September 7, 2017

Honorable Judge Young
District Court Judge
United States District Court for the District of Massachusetts
John Joseph Moakley U.S. Courthouse
1 Courthouse Way, Suite 2300
Boston, Massachusetts 02210

Re: United States of America v. Rafael, case number 1:16-cr-10124-WGY

VICTIM IMPACT STATEMENT ON BEHALF OF
THE NORTHWEST ATLANTIC MARINE ALLIANCE

Dear Judge Young,

On behalf of the Northwest Atlantic Marine Alliance (NAMA) we would like to provide the following written comments to be considered by the court at the sentencing of Mr. Carlos Rafael. As an organization representative of the interests of both the New England fishing communities and the ocean ecosystems, victims of the conduct of Mr. Rafael, we request the opportunity to appear and make a limited address to the court under section 3771 of the Crime Victims' Rights Act.

Our organization's work, the livelihoods of the fishermen who lead our work, and the ocean and fisheries we work on behalf of are all victims of Mr. Rafael's crimes, and the broader fisheries management policies that have empowered him. NAMA and many of our allies spent years working with policy makers to offer alternative solutions and warn them that the ocean and fishermen would be victims of crimes such as those committed by Mr. Rafael.[i]

Over the years, hundreds of New England fishermen and thousands of people in our network have weighed-in with letters, testimony, petitions, round table workshops, and a public "Who Fishes Matters" New England-wide tour to discuss solutions that protect the fish and fishermen from such crimes as Mr. Rafael's.[ii] In addition, thousands more weighed-in through our extended network of hospitals, universities, and institutional advocates.

When totaled, this equated to over a billion dollars worth of seafood purchasing power affected by Mr. Rafael's actions.

NAMA's track record shows that we are committed to a vision of healthy marine ecosystems, a diverse New England fishing fleet, a genuinely democratic management process, dignified livelihoods for community based fishermen, and a more just seafood system. Mr. Rafael's crimes have compromised and impacted our work toward realizing this vision.

We offer the following comments divided into two parts:

1. The impact of Mr. Rafael's actions on the fish, the fishermen, and the public
2. Recommendations for sentencing and sanctions against Mr. Rafael's fisheries assets

1. Impacts

Mr. Rafael has pled guilty to false reporting, smuggling money, and cheating fisheries quota over the course of three years. The public record shows that Mr. Rafael has admitted to illegal activity and misreporting that spans 30 years. However, for the purpose of this statement we are focused on the crimes he committed that are outlined in the current case.

1a. Mr. Rafael's actions, harvesting behaviors and misreporting compromised fish populations, marine ecosystems, and stunted fish rebuilding timelines in the following ways:

The ocean - and what lives within it - is a victim of Mr. Rafael's crimes, and as an organization with 20-plus years of working to protect marine ecosystems and commercial fisheries, it's our responsibility to speak on its behalf.

For decades, we have worked with fishing families and their allies around New England to advance healthier marine ecosystems and fishermen's livelihoods. We have a deep interest in the outcome of Mr. Rafael's sentencing, and the lasting impact these decisions will have on the future, not only for New England fishermen and fisheries, but the US fisheries overall.

Accurate accounts of catch are the best way our government scientists have of estimating the total population of groundfish species such as cod, pollock, and other species. This is what allows managers to achieve their mandate of sustaining healthy levels of fish populations. Marine biologists who have spoken publicly estimate that Mr. Rafael's crimes threw off the count by millions.[iii] This may explain, biologists suggest, why fish stocks are far smaller than scientists have been projecting over the years.

In a media statement, Regional Director John Bullard of the National Marine Fisheries Service said,

> *"The management is based on science. That's fundamental for science to be done well. An awful lot of data comes from fishermen. It needs to be accurately reported. Trust is essential."*[iv]

It is important to note that these fish stocks are animal species that not only have commercial value on land, but have ecological and ecosystem value in their natural habitat. A species like cod interacts with its various prey and predators, maintaining a balance within their marine ecosystems. Illegally harvesting species in high volume disrupts the balance and the impact can have rippling - and often crippling - effects on the rest of the ecosystem.[v]

In addition, leading science tells us that certain subpopulations of codfish exist with natal honing abilities that, like salmon, return codfish to the same spawning grounds year after year.[vi] Mr. Rafael's activities likely have disrupted some of these substocks potentially risking wiping out entire genome classes of codfish and reducing the overall biodiversity within the region.

In 2010-2013 fishermen from around New England testified at New England Fishery Management Council hearings to this impact saying that cheating within the quota system was taking place and that certain fishing activities were removing too many codfish from Stellwagen Bank, thus leaving the area-dependent fishermen with no fish to catch.[vii]

1b. Mr. Rafael's actions directly and indirectly impacted the fishermen who lead our work in the following ways:

Mr. Rafael's false reporting of an estimated 800,000 pounds of fish directly and adversely impacted the fishing quota for other New England fishermen thus limiting their ability to make a livelihood from critical species and therefore making every fisherman who fished for groundfish and scallops a victim of his crimes.

Misreporting of fish also means the integrity of the scientific data that relies on accurate fishing records was undermined. This data is used to allocate how many pounds of any species fishermen can catch. Both under and over reporting of species translates into loss of opportunity for other fishermen. It will likely never be known how many fishermen were affected by Mr. Rafael's false reporting, but it is safe to assume that anyone with a New England groundfish and/or scallop permit was harmed due to Mr. Rafael's actions.

Mr. Rafael's false reporting also allowed his vessels to unfairly target cod fish in the inshore waters of the Gulf of Maine, which contributed to a pulse fishing pressure on that area that exceeded the ecosystem's capacity to withstand.[viii] While many fishermen warned policy makers this was occurring and that the fish stocks could not withstand the pressure,[ix] Mr. Rafael is on the record lobbying to ensure his fishing practices would continue. As a result, many fishermen and shoreside businesses' ability to make a living was compromised, and many were forced to exit the fishery or related fishing businesses.[x]

In addition, falsifying records compromised rebuilding efforts for highly valuable commercial fish species, thus preventing what otherwise may have been larger quotas allocated to fishermen around New England. In 2015 NOAA economists estimated that rebuilding all US fish stocks would generate an additional $31 billion in sales impacts, support an additional 500,000 jobs, and increase the revenue fishermen receive at the dock by $2.2 billion.[xi] While New England groundfish is only a fraction of the overall domestic catch (less than 1%) the economic loss based upon Mr. Rafael's actions ranges upwards into the hundreds of millions of dollars affecting thousands of jobs.[xii]

1c. Mr. Rafael's actions directly and indirectly impacted the public in the following ways:

The ocean and the fish are part of the public commons who are ultimately the "owners" of the ocean and all that lives within it. In the United States, the public owns out to 200 miles of the ocean and its bounty. Under the Public Trust Doctrine,[xiii] the ocean and its bounty are preserved for public use and the government must protect and maintain these resources for the public's use.[xiv] Under this Doctrine, the government holds title to all submerged land under navigable waters and is responsible for its protection on behalf of the public.[xv] Therefore, the crimes committed by Mr. Rafael include stealing from the public the rich assets beneath these navigable waters.

In addition, Mr. Rafael's failure to pay sufficient taxes means the public was robbed of resources that require tax monies. Subsequently, Mr. Rafael's failure to disclose his income means the public was robbed of the tax dollars dedicated to the functions of the government, including any directed toward science and management of natural resources.

Mr. Rafael's aforementioned misreporting jeopardized the scientific data on which the government relies on in their efforts to protect the fish stocks. This means the public's trust was violated both by Mr. Rafael and by fisheries managers who ignored warnings - by

ourselves and many fishermen - that crimes were being committed that undermine the scientific integrity.

Furthermore, Mr. Rafael's misreporting of lesser priced fish and passing it off as the more lucrative species means many members of the public who rely on lower priced species for food and nutrition are also victims of Mr. Rafael's crimes because their access to essential foods was limited.

Finally, Mr. Rafael used his ill gotten profits to ensure control over more of the public's wealth by influencing policy. During recent New England Fisheries Management Council (the Council) meetings, Mr. Rafael publicly committed $10 million to fight the Council's attempt to establish quota limits on excessive groundfish consolidation.[xvi] His lobbying efforts successfully influenced the Council's final decision resulting in a 15.5% cap that would effectively allow for a few large players to dominate the entire industry.[xvii] When the majority of fishermen spoke out in favor of a lower cap Mr. Rafael responded by saying,

> *"The maggots screaming on the sidelines, they're done. They can scream all they want. Nobody can save them. They are like mosquitos biting on the balls of an elephant."*[xviii]

The impact of this policy may last into the foreseeable future and forever adversely impact the ability of new entrants and independent fishermen to have a place in this fishery. Not only that but this policy helped solidify the transfer of a public commons resource into his and others' private property that will forever reduce the general public's ability to ensure these fish stocks are well managed for the greatest benefit to the nation as required by the Magnuson-Stevens Fisheries Conservation and Management Act.

2. Recommendations & Restitution

As victims of Mr. Rafael's crimes, on behalf of our organization, the fishermen who lead our work, and the ocean and fisheries we work on behalf of, we offer the following recommendations to the court:

Mr. Rafael should receive maximum jail time, maximum fines, and maximum forfeiture of assets, particularly those assets that Mr. Rafael employed to commit his crimes and those assets that he acquired from the tainted profits of his crimes.

Upon the forfeiture of Mr. Rafael's fishing assets, there are provisions under the federal criminal code that authorize the federal government to confiscate any property that was used

in the commission of a crime. We believe the government should confiscate and liquidate any and all property, which includes fishing vessels, equipment, permits, buildings, etc.

We request that the court order specific restitution for the harms Mr. Rafael caused and that funds raised by the liquidation of Mr. Rafael's assets be applied and distributed in the following ways:

- Mr. Rafael should be barred from any future involvement in fisheries.

- Restitution of all Mr. Rafael's assets be considered on a New England-wide basis, not just New Bedford. The impact and harm caused by his crimes affects every fisherman who has held a groundfish and/or scallop permit and therefore they should receive restitution.

- Restitution of Mr. Rafael's groundfish quota should exclude any entities currently controlling an excessive share of groundfish quota (2% or higher for any species identified under the Northeast multispecies fisheries management plan).

- Restitution of Mr. Rafael's groundfish quota and scallop permits should provide a right-of-first-refusal to the fishermen who were put out of business or effectively removed from the groundfish and scallop fisheries due to Mr. Rafael's actions.

In conclusion, we appreciate this opportunity to voice our concerns and express the harm done to our organization's work, the livelihoods of the fishermen who lead our work, and the marine ecosystems we work to protect. Under Section 3771 of the Crime Victims' Rights Act, we request this statement be heard or read during the sentencing proceedings.

Sincerely,

Shannon Eldredge
Commercial Fisherman
Board President, Northwest Atlantic Marine Alliance
On behalf of the Northwest Atlantic Marine Alliance Board of Trustees and Staff

[i] Public comments to the National Oceanic and Atmospheric Administration and the New England Fishery Management Council, 2012 (attached)

[ii] NAMA comments to the National Marine Fisheries Service between 2010 - 2017, http://www.namanet.org/our-work/nama-weighs. Also, Thunderclap Online Petition. https://www.thunderclap.it/projects/31991-stop-wall-street-fisheries

[iii] "New Bedford's Fishing Codfather Pleads Guilty" David Boeri, National Public Radio, March 30, 2017 http://www.wbur.org/news/2017/03/30/carlos-rafael-new-bedford-codfather

[iv] Ibid

[v] Ames, Edward "Cod and Haddock Spawning Grounds in the Gulf of Maine" Island Institute. https://coastalfisheries.org/wp-content/uploads/2017/03/Cod-and-Haddock-Spawning-Grounds-in-the-Gulf-of-Maine1.pdf (accessed September 6, 2017)

[vi] Bentzen P, Bradbury IR "Don't bet against the natal homing abilities of marine fishes" Molecular Ecology Journal, https://www.ncbi.nlm.nih.gov/pubmed/27306459 (accessed September 6, 2017)

[vii] Tolley, B., Gregory, R., Marten, G. "Promoting resilience in a regional seafood system: New England and the Fish Locally Collaborative" Journal of Environmental Sciences and Studies, https://link.springer.com/article/10.1007/s13412-015-0343-8 (accessed September 6, 2017) and Marine Policy, Neoliberalism and the politics of enclosure in North American small-scale fisheries, http://www.sciencedirect.com/science/article/pii/S0308597X15000743 (accessed September 6, 2017)

[viii] "One fisherman's tale shows plight of many," Richard Gaines, Gloucester Daily Times, February 6, 2013 http://www.gloucestertimes.com/news/local_news/one-fisherman-s-tale-shows-plight-of-many/article_4f87b49d-279d-5400-8866-c00a6ce6c78b.html (accessed September 6, 2017) and
"Small boats face double fishing hit," Richard Gaines, Gloucester Daily Times, March 2, 2013 http://www.gloucestertimes.com/news/local_news/small-boats-face-double-fishing-hit/article_36516dba-6811-51da-b8b2-6028ca16f77f.html (accessed September 6, 2017)

[ix] "Catch shares tied to cod losses," Richard Gaines, Gloucester Daily Times, February 28, 2013 http://www.gloucestertimes.com/news/local_news/catch-shares-tied-to-cod-losses/article_e391c989-5443-5a07-baaa-06bc5edcc0be.html (accessed September 6, 2017)

[x] Ibid

[xi] Saving Seafood, NOAA Chief Jane Lubchenco's New England Groundfish Management Testimony, http://www.savingseafood.org/news/washington/noaa-chief-jane-lubchencos-new-england-groundfish-management-testimony/ (accessed September 6, 2017)

[xii] NOAA Fisheries, Fisheries Statistic Division, Commercial Fisheries Statistics https://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/ (accessed September 6, 2017)

[xiii] "Public Trust Doctrine and Coastal Zone Management," Washington State Department of Ecology, Publication No. 93-95, Version 1.0, October 1991 (attached)

[xiv] State of Massachusetts, Executive Office of Energy and Environmental Affairs, "The Ocean as a Public Trust Resource" (http://www.mass.gov/eea/docs/czm/oceans/waves-of-change/tech-pt.pdf); Babcock, H.M., "Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna," 26 Stan.Envtl.L.J. 3-76 (2007).

[xv] Turnipseed, M., Crowder, L.B., Sagarin, R.D., and Roady, S.E. "Legal Bedrock for Rebuilding America's Ocean Ecosystems" Science Magazine, Volume 324, April 10, 2009 (attached)

[xvi] New England Fishery Management Council Scoping Hearing Summary, Amendment 18 to the Northeast Multispecies FMP, http://archive.nefmc.org/nemulti/planamen/Amend%2018/scoping%20hearings/Fairhaven%20A18%20summary.pdf (Accessed September 6, 2017)

[xvii] Federal Register/Vol. 82, No. 76/Friday, April 21, 2017/Rules and Regulations. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration. 50 CFR Part 648 [Docket No. 150630567–7360–02] RIN 0648–BF26 Magnuson-Stevens Fishery Conservation and Management Act Provisions; Fisheries of the Northeastern United States; Northeast Groundfish Fishery; Amendment 18. Agency: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce. ACTION: Final rule. http://s3.amazonaws.com/nefmc.org/Final-Rule-Groundfish-Amendment-18.pdf

[xviii] "Carlos Rafael and His Fish Are the American Dream," Danny McDonald, Vice, May 24, 2013. https://www.vice.com/en_us/article/kwnmea/carlos-rafael-fish-interview

Attachement 1 (for endote i) to Victim Statement on Behalf of the Northwest Atlantic Marine Alliance

September 7, 2017

Re: United States of America v. Rafael
case number 1:16-cr-10124-WGY

PUBLIC COMMENTS SUBMITTED TO THE NEW ENGLAND FISHERIES MANAGEMENT COUNCIL

MAY 2012

SELECTED QUOTES:

"The recent and severe cod stock depletion problem appears to reflect the increased localized fishing effort by large ground fish trawlers. … I ask on behalf of the 130 members of the Stellwagen Bank Charter Boat Association, that you and the NEFCS put forth emergency effort controls that will restrict the large trawlers from further destroying the fragile and highly depleted cod stocks on and around the vicinity of Stellwagen Bank."

– Steven James, President of SBCBA

"We support going ahead with this Amendment [Amendment 18] from our side of the 'big pond' with the hope that you will be able to find a way to protect the smaller fleet which supports many fishing families and fishing communities, many jobs in the fishery and still achieve your goal".

- MA Lobsterman's Association (1300 members)

"There is no doubt in my mind and based upon my experience that the lack of ground fish on Stellwagen Bank is a direct result of the Catch Share system that is now in place. Prior to Catch Shares, small commercial day boats would go out, catch their daily trip limit and return to port to offload. The situation we have now is very large draggers, some in excess of 100 feet, which historically in the past fished Georges Bank, are fishing around the clock, day and night, sweeping Stellwagen Bank clean of all species of Groundfish."

– Captain David Waldrip

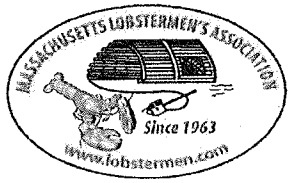
"There is a severe decline in the cod stocks in what had been a healthy and productive fishing ground for the past decade. The recent and severe cod stock depletion problem appears to reflect the increased localized fishing effort by these large ground fish trawlers who, in the past, were fishing further offshore."

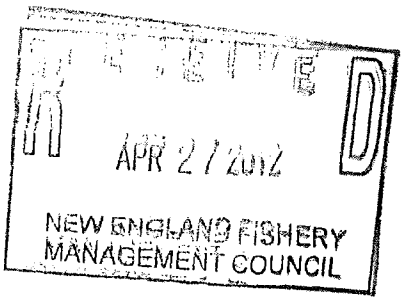
– Captain Skip DeBrusk

(3)

Massachusetts Lobstermen's Association, Inc.

8 Otis Place
Bus. (781) 545-6984 Fax. (781) 545-7837





April 25, 2012

Rip Cunningham, Chair
New England Fisheries Management Council
50 Water Street
Newburyport, MA 01950

Dear Rip,

The 1300 members of the Massachusetts Lobstermen's Association would like to submit the following comments with regard to Amendment 18 to the Groundfish Plan.

1. We support the Council and the NMFS going forward with the Amendment. We believe it is prudent to address issues related to keeping the smaller groundfish vessels in business as opposed to allowing consolidation to occur which could eventually eliminate that part of the fleet. Our concerns revolve mostly from the lobster industry;s perspective of how a status quo decision could adversely affect our industry.
2. Should the status quo groundfish plan continue, the possible consolidation of the fleet could result in many of these smaller operations to be forced out of the groundfish industry and into the lobster fishery. Many of these vessels do have lobster permits and would then choose to enter the lobster fishery. This would mean that they could or would decide to purchase traps and put more fishing pressure on our lobster fishery. This would in turn cause the lobster fishery managers to conclude that the lobster fishery has increased its effort and bring about more restrictions on our fishery when our fishermen have basically not increased their effort. We support our groundfish brothern who really would prefer to remain ground fishermen rather than be pushed out of that fishery and forced into the lobster fishery.
3. Our other concern is that we fear that there'll be more gear conflicts between the groundfish fishermen and our fishermen. If the status quo plan allowing consolidation is allowed to continue, the bigger vessels will be able to access areas with heavier gear that the smaller operations can't currently access. These areas are where lobster fishermen now fish. This would result in more gear conflicts. While there is some conflicts between the two sectors, even now, this problem would increase if the larger vessels can push smaller boats out and then push their way into areas where the lobster fleet has moved in its attempt to avoid the groundfish boats and work with them.

c: TN (4/30)

These are our major concerns, redirection into the lobster fishery which we can ill afford at this time and the potential of more gear conflicts which we also can't afford nor do we believe, the groundfishermen want either. For these reasons, we support going ahead with this Amendment from our side of the "big pond" with the hope that you will be able to find a way to protect the smaller fleet which supports many fishing families and fishing communities, many jobs in the fishery and still achieve your goal.

Thank you for your consideration on these points from the lobster industry's perspective.

Respectfully yours,

Bill

William A. Adler
Executive Director

David Waldrip
Charter Boat Relentless
80 Green Street
Rockland, MA 02370

Mr. Paul Howard
New England Fisheries Management Council
50 Water Street, Mill 2
Newburyport, MA 01950

Dear Mr. Howard:

I am submitting these comments to be taken into consideration at the scheduled Recreational Advisory Panel Meeting on Tuesday, May 15th. I have owned and operated a charter boat fishing for Northeast Multi Species since 2001. The past seven years I have been fishing out of Green Harbor in Marshfield, MA. There are over twenty charter boats which fish out of Green Harbor for cod, haddock and other species of ground fish. I have been active in fishery management issues, donated our vessel to the School for Marine Science and Technology (SMAST), University of Massachusetts, Dartmouth cod tagging program for research. During the past several years we have tagged over three thousand cod fish to obtain more accurate data on the movement and growth rate of GOM cod.

During the past twelve years I have personally observed the cod and haddock fishery drastically improve each year on Stellwagen Bank. The last three years we have seen a large increase in the catch of pollock with schools so thick they were actually chasing sand lance on the surface and hitting jigs ten feet under the boat.

Charter and recreational fisherman were finally seeing the results from years of sacrifices such as increase in the minimum cod size, reduced bag limits and seasonal closures. Fisherman, both commercial day boats, charter and private vessels had no problem finding cod, haddock and pollock each trip. Our customers were eager to book fishing trips, often booking multiple trips each season.

Last summer and fall we were finding less fish on Stellwagen Bank and this year the catch rate is only a fraction of what it should be. Many of the charter boats are struggling locating not only cod but haddock and pollock

cc: tn, fh

also in the GOM, especially on Stellwagen Bank. Our catches are down by over seventy percent this spring while fishing the same waters and using the same methods we have used the last decade.

Presently with large schools of mackerel and herring on the bank and there is absolutely no reason vast amounts of cod and pollock should be feeding on these piles of bait. There are very few fish to be found under or near the bait.

There is no doubt in my mind and based upon my experience that the lack of ground fish on Stellwagen Bank is a direct result of the catch share system that is now in place. Prior to catch shares, small commercial day boats would go out, catch their daily trip limit and return to port to offload. The situation we have now is very large draggers, some in excess of one-hundred feet which historically in the past fished Georges Bank are fishing around the clock, day and night sweeping Stellwagen Bank clean of all species of Groundfish.

We did not have any problem finding and catching groundfish with a rod and reel prior to the implementation of catch shares. The fishing was significantly better when daily trip limits were in place along with the rolling closures in the GOM.

A single charter with fare, tip, local hotels, vehicle fuel, food and other items is well over two thousand dollars to the local economy. With sixty trips out of one small harbor by twenty or thirty boats on a three day weekend, it translates to over $100K to the local economy. Multiply this for three months and it is a loss of millions of dollars to the local economy.

I am respectfully requesting NEFMC and NMFS seriously look into this situation and develop measures to protect the charter fleet. This could include limiting the size of the vessels within the 100 fathom curve, daily trip limits, seasonal or rolling closures. Without any change in regulations there will be no fish left to catch.

I appreciate your time and please take this request seriously.

Respectfully,

Captain David Waldrip
Charter Vessel Relentless

May 9, 2012

Mr. Paul Howard

New England Fisheries Management Council

50 Water Street, Mill 2

Newburyport, MA 01950

Dear Mr. Howard:

I am writing to express my concerns regarding the localized cod stock depletion and the apparent need for more effort controls among large Commercial ground fish trawlers which are tirelessly hammering the Stellwagen Bank area and its' immediate waters. I ask that my comments be considered during the scheduled Recreational Advisory Panel Meeting on Tuesday, May 15th.

By all accounts made to me on behalf of the Charter Boat Captains that regularly fish the Stellwagen Bank area, there seems to be a severe declined in the cod stocks in what had been a healthy and productive fishing grounds for the past decade. The recent and severe cod stock depletion problem appears to reflect the increased localized fishing effort by these large ground fish trawlers.

In my opinion, our inshore stocks need more protection from large Commercial trawl vessels as too many fishermen are simply fishing on too confined an area. This situation, which I believe is largely a spinoff of the recent catch shares program, is having an adverse effect on a non-intended user group and ultimately destroying the livelihood of Charter boat operators. Localized cod stock depletion is further reducing the chances that the fishery will return to a sustainable level any time soon.

I ask on behalf of the 130 members of the Stellwagen Bank Charter Boat Association, that you and the NEFMC put forth emergency effort controls that will restrict the large trawlers from further destroying the fragile and highly depleted cod stocks on and around the vicinity of Stellwagen Bank.

Thank you for your time and consideration in this urgent matter.

Respectfully Yours,

Steven E. James

President, SBCBA

cc: tn, fh

From: Michael Colleary
Date: Wednesday, May 9, 2012 2:28 PM
To: Rip Cunningham
Subject: GOM and Stellwagen Bank

Mr. Rip Cunningham,

I am writing as a concerned recreational fishermen regarding the current lack of ground fish on Stellwagen Bank. I regularly join shared charters for groundfish and wanted to express the experience of fishing last week. Aboard Relentless Captain Shaun Waldrip ran his dads boat and finding fish has never been as difficult in my experience.

Six men fishing for ten hours yielded only 28 fish. We saw giant mid-water trawlers on Stellwagen. These commercial factory vessels are devastating a treasure in my opinion. How is it this is going on? Many of the fishermen I meet are from the mid Atlantic states, they drive for hours and stay at local lodging establishment eat at local restaurants buy tackle from local bait shops buy fuel locally to drive home with local ice.

Local Captains and the economy are suffering by the mismanagement of the resource we have off our coast. Often when I tell co-workers or friends about a fishing trip it warms my heart to say this asset of Stellwagen is World Class Fishing. However I am loosing that enthusiasm after my day on the water last week.

Thank you

Michael Colleary

cc: tn, fh

From: Skip DeBrusk
Date: May 9, 2012 9:15:24 AM HST
To: Paul Howard <phoward@nefmc.org>
Cc: Daniel Morris <daniel.morris@noaa.gov>, Samuel Rauch <samuel.rauch@noaa.gov>
Subject: Recreational Advisory Panel Meeting depleted cod stocks

Dear Mr. Howard:

Because I am unable to attend the Recreational Advisory Panel Meeting scheduled for May 15th, and therefore I am writing to express my concerns regarding the localized cod stock depletion and the apparent need for more controls of large commercial ground fish trawlers which have depleted the local cod stock of Stellwagen Bank area and its' immediate waters. I ask that my comments be considered as if I were present on Tuesday, May 15th.

There is a severe declined in the cod stocks in what had been a healthy and productive fishing grounds for the past decade. The recent and severe cod stock depletion problem appears to reflect the increased localized fishing effort by these large ground fish trawlers who, in the past, were fishing further offshore.

Our inshore stocks need more protection from large commercial trawl vessels as too many fishermen are simply fishing on too confined an area. This situation, which I believe is largely a spinoff of the recent catch shares program, is having an adverse effect on a non-intended user group and ultimately destroying the livelihood of charter boat operators. Localized cod stock depletion is further reducing the chances that the fishery will return to a sustainable level any time soon.

My request is for the NEFMC to put forth emergency effort controls that will restrict the large trawlers from further destroying the fragile and highly depleted cod stocks on and around the vicinity of Stellwagen Bank.

Thank you for your consideration in this urgent matter.

Sincerely,

Capt. Skip DeBrusk

Codfish, Dogfish, Mermaids, and Frank
By Capt. Skip DeBrusk
18 Michael Ave.
Scituate, MA 02066 781-545-1353

cc: tn, fh

From: "Capt. Rich Antonino"
Reply-To:
Date: Wednesday, May 9, 2012 1:10 PM
To: Rip Cunningham <ripcham@verizon.net>
Subject: Conservation and cod

Rip,

Wow. The fix is in. Remember my words. The deck is stacked and here is how it is going to play out. I want to throw up I'm so disgusted at the current affairs of our government and the fisheries department.

1. The fishing on Stellwagen Bank over the past several years has gotten better and better for the spring bite when the fish are in the shallow water. Last year was so incredible that words couldn't describe it. I had fish slamming into my boat (literally) on several occasions. Yes, cod on the surface. As the fish moved into deeper water, the fishing has remained excellent through the fall when the season is closed for us.

2. The old regulations of 800 pounds per day disappeared and the catch shares program allowed unlimited daily catches of cod. So the draggers and longliners lined up on Stellwagen and went to work. 40,000 and 50,000 pounds/day/boat catches reported and conga lines of boats working Stellwagen verified.

3. Reports of boats hammering Stellwagen Bank and then moving offshore to George's Bank afterward...reporting catch as occurring on George's to get through loophole in reporting laws.

4. Now there is hardly a cod on Stellwagen Bank!!! It is as bad as you could imagine in the shallow water on top of Stellwagen. The bait is everywhere and the fishing should be incredible.

My crystal ball prediction...

Emergency closure coming for next year... this will wipe out the small draggers and hook-and-line guys. Companies with many boats will "sacrifice" a 1/3 of their fleet (the boats that they don't want anyways) and put their company-wide losses on those boats. They'll make money through tax losses and trim their fleet in the process. It'll be a three year closure. Very few commercial boats will survive and only the biggest/ones with political clout will emerge. Recreational fishing will resume, but with a 5-fish limit. In light of being shut down completely, we'll "be happy" with the scraps that are being thrown our way. Charter boats and tackle stores will suffer tremendously. I bet 30-40% of charter boats are out of business, with overall trips reduced in the fleet by 50-60%. The "sliver" of closed area on Stellwagen Bank will show great signs of life, so the sliver will grow. Fishing pressure outside of the sliver will increase, so the fishery outside the sliver will be seen to suffer...The population inside the sliver will look more vibrant, so it'll get expanded even larger.

Rip, the foot is in the door big time and it really sickens me to see it happen. I say that "the fix is in" because it's so clearly obvious that allowing that much pressure in such a small area would wipe out the fish population. Now that it's happened, the government can run in and "save the day". They can also argue to keep us off of the water!

At one of the meetings this winter, Rhode Island I believe, I was told that the charter boat/recreational fleet is having good years because we were very mobile and could keep our boats on the schools of fish, but "that the population was greatly diminished, but showed signs of localized concentrated populations" that allowed us to have great catches. Yes, this is what I was told....Because that is what the Govt. believes, allowing widespread concentrated commercial pressure on such a population is CRIMINAL. The results that we're seeing now were completely predictable.

I'm really fed up with the current state of affairs here.

Sincerely,

Capt. Rich Antonino

Black Rose Fishing Charters

cc: tm Lk

Date: May 9, 2012 8:06:29 PM PDT
To: <phoward@nefmc.org>, <danielmorris@noaa.gov>, <samuel.rauch@noaa.gov>
Cc: <Paul.Diodati@state.ma.us>
Subject: 2013 Cod/Hadd Regulations: GOM: Recreational Fisheries

I am a charterboat captain operating out of Massachusetts. I have fished for many years on Stellwagen Bank and never have seen such devastation as has been caused in the last year by **Sector Draggers** on Stellwagen Bank in one year. Last year the fishing was Fabulous. We caught our limit of 80 cod by 9:30-10:00am. Customers were happy and we went for haddock and pollock the rest of the day. Today, we barely catch any cod, usually skinny 19" fish that escaped the draggers nets. We have to go 250' to 390' to maybe catch some haddock and a few small cod.

"Catch Shares" and "Sectors" is the cause of this disaster and I blame Jane Lubchenco and her relentless push for "Catch Shares" for this disaster. It is criminal what she has done to our groundfishing in New England. Please stop this Massacre of our precious groundfish now. Re-establish the 800 lb. daily trip limit to commercial vessels fishing within GOM and the 2,000 lb. daily trip limit on vessels fishing GB.

Keep big draggers 50' or bigger zoned out beyond the 100 fathom line. Prohibit commercial boats with no previous history from fishing Stellwagen Bank ie. Cape Cod Hooker's Association.

I am a charterboat operator and feel that any further restrictions on recreational fisheries should take into consideration the socio-economic needs of charter/headboats as compared to general recreational anglers. The charter/headboat customer from Pennsylvania or New Jersey who only fishes one time each year deserves to catch his share of cod compared to the guy in Massachusetts who has a boat and fishes 10-20 times a year for cod.

Thank-you for your consideration.

Yours truly,

Capt. Debra Richardson
Bigfish II Sportfishing Charters

Mr. Paul Howard
NEFMC
50 Water Street, Mill 2
Newburyport, Ma 01950

Dear Mr. Howard,
I am certain that by now you have heard and read enough anecdotal evidence to realize that the biomass of GOM codfish and other ground fish in the Stellwagen area is seriously diminished. The Charter boat industry reliant upon these fish , myself included, are experiencing some of the worst catches ever while expanding the area we are fishing. I definitely expect to lose business next year based upon the sparse catch so far this year.

From Dec. 2011 through the winter of 2012 there was much discussion regarding the scientific validity of the 2010 stock assessment. As an interim measure you instituted a 22% reduction in allocation for 2012 with the strong possibility of more draconian cuts in 2013.

During the course of this discussion and the sorting out of the scientific assessment process large Georges Bank draggers were allowed to fish the Stellwagen area all winter under the catch share program. This meant no daily limits and no days off. Hook boats with up to 50 tubs set tub trawls consisting of tens of thousands of hooks in areas previously fished by rod and reel commercial boats. This combined with the Gill netters put more pressure on our ground fish stocks than we have seen. As the small boats were pushed out the larger interests purchased the catch share. New England ground fish may well become the "poster child" of the failure of catch shares.

There is hope that the GOM and GB stock are somehow related and that new fish will move onto the bank . Hopefully, if this happens the fish will be able to settle in and spawn before the assault of the factory draggers resumes. I have heard that the Georges fleet did poorly on Georges and is headed back to Stellwagen .

I hope that you will consider keeping the large draggers and tub trawl boats out of the area.

Regards,

Rodger Ballou
712 Ferry Street
Marshfield, Ma. 02050

From: John Richardson
Sent: Thursday, May 10, 2012 2:51 PM
To: Paul Howard
Cc: Dan Morris; samuel.rauch@noaa.gov
Subject: GOM Cod and Haddock

Capt. John Richardson
10 Ringbolt Road
Hingham, MA 02043

Dear Mr. Howard,

Beginning in the summer of 2011, ground fishing on Stellwagen Bank has declined at an alarming rate. Just from spring to fall of 2011 catches dropped by more than 75%.

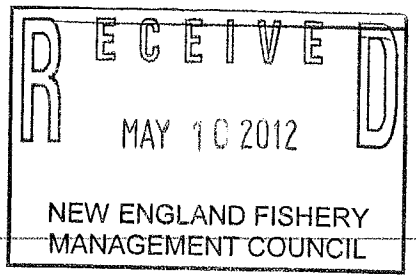
The east side of Stellwagen Bank is a long ride for recreational fishermen with today's fuel prices. Some fishermen group together and charter which is also expensive. In the past 25 years, conservation efforts seamed to keep stock levels to where recreational and charter fishermen could justify the expense. Fishing was great just last spring.

Large draggers moved onto the Bank last summer. We saw them day and night. They were still there in the fall and they are there now. These are offshore boats, over 100 feet, we have seldom seen boats this size and never in concentration.

My goal today is to tell you that this is happening and that the results have been catastrophic. Recreational and charter fishing can do so much more for a local troubled economy than what ever regulation change has allowed a shorter trip for these big boats. I don't believe that this inshore local fish stock can take this kind of pressure without collapsing. From my one trip this spring which produced no fish, it looks like it could be too late.

Very truly yours,

John Richardson



From: Michael Pierdinock
Sent: Thursday, May 10, 2012 3:38 PM
To: Paul Howard; Dan Morris; samuel.rauch@noaa.gov
Subject: Comments for Recreational Advisory Meeting

I am writing to express my concerns regarding the localized cod stock depletion and the apparent need for more effort controls among large commercial ground fish trawlers which are hammering the Stellwagen Bank area and its' immediate waters. I ask that my comments be considered during the scheduled Recreational Advisory Panel Meeting on Tuesday, May 15th.
As a Charter Boat Captain that regularly fishes the Stellwagen Bank area, there seems to be a severe decline in the cod stocks in what had been healthy and productive fishing grounds at sustainable levels the past few years. The recent and severe cod stock depletion problem appears to reflect the increased localized fishing effort by these large ground fish trawlers.

Our inshore stock needs more protection from large commercial trawl vessels as too many fishermen are simply fishing on too confined an area. The cod fishery was at sustainable levels prior to the implementation of the catch share program. The catch share program is having a detrimental impact on the fishery and ultimately destroying the livelihood of Charter boat operators. Localized cod stock depletion is further reducing the chances that the fishery will return to a sustainable level any time soon.
I ask that you and the NEFMC put forth emergency effort controls that will restrict the large trawlers from further destroying the fragile and highly depleted cod stocks on and around the vicinity of Stellwagen Bank.
If you have any questions, please email or give me a call.

Thanks

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Capt. Mike Pierdinock
CPF Charters "Perseverance"
P.O. Box 732
Brant Rock , Massachusetts 02020
(617) 291-8914
www.cpfcharters.com
cpfcharters@yahoo.com

From: "MICHAEL PRATT" <michaelpratt1@verizon.net>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 28, 2012 7:46:34 AM EST
To: <groundfish.amendment18@noaa.gov>

2/28/12

Please see the comments below. The comments are also attached to this email.

My name is Michael Pratt. I am a Hook Fisherman from Green Harbor. I would like to share a few major concerns that I have relating to how catch shares have already caused an excessive amount of Fleet consolidation.

New problems the small inshore Fleet, like myself, are being faced with are the large 100 foot plus boats working day and night in spots once made up of small day draggers in the thirty to fifty foot range.

Another problem is another Fleet of boats that has already exploited their local resource are being able to just lease their way into the Gulf of Maine and continue their unsustainable Fishing practices.

The area I have historically fished is now experiencing what I believe to be at least double the fishing effort that it can withstand.

Without some immediate emergency intervention from National Marine Fisheries, it may be too late.

Even as we sit here today, a basically uncontrolled, unsustainable fishery is taking place on a resource that local fisherman have worked in vain for over a decade to restore.

One example of how consolidation is affecting this area is that this new fleet of large offshore boats has been allowed to come in and harvest so much of the local resource- that some small boat fisherman have been unable to catch their quota and opted to lease it out. Most of this quota is getting leased to the bigger boats.

This strategy of attack and exploit the resource- and then buy out the struggling day boat, is quickly paving the road to a big boat only fishery.

The Massachusetts south shore -and especially sector 10, due to such low quota allocations can not survive the effects of consolidation much longer.

One idea the council needs to consider is dividing the Gulf of Maine Cod Population into eastern and western areas. This would effectively put big boat effort back where it belongs while allowing for a sustainable inshore fishery to continue on for small boat businesses.

To compliment this – I believe it would be necessary to implement a baseline leasing restriction on Gulf of Maine and Georges Bank cod only. Such restrictions would prevent large vessels from buying up small vessels quota and vice-versa, resulting in a diversified fleet.

This would also help eliminate the problems of the new fleet of small boats leasing their way into the Gulf of Maine fishery by trading quota with larger vessels.

With these restrictions in place, much of the burden soon to be caused from the new cod stock assessment could be lightened.

Another benefit of these requirements would also help new entrants in the small boat fishery by allowing more affordable quota.

Currently, small boats relying on cod only, can not afford to purchase quota due to the fact that larger vessels landing several valuable species will pay a premium to ensure they have enough cod ace to harvest their other species.

I will end by thanking you for holding these scoping meetings and ask that great weight be added to what you have heard. This community has suffered and is suffering the most under past and current fisheries management plans. Any further consolidation will certainly be the end.

Thank you for your time.

Michael Pratt
F/V PERFECT C's
F/V Lisa Marie

781-760-0718
michaelpratt1@verizon.net

From: Bob Steneck <steneck@maine.edu>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 17, 2012 3:22:19 PM EST
To: Groundfish.amendment18@noaa.gov

17 February 2012

Dear New England Fisheries Management Council,

I am a professor in the University of Maine's School of Marine Sciences who has worked with numerous fisheries for nearly 30 years. I am very concerned about Amendment 18 because the no-action alternative will contribute to the loss of fleet diversity which is, in my opinion, one of the gravest problems facing the New England fleet and its fisheries.

When I served on the Fisheries Task Force that recommended Catch Shares, my primary concern was that it could result in consolidation. With consolidation, smaller owner operators are squeezed out. This segment of the fleet is most attuned to changes in fish stocks and has the capacity to fish most adaptively and sustainably.

Please do what you can to preserve fleet diversity. I think as part of that there should be quota accumulation limits. I think for the health of the fishing community and the community of fishes, you should work to prevent a heavy concentration of fishing effort around inshore areas. Where possible foster owner-operators and independently owned business. It will also give new entrants into the fishery a chance of surviving.

Along with keeping the offshore boats offshore, it is a good idea to establish quota set-aside programs to reward sectors that meet specific benchmarks that promote fleet diversity. Fishermen should not be allowed to lease 100% of their quota. Leasing and permit trading should be constrained so the smaller fishing operators are not forced out. These actions are necessary because, in my opinion, the small boat subset of fisheries stakeholders is our best chance for improving and sustaining our inshore groundfish stocks.

If you have any questions, please contact me via e-mail (steneck@maine.edu).

Sincerely,

Bob Steneck

Robert S. Steneck, Ph.D
Professor of Oceanography, Marine Biology and Marine Policy
School of Marine Sciences
University of Maine
Pew Fellow in Marine Conservation
Darling Marine Center
193 Clarks Cove Road
Walpole, Maine 04573

207 563 3146 ext 233 (voice)
207 549 3062 (Home office)
207 563 3119 (Fax)
steneck@maine.edu
Darling Marine Center: <http://server.dmc.maine.edu>
School of Marine Sciences: <http://www.umaine.edu/marine/people/directory.php/profile/robert_steneck>

From: Food Chain Workers Alliance <info@foodchainworkers.org>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 27, 2012 5:50:16 PM EST
To: groundfish.amendment18@noaa.gov
Cc: brett@namanet.org

To the New England Fisheries Management Council,

I am writing on behalf of the Food Chain Workers Alliance, a national coalition of organizations representing 160,000 workers throughout the food system. More than a third of our membership is in the greater New York area into New England.

I am writing to oppose the no-action alternative for Amendment 18 and urge the Council to consider every reasonable alternative in order to protect fleet diversity because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects our membership because many of the workers live in coastal communities and we all care about where our food comes from. We see consolidation as a problem because, as we have seen in land-based agricultural systems, consolidation has led to fewer farmers, ecological devastation, lower quality and unsafe food, and exploitation of workers.

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity:

1. Prevent heavy concentration of fishing effort around inshore areas.
2. Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new entrants.
3. Limit the concentration of quota for any one entity.

I also recommend that the Council explore the following potential solutions in order to achieve the goals:

- Establish mechanisms to keep offshore boats offshore for example restrictions from fishing in multiple broad stock areas. (1)
- Establish quota set-aside programs to reward sectors that are able to meet certain benchmarks in order to promote fleet diversity. (2)
- Incentivize fishermen who are primarily owner-operators. (2)
- Establish policies that ensure quota is fished by fishermen and not used solely as an investment tool. (2)
- Dis-incentivize fishermen who decide to lease 100% of their quota. (2)
- Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants. (2)
- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations. (2)
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity. (3)

Thank you for your attention,
Joann Lo
Executive Director
Food Chain Workers Alliance
634 S. Spring St. #614
Los Angeles, CA 90014
EndFragment

From: "Stephen Bartlett" <sbartlett@ag-missions.org>
Subject: Groundfish Amendment 18 Comment
Date: February 27, 2012 1:12:14 PM EST
To: <groundfish.amendment18@noaa.gov>
Cc: <brett@namanet.org>
Reply-To: <sbartlett@ag-missions.org>

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because it would lead to a loss of diversity in the fleet. This is a problem for many reasons but the most obvious one is fairness and equality of opportunity. People lose their jobs when unfair restrictions or an uneven playing field is imposed in their area of livelihood. Fishing should be a job that is done profitably by as many small scale fisherfolk as possible.

Loss of fleet diversity affects me because "loss of fleet diversity" is really a code for exclusion and concentration of the industry into fewer hands. Such economic inequality impacts on everyone. I have faith that organized small scale fisherfolk have the knowledge and motivation to protect their fisheries and not overfish them. Having the industry concentrated into fewer hands actually threatens rather than protects fisheries. As someone who loves to eat fish, this is also a threat to me and my family. Will my grandchildren have healthy, wild fish to eat? Possibly not if the industry continues to favor the large scale over the small scale, and massive overfishing continues.

I also agree with the following solutions for the council to explore!!

Stephen Bartlett
Farmer
Davenport, New York

SOLUTIONS FOR COUNCIL TO EXPLORE

- Establish mechanisms to keep offshore boats offshore for example restrictions from fishing in multiple broad stock areas. (1)
- Establish quota set-aside programs to reward sectors that are able to meet certain benchmarks in order to promote fleet diversity. (2)
- Incentivize fishermen who are primarily owner-operators. (2)
- Establish policies that ensure quota is fished by fishermen and not used solely as an investment tool. (2)
- Dis-incentivize fishermen who decide to lease 100% of their quota. (2)
- Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants. (2)
- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations. (2)
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity. (3)

From: Brian Pearce <fv.gretchenmarie@gmail.com>
Subject: support immediate action of accumulation limits and diverse fleet through Amendment 18
Date: February 28, 2012 8:56:33 PM EST
To: <Groundfish.Amendment18@noaa.gov>

Dear Council:

I am writing to request that you support an immediate action on Amendment 18 to ensure a diverse fleet throughout New England and build accumulation limits into catch share management.

1. Accumulation limits – Before fleet diversity can be obtained accumulation limits must be addressed. In a business where there is zero possibility for new entrants, unless you have rich purchasing power, there must be disincentives for stockpiling quota. The desire to buy quota by those with hefty bank accounts has made it attractive for small business owner operators to exit the business at inflated prices.
2. Fleet diversity – The small boat fleet in New England is shrinking quickly. Landings are down by boats < 50' by percentage that inarguably suggest they are the victims in catch share management (since landing are up by boats greater than 50'). This didn't happen under days at sea management because it was affordable for boats to lease within their size criteria.
3. Below are possible actions to reduce excessive accumulation and accomplish fleet diversity.

a. Consider penalties for excessive leasing of quota, except where conservancy and affordable prices are the goal.
b. Consider quota set asides for various geographic areas, boat sizes, gear types or date/seasons.
c. Permit holder to declare pre-season if you are going to fish or lease the quota. If you choose all lease out of quota, a percentage of the quota goes to set aside for permit banks or redistribution amongst the fleet.
d. If at the end of a fishing year a permit holder has quota left over, a percentage of that quota is deducted from the next fishing year and redistributed to permit banks.

Currently if a consumer purchases fish harvested by a New England fisherman, there is no certainty that the fisherman earned a cent. I think this can be addressed through accumulation limits and fleet diversity.

Catch shares as they are have taken the fish away from fisherman and given it to businessman. None of the fish that I leased in 2011 came from an active fisherman. There is a potential to take advantage of the lack of oversight with regards to these two issues, leaving fisherman with little quota to hardly make money after paying to lease fish. To wait to address these issues would be a mistake.

Regards,
Brian Pearce
Danny Boy Fisheries

From: Michelle Gottlieb <mbgottlieb@comcast.net>
Subject: Groundfish Amendment 18 Scoping Comments
Date: March 1, 2012 9:34:33 AM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

We, Health Care Without Harm's Healthy Food in Healthcare Programs, oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects the network of hospitals we work with, who are engaged in efforts to purchase local and sustainable seafood. The healthcare sector understands that a diverse and local fleet is essential to implement this goal. Hospitals across the region have signed a Pledge to serve healthy and sustainable foods to their patients, and many of them recently gathered in Gloucester, MA to hear directly from fisherman about the challenges they face. Some of these hospitals are now exploring how they can purchase seafood through Community Supported Fisheries. Fleet consolidation and concentration of the rights to fish will undermine the efforts of the healthcare sector to support local fishing communities.

HCWH's mission is to transform the health care sector worldwide, without compromising patient safety or care, so that it is ecologically sustainable and no longer a source of harm to public health and the environment. To that end, we are working to implement ecologically sound and healthy alternatives to health care practices that pollute and contribute to disease. HCWH's 440 member organizations represent an international coalition of hospitals and health care systems, medical professionals, community groups, health-affected constituencies, labor unions, environmental and environmental health organizations and religious groups.

We recommend that the Council explore solutions that support local economies and a healthier ecosystem.

Thank you,

Michelle Gottlieb, MEM
Co-Coordinator
Healthy Food in Healthcare
Health Care Without Harm
Marblehead, MA

From: Kathleen M Reside <kreside@friars.providence.edu>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 28, 2012 3:09:42 PM EST
To: "groundfish.amendment18@noaa.gov" <groundfish.amendment18@noaa.gov>
Cc: "brett@namanet.org" <brett@namanet.org>

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because I care where my food comes from. I see consolidation as a problem.

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity:

1. Prevent heavy concentration of fishing effort around inshore areas.
2. Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new
entrants.
3. Limit the concentration of quota for any one entity.

I also recommend that the Council explore the following potential solutions in order to achieve the goals:

- Establish mechanisms to keep offshore boats offshore for example restrictions from fishing in multiple broad stock areas. (1)
- Establish quota set-aside programs to reward sectors that are able to meet certain benchmarks in order to promote fleet diversity. (2)
- Incentivize fishermen who are primarily owner-operators. (2)
- Establish policies that ensure quota is fished by fishermen and not used solely as an investment tool. (2)
- Dis-incentivize fishermen who decide to lease 100% of their quota. (2)
- Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants. (2)
- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations. (2)
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity. (3)

Thank you,

Kathleen Reside

From: Michelle Mascarenhas-Swan <michellems3@gmail.com>
Subject: Groundfish Amendment 18 Scoping Comments
Date: March 1, 2012 1:10:19 PM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because I eat fish and I care where the food my family eats comes from. I see consolidation as a problem because it reduces our resilience, which in a time of climate change, increases rather than decreases our risk.

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity:

1. Prevent heavy concentration of fishing effort around inshore areas.
2. Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new entrants.
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- Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants.
- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations.
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity.

Thank you,

Michelle Mascarenhas-Swan

Berkeley, CA 94703

From: Shannon Eldredge <shaneldredge@gmail.com>
Subject: Groundfish A18 Scoping Comments
Date: February 29, 2012 12:51:44 PM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

Fleet diversity is an absolute must in order to sustain the fishing communities that fuel the economy of New England. I oppose no-action under A18 because of this reason. If the fleet continues toward a path of consolidation, JOBS will be LOST, infrastructure will fall giving way to coastal ghost towns, shore-side support industries will be negatively impacted (including marine service businesses, boat builders, ice making companies, rope & net suppliers), and a secure food system of local fish to its community will be essentially ERASED.

I care because I am an educator, teaching the importance of marine trades, small-boat sustainable fisheries, and bio-diversity in our oceans to children on Cape Cod.

I care because I live in a fishing village, and my family owns & operates an off-loading facility that has seen a dramatic decline in activity over the last decade.

I care because I fished my way through college, and want children growing up in my community to have the opportunity to do the same, if not own a boat & permits to make a living from the sea, and provide for their own families as they grow & mature.

I care because I EAT FISH that is caught by my hard-working friends, family and neighbors. Who these people are matters.

I recommend the council take into consideration the great number of people that will be affected by a few decision-makers--YOUR decisions. I recommend the council weigh the impacts on future generations in coastal communities. I recommend the council think about WHO caught the fish that lands on your dinner plate, in your community market.

When you make these decisions, picture in your mind what my community of Chatham, or Hyannis & Barnstable would look like if the fleet became increasingly consolidated. Include fleet diversity in A18 in order to prevent a wide-spread community economic depression across the New England coastline.

Thank you,

Shannon Eldredge
Co-Proprietor: Cape Cod Community Supported Fishery
Family weir business: Chatham Fisheries, Inc.
Educator: Cape Cod Maritime Museum
Board Member: NAMA & Women of Fishing Families

--
Shannon Eldredge
508-958-6580

From: Lorrie Clevenger <lorrieclevenger@gmail.com>
Subject: Groundfish Amendment 18 Scoping Comments
Date: March 1, 2012 11:43:37 AM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because I live in a coastal community, I eat fish, and I care where my food comes from. I see consolidation as a problem because fleet consolidation, unaffordable access to the fishery, and a heavy concentration of inshore fishing effort by offshore boats are major threats to the future of New England's diverse ground fish fishery and rebuilding efforts. Following one year of 'Sector Management':

- The largest boats' landings increased by nearly 10%
- The smallest boats decreased landings by over 50%
- 165 crew jobs were lost
- Three entities control nearly 40% of the allowable catch for one fish stock (GB winter flounder)
- Concentration of fishing capacity increased around inshore areas like Stellwagen Bank
- Significant misreporting occurred of catch between broad stock areas

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity:

1. Prevent heavy concentration of fishing effort around inshore areas.
2. Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new entrants.
3. Limit the concentration of quota for any one entity.

I also recommend that the Council explore the following potential solutions in order to achieve the goals:

- Establish mechanisms to keep offshore boats offshore for example restrictions from fishing in multiple broad stock areas. (1)
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- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations. (2)
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity. (3)

Thank you,

Lorrie Clevenger

From: Megan Rynne <megbrynne@gmail.com>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 23, 2012 9:54:31 AM EST
To: groundfish.amendment18@noaa.gov
Cc: brett@namanet.org

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because I am a New England Coastal resident, I care about working class families more than cost-cutting corporations who focus on only bottom-line and are blind to the resources from which they base their bottom-lines, and I respect the oceans and the marine life that support humans. I see consolidation as a problem because the big will get bigger and the fish will deplete and the autonomy of fishermen will disappear.

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity: large corporate fishing boats be limited to specific areas separate from smaller fishing boats and fish caught locally by small boat fishermen be supported by marketing programs highlighting their local, small business catch.

Thank you,

Megan Rynne

Boston, MA

Feb. 18, 2012

Mr. Paul Howard
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

To the New England Fisheries Management Council,

I am a native Mainer that is deeply concerned about the consolidation and loss of access that is occurring in New England's smaller ports, especially Maine. I oppose the no-action alternative "a" because the loss of fleet diversity is a major problem facing the industry and our coastal communities.

I am writing as a concerned citizen and supporter of fishermen and fishing communities. I gained an appreciation of commercial fishermen growing up in the small community of South Freeport, where, according to the Council's data, a groundfish permit resided as late as 2004. As a resident of Maine, I like to buy my seafood as locally as possible. I fear that my fellow Mainers and I will no longer have this option if no action is taken to address the problem of consolidation. As it stands now, locally landed groundfish is conspicuously absent from many coastal communities.

As consolidation disproportionately affects smaller communities, I would like the Council to take definitive steps to preserve New England's fishing heritage through strong fleet diversity measures. These measures should be taken to ensure access stays with actual fishermen (not banks) so the economic benefits stay within the community.

I recommend a range of actions to address alternatives b – f, including the designation of inshore and offshore management areas as well as incentives for owner-operator vessels. Permits should remain in certain length categories, such as 0-50 ft., 50- 70 ft., and 70 ft. and above, similar to what was done in the groundfish management system of eastern Canada. I also support accumulation caps of 2-5% for any one entity.

I also support former Council Member Dana Rice's proposal. He suggests that as groundfish stocks recover, more entrants, including permit holders with no quota and new entrants, should be allowed into the fishery. Additionally, when a permit is sold a percentage of the quota should stay in the corresponding state's permit bank. Fish are a public trust resource, and there should be provisions in place to ensure all fishermen, not just a select few, have continued access to the resource in order to sustain our coastal communities.

The bottom line is that the ocean is diverse and fishing fleets have always been diverse. I am hopeful that the NEFMC will take significant action to ensure diversity in New England's groundfish fleet. Fleet diversity measures that ensure equitable access will lead to increased food security as well as economic stability for our New England communities. Fleet diversity will also ensure an adaptable and truly efficient groundfish fleet.

Thank you for your consideration.

Sincerely,

Sara Randall
Bangor, ME

From: Nicola Williams <nicola@thewilliamsagency.net>
Subject: Groundfish Amendment 18 Scoping Comments.
Date: February 28, 2012 7:23:17 AM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because I eat fish, I care where my food comes from and I believe in sustainable fishing. As a supporter of local businesses, I see consolidation as a problem because we need affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new entrants. It is imperative that we support a diverse and local fleet for sustaining local jobs and economies.

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity:

1. Prevent heavy concentration of fishing effort around inshore areas.
2. Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new entrants.
3. Limit the concentration of quota for any one entity.

I also recommend that the Council explore the following potential solutions in order to achieve the goals:

- Establish mechanisms to keep offshore boats offshore for example restrictions from fishing in multiple broad stock areas.
- Establish quota set-aside programs to reward sectors that are able to meet certain benchmarks in order to promote fleet diversity.
- Incentivize fishermen who are primarily owner-operators.
- Establish policies that ensure quota is fished by fishermen and not used solely as an investment tool.
- Dis-incentivize fishermen who decide to lease 100% of their quota.
- Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants.
- Establish leasing and permit trading rules that prevent consolidation into larger fishing operations.
- Set PSC accumulation caps -e.g. somewhere between 2-5% for each species for any one entity.

Thank you,

Nicola Williams
Board Member. Sustainable Business Network of Greater Boston

--
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From: Jessica Powers <Jessica@whyhunger.org>
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 29, 2012 11:39:09 AM EST
To: "groundfish.amendment18@noaa.gov" <groundfish.amendment18@noaa.gov>
Cc: "brett@namanet.org" <brett@namanet.org>

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet.

My grandfather was an independent fisherman, and as he watched stocks deplete off the coast of Long Island, he emphasized that accumulation caps and dis-incentivizing large operations are necessary steps in order for the ocean to replenish itself. As a former chef and lover of fish, I believe that uncontrolled consolidation is a huge problem that will result in our having even fewer options to enjoy fish in the near future. Please support the Northwest Atlantic Marine Alliance's stewardship recommendations.

Best regards,

Jessica

Jessica Powers
National Hunger Clearinghouse Director
WhyHunger
505 Eighth Avenue, Suite 2100
New York, NY 10018
direct: 212.629.3121
fax: 212.465.9274
www.whyhunger.org

Dear New England Fisheries Management Council,

I am writing to support Amendment 18 and urge the Council to develop protections for fleet diversity.

As a young commercial fisherman and a person who grew up in New England, I'm proud of our region's tradition of independence and support for individual rights. I'm also encouraged by the opportunities provided by the region's natural resources. Stories of the 'Good Old Days' of commercial groundfishing in the Gulf of Maine are a painful reminder of such opportunity, wasted. Imagine the fish resource of yesterday coupled with the marketing networks of today - local food movement, charter boats, restaurants, fish markets, boatyards, chandleries - small businesses thriving as a direct result of careful and effective management - an economy celebrating conservation with its success.

The realization of this vision depends directly on the leadership and political courage of today's fisheries managers. Courage is required to overcome the influence of a few self interested players who defend their stake by blocking solutions to the problems and hindering a more meaningful recovery of groundfish in the Gulf of Maine.

We know how it all went wrong; over fishing, destructive gear, failure to protect spawning fish and spawning areas - these are the mistakes that contributed to today's relatively low abundance. I'm not interested in repeating these mistakes. I'm interested in creating and seizing the moment where it all starts to go right. Amendment 18 can be that moment. Fleet diversity measures provide opportunity to those who want to transcend the status quo and hold a stake in the successful future of sustainable groundfishing.

Today, small scale, more sustainable fishing operations are challenged by the fact that their fishery is increasingly less affordable. To begin with, the way quota was distributed was unfair and not in the interest of sustainability; those who historically caught the most fish, in other words, those most responsible for depleted fish stocks, were rewarded with the most quota.

When too few people control the right to fish, they are able to manipulate the cost of quota leasing to a point where those who own permits with significant quota, and lease to other fishermen, are the only ones who can make money. This modern form of marine sharecropping is a losing proposition. The everyday challenges that smaller scale fishermen face - high fuel prices, inconsistent fish prices, weather, etc. are increasingly compounded by the artificially high price of quota. Quota costs are continuing to rise because of speculative hoarding and trading of unfairly distributed fishing rights. In the same way that there are laws preventing businesses from forming monopolies, the amount of quota that a single person can control should be limited too. For this reason I strongly support quota accumulation caps.

Higher fuel prices and the removal of trip limits have concentrated much of the fishing effort of the largest offshore boats in relatively small areas. This is detrimental as much research suggests that groups of fish that spawn together also travel together. Thus even when not technically spawning, that entire spawning population is vulnerable to the same extreme and lasting depletion we've seen in areas of coastal down east Maine. These sub populations' loyalty to their spawning grounds makes the sort of concentrated effort on Stellwagen Bank akin to blocking a salmon river with a gill net. In order to remedy this

systematic depletion of inshore fish, we must separate the fishery into an inshore and an offshore fishery. Smaller boats lack mobility and as a result these fishermen have a vested interest in their specific fishing grounds. This vested interest lends itself to the sort of area and ecosystem based management that leads to meaningful and effective regulations matching the scale of fishing to the scale of the ecosystem.

To date, fisheries managers have ignored the impact of fisheries on one another. Recovering fish stocks that are starved by mid-water trawlers and plagued by dogfish predation will not recover in the ways that they could and should. It's essential that scientists and fisheries managers better understand and acknowledge the interaction of different fisheries and establish inter-fishery goals that are achieved through thoughtful and meaningful regulation in order to better facilitate the recovery of the ecosystem as a whole.

Today we are faced with a clear choice: Do we want to be the folks who stood by while the largest boats concentrated their fishing in small inshore areas and forced out the most sustainable and traditional operations out of business? Or, do we want to be the folks who stood up for independent fishermen - for small businesses that, as a result of what those who favor consolidation call "inefficiencies', generate the most prosperity for the most people per pound of fish harvested? We have the opportunity to bring common sense back into the realm of fisheries management, to foster a meaningful recovery of groundfish, and to return to the 'Good Old Days'. This is our moment, this is when we take the positive and meaningful steps toward rebuilding the 'Good Old Days'.

Sincerely,
Ed Snell

F/V Rita B

From: anitaccmaui@aol.com
Subject: Groundfish Amendment 18 Scoping Comments
Date: February 28, 2012 10:54:15 AM EST
To: groundfish.amendment18@noaa.gov

To the New England Fisheries Management Council,

I oppose the no-action alternative option under A18 because the loss of fleet diversity is a major problem facing the New England fleet. Loss of fleet diversity affects me because my family are fishermen, I live in a coastal community, I eat fish, I care where my food comes from. I see consolidation as a problem because
165 crew jobs were lost
Three entities control nearly 40% of the allowable catch for one fish stock (GB winter flounder)

A range of actions can be implemented that can address alternatives B-F. I recommend that Amendment 18 include measures to achieve the following goals related to fleet diversity: Foster an affordable fishery through incentive programs and leasing policies that do not disproportionately impact portions of the fleet including owner-operators, independently owned businesses, and potential new
entrants.

I also recommend that the Council explore the following potential solutions in order to achieve the goals: Establish leasing and permit trading constraints that maintain affordability for smaller fishing operations and new entrants.

Thank you,

Anita Regan
7 Wamponoag Dr
Fairhaven, MA

Testimony before New England Fisheries Council
June 23, 2010

Anne D. Burt
Environmental Justice Consultant
Maine Council of Churches

For more than a decade the Maine Council of Churches has engaged congregations in environmental and economic justice projects that are designed to foster sustainable and resilient local communities. For the past five years that work has involved linking congregations to their local foods systems…initially connecting the local congregations with nearby farms and farmers and more recently with their neighbor fishermen. I have come today to tell you some stories about local communities that are working together to reclaim and revitalize their working waterfront and fishing traditions as they rebuild local markets for fresh caught seafood and commit to more sustainable ways of fishing and eating.

In the winter of 2007, when fuel prices were out of sight and the Midcoast Fishermen's Association's small groundfish fleet had tied up, though there was plenty of shrimp to be harvested, some of the fishermen approached a Rockland congregation about becoming a Community-Supported Fishery site. The congregation had a history of working with local farmers, having bought into Hatchet Cove Farm's Community-Supported Agriculture farm in its infancy and watched the number of shares bought by church members grow from 15 the first year to now over 200. (By the way, Reba and Bill Richardson, the farming couple, have now been able to purchase their farm and their business is thriving!) The church felt deep concerns about their community's working waterfront heritage and the alarming reports of declining fish stocks, a degrading ocean environment, and, as a result, disappearing small fishing fleets up and down the coast. So when MFA approached the church and said fishermen would need to sell church members 100 pounds of shrimp/week (10 shares at 10 pounds/share) to make the project viable, some members of the church stepped forward, timidly at first, and promised to meet the MFA requirement. Together they launched Maine's first CSF, which has grown to include whole fish, and now cut and filleted fish. MFA members showed the church members, mostly neophytes when it came to cleaning fish and shrimp, how to process the seafood, store it, and even cook it! Together with MFA and the Island Institute, the church published last fall The Original Maine Shrimp Cookbook, which I understand has nearly sold out! MFA, meanwhile, has opened a new fish processing plant in Port Clyde, and helped to meet Maine communities' appetite for locally caught fresh seafood by establishing several other similar sites in nearby communities. First Universalist members are deeply grateful for the fresh fish and seafood that comes to their doorstep every Sunday during the fishing seasons.

Rockland is not an isolated community and that is not the only story. This spring Maine Council of Churches partnered with congregations in Kennebunk, Topsham, and Bar Harbor to study the changing ocean environment, fishing management, and

what those on the land could do to preserve their local fishing communities and the ocean's flora and fauna. The four-week study "Fishes and Loaves" concluded with a community dinner featuring local seafood. In all three communities, the participating faith communities and local fishermen are pursuing next steps to establish CSFs that will benefit both local fishermen and local consumers. There will be at least three more of these local studies/suppers this fall in York, Cumberland and Lincoln county communities where we believe we can anticipate similar results. We say this because in February 2009, with Maine Organic Farmers and Gardeners Association and the Northwest Atlantic Marine Alliance, we conducted a survey of the public at our annual CSA/CSF fairs in 12 communities and had enthusiastic responses from the local attenders to increase the amount and diversity of seafood that they could purchase locally, including interest in getting CSFs off the ground. We believe, with our partners, that we can help to galvanize that interest into sustainable markets that would support small and diverse local fishing fleets in communities where they have traditionally thrived.

The uncertainty about the future health of the resources on land and sea that we depend on for food and the certainty that fuel costs will continue to rise (and with that increasing costs to farmers and fishermen)…together these challenge us to seek a bold new vision for caring for our food resources, their environment, and each other. We think that there is growing evidence that small, diverse and local food production…yes, how it was traditionally done…is the sensible approach. Small local farms and fleets, using methods that are least harmful to the ecosystems in which they produce food, can adapt more easily to fluctuations in climate and fish availability, and the relationships that have traditionally bonded us together as communities of farmers, fishermen, small businesses and churches can sustain us through the hard times.

WHO FISHES MATTERS
PROTECT FLEET DIVERSITY

WHAT WE FACE

- Consolidation is hurting communities and driving the distribution of quota in one direction: towards the large-scale.
- Lack of protections is leading toward a less diverse fleet which hurts infrastructure as well as access to local fish.
- The fishery is becoming unaffordable for independent fishermen.
- There were inherent inequities with the initial allocation that have not been addressed.

WHAT WE WANT

To ensure diversity of the fishing fleet and prevent excessive consolidation for the well being of the marine ecosystem, our fishing communities and our source of seafood.

"If you honestly care about fish stocks and future of our greatly diverse fishing fleet, we must consider some form of safety measures to ensure its survival."

- *Fisherman testimony at June 2010 NEFMC meeting*

NEW ENGLAND CAN LEAD THE WAY

WHERE WE WANT TO GO

- A fishery that is more affordable.
- A fishery where owner-operators have more freedom and opportunity.
- A fishery where active fishing remains more attractive than leasing.
- A fishery that is more diverse.

HOW WE GET THERE

- Anchor fishing access and privileges to fishing communities.
- Limit share of the catch of any one fisherman or fishing operation.
- Incentivize and reward owner operators.
- Ensure affordable access for new fishermen looking to enter the fishery.
- Foster and promote affordability for access to the rights to fish.

TO THE NEW ENGLAND FISHERIES MANAGEMENT COUNCIL,

The Council discussion related to Fleet Diversity and Excessive Consolidation is an opportunity to make the Groundfish fishery more fair and equitable for New England fishermen and coastal communities. I urge you to consider the principals above and take action as soon as possible.

---

* To 'sign' please e-mail your name and contact info. to Brett Tolley - brett@namanet.org

Ed Snell
Commercial Fisherman
Portland, ME

Ed Barrett
President Sector X
Commercial Fisherman
Plymouth, MA

Aaron Dority
NCCS Sector Manager
Director, Downeast
Groundfish Initiative,
Stonington, Maine

Greg and Todd
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Commercial Fishermen
Martha's Vineyard, MA

Hannah Mellion
Farm Fresh
Rhode Island
Providence, RI

Jamie Hayward
Commercial Fisherman
Eliot, ME

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Rye, New Hampshire

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Naz Sanfilippo
Commercial Fisherman
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Teddy Diggs
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Martha's Vineyard, MA

Shannon Eldredge
Fishing family
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Lobsters on the Fly
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Kathy McQuarrie
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Elizabeth Rectanus
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Karen Stephanie
Fishing family
Sandwhich, MA

Brendan and Jason
Stephanie
Sandwhich, MA

Judy Keating
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Plymouth, MA

Weslie Welch
Fishing family
Plymouth, MA

Steve Gilman
Stillwater, NY

Ron Spencer
Nadic, MA

Chad Hunter
Plymouth, MA

Brian Connolly
Waltham, MA

Russ Burgess
Plymouth, MA

Meri Ratzel
Harwich, MA

Kim Libby
Fishing family
Port Clyde, ME

Attachement 2 (for endote xiii) to Victim Statement on Behalf of the Northwest Atlantic Marine Alliance

September 7, 2017

Re: United States of America v. Rafael
case number 1:16-cr-10124-WGY

2007

Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna

Hope M. Babcock
Georgetown University Law Center, babcock@law.georgetown.edu

26 Stan. Envtl. L.J. 3-76 (2007)

Grotius, Ocean Fish Ranching, and the Public Trust Doctrine: Ride 'Em Charlie Tuna

Hope M. Babcock*

* Professor of Law, Georgetown University Law Center; B.A. Smith College; LL.B. Yale Law School.

I. INTRODUCTION

> Are the fishermen to be driven from their fishing-grounds, are the people to be deprived of food, that a few men may be made rich out of the public treasury of the sea?[1] The law locks up the man or woman who steals the goose from the common; but leaves the greater villain loose who steals the common from the goose.[2]

Seventy percent of the world's fish populations are in serious decline; some have been fished to near extinction.[3] While domestic and international efforts are underway to curb the rate at which the remaining fish are being depleted, the demand for fish appears to be outstripping these initiatives—before they can take hold, the fish may be gone. In response to this increasingly dire situation, many countries, including the United States, have turned to fish farming in hope of taking pressure off of certain wild stocks of fish while still meeting consumer demands for them. More recently, non-U.S. fish farmers have moved the locus of their activities from land and coastal waters to the open oceans. In this country, ocean fish ranching is still at the experimental stage, but hopes are high that it could become commercially profitable in

1. S.F. Baird, *Report on the Condition of the Sea Fisheries of the South Coast of New England in 1871 and 1872, in* REPORT OF THE U.S. COMMISSION OF FISH AND FISHERIES FOR 1872 101 (Washington, D.C., USGPO 1873), *quoted in* Bonnie J. McCay, *The Culture of the Commoners: Historical Observations on Old and New World Fisheries, in* THE QUESTION OF THE COMMONS: THE CULTURE AND ECOLOGY OF COMMUNAL RESOURCES 195, 206 (Bonnie J. McCay & James M. Acheson eds., 1990).

2. Seth Macinko & David W. Bromley, *Property & Fisheries for the Twenty-First Century: Seeking Coherence from Legal and Economic Doctrines*, 28 VT. L. REV. 623, 648 (2004).

3. *See* discussion *infra* Part I.A.

the United States' Exclusive Economic Zone ("EEZ").[4] One problem hindering the development of a robust ocean fish ranching industry in the United States is the absence of a comprehensive regulatory program. Increasing pressure to develop the ocean fish ranching industry and the current structure of the industry, however, may mean that for the foreseeable future ocean fish ranching will happen in a regulatory vacuum.

While much has been written about the adverse environmental and economic impacts of fish farming,[5] including concerns about moving these activities offshore,[6] little has been written about the property law implications of ocean fish ranching. Viewing ocean fish ranching through a property lens invites consideration of common law property concepts like the public trust doctrine. The public trust doctrine offers a set of useful principles that could be applied to ocean fish ranching until the government develops a suitable regulatory framework. Because the public trust doctrine traditionally applies only to coastal waters, though, extending it to the EEZ requires a new legal basis. This article proposes two such theoretical bases: one founded on the public domain status of EEZ, the other in the extension of state common law to the EEZ.

Before expanding on the reasons why the public trust doctrine could and should apply to ocean fish ranching, the article provides background information on the status of the world's fisheries, the

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4. The United States EEZ "extends 200 nautical miles offshore" and is the "largest" EEZ in the world. FINAL REPORT ON THE U.S. COMMISSION OF OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY 5 (2004), *available at* http://www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf. Spanning over 13,000 miles of coastline and containing 3.4 million square nautical miles of ocean (equivalent to 44.2 square miles), the U.S. EEZ is "larger than the combined land area of the 50 states." *Id.* In 1966, the United States extended its exclusive jurisdiction over fisheries to twelve nautical miles, which it then further extended in 1976 "by legislating a fishery conservation zone" 200 miles from the coast. In 1983, this zone was "absorbed" into the U.S. EEZ. Katrina Miriam Wyman, *From Fur to Fish: Reconsidering the Evolution of Private Property*, 80 N.Y.U. L. REV. 117, 153 n.89 (2005).

5. *See, e.g.*, Erin R. Englebrecht, Comment, *Can Aquaculture Continue to Circumvent the Regulatory Net of the Magnuson-Stevens Fishery Conservation and Management Act*, 51 EMORY L.J. 1187 (2002); Press Release, Sea Web, Farming the Tigers of the Sea Undermines the Promise of Aquaculture (July 3, 2003), http://www.seaweb.org/documents/PR_2003.7.3.pdf.

6. *See, e.g.*, Jeremy Firestone & Robert Barber, *Fish as Pollutants: Limitations of and Crosscurrents in Law, Science, Management, and Policy*, 78 WASH. L. REV. 693 (2003); Robin Kundis Craig, *The Other Side of Sustainable Aquaculture: Mariculture and Nonpoint Source Pollution*, 9 WASH. U. J.L. & POL'Y 163 (2002); Melissa Schatzberg, Note, *Salmon Aquaculture in Federal Waters: Shaping Offshore Aquaculture Through the Coastal Zone Management Act*, 55 STAN. L. REV. 249 (2002).

growth of the fish farming industry and its movement offshore, environmental and economic concerns, and the existing regulatory picture. The second part of the article explains the concept of common pool resources and how open access has contributed to the decline in wild fish stocks and prompted the creation of property-based responses like individual fishing quotas ("IFQs"). The third section describes the public trust doctrine and develops two bases for the doctrine's application to activities occurring within the EEZ: (1) the public domain nature of the EEZ to which federal common law might apply; and (2) the potential extension of state common law beyond state waters. The first basis requires an argument that there is a federal common law public trust doctrine that attaches to public lands, and the second presumes that the federal laws governing the EEZ include a role for state common law's continuing regulatory presence.

Professor William Buzbee's work on the "regulatory commons,"[7] described in the fourth part of the article, underscores the need to make these doctrinal leaps. He explains why regulatory commons are counter-productive yet self-perpetuating. In turn, this article shows how ocean fish ranching is an example of such a commons and argues that the cure for it is not privatizing the resource. The article concludes by explaining how the application of the public trust doctrine will end the ocean fish ranching regulatory commons and why applying the doctrine, until effective regulation eliminates the potential adverse environmental and economic effects of these activities, makes good policy sense, and is preferable to market-based solutions.

II. BACKGROUND

This part of the article discusses the collapse of finfish stocks and the finfish industry, the minimal success of governmental efforts to stop the downward spiral in wild fish stocks, the concomitant growth in fish farming, and the gradual movement of these activities offshore to lessen their impacts on the terrestrial and nearshore environments. The part also describes the adverse

7. William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 1 (2003) [hereinafter Buzbee, *Regulatory Commons*]. Professor Buzbee has expanded his critique of the perils of regulatory fragmentation in *Contextual Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 108 (2005) and *The Regulatory Fragmentation Continuum, Westway and the Challenges of Regional Growth*, 21 J.L. & POL. 323 (2005) [hereinafter Buzbee, *The Regulatory Fragmentation Continuum*].

environmental effects of raising fish in confined pens and fish farming's economic impact on local fishing interests and their communities. Finally, this section sets out the current legal framework for regulating ocean fish farming and the problems that this patchwork of laws creates.

A. *The Collapse of Finfish Stocks and the Finfishing Industry*

> Why does everyone overfish, even to the detriment of the body of water and its living stocks? According to the economic account, everyone does so because each user knows that, even if any particular individual refrains from fishing so intensely, everyone else will continue to fish, and in fact the other might just fish a little bit more, to take up the slack left by the moderate fisher. The moderate fisher, in short, would just be a sucker . . . .[8]

"Ocean fisheries are one of the world's most important resources."[9] Fisheries are a "major source of both sustenance and employment."[10] As a reflection of their importance, the global consumption of fish has "almost doubled in under half a century."[11] Although the National Oceanic & Atmospheric Administration ("NOAA")[12] has made a little progress rebuilding some depleted fisheries in this country, it has not been able to stop the widespread over-fishing or other activities, such as habitat loss

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8. Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1, 3 (1991).

9. Barton H. Thompson, Jr., *Tragically Difficult: The Obstacles to Governing the Commons*, 30 ENVTL. L. 241, 247 (2000).

10. *Id. See also* Montserrat Gorina-Ysern, *World Ocean Public Trust: High Seas Fisheries After Grotius—Towards a New Ocean Ethos?*, 34 GOLDEN GATE U. L. REV. 645, 705 n.227 (2004) (citing Asian Development Bank statistics that "more than one billion people around the world depend on fish for their primary source of protein", and approximately 50 million people "rely" on some aspects of the small scale fishing industry "for their livelihoods"). Moreover, fish byproducts are used in cosmetics, animal feeds, fertilizers, detergents, and jewelry as well as in industrial and pharmaceutical products. *Id.*

11. *The Promise of a Blue Revolution—Fish Farming: Can Farming Meet the World's Need for Fish?*, ECONOMIST, Aug. 9, 2003, at 19.

12. NOAA's responsibilities over fisheries resources stem from the 1976 Magnuson-Stevens Fishery Conservation & Management Act, 16 U.S.C. §§ 1801-1883 (Westlaw 2006), *amended by* Sustainable Fisheries Act (SFA), Pub. L. No. 104-297, 110 Stat. 3559 (1996) (codified in scattered sections of 16 and 46 U.S.C.) (authorizing the federal government to establish essential fish habitat and to determine optimum yield on the "basis of maximum sustainable yield from the fishery, as reduced by any relevant social, economic, or ecological factor," and authorizing states to regulate fishing vessels outside state territorial waters under certain circumstances).

and pollution that adversely affect fish stocks.[13] In 2003, NOAA Fisheries reported that eighty-six stocks were over-fished and sixty-six species were in the process of being over-fished.[14] According to Donna Christie "only" 25% of "[main fish] stocks or species groups are underexploited or moderately exploited," 47% are "fully exploited," and 18% are "overexploited"; the remaining 10% "are either significantly depleted or recovering from depletion."[15] Moreover, "nine of the world's seventeen major fishing grounds are in serious decline; four have been commercially fished out."[16] "The unthinkable has come to pass: The wealth of oceans, once inexhaustible, has proven finite, and fish, once dubbed the 'poor man's protein,' have become a resource coveted—and fought over—by nations."[17]

There are many causes of the dire situation of the world's

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13. *See* Donna R. Christie, *Living Marine Resources Management: A Proposal for Integration of United States Management Regimes*, 34 ENVTL. L. 107, 120 (2004) (commenting on the optimism of NOAA's statistic that in five years since the passage of the SFA it had taken twenty species off the list of over-fished fish and eliminated overfishing for twenty-five other species, and noting that during "the same period overfishing ha[d] begun in 14 cases, and in 13 cases a stock had become overfished").

14. *Id.* at 120. Christie additionally says "the overfished status of 695 stocks remains classified as 'unknown or not defined,'" and the fishing status of an additional 658 stocks "cannot be determined because the harvest rate is not known" to NOAA or the agency has not established "the threshold for overfishing." *Id.* at 120. *See also* Dallas DeLuca, Student Article, *One for Me and One for You: An Analysis of the Initial Allocation of Fishing Quotas*, 13 N.Y.U. ENVTL. L.J. 723, 726-27 (2005) (saying the three most recent National Marine Fisheries Service reports to Congress showed "an average of 23% of major U.S. fisheries are subject to overfishing and that 30% of major U.S. fisheries are overfished" (citations omitted)).

15. Donna R. Christie, *It Don't Come EEZ: The Failure and Future of Coastal State Fisheries Management*, 14 J. TRANSNAT'L L. & POL'Y 1, 4 (2004). *See also* Thompson, *supra* note 8, at 247 (saying NMFS reports that over one third of the fish stocks under its jurisdiction, whose status it knows about, "are overutilized: almost another half are fully utilized," and that the "current population levels of almost half of those stocks, moreover, are below the levels needed to support long-term potential yield"); JAMES GUSTAVE SPETH, RED SKY AT MORNING: AMERICA AND THE CRISIS OF THE GLOBAL ENVIRONMENT 33 (2004) ("Data reveal that the global fish catch has shown a strong and consistent downturn every year since 1988 . . . .").

16. Thompson, *supra* note 8, at 247. *See also* SPETH, *supra* note 15, at 15 ("In 1960, 5 percent of marine fisheries were either fished to capacity or overfished; today 75 percent of marine fisheries are in this condition."). Speth also comments that overfishing has severely impacted coral reefs and has led to the disappearance of spiny lobster, bumphead parrotfish, Nassau grouper, and other reef species. *Id.* at 34.

17. Michael Perfit, *Diminishing Returns: Exploiting the Ocean's Bounty*, NAT'L. GEOGRAPHIC, Nov. 1995, at 2, *quoted by* Jose L. Fernandez, *Public Trust, Riparian Rights, and Aquaculture: A Storm Brewing in the Ocean State*, 20 WM. & MARY ENVTL. L. & POL'Y REV. 293, 294 (1996).

fisheries,[18] but this article focuses primarily on the inability of fishers to "control their selfish impulses to overfish,"[19] thus acting out Hardin's tragedy,[20] in which the rational economic individual is

18. Other commonly cited reasons for the decline in fish species are loss of spawning and nursery habitat, coastal development, overfishing, pollution, invasive non-native species, and global climate change. *See* Robin Kundis Craig, *Protecting International Marine Biodiversity: International Treaties and National Systems of Marine Protected Areas*, 20 J. LAND USE & ENVTL. L. 333, 345-48 (2004-2005) (mentioning land-based water and air pollution and ocean dumping among the sources of harmful pollution); Dean Scott, *Scientists Say Reports of Rising Sea Levels Signal Possible Effects on Fish Population*, 37 Env't Rep. (BNA) 890 (Apr. 28, 2006) (reporting on congressional testimony by NOAA's director for scientific programs to the Senate Commerce Subcommittee of Global Climate Change identifying global climate change as one of the factors that could have a "long term influence" on marine ecosystems and world fish populations by precipitating a decline in plankton at the bottom of the aquatic food chain.); Editorial, *Acid Oceans: Scientists Identify Another Potentially Devastating Consequence of Failing to Control Greenhouse Gases*, WASH. POST, July 6, 2006, at A20 (discussing a recent report by federal scientists and university researchers "highlight[ing] . . . [the] potentially devastating ecological consequences" of the oceans' increased acidification from carbon emissions); Editorial, *Sea Rescue*, N.Y. TIMES, July 17, 2006, at A16 (identifying the problems of "multiple and overlapping government agencies," coastal sprawl, and the failure to ratify the Law of the Sea Treaty as factors making it "all the more urgent that Congress get right the one recommendation that has survived Washington's torpor: a much-needed update of the Magnuson-Stevens Act").

19. Victor B. Flatt, *Enron Story and Environmental Policy*, 33 Envtl. L. Rep. (Envtl. L. Inst.) 10485, 10492 (2003). One of the most puzzling aspects of the over-fishing problem has been the problem fishers have self-regulating given the dire consequences of the collapse of a fishery. Some blame this problem on the tragedy of the commons and the contribution of government regulations to that tragedy, assuming that "as long as the rule of capture prevails," fisherman are trapped in a downward spiral of consumption that they "cannot break out of . . . unless they have a private right to harvest an amount of fish which they can use or sell." Alison Rieser, *Prescriptions for the Commons: Environmental Scholarship and the Fishing Quotas Debate*, 23 HARV. ENVTL. L. REV. 393, 399 (1999). *See also* Michael C. Blumm & Lucus Ritchie, *The Pioneer Spirit and the Public Trust: The American Rule of Capture and State Ownership of Wildlife*, 35 ENVTL. L. 673, 690 (2005). ("By awarding the first taker the exclusive rights to the resource, an unrestricted rule of capture encouraged resource exploitation . . . . By rewarding efficient capture, America's . . . policies promoted investment in capture technology, encouraging hunters to purchase bigger nets, better guns, and more ammunition."). While some United States fishing communities have been able to regulate themselves, *see, e.g.*, James M. Acheson, *The Lobster Fiefs Revisited: Economic and Ecological Effects of Territoriality in the Maine Lobster Industry*, *in* THE QUESTION OF THE COMMONS, *supra* note 1, at 371, most have not, and according to Thompson have "actively fought" stronger management and enforcement efforts that would reduce catches. Thompson, *supra* note 8, at 248.

20. Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968). *See also* Thompson, *supra* note 8, at 242 (noting that while not consuming as much of a commonly available resource as possible is in the interest of "[s]ociety as a whole," preserving the resource makes "one a patsy" where "no one can bind anyone else's actions . . . . The high road leads nowhere," even though "[t]he cumulative results of reasonable individual choices is collective disaster"). Many common property scholars, however, do not think that there is a tragedy of the commons, or, if there is one, that it is inevitable. *See, e.g.*, Alison Rieser, *Property Rights and Ecosystem Management in U.S. Fisheries: Contracting for the*

driven inexorably to extract the last wild fish from the ocean commons.[21] Fishers have additionally over exploited unregulated fisheries by fishing "down the food web,"[22] and their uncontrolled bycatch has wiped out entire populations of untargeted species.[23] Increased fishing capacity and more efficient technologies are outpacing the capacity of stocks to replenish themselves, as indicated by the "recent periodic leveling-off or decline in total marine catch," and are making matters worse.[24] "Modern technologies now enable fishermen to go wherever the fish are

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Commons, 24 ECOLOGY L.Q. 813, 816 (1997), (describing commons scholars like Ostrom as "adherents" to the view that the commons in Hardin's "metaphor" was "not tragic at all," and that the tragedy only occurred when the market economy "destroyed the communal property regime and its system of self-governance"); Thompson, *supra* note 8, at 242-43 (summarizing recent academic literature on why the tragedy of commons is not inevitable).

21. In fisheries, an individual fisher has little incentive to "be [a] steward[] of the resource" because the cost of investing in the conservation or enhancement of fish stocks will be "fully borne" by her, while the benefits of her good deeds will inure to all the fishers. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 16. "Each fisher acting in an individually rational manner is likely to be a free rider, hoping for ameliorative efforts by others, or perhaps just focusing on short-term gain." *Id.* The high cost of collecting information about the population status of individual fish stocks also makes fishers free riders as "seldom will individual fishers have incentives to research and produce information about the resource," and each will "hope that others produce such information." *Id.*

22. Fishing down the food chain occurs when a fishery becomes fished out and serves as an "economic 'prop' for struggling fishermen." Christie , *supra* note 12, at 122. The practice disrupts the marine ecosystem, interfering with the recovery of traditionally fished species. *Id.* Christie cites the unregulated fishing for the spiny dogfish, used in England for fish and chips, as an example of this practice, which increased "tenfold" due to depleted stocks and increased regulation of the groundfish catch so that by 2000 the female population of the fish had decreased by eighty percent. *Id.*

23. *Id.* at 120-21. Christie uses as an example of the bycatch problem of the Gulf of Mexico red snapper, where less than twenty percent of each year's juvenile class survives shrimp nets. *Id.* at 122. *See also* Juliet Eilperin, *Study: U.S. Fisheries Discard 22% of Catch*, WASH. POST, Dec. 1, 2005, at A03 (reporting that using eleven years worth of data, U.S. fisheries "on average" throw away "1.1 million tons of the fish they catch"). Christie cites the collapse of New England's groundfish fishery (cod and yellowtail flounder) between 1982 and 1994 as one of the more spectacular examples of some of these problems. Christie, *supra* note 12, at 121. The collapse of this fishery resulted in a federal district court judge unsuccessfully attempting to design a remedy to allow the fishery to recover. Conservation Law Found. v. Evans, 195 F. Supp. 2d 186 (D.D.C. 2002) (holding government violated over-fishing, rebuilding, and bycatch provisions of SFA), *vacated*, 211 F. Supp. 2d 55 (D.D.C. 2002).

24. Christie, *supra* note 14, at 4. According to Christie, another sign wild stocks are not replenishing themselves is the increased percentage of "juveniles and lower-value species" observed in landings, which, when coupled with over-fishing and the practice of fishing down the food web, "can lead to long-term and potential irreversible ecosystem level consequences through the effect on "predatory relationships, genetic diversity of fish stocks, and the future recruitment and regenerative capacity of [fisheries]." *Id.*

found and to identify, track, and catch the fish with a relentless efficiency."[25] While intense "high seas fishing for straddling stocks and highly migratory species" like tuna and various shark species has received "recent international attention," over 90% of the fish are within 200 nautical miles of the U.S. coastline and "distant" or high seas fishers contribute only 5% to total marine landings.[26]

As fish stocks decline, governments, such as the United States, take various forms of preemptive action against fishers, such as restricting types of fishing gear, the hours/day or days/month of fishing, the size of a fisher's daily or annual catch, and even closing fishing areas to allow the remaining fish stocks to recover.[27] While, these initiatives financially hurt fishers, even "driv[ing] some out of business,"[28] the impact of declining catches on local fishers and fishing communities can be just as devastating.[29] Many of these fishers have over-capitalized their investments in their boats and

25. Thompson, *supra* note 8, at 247.

26. Christie, *supra* note 14, at 5.

27. *See* Abby Goodnough, *A Favorite Florida Fish is Off the Menu Till Next Year*, N.Y. TIMES, Oct. 16, 2005 (reporting on the temporary closing of the Gulf of Mexico commercial grouper fishery and limitations placed on recreational fishing for grouper); Seth Macinko, *Public or Private?: United States Commercial Fisheries Management and the Public Trust Doctrine, Reciprocal Challenges*, 33 NAT. RESOURCES J. 919, 922 (1993) (describing limited entry as a way to "target perceived irrationalities in so-called 'derby style' open access fisheries" where there is a "competitive 'race for fish,'" which "spurs continual reinvestment (of captured economic rent) in technology in pursuit of competitive advantage," leading to "both economic and biological consequences that are deemed undesirable"). *But see* OSTROM, GOVERNING THE COMMONS 173-77 (1990) (documenting the failure of various regulatory efforts by the Canadian government when applied to a self-regulating Nova Scotia fishing village); Ralph Townsend & James A. Wilson, *An Economic View of the Tragedy of the Commons*, *in* THE QUESTION OF THE COMMONS, *supra* note 1, at 320 (criticizing "extensive rule structure[s]" required to reduce fishing effort to achieve sustainable fisheries because they lead to "high enforcement costs and/or fishing effort that exceeds the level desired"); Evelyn Pinkerton, *Intercepting the State: Dramatic Processes in the Assertion of Local Co-Management Rights*, *in* THE QUESTION OF THE COMMONS, *supra* note 1, at 344 (saying that in the case examined, "it is the state that permits and even creates the resource problem; it is the community, including local fishermen, that holds the problem in check"); DeLuca, *supra* note 13, at 728 (saying such restrictions "frequently resulted in drastically abbreviated fishing seasons ('derbies')" causing "over-capitalization of the [fishing] fleet, high rates of bycatch, highgrading, ghost fishing, and unsafe fishing practices which resulted in loss of boats and lives" (citations omitted)).

28. Christie, *supra* note 12, at 161 (quoting A.M.L. Int'l Inc. v. Daley, 107 F. Supp. 2d 90, 108 n.29 (D. Mass. 2000)).

29. *See* McCay, *supra* note 1, at 206 (saying overfishing deprives fishermen of "common-use rights," and as such can also be seen as "a social tragedy"); S.F. Baird, *supra* note 1, at 221 ("[T]he privilege of fishing where no fish are to be found, is equivalent to no right to catch fish.").

fishing gear as they race to scoop up the remaining fish.[30] So when a fishery collapses, the effects on those communities are particularly severe.[31] The most spectacular illustration of what happens when a fishery collapses was the collapse of the Newfoundland groundfishery in the early 1990s.[32] When there are a limited number of fish in the ocean and more individuals enter the industry, those already fishing have to "race" harder to "achieve a return on their investment."[33] The result is that "overcapitalization and overcapacity increase, and the resource, however renewable, is overexploited and depleted."[34]

B. *The Growth of the Fish Farming Industry*

People who go fishing are the last commercial market hunters in

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30. Over-capitalization is a response to the fishing version of the tragedy of the commons as participants in the race to capture the last fish invest in larger boats and more effective fishing gear. *See* Pinkerton, *supra* note 26, at 350 (describing the over-capitalization of a Canadian mobile seine fleet in its search for more fish). *See also* Townsend & Wilson, *supra* note 26, at 313 (noting that "[i]n nearly every fishery examined, economists found excessive investment in harvesting capacity, low economic returns to fishermen, and increasing signs of stock decline which they attributed to the institution of open access"); Macinko, *supra* note 26, at 922 (saying "[o]vercapitalization represents the tragedy of rent dissipation, an unnecessary diversion of capital and labor that could be released to more productive sectors of the national economy.").

31. Katherine Marvin makes the point that although large investments in outfitting their boats "means that there are steep supply curves for fishermen" and that they receive low individual economic rent, the rise in costs must be "equally steep" before they will stop fishing, even when the "resource yield has started to decline." Katherine A. Marvin, Note, *Protecting Common Property Resources Through the Marketplace: Individual Transferable Quotas for Surf Clams and Ocean Quahogs*, 16 VT. L. REV. 1127, 1145 n.147 (1992).

32. *See, e.g.*, Fred Mason, *The Newfoundland Cod Stock Collapse: A Review and Analysis of Social Factors*, 17 ELECTRONIC GREEN J., Dec. 2002, http://egj.lib.uidaho.edu/egj17/mason1.html (describing the causes of the collapse of the cod fishery).

33. Marvin, *supra* note 30, at 1145. One effect of the need to venture further offshore to catch fish has been an increase in the amount of fuel the fishing industry consumes. According to a recent report in the New York Times, "if the fishing industry were a country, it would rank with the Netherlands as the world's 18th-largest oil consumer" and "is the only major industry in the world that is getting more and more energy-inefficient," adding to the "list of concerns about fishing as a destructive practice." Cornelia Dean, *Fishing Industry's Fuel Efficiency Gets Worse as Ocean Stocks Get Thinner*, N.Y. TIMES, Dec. 20, 2005, at F3. However, "growing fish in aquaculture pens can be less energy efficient than fishing." *Id.*

34. Marvin, *supra* note 30, at 1145. Marvin also criticizes the adoption of "conservation measures" like total industry quotas, which she says merely drive fishermen to race harder and invest in more effective gear and the government to tighten the restrictions "in a constant race with the ingenuity of the regulated." *Id.* at 1146. Restrictions can also create unnecessary hazards and enforcement problems. *Id.* at 1147-48.

the world. . . . We don't do that anymore on land.[35]

As stocks of wild fish decline, aquaculture has increased.[36] The reliance "on aquaculture to bridge the gap" between the supply of, and demand for, fish is "most acute in the developing world where fish protein provides between 19% and 50% of all animal protein consumed."[37] But farmed fish also offers the potential of a plentiful supply of cheaper food in developed countries.[38] Additionally, aquaculture provides employment to millions of persons in the developing world.[39] As a result, aquaculture's growth is outpacing all other animal-based sectors of the world's economy, including traditional fisheries.[40]

In this country, aquaculture presents a way to take pressure off of wild stock[41] and reduce the United States' seafood trade deficit of nearly seven billion dollars annually.[42] Farmed fish also provide

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35. Juliet Eilperin, *Fish Farming's Bounty Isn't Without Barbs*, WASH. POST, Jan. 24, 2005, at A1, A4 (quoting Sebastian Bell, Executive Director of the Maine Aquaculture Association). *See also* Roy Whitehead, Jr., Catherine Gould, & Walter Block, *The Value of Private Water Rights: From a Legal and Economic Perspective*, 9 ALB. L. ENVTL. OUTLOOK 313, 338 n.177 (2004) (saying "as humans moved from hunting to farming on the land, they should also move from fishing to farming in the oceans. Man will not arrive at a modern system of economics on the oceans until this move is made.").

36. "Aquaculture is the fastest growing sector of the world food economy, increasing by more than 10% per year," and in 2003 counted for more than thirty percent of all fish consumed. Press Release, Sea Web, *supra* note 4.

37. Shannon R. Wilson, *Sustainable Aquaculture: An Organizing Solution in International Law*, 26 T. JEFFERSON L. REV. 491, 496. *See also id.* at 495-496 (saying ninety percent of aquaculture consists of "small scale [projects] in developing countries to meet dietary needs," and 81% occurs in " Low Income Food Deficit Countries," mostly in Asia and Africa).

38. *See id.* at 497 (saying developed countries will rely on aquaculture to supplement fish supply and reduce fish product prices).

39. *Id.* at 498.Wilson notes, however, that aquaculture for export of fish products is "often undertaken by foreign nationals, rather than by local individuals with a vested interest in the local economy." *Id. See also* Schatzberg, *supra* note 5, at 255 (saying that the "startup capital, skill, and time" required to run an aquaculture operation make the "industry ripe for consolidation under multinational companies" and, therefore, aquaculture will not necessarily "reincarnate a fishing community that once prospered from a now-depleted resource"); *id.* (saying while "fish processing and other land-based activities [associated with aquaculture] could create jobs in coastal areas, raising salmon as an employee of a large farm is quite a different way of life than catching them as the owner of a small boat,").

40. Wilson, *supra* note 36, at 498.

41. *See* Craig, *supra* note 5, at 165 n.10 (saying aquaculture reduces pressure on wild stocks and helps with their recovery). Schatzberg disputes that this is actually occurring with respect to wild salmon. Schatzberg, *supra* note 5, at 254.

42. U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 330. According to the National Sea Grant College Program, the United States imports greater

"the seeds" for replenishing depleted stocks.[43] Aquaculture can be an "attractive source of revenue and employment" to depressed fishing communities[44] and has lowered the price of once very costly seafood products like shrimp and salmon.[45]

Experts maintain that "worldwide fisheries production will be inadequate to meet the needs of the world's population, without supplementation through aquaculture,"[46] a conclusion which may account for the industry's rapid growth. While the total catch of wild fish worldwide has "leveled off" at slightly less than 100 million tons,[47] total global aquaculture production more than doubled in both weight and value from 1988 to 1997.[48] By 1997, 28% of the global seafood market consisted of aquaculture

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than 60% of the fish and shellfish it consumes annually. Press Release, Sea Grant, Science Supporting Sustainable Marine Aquaculture 1 (2004) (on file with author), *available at* http://govdocs.aquake.org/cgi/reprint/2005/801/8010130.pdf. This deficit is "the largest for any agricultural commodity," and, according to the FDA, the value of imported shrimp, Atlantic salmon, and tilapia "were worth as much as the combined exports of the U.S. broiler and hog industries." Craig, *supra* note 5, at 166,166 n.13.

43. *See* Press Release, Sea Grant, *supra* note 41, at 2 (citing "the potential for rebuilding collapsed wild fish stocks through the use of aquacultured fish"). *See also* Craig, *supra* note 6, at 167 (listing "wild stock enhancement" as a "potential purpose[]" for aquaculture).

44. Firestone & Barber, *supra* note 5, at 708. *See also* Wilson, *supra* note 37, at 499 (saying aquaculture industry employs nearly 100,000 people, which is "projected to increase to 500,000 by 2025"). *But see* MICHAEL WEBER, SEAWEB AQUACULTURE CLEARINGHOUSE, WHAT PRICE FARMED FISH: A REVIEW OF THE ENVIRONMENTAL & SOCIAL COSTS OF FARMING CARNIVOROUS FISH EXECUTIVE SUMMARY 2 (2003), http://www.seaweb.org/resources/aquaculturecenter/documents/Carnivorous_Fish.pdf (saying improvements in salmon farming methods have decreased employment opportunities, while "lower production and market prices . . . have contributed to financial instability in salmon fishing fleets," forcing many fishers out of business "with dramatically negative effects on the economies of rural coastal communities.")

45. Eilperin, *supra* note 34, at A04 (saying the cost of farmed salmon has dropped from approximately seven dollars per pound to two dollars per pound). *But see* Wilson, *supra* note 36, at 497 (saying "[d]espite aquaculture's contribution to the world's fish supply, the retail cost of fish has not decreased" because of demand outpacing supply, declining wild fisheries, high operational costs in a "new" industry, and the willingness of some "to pay exorbitant prices" for some species like salmon and shrimp).

46. Craig, *supra* note 5, at 166, n.11 (quoting UNIV. OF CALIFORNIA, SAN DIEGO, *Introduction, in* NOAA'S AQUACULTURE POLICY (1998), http://swr.ucsd.edu/fmd/bill/aquapol.htm).

47. Eilperin, *supra* note 34, at A04. *See also* Firestone & Barber, *supra* note 6, at 708 (noting fish landings leveled off during the 1990s to eighty-five to ninety-five million metric tons a year). One Canadian company, New Brunswick's Cooke Aquaculture, processes 100,000 pounds of farmed fish per day, seven days a week and, within twenty-four hours, can transport it anywhere in the United States. Eilperin, *supra* note 34, at A04.

48. Firestone & Barber, *supra* note 5, at 706.

products.[49] Worldwide, the aquaculture industry is worth $40 billion.[50]

In the United States, the industry is worth "nearly" one billion dollars [51] and, in North America, has increased in size an average of 3.6% per year from 1984 to 2001.[52] This is so, even though the United States' aquaculture industry "supplies less than 10% of the nation's seafood demands."[53] The vast majority of this increase in sales was from farmed fish like Atlantic and Pacific salmon and shrimp.[54] As of 1997, the aquaculture industry consisted of approximately 5000 aquaculture facilities located in every state and territory.[55] It is one of "several growing segments" of domestic agriculture.[56] Some predict that aquaculture will supply up to 25% of all seafood consumed in this country in the next twenty years.[57]

Reflecting the importance of aquaculture to the country's economy, the federal government is actively encouraging the industry's development.[58] The U.S. Department of Commerce is

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49. *Id.*

50. Craig, *supra* note 5, at 166.

51. *Id.* at 167.

52. Firestone & Barber, *supra* note 5, at 706. The global average aquaculture production increased at a yearly rate of nine percent during the same time period. *Id.*

53. Craig, *supra* note 5, at 167 (quoting OFFICE OF WATER, EPA, *Aquaculture, in* TURNING TO THE SEA: AMERICA'S OCEAN FUTURE, *available at* http://www.publicaffairs.noaa.gov/oceanreport/ (last visited Nov. 2, 2006)). The United States is eleventh in the world in aquaculture production, Firestone & Barber, *supra* note 5, at 707, producing 1 to 2% of the world's total, Eilperin, *supra* note 22, at A04.At the same time, it ranks third in the consumption of seafood. Firestone & Barber, *supra* note 6, at 707.

54. Craig, *supra* note 5, at 167-68. Other aquaculture products include oysters, clams, ornamental fish, baitfish, and crustaceans. *Id.* As an illustration of the growing importance of the industry, *see* the six-page advertisement in the New York Times touting the advantages of ocean farmed salmon. *Ocean-Farmed Salmon: A Healthy Choice for Our Times and Your Table,* N. Y. TIMES MAG., Dec. 4, 2005, at 91-96.

55. Craig, *supra* note 5, at 168. Sixty-eight percent of aquaculture acreage is in the south, and the south "account[s] for 65% of the value of aquaculture products sold." *Id.* The north-central states are the least active aquaculture area of the country. *Id.* at 168-69.

56. *Id.* at 168.

57. *See* Press Release, Sea Grant, *supra* note 41, at 1 (saying that aquaculture has the "potential to supply up to 25 percent of all seafood consumed by its citizens within the next 20 years"). According to an article in the Washington Post, by 2025 one half of the fish consumed worldwide will be farm-raised. Eilperin, *supra* note 22, at A04.

58. *See* Craig, *supra* note 5, at 169-170 (describing various federal initiatives like the 1980 National Aquaculture Development Act, amended in 1985, and federal agency funding initiatives like National Sea Grant College Program funding that develops technology, the impact of which totals $100 million per year and provides thousands of jobs).

"promoting a five-fold increase in U.S. aquaculture production" by 2025.[59] Towards the end of the last century, the National Marine Fisheries Service (NMFS) spent nearly ten million dollars annually for "the operation of 25 major salmon hatcheries in the Columbia River Basin" and almost twenty million dollars for "salmon enhancement projects in Alaska." [60] In FY1994 and FY1995, the Northeast Fishing Industry Grants program gave a total of $3.39 million for "aquaculture-related projects" for the purpose of "creating commercial development opportunities for displaced New England fishermen."[61] In its 2001 Fisheries Strategic Plan, NOAA cited as the "fourth objective" for sustainable fisheries the promotion of the development of "robust and economically sound aquaculture."[62]

While the United States freshwater aquaculture industry is booming,[63] the coastal or nearshore industry is not; it currently provides only 15% of total domestic aquaculture production.[64] One of the first commercial open-ocean aquaculture operations began in 2001 with the transfer of what had been a public project in the waters off Hawaii to a private firm.[65] Most other offshore aquaculture activities are "in the pilot project stage."[66] These include a single net pen next to a Gulf of Mexico oil platform and federally supported experiments off the coasts of Hawaii and Massachusetts.[67] While, at present, there are "no wholly

59. Firestone & Barber, *supra* note 5, at 709. This is roughly 2.2 million tons more seafood than the country now produces. Eilperin, *supra* note 22, at A04.

60. Craig, *supra* note 5, at 170.

61. *Id.*

62. Craig, *supra* note 5, at 170 (quoting NOAA, DEP'T OF COMMERCE, FISHERIES STRATEGIC PLAN (2001)). Craig notes, in support of the fourth objective, NOAA "promised to (1) promote the commercial rearing of at least seven new species [of fish]; (2) reduce the time and cost of permitting environmentally sound aquaculture ventures"; as well as "identify areas in coastal waters and the EEZ suitable for environmentally sound aquaculture development." *Id.* at 170-71 n.36.

63. During the last two decades of the last century, U.S. aquaculture production rose approximately 400%, to almost $1 billion. U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 330.

64. *Id.* Firestone and Barber disagree with this estimate and say that, by 1997, marine aquaculture was 40% of the North American aquaculture production, noting particularly the "explosive" growth in Atlantic salmon mariculture. Firestone & Barber, *supra* note 5, at 707.

65. U.S. COMMISSION ON OCEAN POLICY REPORT, *supra* note 3, at 332.

66. *Id.*

67. *Id.* at 332, 335; Schatzberg, *supra* note 5, at 270 (describing these early offshore aquaculture efforts and saying there are experimental offshore fish farms growing scallops, flounder, Pacific threadfin, and red snapper, which have "partial federal research

commercial aquaculture operations"[68] in the EEZ, this is expected to change "dramatically in the next two decades" because of federally supported "intensive" research and development initiatives and financial support from Congress.[69]

C. *The Environmental and Socio-Economic Impacts of Near and Off-Shore Fish Farming*

> The oceans are in crisis, and what's their response? To allow the enormous expansion of this industry [aquaculture] that's proven to have a negative environmental impact.[70]

Despite its potentially positive features, non-land based aquaculture is not a benign activity from an environmental perspective. While moving these activities farther offshore may reduce or even eliminate some of these adverse impacts, other adverse impacts will remain the same and new ones may be created. In addition, the growth of either a nearshore or offshore fish farming industry threatens the economic stability of traditional fishers and their communities as much as the declining fish populations do.

1. *Adverse environmental impacts of non-land-based aquaculture.*

A typical aquaculture facility, whether located in coastal or ocean waters, consists of "cages, net pens, and nursery boxes."[71] The young fish, which are used to stock these facilities, are generally reared in freshwater hatcheries then moved to net pens anchored on the floor of a coastal bay or the ocean.[72] There, the small fish grow to market size.[73] Although to date, the most likely

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sponsorship").

68. Schatzberg, *supra* note 5, at 270. However, Schatzberg notes that competition with established foreign coastal fish farms with lower labor costs and less regulatory constraints may inhibit the growth of domestic ocean fish ranching. *Id.* at 270-71.

69. Englebrecht, *supra* note 4, at 1204. The U.S. Commission on Ocean Policy identified as one of its recommendations "the development of an economically and environmentally sound marine aquaculture industry." U.S. COMMISSION ON OCEAN POLICY REPORT, *supra* note 3, at 330. *See also* the half page advertisement" Salmon of the Americas" in the New York Times touting ocean-farmed salmon for being "Good for You" and "Good for the Oceans." N.Y. TIMES, Oct. 12, 2005, at A19.

70. Gerry Leape, Vice President for Marine Conservation at the National Environmental Trust, *quoted in* Eilperin, *Without Barbs*, *supra* note 34, at A-1.

71. Englebrecht, *supra* note 4, at 1193.

72. *Id.* at 1193 n.41.

73. *Id.*

candidate species for ocean fish ranching in the United States EEZ is salmon, other species, such as summer flounder, Pacific threadfin, sea scallops, and Atlantic cod, are also being considered.[74]

Among the potential adverse impacts of cultivating fish in pens in open water, regardless of whether these waters are near or offshore, are the spread of diseases, such as sea lice and salmon anemia,[75] to wild fish stocks; genetic contamination of those stocks, perhaps reducing their ability to survive in the wild; and competition between either native or exotic species and wild fish for food and habitat.[76] Genetic contamination and competition with native species are of particular concern when farmed species escape from their pens (disease is easily spread even without escape in some cases),[77] further imperiling wild stock recovery efforts.[78] The potential of escaped fish to dilute the genetic

74. Schatzberg, *supra* note 5, at 251 n.8. *See also* Florence Fabricant, *Cod Returns to These Shores, This Time By Boat*, N.Y. TIMES, Dec. 14, 2005, at F6 (reporting on importation to the United States of parasite free cod from net pens in waters offshore of the Shetland Islands, raised without antibiotics, pesticides or dyes, and fed by products made from wild herring and mackerel); Paul Greenberg, *Green to the Gills: Is There a Way to Farm-Raise Fish that Helps Save the Oceans*, N.Y. TIMES MAG., June 18, 2006, at 54 (reporting on efforts in Norway to farm cod).

75. Sea lice eat salmon flesh and salmon anemia kills salmon. *See* Eilperin, *supra* note 34, at A-1 (saying in 2002 one Maine fish farm killed over 1.5 million fish in an effort to contain the disease); Englebrecht, *supra* note 4, at 1196-97 (reporting "disease and parasite outbreaks in aquaculture facilities are becoming commonplace," and saying both can be spread through exposure to infected fish parts, "blood water from harvesting operations, improper handling and disposal of dead fish, and the movement of personnel and equipment between multiple aquaculture facilities.")

76. *See* Firestone & Barber, *supra* note 5, at 694-95 (listing among the impacts of "sea-based fish farming. . . introduction of exotic species or varieties of fish to new bodies of water, genetic contamination of the wild genome, predation on wild fish, competition with wild fish for food and favorable space, disruptive behavior, stimulation of premature migrations, creation of unacceptably high densities of fish, mixed-stock exploitation problems, predator attraction, and disease and parasite transmission").

77. Firestone and Barber explain that escape of mariculture fish occurs either through "leakage" ("the escape of a small number of fish during normal operations") or "through catastrophic events," like the escape of approximately 100,000 non-North American Atlantic salmon from a net pen off the Maine coast in December 2000. Firestone & Barber, *supra* note 5, at 710. *See also* Eilperin, *supra* note 34, at A-1 (reporting that in 2004 a researcher with the Atlantic Salmon Federation found eight times as many escaped cultivated salmon in a New Brunswick river as wild salmon).

78. *See generally* Schatzberg, *supra* note 5, at 255 (saying "[T]he foremost concern for those looking into the negative environmental impacts of salmon farming on the West Coast is the fear of biological pollution in the form of escaping salmon.") *See also* Firestone & Barber, *supra* note 6, at 715 (saying hatchery-reared fish used as feedstock for mariculture operations bred with aggressive feeding behaviors so they grow quickly are particularly problematic for wild stock when they escape because they may "out-compete

material of wild stock is especially high where the wild species is threatened and, therefore, less able to withstand the influence.[79] There is also concern that escaped, non-native fish may successfully spawn in rivers traditionally occupied by wild fish and, if successful, may colonize those waters.[80] The escape of Atlantic salmon from net pens "is apparently routine."[81]

Fish wastes,[82] dead fish, uneaten food, and antibiotics and hormones used to promote growth may contaminate the quality of the water surrounding the net pens.[83] Nutrients[84] and chemical

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wild fish in certain situations, with no hope of later completing the salmon life cycle" because they have not been imprinted with information about where they must return to spawn).

79. Firestone & Barber, *supra* note 5, at 711.

80. *Id.* at 712 (discussing the spawning success of Atlantic salmon which have escaped from net pens in the Pacific northwest to spawn in British Columbia, posing a "potential to be an unmitigated disaster . . . where Pacific salmon are already in severe decline due to overfishing and habitat destruction"); *see also* Englebrecht, *supra* note 4 at 1196 (saying in the last ten years almost one million mature Atlantic salmon escaped from Pacific Northwest aquaculture pens, since 1987 Canadian and U.S. fishermen caught approximately 19,000 of these fish in the ocean off the Pacific coast, including 200 in 2001 alone, and in the same period Alaskan fishermen caught almost 600 adult Atlantic salmon, including one in the Bering Sea); Eilperin, *supra* note 34, at A-4 (reporting industry officials say the number of escaped Atlantic salmon in British Columbia dropped from 89,000 in 1998 to 2,500 in 2004).

81. Firestone & Barber, *supra* note 5, at 711; *id.* (saying when the number of escaped fish "are compared to the numbers of wild fish returning to spawn, it is easy to see why a great deal of concern has been focused on the impact of mariculture escapees on wild Atlantic salmon.") *See also* Englebrecht, *supra* note 4, at 1194 (saying "fish escapes are inevitable"). Firestone and Barber attribute the "accelerated decline" in wild Atlantic salmon populations in the past thirty years from their historic abundance to salmon mariculture, over-fishing, diversion of water from salmon rivers, toxic pollution, acidification, deforestation, and the introduction of exotic species, like the brown trout, which prey on juvenile salmon. They say "not all" of the salmon populations found today in many of the major river systems in New England "are wild" and can only be maintained through restocking with fry from hatcheries, and that today the total return of both wild and hatchery-reared Atlantic salmon to the waters of the United States is a little over a thousand fish. Firestone & Barber, *supra* note 5, at 687, 698-702.

82. *See* Eilperin, *supra* note 34, at A-1 (salmon wastes off of the British Columbia coast release an amount of excess nitrogen equivalent to that released by sewage from a city of 250,000 people). Environmentalists describe ocean aquaculture as "floating pig farms." Mark Dowie, *Terms of Art, Salmon and the Caesar: Will a Doctrine from the Roman Empire Sink Ocean Aquaculture?* LEGAL AFF. (Sept./Oct. 2004), at 3, http://www.legalaffairs.org.

83. *See* Rosamond L. Naylor & Rebecca J. Goldberg, *Nature's Subsidies to Shrimp and Salmon Farming*, 282 SCIENCE 883 (1998) ("The ocean's capacity to assimilate wastes and maintain viable fish populations is being challenged by aquaculture's continued growth."), *quoted in* Englebrecht, *supra* note 4, at 1193; *see also* U.S. Public Interest Research Group v. Stolt Sea Farm, Inc., 2002 WL 240386 (D. Me. Feb. 19, 2002) (holding aquaculture facilities are point sources under Clean Water Act because they discharge pollutants, including escaped non-native fish); *accord* U.S. Public Interest Research Group v. Heritage

pollutants from these facilities are discharged directly into the ocean, unfiltered.[85] Fish feces and uneaten food can build up beneath the floating pens and create "bacteria mats" on the ocean floor, posing an additional threat to marine life.[86]

Furthermore, the practice of harvesting wild fish, which are already under traditional fishing pressure,[87] to feed cultivated fish "directly and immediately impact[s] the marine habitat."[88] It "typically" takes "two to five kilograms of wild-caught fish, processed into fish meal and fish oil for feed," to produce one kilogram of farmed marine fish.[89] This pressure on small fish like

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Salmon, Inc., 2002 WL 240440 (D. Me. Feb. 19, 2002). The discharge of certain pollutants into net pens is allowed so long as water quality standards are met and no ecological or human health problems are created. This discharge has been permitted "to determine the feasibility of using pollutants to grow aquatic organisms." Tim Eichenberg & Barbara Vestal, *Improving the Legal Framework for Marine Aquaculture: The Role of Water Quality Laws and the Public Trust Doctrine*, 2 TERR. SEA. J. 339, 393 (1992) (*citing* 40 CFR §§ 125.10-11). *But see generally* Firestone & Barber, *supra* note 6, at 730 (arguing escaped fish should be treated as pollutants and their discharge regulated under the Clean Water Act, and being encouraged by EPA's "cautious step" in 2002 issuing proposed effluent guidelines for aquaculture activities that require operators of "certain net pen systems" to "develop and implement [best management] practices ["BMPs"] to minimize the potential [unintended] escape of non-native species").

84. *See* Englebrecht, *supra* note 4, at 1193-94 (saying excess nutrients stimulate phytoplankton growth, depleting oxygen levels in water, stressing or killing fish and other aquatic species, or leading to toxic algae blooms, like red tides and *pfiesteria*, causing large fish kills, contaminating shellfish, and threatening human health); *see also* Craig, *supra* note 5, at 199 (saying the number of eutrophic and/or hypoxic areas in ocean waters off of the United States coastline is increasing).

85. Englebrecht, *supra* note 4, at 1193. *See also* Firestone & Barber, *supra* note 6, at 711 (listing among the pollutants discharged from mariculture operations copper to control the growth of marine algae on fish pens, fish food (including biological wastes from the chicken industry, antibiotics, and added pigments to color salmon flesh pink), fish wastes, a variety of diseases, viruses, parasites, and chemicals including antibiotics and biocides).

86. Eilperin, *supra* note 34, at A-4. *See also* Englebrecht, *supra* note 4, at 1194 (saying NMFS "consider[s]" that these mats "present the most risk to aquatic habitat").

87. *See generally*, U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 331.

88. Englebrecht, *supra* note 4, at 1197. *See also* Craig, *supra* note 5, at 171-72 (noting the "perverse" impact on wild fish stocks of using wild fish to feed carnivorous marine fish, like salmon, tuna, cod, and sea bass); Schatzberg, *supra* note 6, at 254 (saying "only if the amount of fish meal and fish oil declines can salmon aquaculture truly contribute to the aggregate global fish supply," and saying also developing countries "can actually lose food resources to aquaculture" because the constituents of fish food "come from small fish caught in the waters off these nations").

89. Craig, *supra* note 5, at 172. *See also* Rosamond L. Naylor et al., *Aquaculture – A Gateway for Exotic Species*, 294 SCIENCE 1655, 1656 (2001) ("in 1997 about 1.8 million tons of wild fish for feed were required to produce 644,000 metric tons of Atlantic salmon – a 2.8:1 ratio"), *quoted by* Englebrecht, *supra* note 4, at 1197. Craig, *supra* note 5, at 172 also

anchovies reduces a critically important source of food for wild stock, as well as for marine mammals and seabirds, [90] and disrupts the traditional prey food chain. Also, when wild, instead of hatchery-reared, fish are used to stock these operations, the populations of those species are further depleted.[91]

Marine mammals, such as sea lions, attracted by the farmed fish may become entangled in coastal net pens.[92] The construction of support facilities, like fish processing and canning operations, can destroy wetland and coastal habitats and can themselves be a source of pollutants into the nearshore environment.[93] Additionally, the placement and construction of aquaculture structures like anchors, cages, and net pens, "directly alter" habitat for wild fisheries and, when placed in spawning rivers, can adversely affect the migration and habitat of anadromous fish.[94]

There may also be adverse human health effects associated with the consumption of farmed salmon. A study published in the journal *Science* last year found sufficiently elevated levels of PCBs, dioxin, and other carcinogens in farmed salmon to warrant a recommendation that consumers limit themselves to one eight ounce portion of farmed salmon per month.[95] These contaminants bioaccumulate and become more potent as one moves up the food chain. There are additional concerns about the amount of antibiotics and hormones fed to farmed fish, such as salmon, and how those may affect human health.[96]

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notes it is "non-carnivorous species such as marine mollusks and carps [that] account for most of the current net gain in world fish supplies from aquaculture," *citing* ROSAMOND L. NAYLOR ET AL., ENVIRONMENTAL PROTECTION AGENCY, A WATERSHED ACADEMY WEB STEPPING STONE TO LEARNING—EFFECTS OF AQUACULTURE ON WORLD FISH SUPPLIES, http://www.epa.gov/watertrain/step8aabstr.html.

90. Craig, *supra* note 5, at 172. *See also* Englebrecht, *supra* note 4, at 1197-98 (quoting Naylor & Goldberg as saying "because of their dependence on wild-caught fish, shrimp and salmon aquaculture deplete rather than augment fisheries resources").

91. *See also* Greenberg, *supra* note 73, at 56 (saying "the overarching concern" of fishers is "the entire reorganization and homogenization of the sea" that may result from aquaculture's selective breeding of fish for the marketplace).

92. Weber, *supra* note 43, at 2.

93. Craig, *supra* note 5, at 172.

94. Englebrecht, *supra* note 5, at 1198.

95. Eilperin, *supra* note 34, at A-4. *See also* Weber, *supra* note 43, at 26 ("farmed Atlantic salmon have low levels of omega-3 fatty acids and relatively high levels of omega-6 fatty acids, which can be problematic").

96. Ronald J. Rychlak & Ellen M. Peel, *Swimming Past the Hook: Navigating Legal Obstacles in the Aquaculture Industry*, 23 ENVTL. L. 837, 863 (1993) (noting that the FDA has approved only two antibiotics and one topical treatment for food fish diseases, and bemoaning the slow pace at which the agency approves new drugs).

2. *Specific problems with offshore aquaculture.*

Many of the environmental problems associated with coastal fish farming can also occur when the activities are moved farther offshore into the EEZ. In the open ocean, escaped fish can still be disease vectors for wild fish, sea mammals, and sea birds, and can adversely affect wild fish through competition and genetic mutations. Also, even though the ocean is a larger sink in which to disperse pollutants, the dispersed pollutants must go somewhere. Instead of net pens posing a hazard to marine mammals, they now pose a threat to offshore commercial navigation. Even if the pens are submerged below the ocean's surface to decrease conflicts with surface navigation, the wastes from these facilities may still form a mat on the ocean floor, depending on the depth of the water in which they are located, posing a hazard to bottom dwelling sea life and find their way into the human food chain as wild fish gather around the pens to consume the waste feed. Additionally, both ocean storms, with their extreme wave activity and high winds, and commercial navigation may pose threats to the security of pens that are not submerged.[97] Surface net pens, or those located just below the surface, might experience sufficient damage under certain conditions to allow the escape of fish.[98] There are also logistical problems associated with operating offshore aquaculture facilities – moving workers to and from the net pens, maintaining the net pens during adverse weather conditions – and the need to place them at locations that do not pose barriers to navigation.[99]

3. *Impacts on local fishers and fishing communities.*

The natural environment is not the only thing that may be at risk from ocean fish ranching. Ocean fishers may suffer as well.[100]

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97. *See* Schatzberg, *supra* note 5, at 269 n.122 (discussing technological problems associated with locating aquaculture facilities in "the harsher conditions in the open ocean.")

98. *But see* Eilperin, *supra* note 34, at A-4 (reporting on the success of the University of New Hampshire's Open Ocean Aquaculture project, which, in five years, has not had one escaped cod, halibut, or haddock from its three galvanized steel cages six miles off the New Hampshire coast, and where no environmental problems have been "detected").

99. U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 332. *See also* Schatzberg, *supra* note 6, at 269 n.122 (saying "moving [aquaculture facilities] seaward cannot fully eliminate user conflicts . . . with the fishing industry, oil exploration firms, and those navigating the EEZ").

100. *See* Eilperin, *supra* note 34, at A-4 (reporting that an Institute for Fisheries Resources' lawyer who represents "wild-catch fishermen" says his clients "resent

Fishers will lose access to offshore fishing grounds they have traditionally fished for years—in some cases, these areas have been fished for centuries.[101] They may also see the price of their harvests go down as ranched fish flood the market at a lower cost.[102] The effects on individual fishermen may extend to their communities, as reduced yields and depressed prices lead to a general economic decline.

4. *Some benefits from moving aquaculture to the open ocean.*

While moving fish farming operations offshore may merely transfer the problems of farming in coastal waters farther offshore and create new problems, moving activities out of coastal waters may also provide some benefits. For example, moving aquaculture into the EEZ may avoid some water quality problems that make it difficult to farm fish in coastal waters and eliminate aquaculture as a source of pollution to these waters. Nonpoint source pollution, carrying fertilizers, bacteria, pesticides, chemicals, and other toxic pollutants into coastal waters, acid deposition from power plants,[103] and erosion causing turbidity and sediment loadings in adjacent waters have made the nearshore environment inhospitable for aquaculture.[104] At the same time, as discussed above, fish farming contributes pollution to those same waters through the discharge of fish feces, antibiotics and hormones, pesticides, dead fish, and

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aquaculture's impact on their hunting grounds" and complain that "[i]f you destroy the environment and you destroy the wild fish, there won't be anything left to fish").

101. Jose L. Fernandez, *Public Trust, Riparian Rights, and Aquaculture: A Storm Brewing in the Ocean State*, 20 WM. & MARY ENVTL. L. & POL'Y REV. 293, 294 (1996) (warning against the "potential for the alienation of the bay bottom to private owners, thereby dissipating a public resource on which depend the exercise of historical rights").

102. *See* Schatzberg, *supra* note 5, at 265 (saying Alaskan commercial fishermen "feared the economic impacts of competition with farmed salmon production"); *id.* (explaining local Alaska fishermen's opposition to salmon farming in Alaskan state waters came from their fear of large fishing companies "overtaking" their small boat operations); *see also* Fernandez, *supra* note 100, at 297 (saying "[t]hose who exercise the right of free fishery argue that aquaculture . . . may drive down the value of the harvest").

103. *See generally* CANADIAN DEPARTMENT OF FISHERIES AND OCEANS, DFO MARITIMES REGIONAL HABITAT STATUS REPORT: THE EFFECTS OF ACID RAIN ON ATLANTIC SALMON OF THE SOUTHERN UPLAND OF NOVA SCOTIA (2000); WORLD WILDLIFE FUND, THE STATUS OF WILD ATLANTIC SALMON: A RIVER BY RIVER ASSESSMENT (2001), http://www.worldwildlife.org/oceans/pdfs/atlantic_salmon.pdf.

104. *See generally,* Craig, *supra* note 5, at 188-200 (describing terrestrial sources of pollution adversely affecting nearshore aquaculture activities and calling for "a better approach to regulating land-based pollution of the oceans, especially nonpoint source water pollution").

uneaten fish food, which spread disease and parasites and adversely affect important aquatic habitat. According to Naylor and Goldberg,

> The increasing scale of these enterprises is now having unforeseen ecological consequences. The conversion of coastal ecosystems to aquaculture ponds destroys nursery areas that support ocean fisheries. Fish farming degrades coastal waters through discharge of nutrients and chemicals, and it disrupts coastal ecosystems by the introduction of exotic species.[105]

Moving these activities farther offshore[106] will protect them from nearshore pollution and at the same time may lessen their direct impact on the coastal environment by dispersing the pollutants in a larger area, assuming that ocean currents do not redeposit the pollutants back into coastal waters.[107]

In addition, moving these activities away from the coast will also reduce their visibility, perhaps lessening the opposition of coastal residents to them,[108] and may make them less disturbing to coastal commercial and recreational fishers.[109] Moving aquaculture offshore into the EEZ would also bring the United States "in line with other nations" that are doing exactly that.[110]

However, as shown above, moving fish farms offshore merely transfers many of their nearshore problems to deep water, and fish farming's onshore socio-economic impacts on local fishers and fishing communities remains the same regardless of where the

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105. Rosamond L. Naylor & Rebecca J. Goldberg, *Nature's Subsidies to Shrimp and Salmon Farming*, 282 SCIENCE 883, 883 (1998), *quoted by* Englebrecht, *supra* note 4, at 1193.

106. According to Dowie, the Bush Administration proposes placing these facilities in "the outermost 188 miles" of the 200-mile wide EEZ. Dowie, *supra* note 81, at 3.

107. *But see* Wilson, *supra* note 26, at 500-01 (describing transboundary problems caused by escaped fish that cross national borders carrying diseases and competing with wild fish for food, and saying even though aquaculture's "most acute environmental effects are primarily local . . . changes in local ecosystems can affect the ecosystem as a whole . . . [and] have "broader implications").

108. *See* Schatzberg, *supra* note 5, at 268 (saying that local government opposition to expansion of shoreline aquaculture operations in response to pressure from resistant local landowners concerned about aesthetics is fueling NOAA's enthusiasm for ocean fish farming); Greenberg, *supra* note 73, at 56 (reporting that a combination of environmentalists, fishers, and coastal residents "have kept aquaculture out of most state-controlled waters" because of fear "that it could pollute the coastline and harm wild fish populations").

109. U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 332.

110. Schatzberg, *supra* note 5, at 268.

activity takes place. While fish farming may offer substantial benefits, these do not come without serious associated costs.

> In sum, aquaculture serves to enhance the nation's fisheries by relieving pressure on the wild fish stocks from overfishing. However, by impairing water quality, introducing exotic species and diseases, extracting marine biomass, and directly altering habitat and obstructing migration, aquaculture is increasingly contributing to marine habitat loss – and consequently presents an actual and significant threat to the nation's wild fisheries.[111]

If anything, these costs are potentially greater, not less when the activity is moved farther offshore because new risks are created in addition to those that are simply transferred to an open water environment.

Despite these concerns, many feel that ocean fish ranching will, and should, develop given the need to meet the demand for fish and growing opposition to aquaculture in coastal waters. Fueled by the current downward spiral of wild fish stocks and the potential profitability of the activity, it seems almost "inevitable" that the industry will grow.[112]

D. *Current Legal Framework*

Despite a kaleidoscope of federal and state laws that might apply to ocean fish ranching, a serious problem hindering the industry's development is the lack of a coherent, comprehensive regulatory regime.[113] The present framework for managing commercial ocean fish ranching is characterized by "complex, inconsistent, and overlapping policies and regulatory regimes administered by numerous federal and state agencies."[114] This lack of coherence is a serious barrier to the industry's growth and to its potential to meet the country's growing demand for seafood.[115] The lack of a unified regulatory framework also makes it difficult to address the potential environmental and economic harms that

111. Englebrecht, *supra* note 4, at 1198.

112. Firestone & Barber, *supra* note 5, at 710.

113. *See* Craig, *supra* note 5, at 173 (quoting EPA's Office of Water saying "[n]o comprehensive regulatory framework exists for permitting aquaculture operations").

114. U.S. COMMISSION ON OCEAN POLICY FINAL REPORT, *supra* note 3, at 332. The Commission calls this a "conundrum." *Id.*

115. *Id.* at 333 (saying the "mix of laws and regulations" means ocean ranching applicants have "no guarantee of exclusive use of space in offshore areas" and makes private capital, insurance coverage, and bank loans "difficult to obtain").

aquaculture may produce.[116]

This lack of a comprehensive regulatory regime is not the result of incomplete jurisdiction over ocean space. International law gives the United States "complete sovereignty over the waters, airspace, seabed, and subsoil" within its twelve-mile territorial sea,[117] subject only to the rights of ships to "innocent passage."[118] In addition, the federal government has sovereign authority over the EEZ.[119]

States also have jurisdiction over a portion of the EEZ and exercise regulatory authority in their waters to protect important state resources. Under the Submerged Lands Act of 1953 ("SLA"),[120] coastal states have title to lands beneath and control

116. The 1980 National Aquaculture Act, 16 U.S.C. §§ 2801-2810 (1988 & Supp. III 1991) (Westlaw 2006), did little to change this situation. The law merely stated that it was in the national interest to encourage the development of aquaculture and commissions the preparation of a national aquaculture development plan, *id.* at § 2801, and directs the Secretaries of Agriculture, Commerce, and Interior to report to Congress on the federal laws and regulations that impede the development of commercial aquaculture activities together with recommendations on how they might be removed, *id.* at § 2804. Although a National Aquaculture Development Plan was subsequently developed, the federal government has not requested, nor has Congress appropriated, funds for its implementation. Rychlak & Peel, *supra* note 95, at 841-42.

117. Craig, *supra* note 5, at 173-74.

118. *Id.* at 174 (citing United Nations Convention on the Law of the Sea, (UNCLOS) III (1982), arts. 2.1, 2.2, 3, 17-25).

119. The UNCLOS III (1982) authorized signatory nations to claim jurisdiction over an EEZ, and although the United States has not ratified the treaty, its legal position is that the treaty's provisions are customary law. Craig, *supra* note 5, at 173 n.50. In 1983, the United States claimed a 200 mile wide EEZ, and in 1988, President Reagan claimed a twelve-mile territorial sea for the United States, also as authorized by UNCLOS III. *Id.* In 1999, President Clinton claimed a twenty-four mile wide contiguous zone for the United States. *Id.* Prior to President Reagan's actions, Congress in the Bartlett Act, Pub. L. No. 89-658, 1-4, 80 Stat. 908, 908 (1966), created a twelve-mile exclusive fishing zone around the United States. Christie, *supra* note 12, at 112. While displacement of foreign fisheries from EEZs by UNCLOS III "created the possibility for coastal states to address the 'tragedy of the commons' within the EEZ," many nations saw this as "the opportunity to develop their domestic industries." Christie, *supra* note 14, at 11; *id.* ("freedom of the high seas was replaced by virtually open access for national fishermen"). Christie says since coastal states have extended their jurisdiction over EEZ fisheries, "worldwide marine catch has increased from about 60 million tons" in the mid-1970s to "94.8 tons in 2000." *Id.* at 4. *See also* SPETH, *supra* note 14, at 107 (saying nation states responded to the creation of exclusive economic zones "by subsidizing new fishing fleets and neglecting needed regulation").

120. 43 U.S.C. §§ 1301-1303, 1311-1315 (1994) (Westlaw 2006), *cited in* Craig, *supra* note 5, at 174 n.53. *See also* Pollard v. Hagan, 44 U.S. 212, 234-35 (1845) (affirming exclusive state jurisdiction over tidal waters and tidelands); Englebrecht, *supra* note 4, at 1234 (discussing SLA and noting Magnuson Act incorporated the SLA's jurisdictional boundaries). Prior to the Magnuson-Stevens Act, states could regulate state-registered fishing boats and fishermen fishing in what is now the EEZ. *See* Skiriotes v. Florida, 313

over coastal waters "at least three miles out to sea, subject to the federal government's paramount rights"[121] to regulate those waters and lands for "commerce, navigation, national defense, and international affairs."[122] The SLA gives states title to, and the power to "manage, administer, lease, develop, and use,"[123] natural resources in their territorial seas. Among other marine life, the SLA includes fish, shrimp, oysters, clams, and crabs in the definition of "resources."[124] States, therefore, have the power to regulate mariculture activities that take place up to three miles offshore, subject to federal preemption, and the federal government has the power to regulate these activities outside state waters to the outer perimeter of the EEZ.[125]

Nor is the problem the absence of potentially applicable laws. Indeed, there are many federal and state laws that could apply to ocean fish ranching.[126] For example, the U.S. Environmental Protection Agency ("EPA"), using its authority under section 402 of the Clean Water Act ("CWA")[127] to regulate discharges of

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U.S. 69, 77 (1941).

121. Craig, *supra* note 5, at 174 (citation omitted). *See also* Montserrat Gorina-Ysern, *supra* note 9, at 663 (stating that through the 18th century, the "limits of fishery rights were those that could be enforced by the cannon-shot, commonly understood to reach out 3 miles from the shore (or 1 maritime league)").

122. Douglas v. Seacoast Prods., Inc., 431 U.S. 265, 284 (1977) (quoting United States v. Louisiana, 363 U.S. 1, 10 (1960)) (striking down Virginia law barring federally licensed nonresident fishers from engaging in commercial fishing); Craig, *supra* note 5, at 174 n.54 (noting that Florida and Texas have historic claims to more ocean territory). *See also* Englebrecht, *supra* note 4, at 1234-35 (noting that the Supreme Court called the idea of owning fish prior to their being reduced to possession by "skillful capture" a "legal fiction," and that there could "be no question today" Congress has "power under the Commerce Clause to regulate the taking of fish in state waters"). On the rule of capture and its evolution from Roman to American law, *see generally* Blumm & Ritchie, *supra* note 18 (2005).

123. 43 U.S.C. § 1311 (Westlaw 2006).

124. 43 U.S.C. § 1301(e) (Westlaw 2006).

125. Craig, *supra* note 5, at 174. *See* Englebrecht, *supra* note 4, at 1237-38 (explaining how recent NMFS regulations limit the Agency's and Regional Councils' authority to regulate non-Magnuson-Stevens fishing activities and those managed by state agencies).

126. This discussion does not include laws like the Food, Drug, and Cosmetic Act (FDCA), 21 U.S.C. §§ 301-399 (Westlaw 2006), which regulates the movement of contaminated and "adulterated" products in interstate commerce, the use of chemicals and antibiotics for use on human food products, and federal fish and shellfish inspection programs or their state replicates. For information on those programs, see Rychlak & Peel, *supra* note 95, at 861-67.

127. 33 U.S.C. § 1342 (Westlaw 2006). Therefore, EPA can require that fish ranchers acquire a national pollution discharge elimination system (NPDES) permit prior to discharging any pollutants from their facilities, and that these discharges conform to regulatory limits once set. *See* Craig, *supra* note 5, at 183-84 (stating any aquaculture facility

pollutants into waters over the outer continental shelf ("OCS"),[128] has defined concentrated aquatic animal production facilities ("CAAPFs") as point sources[129] and, in 2004, issued national effluent guidelines[130] for commercial net pens or submerged cage systems producing 100,000 pounds of fish or more.[131] EPA also has authority under section 403 of the CWA to prohibit discharges into the territorial seas, waters of the contiguous zone, and oceans pursuant to a 402 permit unless they are in compliance with EPA's regulatory guidelines.[132] EPA promulgated "ocean discharge

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that is not subject to § 318 is "potentially" subject to § 402 as an aquatic animal production facility). Section 318 of the CWA, 33 U.S.C. § 1328 (Westlaw 2006), creates a limited exemption from section 402 for the discharge of specific pollutants from approved aquaculture projects subject to federal or state NPDES permitting programs that use recycled wastewater from industrial or municipal facilities. Craig, *supra* note 6, at 182. EPA has issued guidelines under § 318 that exempt non-toxic aquaculture discharges from technology-based effluent limitations. 40 C.F.R. § 125.10(c) (Westlaw 2006).

128. Within the context of the Outer Continental Shelf Lands Act, the "outer continental shelf" includes all submerged lands outside the boundaries of lands which are covered by navigable waters. 43 U.S.C. § 1331(a) (Westlaw 2006). Section 502 of the Clean Water Act, 33 U.S.C. § 1362(7) (Westlaw 2006), defines "navigable waters" to include the territorial seas and then defines "territorial seas" narrowly to include only those waters where states have primary jurisdiction under the Submerged Lands Act. *See* 33 U.S.C. § 1362(8) (Westlaw 2006). However, nothing in § 502 restricts the agency's permitting jurisdiction to the territorial seas, as it also applies to "waters of the United States," which would include the waters of the EEZ. *See* 33 U.S.C. § 1362(7) (Westlaw 2006).

129. 40 C.F.R. § 122.24 (Westlaw 2006).

130. 40 C.F.R.,§ 451 (Westlaw 2006). These guidelines focus on "management practices" to "minimize the release of pollutants," such as "proper practices for feed management, storage of drugs and pesticides to avoid spilling, disposal of feed bags, nets, and other materials, as well as minimizing the discharge of dead animals or animal parts." Odin Smith & Ann Powers, Emerging Ocean Issues 5 (Nov. 7, 2005) (unpublished manuscript, on file with author). *See also* Linda Roeder, *EPA Finalizes Regulation on Discharges from Fish Farms, Other Aquaculture Sites*, 35 ENV'T. REP. (BNA) 1826-27 (Aug. 27, 2004) (describing the effluent guidelines). In May of 2006, EPA issued a "Compliance Guide for the Concentrated Aquatic Animal Production Point Source Category," describing the "legally binding statutory provisions and rules" permit writers must apply when they write NPDES permits for wastewater discharges from concentrated aquatic animal production facilities and commercial fish farms. Amena H. Saiyid, *EPA Releases Guide for Permit Writers to Ensure Fish Farms Meet Effluent Limits*, 37 ENV'T. REP. (BNA) 1119 (May 26, 2006).

131. 40 C.F.R. § 451.1-.24 (Westlaw 2006). The effluent guidelines apply to commercial and noncommercial fish farms, hatcheries, and other aquatic facilities, producing 100,000 pounds or more of aquatic animals in flow-through, recirculating, net pens or submerged cage systems. 40 C.F.R. § 122.24; 40 C.F.R. § 122, app. C; 40 C.F.R. § 451.1-.24. (Westlaw 2006). *See* Smith & Powers, *supra* note 129, at 5 n.9. Regulations define net pen systems as "a stationary, suspended or floating system of nets, screens, or cages in open waters of the United States. Net pen systems typically are located along a shore or pier or may be anchored and floating offshore." 40 C.F.R. § 451.2(j) (Westlaw 2006).

132. 33 U.S.C. 1343(a) (Westlaw 2006).

criteria," under Section 403 in 1980.[133] Amendments to these guidelines have been pending since 2001, but have not been finalized.[134] EPA can also regulate the use of pesticides at these aquaculture facilities under the Federal Insecticide, Fungicide, and Rodenticide Act.[135]

The U.S. Army Corps of Engineers has authority under section 10 of the Rivers & Harbors Act[136] to require ocean fish ranchers to get a permit to locate their facilities in navigable waters. The Outer Continental Shelf Lands Act[137] extended the Corps' permitting authority to include offshore facilities related to energy extraction located in the EEZ.[138] The National Oceanic, Atmospheric Administration ("NOAA") has asserted that offshore aquaculture facilities are subject to the Magnuson-Stevens Fishery Conservation & Management Act[139] when they use any harvesting or support vessels.[140] The U.S. Fish & Wildlife Service and the U.S. National

133. *See* 40 C.F.R. § 125.120 (Westlaw 2006).

134. Craig, *supra* note 5, at 178-79 n.85, 200 (stating that EPA was poised to issue new ocean discharge criteria in early 2001 developed under the prior Administration that would have set baseline standards consisting of both a narrative statement of desired water quality and pollutant specific numeric criteria and that would have applied to all permits for discharges into the territorial sea, the contiguous zone, and the EEZ, but that the Bush Administration blocked their publication and have not published new proposed criteria).

135. 7 U.S.C. § 136(a)-(y) (Westlaw 2006) (prohibiting, among other things, pesticide use in a way inconsistent with labeling restrictions).

136. 33 U.S.C. § 401 (Westlaw 2006) (requiring permit to place structures in navigable waters).

137. 43 U.S.C. §§ 1331-1356 (Westlaw 2006).

138. Schatzberg argues that this permitting authority extends to the EEZ under the OCSLA. *See* Schatzberg, *supra* note 5, at 258. *See also id.* (stating that the OCSLA "does not provide a clear environmental mandate to underlie permitting decisions").

139. 16 U.S.C. §§ 1801-1883 (Westlaw 2006) (establishing a comprehensive management structure regulating commercial fishing through a system of regional councils).

140. *See generally* U.S. COMMISSION ON OCEAN POLICY REPORT, *supra* note 3, at 271-72. For a discussion on whether the Magnuson Act confers regulatory authority over ocean fish ranching on the EEZ, see Firestone & Barber, *supra* note 5, at 734-35 n.241 ("There is some question whether, as a matter of law, the Magnuson Act actually confers on NOAA, NMFS, and the regional Fisher Management Councils the power to regulate aquaculture."); Englebrecht, *The Magnuson-Stevens Fishery Conservation Act*, *supra* note 4, at 1188-89 (describing the Magnuson-Stevens Act's application to aquaculture as "minimal and inconsistent," and noting importance of resolving any question about its application to aquaculture activities in the EEZ because the essential fish habitat (EFH) provisions of the SFA make mandatory application of conservation measures to fishing activities in EFHs). Englebracht also says that NMFS "has classified aquaculture as both 'fishing' and 'non-fishing,'. . . [,] has chosen not to adopt any conservation measures for aquaculture ventures that are adversely affecting designated EFH[s]," and has limited the Regional Councils' "authority to regulate 'fishing' activities" affecting EFHs designated within state

Marine Fisheries Service ("NMFS") share authority to regulate offshore ocean ranching activities that might involve species or areas protected under the Endangered Species Act,[141] the Marine Mammal Protection Act,[142] and the Marine Protection, Research, and Sanctuaries Act ("Ocean Dumping Act").[143] The U.S. Coast Guard can require that navigational lights and signals be attached to ocean ranching facilities and can establish a zone to protect them and any ships in the area.[144] The Food and Drug Administration regulates the addition of additives, like dyes and antibiotics, to food through the Food, Drug, and Cosmetic Act.[145] To the extent that federal permits apply to ocean fish ranching, the permitting agencies' obligations under the National Environmental Policy Act also apply.[146]

States also have a variety of ways that they can regulate ocean fish ranching activities that occur in their waters.[147] For example, section 401 of the CWA authorizes states to certify that federally permitted activities are in compliance with their water quality

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waters. *Id.* at 1189-90. On the topic of EFHs, Christie says the breadth of the term's definition in the SFA "could lead to the entire EEZ being designated EFH" thus "compromising" the term's "usefulness . . . as a management tool". Christie, *supra* note 12, at 145.

141. 16 U.S.C. §§ 1531-1544 (Westlaw 2006) (prohibiting the take of listed endangered species and placing an affirmative obligation on federal agencies not to jeopardize their continued existence). If imported exotic species are used in fish ranching, the Lacey Act Amendments of 1981, 16 U.S.C. §§ 3371-3378 (Westlaw 2006), which makes it a crime to import or acquire any fish in violation of any law that might be injurious to humans, or wildlife resources, might apply because of the harm that escaped fish might cause to native species. *See* Rychlak & Peel, *supra* note 97, at 857-58 (discussing potential application of Lacey Act to Grass Carp and Tilapia because of their "rapid" reproductive capabilities).

142. 16 U.S.C. §§ 1361-1421 (Westlaw 2006) (protecting marine mammals and regulating their take).

143. Pub. L. No. 95-532, 86 Stat. 1052 (codified in scattered sections of 33 and 16 U.S.C.) (regulating the dumping of any materials into ocean waters and preventing or strictly limiting the dumping of any material that could adversely affect human health or amenities or the marine environment).

144. U.S. COMMISSION ON OCEAN POLICY REPORT, *supra* note 3, at 101.

145. 21 U.S.C. §§ 301-397 (Westlaw 2006) (prohibiting contaminated or adulterated food in interstate commerce, including fish products containing chemical residues in unsafe amounts). *See* Rychlak & Peel, *supra* note 97, at 861-62.

146. 42 U.S.C. § 4332 (Westlaw 2006) (mandating the preparation of an environmental impact statement for all federal activities significantly affecting the human environment).

147. *See generally* Rychlak & Peel, *supra* note 95 (discussing the application of various state laws to terrestrial or nearshore aquaculture).

standards.[148] This could mean that, even if ocean fish ranching activities occur outside territorial waters, if the waters of the adjacent coastal state are adversely impacted, 401 may be triggered. Section 307 of the Coastal Zone Management Act requires applicants for federal permits to demonstrate the consistency of their authorized activities with state coastal zone management plans.[149] Even though the CZMA "does not explicitly mention aquaculture or mariculture," some states have relied on the Act's general policies to initiate "CZMA-related regulatory projects" governing these activities.[150] For example, Mississippi has developed aquaculture net pen guidelines, Rhode Island has developed "a marine aquaculture management plan and geographic information system," and Virginia has developed and implemented "a marine aquaculture regulatory and leasing program."[151] "Alaska has banned Atlantic salmon aquaculture" in its waters, "Washington has banned the use of certain antibiotics" in aquaculture operations, and "Maryland has placed a moratorium on the introduction of genetically engineered fish into its waterways." [152] Some states have laws regulating activities in their territorial waters, like Alaska's rules regulating the transportation of live fish, which might impede ocean fish ranching.[153]

Despite this impressive array of laws that *might* be applied to ocean ranching in the EEZ, there is no comprehensive regulatory program that *does* apply,[154] and there are many gaps in the

148. 33 U.S.C. § 1341 (Westlaw 2006) (requiring federal CWA permit applicants to receive state certification that the proposed discharges do not interfere with the state's water quality standards and comply with federal law).

149. 16 U.S.C. § 1456 (Westlaw 2006). States may also issue permits, licenses, and leases for coastal and ocean aquaculture projects within their waters. *See also* section 318(c) of the CWA, 33 U.S.C. §1328(c) (Westlaw 2006) authorizing states with approved aquaculture programs to issue permits for the discharge of specific pollutants from approved aquaculture projects. Englebrecht, *supra* note 4, at 1199.

150. Craig, *supra* note 5, at 175-76.

151. *Id.* at 176-77.

152. Englebrecht, *supra* note 4, at 1201.

153. *See generally* Rychlak & Peel, *supra* note 95 (describing state regulations that apply to aquaculture activities).

154. The Commission on Ocean Policy called for the development of a new marine aquaculture management framework, which among other things should take "into account other traditional, existing, and proposed uses of the nation's ocean resources." *See* U.S. COMMISSION ON OCEAN POLICY REPORT, *supra* note 3, at 333. In response, the Bush Administration issued a U.S. Ocean Action Plan directing NOAA to develop a program to regulate offshore aquaculture activities, which led to the introduction of the National

potential federal regulatory net.[155] For example, there is no clear regulatory authority over the design of net pens to assure that no farmed fish escape or that no sea mammal entanglements occur, nor is there any clear authority to prohibit the escape of ranched fish[156] or to impose restitution requirements in the event of harm from ocean fish ranching operations. While NMFS has "acknowledged" the existence of these "gaps" and its responsibility "to oversee aquaculture's impact on the marine environment," the agency has done little that is meaningful to close them.[157] State laws cannot fill the regulatory gaps because they cannot address migratory species adequately, their extension to the federal waters of the EEZ is vulnerable to a preemption challenge,[158] and states

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Offshore Aquaculture Act of 2005, S. 1195, 109th Cong. (2005). The bill provides for the leasing of submerged lands in the EEZ for aquaculture activities and grants the Secretary of Commerce authority to develop a permitting program for those activities. The bill, however, left intact other competing legislative authorities, suggesting only that agencies coordinate among themselves. *See* Smith & Powers, *supra* note 129, at 4.

155. Any thought that article 61 of UNCLOS III, requiring coastal states to "adopt measures to prevent overexploitation . . . and maintain and restore stocks to produce 'maximum sustainable yield,'" Christie, *supra* note 14, at 5-6, might lead to conservation of fisheries resources within the EEZ has not come to pass, and "problems of overfishing, overcapitalization, single-species management, insufficient scientific data, and excessive bycatch persist within the EEZ," *id.* at 17. *See also* Christie, *supra* note 12, at 132-33 (discussing concept of maximum sustained yield, its strengths and weaknesses). Christie finds some hope in changes in the international legal regime affecting fisheries, such as adoption of ecosystem principles, protection of biodiversity, principles of sustainability, and ecosystem management. *Id.* at 135-36. She hopes that coastal states will incorporate these principles into their domestic laws and cites particularly the UN Fish Stocks Agreement as providing incentives for coastal states to adopt and apply them to straddling stocks within the EEZ. *Id.* Steinberg suggests that "the goal of 'sustainability" should not only refer to ecological systems, but also to the "sustainability of economic and social communities." Phillip E. Steinberg, *Fish or Foul: Investigating the Politics of the Marine Stewardship Council*, Conference on Marine Environmental Politics in the 21st Century, at 2, *available at* http://globetrotter.berkeley.edu/macarthur/marine/papers/steinberg-1.html, *cited by* Gorina-Ysern, *supra* note 9, at 705. On the history and use of the precautionary principle, *see* Robert V. Percival, *Who's Afraid of the Precautionary Principle*, 23 PACE ENVTL. L. REV. 21 (2005-06).

156. *But see generally* Firestone & Barber, *supra* note 5 (arguing that under some circumstances escaped fish can be considered "pollutants" within the meaning of the CWA).

157. Englebrecht, *supra* note 4, at 1205. Englebrecht reports that NMFS, in 2002, proposed a "voluntary" Code of Conduct for Responsible Aquaculture in the U.S. Exclusive Economic Zone, which he recommends be incorporated into the agency's enforceable regulations under its Magnuson-Stevens Act authority. *Id.* at 1205-07. *See also* Thompson, *supra* note 8, at 248-49 (explaining how "fishing interests" have fought incorporating more meaningful management and enforcement provisions into the Magnuson Act and how these same interests "have worked to undermine effective implementation of the Act").

158. Where state law directly conflicts with federal law, under the Supremacy Clause

are more likely to let economic pressure lessen their regulatory zeal in efforts to attract new aquaculture operations.[159]

Given the rapid growth of the nearshore aquaculture industry, the push to expand into the waters of the EEZ is understandable. However, it is also very troubling because there is no comprehensive, effective federal regulatory framework for managing ocean fish ranching and no promise of one on the immediate horizon. One alternative to an absence of effective regulation is to allow the marketplace to function.[160] The next section of the article examines the effect of allowing the market place to function on fish ranches in the EEZ.

III. PRIVATIZING COMMON POOL RESOURCES TO PROTECT THEM

A. *The Ocean as a Common Pool Resource*

> The sea is common to all because it is so limitless that it cannot become a possession of any one, and because it is adapted for the use of all, whether we consider it from the point of view of navigation or of fisheries.[161]

The oceans are a giant global commons.[162] They belong to

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of the Constitution, Art. VI, cl. 2, state law is preempted. State law may also be preempted where the federal regulatory scheme is sufficiently pervasive and detailed to effectively "occupy the regulatory field" or the federal interest in the area that the state law is regulating is "'so dominant that the federal system will be assumed to preclude enforcement of state laws on the same subject.'" GEORGE CAMERON COGGINS ET AL.,,FEDERAL PUBLIC LAND AND RESOURCES LAW 207 (5th ed. 2001). Finally, state regulation may be precluded when it is impossible to comply with both federal and state regulation at the same time, or where state law "interferes with the accomplishment" of some congressional policy objective. DANIEL A. FARBER ET AL., CASES AND MATERIALS ON ENVIRONMENTAL LAW 315 (2d ed. 2006).

159. Englebrecht, *supra* note 4, at 1201. *See also* Buzbee, *The Regulatory Fragmentation Continuum, supra* note 6, at 353 (noting the likelihood that "[s]tate and local governments will under invest in information of broad interest that cannot be captured exclusively for the investing jurisdiction," and commenting on the difficulty of achieving "horizontal cooperation among states to gather such information").

160. *See* JAN G. LAITOS ET AL.,NATURAL RESOURCES LAW 6 (1st ed. 2006) (saying there are "[t]wo allocation mechanisms" for "allocating scarce resources" markets and governments).]

161. Hugo Grotius, *MARE LIBERUM* 28 n. 3 (1608), *referenced by* Gorina-Ysern, *supra* note 9, at 661.

162. *But see* Carol Rose, *Expanding the Choices for the Global Commons: Comparing Newfangled Tradable Allowance Schemes to Old-Fashioned Common Property Regimes*, 10 DUKE ENVTL. L. & POL'Y F. 45, 72 (1999) (saying "[t]he very idea of the *common itself* is enormously variegated" and rejecting the idea that there is a "single commons or even a few global commons," finding instead "a tapestry of constituent large and small commons, interacting and overlapping in ways that are as subtle as the environment itself")

everyone (*res communis*)[163] and have been considered open to all for navigation, commerce, and recreation since the time of Grotius.[164] The resources in them are available to all for the taking.[165] The fact that the United States has extended its sovereignty 200 miles from its coastline does not transform in any way the open character of these waters or the communal nature of the resources.[166]

Neither the commons nor its resources have been reduced to private ownership.[167] Although fishermen hold many rights such as

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(emphasis original).

163. *See* Gorina-Ysern, *supra* note 9, at 663-64 (saying the debate over whether the ocean and its resources should be considered *res nullius* ("belonging to no one" and thus open to "individual appropriation") or *res communis* (open . . . [and] belonging to everyone, and incapable of appropriation") was resolved in UNCLOS III in favor of *res communis*). *See also* Michael C. Blumm & Lucus Ritchie, *The Pioneer Spirit and the Public Trust: The American Rule of Capture and State Ownership of Wildlife*, 35 ENVTL. L. 673, 677-79 (2005) (explaining various categories of property under Roman law and distinguishing between *res publicae* (things owned by the state), *res communes* (things owned in common, like air, rivers, and the sea), and *res nullius* (things owned by no one and thus" capable of individual appropriation").

164. *See* Gorina-Ysern, *supra* note 9, at 657-60 (discussing Grotius' *MARE LIBERUM*); *see also* McCay, *The Culture of the Commoners*, in The QUESTION OF THE COMMONS, *supra* note 1, at 206 (saying Grotius "original learned argument for the freedom of the seas was based on a theory of property that justified the creation of private property only when one person's activities might endanger another's"); Macinko, *Public or Private?: U.S. Commercial Fisheries*, *supra* note 26, at 934 n.73 (saying open access fisheries has "two distinct roots" – the public trust doctrine and Grotius' writings – but the latter is "irrelevant" to the debates over limited entry because of its "high seas focus and reliance on notions of the inexhaustibility of ocean resources").

165. Although there are subtle differences between a commons and common pool resources, the terms are used interchangeably in this Article. *See* Alison Rieser, *supra* note 18, at 400 (distinguishing between a common pool resource, which describes "the nature and condition of the resource," and common property, which is descriptive of one type of "management regime").

166. With the exception of leasing space on the outer continental shelf for the extraction of oil, natural gas, and other mineral resources, these waters have not been withdrawn from public access and the United States has never relinquished its sovereignty over the waters or resources of the EEZ. *See* Rieser, *supra* note 19, at 820 (saying the "public right of fishing" under United States law "tends to maintain [a] condition of non-exclusivity" and "to justify maintaining a condition of open access"); McCay, *supra* note 1, at 196-202 (describing how United States fishers rejected "Old World laws of inland fisheries" which were based on "the privileges of private property," avowing instead "the sentiment . . . of 'free-taking'"); David A. Dana, *Overcoming the Political Tragedy of the Commons: Lessons Learned from the Reauthorization of the Magnuson Act*, 24 ECOLOGY L.Q 833, 846 (1997) (describing ocean fisheries as "one of the most important remaining commons in the American economy").

167. *See* OSTROM, *supra* note 26, at 133-46, 136 (distinguishing between water rights held by water producers, which are "separable from land and well-defined," and the basins that are the source of these rights, which are not owned or "centrally regulated," and "are

the right of access to fishing grounds, the right to capture fish and "enjoy the yield" of their efforts, the right to manage the fishery until that right is preempted by the government, the right to exclude others, and the right to give away any of these rights, they do not hold these rights exclusively—*i.e.* they hold the right to take fish "in common with all other fishermen."[168]

The fact that oceans are a commons and the resources in them are available for the taking has contributed to the decline in fish stocks.[169] The result of this decline may be that what has been the last truly "open frontier" may finally be closing.[170]

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managed by a *polycentric* set of limited-purpose governmental enterprises").

168. *See* Rieser, *supra* note 19, at 819 (describing four "principle regimes" of common property: open access, and government, private, or communal ownership, and saying that of the "sticks" or rights that fishers may get under each of these regimes, the right to manage is the broadest as it includes "the authority" to take engage in activities "affecting the resource's condition"). *See also id.* at 820 (saying that fishers "do not own any of these rights exclusively," at most, they have a *use* right, consisting of the right of access and the right to take fish, while the government maintains the right to manage the resource, including the right to exclude and alienate).

169. *See* Rieser, *supra* note 18, at 400-01 ("The physical nature of common-pool resources [like fisheries] tends to encourage their overconsumption" because of "the difficulty of excluding other potential users" from the resource as fish stock may be seasonally migratory and located at a significant distance from land, and because once fish are "captured" they are not "available to other fishers, predators, or to the stock itself for reproduction"); *id.* at 401 (identifying the ocean's biological diversity as a CPR "benefit[ing] the entire biosphere," and saying that when that benefit "is reduced by activities such as overfishing or habitat destruction, the value to all current and future beneficiaries is diminished"). *See also* Colin W. Clark, *Restricted Access to Common Property Fishery Resources: A Game-Theoretic Analysis, in* DYNAMIC OPTIMIZATION AND MATHEMATICAL ECON. 117 (E. P.T. Liu ed., 1980) (saying "the 'tragedy of the commons' has proved particularly difficult to counteract in the case of marine fisheries resources where the establishment of individual property rights is virtually out of the question"), *quoted in* OSTROM, GOVERNING THE COMMONS, *supra* note 26, at 13; *id.* ("common ownership is the fundamental fact affecting almost every regime of fishery management"); H. Scott Gordon, *The Economic Theory of a Common-Property Research: The Fishery*, 62 J. POL. ECON. 124 (1954) ("The fish in the sea are valueless to the fisherman, because there is no assurance that they will be there for him tomorrow if they are left behind today.") *quoted* in OSTROM, GOVERNING THE COMMONS, *supra* note 26, at 3. *But see* Seth Macinko and Daniel W. Bromley, *Property and Fisheries for the Twenty-First Century: Seeking Coherence From Legal and Economic Doctrine*, 28 VT. L. REV. 623, 645-51, 645 (2004) critiquing the "standard diagnosis" for the so-called "fishery problem" as being a "property rights problem"); McCay & Acheson, *Human Ecology of the Commons, in* The QUESTION OF THE COMMONS, *supra* note 1, at 28-29(citing sources for the proposition that open access is "only one of a larger set of causes of those tragedies" of the commons).

170. *See* Susan Hanna, *The New Frontier of American Fisheries Government*, 20 ECOLOGICAL ECON. 221, 223 (1997) (describing ocean fisheries as an "ocean-resource based frontier") *cited by* Rieser, *supra* note 18, at 418. Rieser says "the increasing number of spillover effects between users, including fisheries bycatch levels, habitat destruction, and changes in biological relations among trophic levels (such as predator-prey relations)" are

> The institutions of the frontier, including open access, creation of ownership at the point of capture, and reliance on the resource user to make decisions about resource use in competition with others (a scramble competition strategy) are no longer appropriate.[171]

One response to this closing frontier has been to look toward private property solutions to open access problems, such as individual fish quotas ("IFQs").[172]

Aquaculture sidesteps entirely the debate over the cause of the collapse of wild fish stocks and whether to stop the downward spiral through marketplace mechanisms like IFQs or governmental

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another "signal" that the ocean resource frontier is closing. Rieser, *supra* note 18, at 418. *But see* Macinko & Bromley, *supra* note 168, at 645-46 (seeing commercialization of the oceans as "a "new homestead movement" and the "oceans as the last American frontier freely available for expropriation").

171. Rieser, *supra* note 18, at 418. Much has been written about what fisheries management regime should replace the existing largely uncontrolled one. *See, e.g.*, Rieser, *supra* note 19, at 826-29 (proposing a "contractual, co-management" model, in which the government "cedes rights and responsibilities" in a certain fishery for a set period to a "local fishery management agency," like a community association, where the rights would be "renewable semi-permanent rights" and include the right to "define conditions of access, and prescribe management controls"). *But see generally* OSTROM, *supra* note 26 (saying ecological and sociological complexity requires as a response institutional complexity, and rejecting the concept of one size fits all, meaning that common pool resources must either be regulated or privately owned); Thompson, *supra* note 8, at 243, 246 (exploring why "it has proven difficult for governments, communities, and other institutions to adopt and implement solutions to common dilemmas – and even more troubling, why resource users often have been the most vociferous opponents of solutions," and seeking ways that they could be "enlist[ed] . . . in solving the tragic cycle in which they are trapped").

172. The Magnuson-Stevens Act authorizes IFQs. 16 U.S.C. § 1853(b) (Westlaw 2006). Wyman describes IFQs as a "property rights-based approach for managing resources" because they "share the same purpose," improving economic efficiency, "as other more familiar forms of private property," and because they share "many of the formal characteristics commonly assumed to inhere in private property," *i.e.* they are "individual allotments that are exclusive, durable, and alienable," "even though there is considerable reluctance to characterize them as such for fear of attracting takings liability" in the event that the government reduces their value. Wyman, *supra* note 3, at 163-64. *See* 16 U.S.C. § 1853(d)(2)(A) (Westlaw 2006) (providing IFQs can be revoked or limited without compensation) & § 1853(d)(3) (Westlaw 2006) (declaring IFQs to be permits which can be revoked or limited, and which create no compensable right). *See also* Am. Pelagic Fishing Co. v. United States, 379 F.3d 1363, 1374 (Fed. Cir. 2004) (holding fishery permittees "did not and could not" possess a property interest); *accord* Conti v. United States, 291 F.3d 1334, 1341-42 (Fed. Cir. 2002) (finding no property interest in a swordfishing permit because fisher "could not assign, sell, or transfer" it as "it did not confer exclusive fishing privileges, and because the government at all times retained the right to revoke, suspend, or modify it").

regulation of fishing.[173] Instead, it focuses on replacing those depleted stocks with farmed fish. But, ocean fish ranching, by proposing to enclose portions of the EEZ for the commercial cultivation of fish, is just another type of privatization of a common pool resource.[174] Although enclosing parts of the ocean is quite different than giving fishers a transferable, exclusive right to take a certain quantity of fish,[175] each involves the conversion of a common pool resource to individual private property.[176]

B. *Looking Through the Individual Fish Quotas Lens at Enclosing the Oceans*

"[M]any of the liveliest contemporary debates concerning property rights are about whether to create private rights in resources traditionally owned by the public through the state, such

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173. *But see* OSTROM, *supra* note 26, at 14 (saying institutional solutions to common pool resource problems are "rarely either private or public – 'the market' or 'the state'"). *See also* Ralph Townsend & James A. Wilson, *An Economic View of the Tragedy of the Commons*, *in* THE QUESTION OF THE COMMONS, *supra* note 1, at 318, 319 (critiquing IFQs, and saying it is difficult to "create private-property rights" in mobile species, and that "imitating private-property rights without exclusive property rights creates neither the incentives for socially appropriate behavior nor a spontaneous enforcement mechanism").

174. Efforts to privatize portions of the ocean by enclosing them have not succeeded to date, not for lack of trying. *See* Wyman, *supra* note 3, at 126 ("for over six decades" there has been a largely unsuccessful international effort to enclose the oceans: the first "wave" occurred after the end of World War II when "countries began claiming national property rights over ever-larger expanses of the oceans" and their marine resources; the second when individual countries "subdivided national property rights in fisheries domestically into smaller-scale communal regimes;" and for the last thirty years, through the "creation of individual tradable rights"). For an extreme proposal to privatize the oceans see Whitehead, Jr. et al, *supra* note 34, at 336 (arguing that privatizing the ocean would allow owners to farm fish in their sections, "just as landowners breed and raise cattle on private land"); *id.* at 341-43 (proposing "electronic fences" to divide open water up between different property owners and to allow for fish "breeders . . . to herd their charges" just like barbed wire allows for herding cattle "in above-ground pastures," and computer chips on boats to track the amount of time fish spend in various property sections).

175. Indeed, some see IFQs as "just temporary waypoints on the path to privatization of 'what really counts,' the marine ecosystem itself." Macinko & Bromley, *supra* note 168, at 624; *see also id.* at 652, *quoting* RIGHTS BASED FISHING: PROCEEDINGS OF THE NATO ADVANCED RESEARCH WORKSHOP ON SCIENTIFIC FOUNDATIONS FOR RIGHTS BASED FISHING 3 (Philip A. Neher et al. eds., 1989) ("ITQs are part of one of the great institutional changes of our times: the enclosure and privatization of the common resources of the ocean").

176. *See* Buzbee, *Regulatory Commons*, *supra* note 6, at 8 (describing aquaculture as "an industry where harvesters of ocean, river, or lake resources work not in such waters subject to shared use rights, but in confined pens subject to their own maintenance obligations, harvesting rights, and rights to exclude others, . . . in essence, an effort to privatize the classic common pool resources of fisheries").

as air, water, fisheries and public lands."[177] To Macinko and Bromley, "the essential challenge, and the unavoidable imperative in American fisheries policy, seems to be one of getting on with the inevitable conversion of the oceans and their wealth to the logic of thoroughgoing possessive individualism—Lockean private property."[178]

An IFQ is a form of "Lockean private property" to the extent that it gives fishers an exclusive, transferable property interest in a percentage of the allowable catch of a fish species over a given time period (e.g. "limited access fishing licenses or individual harvesting rights").[179]

The idea behind an IFQ is that fishermen will avoid Hardin's tragedy of the commons because they have been guaranteed their share of the allowable harvest whenever they go fishing and thus will not need to "invest in excessive fishing power or deploy an excess of fishing gear in order to win the 'race to the fish.'"[180] In the absence of IFQs, Terry Anderson and other free market environmentalists argue that government regulation, usually consisting of limitations on fishing gear, boat size, and the size of the fish catch, "introduce[s] inefficiency into the fishing fleet," perversely prompting the industry to invest in ways to catch more

177. Wyman, *supra* note 3, at 125; *see also* Macinko & Bromley, *supra* note 168, at 635-38 (discussing how Justice Field's dissent in *Geer* emphasizing the "law of capture" has influenced contemporary property rights-based rhetoric in fisheries policy).

178. Macinko & Bromley, *supra* note 168, at 651-52.

179. Rieser, *Contracting for the Commons*, *supra* note 19, at 821; *see also* Wyman, *supra* note 3, at 163 n.118. According to Wyman, only six federal fisheries in U.S. coastal waters have IFQ programs; another five have IFQ-type programs. *Id.* at 167. IFQs are different from "license limitation" where the total number of participants in a given fishery is "fixed," but each fisher's "share of the total allowable catch (TAC) is not fixed . . . [so that] [e]ach licensed participant competes directly against all other licensees for a portion of the TAC"; under an IFQ system, "the total pool of participants is not fixed, but each participant's share of the TAC is fixed by the amount of shares possessed," which amount "is adjusted by buying and selling shares in an open market." Macinko, *supra* note 26, at 923 (likening license limitations to "taxicab medallions" and IFQs to "stock market shares" or "tradable emissions"). Both TACs and IFQs limit entry into the fishery. *Id.*

180. Rieser, *supra* note 18, at 407. But Rieser goes on to say that IFQs have not prevented over-fishing because, after foreign fishing vessels were removed from the U.S. EEZ, the domestic fishing industry grew to "unprecedented levels," which "led to . . . overcapacity, reduced profits, short and dangerous fishing seasons, and continuous political pressure on the management system to relax conservation and management measures." *Id.* at 408-09. The 1996 SFA was passed to counteract this trend by reintroducing measures to prevent over-fishing and encourage conservation of fish stocks, as well as to give "attention to non-commercial marine resources and the habitat impacts of fishing gear and activities." *Id.* at 409.

fish.[181] This effort reduces fish stocks even more and increases overcapitalization of the fleet, which, in turn, dissipates resource rents[182] from the fishery as they are "wasted in the endless struggle to evade regulation and to catch fish before the fishery is closed."[183] Indeed, free market environmentalists tout IFQs as a solution to the "relentless and futile cycle in fisheries regulation,"[184] because only giving fishermen "a private right to harvest an amount of fish which they can use or sell" will enable them to "break out of the cycle" that is the tragedy of the commons.[185]

While IFQs have many critics, most of the criticisms leveled against them concern implementation,[186] a subject which is beyond

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181. Rieser, *supra* note 18, at 399.

182. On the concept of economic rent in the fishing industry, see Marvin, *supra* note 30, at 1145 n.146 (defining economic rent as a fisher's income beyond that required to keep him from abandoning fishing, and stating that "[i]n a perfectly competitive market all fishermen are paid the price necessary to keep the last fisherman fishing," and that "the industry's economic rent" is the income fishers "collectively receive over and above the lowest price they would individually accept").

183. Rieser,, *supra* note 18, at 399; Marvin, *supra* note 30, at 1145-48 (discussing these phenomena). *But see* Rose, *supra* note, 161 at 70 (describing the use of common property regimes by holders of IFQs to conserve fishing habitat); *cf.* Erin Webreck, *The Challenge of Battling Privatization: A Case Study of Swedish Water Companies*, 5 SUSTAINABLE DEV. L. & POL'Y, Winter 2005, at 30. (listing arguments in favor of privatizing water systems such as that private interests possess sufficient financial resources to maintain natural resources and have the technical expertise and "aptitude" to manage resources efficiently).

184. Rieser, *supra* note 18, at 398-99, *citing* TERRY L. ANDERSON & DONALD R. LEAL, FREE MARKET ENVIRONMENTALISM 121-34 (1991); *see also* Rieser, *supra* note 19, at 823 (stating that IFQs can "reduce costs by eliminating the race to fish and by allowing the market to allocate fishing rights to lower cost fishermen and fishing methods," freeing up "money to invest in resource improvement," and "reducing overcrowding [of fishing grounds], the race to harvest in an increasingly shorter season, landing gluts, and poor quality").

185. Rieser, *supra* note 18, at 399. However, the holder of an IFQ does not have a property right in the fish she is entitled to take, as the government can revoke or curtail an IFQ at any time without compensation, and it does not create a right in, or title to, fish before they are harvested. Rieser, *supra* note 19, at 821, *citing* Sustainable Fisheries Act, Pub. L. 104-297, § 108(e), 110 Stat. 3559, 3576-77 (1996) (codified at 16 § U.S.C. 1853(d) (Westlaw 2006)). Macinko & Bromley, *supra* note 168, at 625 (saying that they "know of *no* explanation of IFQs that does not invoke a property rights-based explanation of how IFQs work"). Indeed, the limited nature of this right, reflected in the fact that the government can "expropriate the resource or fail to renew the use rights," prompts Rieser and others to criticize IFQs on the ground that the holder of those rights will not have "sufficient certainty or incentive to invest in the long-term value of the resource." Rieser, *supra* note 19, at 822 (explaining how the language of the Magnuson-Stevens Act "disavowing any duty to compensate IFQ holders . . . works against the creation of stewardship incentives" and regulations implementing the Act that restrict the transfer of IFQs to protect "the social structure of existing fishing communities" decreases the incentives of IFQ holders "to consider how others value the right, including future generations").

186. *See generally* Rieser, *supra* note 19, at 822-23 (complaining that the enforcement

the scope of this article. However, some criticisms focus on the idea of privatizing portions of the oceans.[187] This article focuses on those concerns because they are also germane to the privatization involved in ocean fish ranching.

Critics protest that individual property approaches like IFQs ignore communal rights in common pool resources and communal norms, which have a socializing influence.[188] They contend that IFQs often create social and economic inequities because of the greater political and economic clout of the fishing industry to influence the distribution of licenses.[189] This favoring of large fishing firms over smaller, less economically powerful fishers, which might also be expected to occur in the case of large ocean fish ranching enterprises, rewards efficiency over equity.[190]

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costs of IFQs are high because they reward cheating, and that IFQs are distributed to too many holders because they are instituted late in the management process in mature fisheries, are set too high, encourage rent-seeking, and are too inflexible to allow the adoption of alternative management strategies); Rieser, *supra* note 18, at 405-06 (saying that IFQs ignore community stakeholders who "are more likely to embody a broader range of values and . . . therefore balance harvesting decisions against broader spatial and temporal views of the ecosystem" and who are able to "enforce limits on individual appropriators through informal norms and sanctions"; Wyman, *supra* note 3, at 160 n.110 (saying IFQs encourage fishers to "highgrade" (to catch more economically valuable fish) or not report their actual catches, "are inconsistent with ecosystem-based management . . . [because] they are premised on single species management," and may "give rise to expectations among fishers" that they are a form of property right); Rose, *supra* note 7, at 22 (indicating property rights systems are expensive to monitor and enforce).

187. *See, e.g.* McCay, *supra* note 1, at 208-09 (describing resistance of local oystermen to enclosing the commons through creation of private or leased oyster beds and "persistence of the sentiment or culture of the commons"); Rieser, *supra* note 19, at 814 (asserting that if there are to be "property regime[s]" as part of management strategies to conserve fish stocks, then those regimes must "reflect both the public property rights in the ecological condition of the marine environment and the private or common ownership rights of access, harvesting and management").

188. *See* Robert W. Gordon, *Paradoxical Property, in* EARLY MODERN CONCEPTIONS OF PROPERTY 95, 108 (John Brewer & Susan Staves eds., 1995) (saying that property ownership has suppressed "the collective and collaborative elements" of society arising from "the necessity of mutual dependence"); Rieser, *supra* note 18, at 419 (saying that any new property rights "must be created in a manner informed by a wider sense of social justice" and must establish "a link . . . between rights and responsibilities").

189. Neal D. Black, Note, *Balancing the Advantages of Individual Transferable Quotas Against Their Redistributive Effects: The Case of* Alliance Against IFQs v. Brown, 9 GEO. INT'L ENVTL. L. REV. 727, 728 (1997) (saying that IFQs "tend to favor larger, more efficient fishing operations").

190. *See* Wyman, *supra* note 3, at 160 (saying ITQs, by "privileging aggregate efficiency over equity," will cause small fishers to lose access to rents and consolidate harvesting in a few large, more efficient firms); DeLuca, *supra* note 14, at 757 (noting that the "bias [in this country] towards capital over labor . . . [is] reflected in the IFQ programs" and conflicts with "other values, such as prior effort, community development

> Through time this process ensures that quota becomes concentrated in the possession of fewer and fewer vessel owners. It also assures that through time fewer coast communities contain vessels with quota supplying resource to local plants. In short, quota and fishing activity become increasingly concentrated in fewer and fewer enterprises and fishing towns.[191]

Additionally, some critics assert that individual property rights like IFQs are fundamentally at odds with the nature of ecosystems, which are complex, dynamic, self-organizing systems.[192] Alison Rieser says that human intrusion into those complex systems through various management prescriptions must, "over the long term," "sustain the integrity of an entire ecosystem," of which fish stocks are only one element.[193] Marine ecosystems "have valuable components beyond the fish caught, marketed, and consumed," such as biodiversity and habitats.[194] Granting individual property

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and stability"); Macinko, *supra* note 26, at 924-25 (describing the "[d]istributional equity concerns" arising in the design of any limited entry system and how the "prevailing" United States design, which grants "transferable privileges . . . in perpetuity free of charge to qualifying vessel owners" creates "[t]he specter of high market values," which, in turn, raises four other concerns: "the basic equity involved in the apparent give-away of a public resource to a few individuals" who may experience "a sizable windfall"; "intergenerational equity" to the extent high entry costs prevent entry of future generations; "consolidation of the industry into the hands of large capital owners at the expense of small-scale participants"; and "the combined impact of the above concerns on fisheries-dependent coastal communities"); *id.* at 932, *quoting* Letter from T. Seaton to R. Berg, Nat'l Marine Fisheries Serv. (undated) (saying that the Alaskan halibut and sablefish ITQ plan "locks out women" and "locks in the white male 'good ole boys club' of vessel owners" because it privileges prior participation in the industry when women did not participate); Ragnor Arnason, *Property Rights as a Means of Economic Organization, in* Use of Property Rights in Fisheries Management: Proceedings of the FishRights99 Conference, Vol. 1 at 24-25 (Ross Shotton ed., 2000) *available at* http://www.fao.org/DOCREP (search for "Use of Property Rights in Fisheries Management"; follow hyperlink for volume 1; follow hyperlink for the Arnason chapter) (saying instituting private property rights "almost by definition dispossesses someone" and "means the exclusion of a subset of the population" as well as "the expropriation of prior rights," and that the question as to whether the "dispossessed" receive compensation for their loss "depends to a large extent on who has the political and economic power in society"), *quoted in* Macinko & Bromley, *supra* note 168, at 654 n.147.

191. Anthony Davis, *To Transfer or Not to Transfer*, ATLANTIC FISHERMAN, at 5, (May 1993), *quoted in* Douglas F. Britton, Comment, *The Privatization of the American Fishery: Limitations, Recognitions, and the Public Trust*, 3 OCEAN & COASTAL L. J. 217, 247 n.162 (1997).. *See* Macinko, *supra* note 26, at 940 (saying that"[f]isheries use rights conflicts pitted a 'culture of the commoners' against those who viewed them as obstacles to progress").

192. Rieser, *supra* note 18, at 404 (describing ecosystems as complex, "resilient, dynamic, and self-organizing").

193. *Id.* (identifying this as one of the "hallmarks of 'ecosystem management'"; the other being the "adaptive and precautionary use of science to achieve that reality").

194. *Id.* Rieser also observes that "[c]atching a species of fish for sale realizes one

rights in fish or their ocean habitat runs "a serious risk that all other valuable components of the ecosystem, which have no direct market value and whose contribution to the ecosystem's productivity is not understood, will be ignored."[195] To Rieser, "property rights accorded any one individual cannot adequately take account of the entire ecosystem," and the concept of an individual property right should be seen as being "more consistent with the previous era of resource use, a time when the policy goal was to design incentives to capture the flow of benefits from fish populations without an excess investment in physical capital."[196]

Professor Carol Rose fears that a property-based measure will "elevate the significance of the propertized component and, in effect, over-value them," which will encourage the property rights holder to disregard the "entitlements of others interested in the same resource or ecosystem."[197] This, in turn, might lead the stronger entitlement holders to over-reach and "overstate what they 'own'", blocking management initiatives designed to protect "other components of the same ecosystem."[198] Further, giving ocean fish ranchers an exclusive right to use the ocean for the cultivation of fish creates a quasi- property right in those fish and their habitat which "by definition, excludes some individuals from participation."[199] The underdog in these situations may well be

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value of a rich and diverse marine ecosystem." *Id.* at 405. *See also* Paul Greenberg, *The Catch*, N.Y. TIMES, Oct. 23, 2005, §6, at 60 (describing the plight of the Chilean sea bass as illustrating why "the world is running out of fish" and describing the "cascading decline of fish species").

195. Rieser, *supra* note 18, at 405. *But see* Lee P. Breckinridge, *Can Fish Own Water?: Envisioning Nonhuman Property in Ecosystems*, 20 J. LAND USE & ENVTL. L. 293, 297 (2004) (suggesting that "the ecological design of property regimes may involve 'seeing' property in new places . . . . [and] recognizing nonhuman entities as property holders").

196. Rieser, *supra* note 18, at 418-19.

197. *Id.* at 405, *citing* Carol M. Rose, *The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129, 173 (1998).

198. Rieser, *supra* note 18, at 405, *citing* Rose, *supra* note 196, at 173. Rieser's solution to this problem is that any property rights in fish, like IFQs, should "emphasize less the individual nature of the property right and more the community nature of the right." *Id.* This can be done for fisheries by giving communities ITQs. Rieser, *supra* note 18, at 405. Rieser warns that any system of co-management must include "the right to exclude others from . . . the fishery." Rieser, *supra* note 19 at 826; *see also* Britton, *supra* note 190, at 255 (arguing for "community-based fishery management systems," which "seek to harness the forces of custom and culture to constrain the tragedy of the commons by allowing fishermen to participate in the government regulation of fisheries").

199. Gorina-Ysern, *supra* note 9, at 704, *quoting* Phillip E. Steinberg, *Fish or Foul: Investigating the Politics of the Marine Stewardship Council*, CONFERENCE ON MARINE ENVTL. POL. IN THE 21ST CENTURY, (1999),

fishing communities.[200]

Rieser worries that individual property rights cannot respond to the "cascading effects" on the entire marine environment caused by the collapse of fish stocks.[201] Quoting Professor Lee Breckenridge, she notes that individual property rights are based on a view of nature "as something that can be 'separated into components and dedicated to [the] production of particular commodities'"[202]—in the case of ocean fish ranching operations, these components are the discrete parts of the ocean ecosystem. However, this view ignores all the other "legitimate claims of other components of marine ecosystems."[203]

When the marine environment is viewed "ecologically," Rieser says, it is "at work, performing important services in its unaltered state . . . . Transformation diminishes the functioning of this economy and, in fact, is at odds with it."[204] This suggests that use

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http://globetrotter.berkeley.edu/macarthur/marine/papers/steinberg-6.html. Although Steinberg's comment is directed toward the Marine Stewardship Council's certification program that would privately "certify" local fishing fleets that adhere to a "fisheries code of conduct" and fish processors and distributors who buy from them, the idea that property can be created in fish through a market mechanism that results in the exclusion of some fishers from taking part in a "club" of exclusive participants, is analogous to giving ocean ranchers an exclusive right to take what in essence is a "club good." For a fuller description of how this Council would work, *see id.* at 704, n. 233.

200. *Cf.* Webreck, *supra* note 182, at 30 (saying that privatizing water supplies may leave poorer areas "suffering because long-term investment in resources" may become "infeasible and unprofitable" and cause a price increase in "essential resources," which can lead to "increased social conflict," invite corruption, and be "fundamentally unfair and unjust" to the extent that the "poorest members of society" must pay for essential resources instead of having them provided based on need). The SFA contains provisions "requiring consideration of the importance of fishing to certain 'fishing communities' and greater attention to the distribution of economic benefits from U.S. fisheries." Rieser, *supra* note 18, at 409, *citing* 16 U.S.C. § 1851(a)(8) (Westlaw 2006); *see also* Christie, *Living Marine Resources Management*, *supra* note 12, at 159 (saying that the 1990 Magnuson-Stevens Act amendments require regional fisheries management plans include a "fishery impact statement" to "assess, specify, and describe" the plan's effects on fishing communities and that National Standard 8, added to the law in 1996, directs regional managers to consider the importance of fish to fishing communities and "to the extent practicable" minimize adverse economic impacts on those communities and sustain their participation in the fishery), *quoting* 16 U.S.C. §§ 1851(a)(8), 1853(a)(9) (Westlaw 2006).

201. Rieser, *supra* note 18, at 419.

202. *Id.*, *quoting* Lee P. Breckenridge, *Reweaving the Landscape: The Institutional Challenges of Ecosystem Management for Lands in Private Ownership*, 19 VT. L. REV. 363, 385 (1995).

203. Rieser, *supra* note 18, at 419.

204. Rieser, *supra* note 18, at 420, *quoting* Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding* Lucas v. South Carolina Coastal Council, 45 STAN. L. REV. 1433, 1442 (1993).

rights should arise principally from nature-based considerations. "The marine environment is, like land, part of a community which extends beyond the dominion of the owner, where use rights must be determined by physical nature, not humankind, and where public and exclusive owners have a custodial and affirmative protective role for ecological functions."[205] As IFQs are a "highly individualistic mode of production," what Anthony Scott terms the "hunting-and-gathering stage of economic production," Rieser also worries that IFQs will discourage participants "from collecting and sharing information; conserving, protecting, and enhancing fish stocks; and achieving economies of scale."[206] This happens because fishing under an IFQ system "still leave[s] each fishery in the hunting and gathering stage of economic production . . . a highly individualistic mode of production" that creates disincentives for "collectively advancing the 'new concern for the future value of their property' that they share."[207] In any new technology, such as ocean fish ranching, the collection and sharing of information, especially about problems with that technology, is critical.

Privatizing portions of the ocean through a property-based mechanism such as the IFQ will commodify a common pool resource and give ocean fish ranchers the most important stick in the bundle of property rights:[208] the ability to exclude the public from what otherwise would be publicly available resources.[209] This

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205. Rieser, *supra* note 18, at 420; *see also* Breckinridge, *supra* note 194, at 303 ("[H]uman institutions must become newly flexible, adaptive, and open to environmental signals. . . . [T]he main goal must be to foster resilience in ecosystems and avoid human-induced alterations beyond the range of perturbations that ecosystems have evolved to absorb.").

206. Rieser, *supra* note 19 at 824, *quoting* Anthony D. Scott, *The ITQ as a Property Right: Where It Came From, How It Works, and Where It is Going, in* TAKING OWNERSHIP: PROPERTY RIGHTS AND FISHERY MANAGEMENT ON THE ATLANTIC COAST 31, 79-80 (Brian Lee Crowley ed., 1996). *But see* Rieser, *supra* note 19, at 826 (saying that public choice scholarship shows that a top down regulatory approach "is vulnerable to the pressures of special interest groups . . . and to the self-interest of governmental officials and politicians," and that "when government agencies regulate fisheries, fishermen often selectively provide managers with information about the resource and the technology they use").

207. Rieser, *supra* note 19, at 824.

208. *See* Rieser, *supra* note 19, at 819 (saying that "[p]roperty law has given us the metaphor of property as a bundle of rights composed of several 'sticks,' each stick consisting of a distinct right or power that ownership conveys," and "applied the . . . metaphor to fishing"); *see also id.* at 827 (saying in fisheries the right to exclude is "essential".

209. Macinko views *Arnold v. Mundy* as "a pronouncement on the duty of the state, as the representative of the people, to maintain common use rights as an instrument of

conversion contradicts the proposition that common pool natural resources should be open to all and not subject to individual appropriation.

> [T]he purported inefficiencies of shellfishing and other activities done within a common-property regime must be assessed against the fact that "it was with a particular social welfare function in mind that our founders determined that certain natural resources would remain the common property of all—not the private property of the fortunate few."[210]

Critics of IFQs have shown how converting common pool resources into individual property can create distributional inequities, undermine communal norms, and contradict the natural workings of ecosystems. Moreover, they have detailed how private property regimes can impede the sharing of information and implementation of broader management strategies. They have also shown how conversion to a private property-based regime can lead to resource management problems without necessarily promoting conservation of resources or economic advancement of local fishing communities.[211]

If IFQs are an imperfect answer to declining fish populations, then should not ocean fish ranching, with its potential to offset those losses, be welcomed and even encouraged? Yet this article

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distributional equity." Macinko, *supra* note 26, at 937 ("For the state, in its regulatory capacity, to divest the citizens of their common rights 'would be a grievance which never could be long borne by a free people.'"), *quoting* Arnold v. Mundy, 6 N.J.L. 1, 78 (1821).

210. McCay, *supra* note 1, at 209, quoting D.W. Bromley, *Land and Water Problems in an Institutional Perspective*, 64 AM. J. AGRIC. ECON. 834, 842 (1982); *see also* Victor B. Flatt, *This Land is Your Land (Our Right to the Environment)*, 107 W. VA. L. REV. 1, 24 (2004) (saying environmental rights "are like property to the extent that we need or want natural resources such as fish stocks. . . or like torts to the extent they protect human autonomy through protection of human health"); Michael J. Sandel, *What Money Can't Buy: The Moral Limits of Markets*, in THE TANNER LECURES ON HUMAN VALUES, VOL. 21, 87, 94-95 (Grethe B. Peterson ed., 2000) (saying that extending the reach of markets creates opportunities for people to be "coerced" into "buy[ing] and sell[ing] things under conditions of severe inequality or dire economic necessity" and that subjecting some "moral or civic goods" or practices to "market valuation and exchange" will "diminish[] or corrupt[]" them, which cannot be cured "by fixing the background conditions within which market exchanges take place," since this argument "appeals . . . to the moral importance of the goods at stake").

211. *See, e.g.*, James L. Huffman, *Limited Prospects for Privatization of Public Lands: Presidio and Valles Caldera May Be as Good as It Gets*, 44 NAT. RESOURCES J. 475, 479 (2004) (noting that if preservation of natural resources is "our objective," then pursuing a "model" that emphasizes "efficient resource allocation" is "risky"); *id.* at 481 (referring to the "narrow prospects" for preservation that privatization of public lands holds).

has shown that there are serious concerns with allowing ocean fish ranching to proceed unregulated, some of which may flow from the replacement of a common property management regime with a private property one.

The article turns next to an exploration of the public trust doctrine as a possible regulatory gap filler, a means of preventing these harms until a comprehensive, protective regulatory program can be implemented. However, before the public trust doctrine can be so employed, a basis for its application must be found.

IV. APPLICATION OF THE PUBLIC TRUST DOCTRINE TO THE EEZ

> [N]othing is clearer settled in the law than that all men have the right to catch fish in the bays, inlets, and arms of the sea, and that no man has the right to catch fish to the injury of others in their rights.[212]

The public trust doctrine is a venerable common law property doctrine rooted in Roman law[213] and long recognized in the United States. The doctrine is based on the proposition that the sovereign holds certain common properties in trust in perpetuity for the free and unimpeded use of the general public. Public access to public trust resources is at the core of the doctrine.[214]

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212. McCay, *supra* note 1, at 206, *quoting* S.F. Baird, *Report on the Condition of the Sea Fisheries of the South Coast of New England in 1871 and 1872, in* REPORT OF THE U.S. COMMISSION OF FISH AND FISHERIES FOR 1871, at 91 (1873).

213. For a succinct summary of the origins of the public trust doctrine and its passage through time, see generally Dowie, *supra* note 82, at 1. *See also* Gary D. Meyers, *Variation on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife*, 19 ENVTL. L. 723, 734 (1989) (calling the public trust doctrine a "transcendent legal principle" with "roots . . . in natural law"); Ralph W. Johnson & William C. Galloway, *Protection of Biodiversity Under the Public Trust Doctrine*, 8 TUL. ENVTL. L.J. 21, 29 (1994) (saying the public trust doctrine "binds state agencies as well as private parties" because it is "a rule of property law" once adopted by state courts). On the transnational impact of the American public trust doctrine, see Jona Razzaque, Case Law Analysis, *Application of Public Trust Doctrine in Indian Environmental Cases*, 13 J. Envtl. L. 221 (2001) (U.K.) (analyzing the Indian Supreme Court's application of the public trust doctrine to protect India's natural resources and parks, and the Court's reliance on Ill. Cent. R.R. v. Illinois, 146 U.S. 387 (1892), Gould v. Greylock Reservation Comm'n, 350 Mass. 410 (1966), Nat'l Audubon Soc'y v. Superior Court (Mono Lake), 33 Cal. 3d 419 (1983), and Phillips Petroleum Co. v. Mississippi, 464 U.S. 469 (1988)- to reach its decision).

214. *See* Meyers, *supra* note. 213, at 731 ("In essence, the courts protect access rights to public trust resources."). *Cf.* Kootenai Envtl. Alliance, Inc. v. Panhandle Yacht Club, 671 P.2d 1085 (Idaho 1983) (allowing the construction of exclusive yacht club on a lake, but only after finding the club would not interfere with navigation if properly lighted and marked and did not substantially impair public rights in the remaining waters and that the grant remained subject to the public trust).

Consequently, "absolute private dominion over property impressed with the public trust can never be granted unless it is in the public interest to do so,"[215] since it interferes with public access to those resources.

Professor Joseph Sax rediscovered the public trust doctrine in a 1970 article,[216] in which he suggested it be used to address a variety of environmental harms. Since then, others have deployed the doctrine to protect natural resources from commercial development and to assure public access to those resources "for the exercise of historically recognized rights,"[217] like fishing, oystering, and navigation.[218] Although expanded over time to

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215. Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 433 (1892); *see also* United States v. 1.58 Acres of Land, 523 F. Supp. 120, 122-23 (D. Mass. 1981) ("Historically, no developed western civilization has recognized absolute rights of private ownership in [submerged] land as a means of allocating this scarce and precious resource among the competing public demands. Though private ownership was permitted in the Dark Ages, neither Roman law nor the English common law as it developed after the signing of the Magna Charta would permit it.").

216. Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970). Professor Blumm notes courts have cited Professor Sax's article thirty three times as of 1989. Michael C. Blumm & Lucus Ritchie, Lucas's *Unlikely Legacy: The Rise of Background Principles as Categorical Takings Defenses*, 29 HARV. ENVTL. L. REV. 321, 342 n.125 (2005).

217. Fernandez, *Public Trust, Riparian Rights, and Aquaculture*, *supra* note 216, at 302 n. 49; *see also* Harry R. Bader, *Antaeus and the Public Trust Doctrine: A New Approach to Substantive Environmental Protection in the Common Law*, 19 B.C. ENVTL. AFF. L. REV. 749, 761 (1992) ("The marriage of absolute ecological protection with absolute access for the purpose of utilizing natural resources comes the closest to the true essence of the public trust doctrine."); Meyers, *Protection of Wildlife*, *supra* note 212, at 735 ("[T]he public's interest in common natural resources . . . . includes both access to those resources for economic and nonconsumptive uses as well as restrictions on use or access to promote common needs and amenities."); Macinko, *Public or Private?: U.S. Commercial Fisheries*, *supra* note 26, at 954 ("A striking feature of the idea of the classic [public] trust doctrine, the role of common use rights in mediating class relations through distributional equity, is that it underlies responses to great class challenges of different epochs."); *id.* at 920 (faulting the "abandon[ment]" of the doctrine's original emphasis on "distributional equity and common rights based upon democratic ideals" in "our contemporary quest for environmental preservation" and of its original "specificity . . . in exchange for the extreme malleability of current articulations").

218. *See generally*, Hope M. Babcock, *Has the United States Supreme Court Finally Drained the Swamp of Takings Jurisprudence? The Impact of* Lucas v. South Carolina Coastal Council *on Wetlands and Coastal Barrier Beaches*, 19 HARV. ENVTL. L. REV. 1, 36-54 (1995) (discussing the doctrine's evolution in this country); Hope M. Babcock, *Should* Lucas v. South Carolina Coastal Council *Protect Where the Wild Things Are? Of Beavers, Bob-o-Links, and Other Things that Go Bump in the Night*, 85 IOWA L. REV. 849, 889-98 (summarizing salient aspects of the public trust doctrine and its application to many species of wildlife, including fish); Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 452 (1892) (saying state title to lands under navigable waters are "held in trust for the people of the State that they may enjoy the navigation of the waters, carry commerce over them, and have liberty of fishing therein

protect an array of land-based resources and a variety of uses, including recreation, the doctrine's origins were water-based, and it was traditionally applied to protect public rights in fishing, oystering, and navigation.[219]

The ocean has the attributes of a classic public trust resource—*res communis*,[220] "open to everyone, belonging to everyone, and incapable of appropriation by anyone."[221] Indeed, "[t]he sea is common to all because it is so limitless that it cannot become a possession of any one, and because it is adapted for the use of all, whether we consider it from the point of view of navigation or of fisheries."[222]

The public trust doctrine protects public rights in trust resources and prevents the government or private individuals from alienating or otherwise adversely affecting those rights.[223] This

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freed from the obstruction of private parties," and thus different from state title in other lands); *cf.* California Trout, Inc. v. State Water Res. Control Bd., 255 Cal. Rptr. 184, 211 (Cal. Ct. App. 1989) (applying public trust doctrine to wildlife dependent on navigable waters and their tributaries, and saying "[w]ild fish have always been recognized as a species of property the general right and ownership of which is in the people of the state").

219. *See* Babcock, *Protecting Where the Wild Things Are, supra* note 217, at 891 n.180 and accompanying text; *see also* Emily A. Gardner, *A Victim of Its Own Success: Can User Fees Be Used to Save Hanauma Bay*, 4 OCEAN & COASTAL L.J. 81, 98-99 (1999) ("While the public's rights to use navigable waters were historically limited to uses associated with navigation, commerce and fishing, since the United States' adoption of the public trust doctrine, a number of state courts have expanded the list of protected rights in navigable waters to include recreational uses."); Wood, *Protecting the Wildlife Trust, infra* note 222, at 611 (explaining the expansion of the doctrine's geographic coverage and scope of protected trust-based activities).

220. Gorina-Ysern also argues as a basis for establishing a "world ocean public trust" to protect ocean resources that the sea can be seen as *res publicae*, in which "the people of the whole world (as a unity) have a collective property right." Gorina-Ysern, *World Ocean Public Trust, supra* note 9, at 665-66.

221. *Id.* at 664; *see also id.* at 666 n.76 (explaining that "[u]nder common law, the *jus piscandi* in the sea and in rivers belonged to all with very few exceptions," such as "fishing in private rivers, . . . where it was customary not to fish for private gain but for the public good, and where immemorial custom prohibited fishing").

222. HUGO GROTIUS, *MARE LIBERUM* 28 n.3 (1608), *quoted by* Gorina-Ysern, *World Ocean Public Trust, supra* note 9, at 661.

223. Babcock, *Protecting Where the Wild things Are, supra* note 217, at 891; *see also* Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605, 612 (2004) ("[G]overnment trustees are required to preserve wildlife assets and protect them against damage."); Arnold v. Mundy, 6 N.J.L. 1, 76-77 (1821) (saying the public trust doctrine protects public use rights in navigable waters, tidal rivers, and the seacoast, "including both the water and the land under the water," for purposes of "passing and repassing, navigation, fishing, fowling, sustenance, and all the other uses of the water and its products"); Vander Bloemen v. Wisconsin Dep't of Natural Res., No. 95-1761, 1996 WL 346266 (Wis. App. June 26, 1996) (unpublished decision)

capacity to "constrain the natural tendency of governmental officials to exhaust resources in the present generation" acts like "a normative anchor . . . geared towards sustaining society for generations to come."[224] Indeed, some courts have gone so far as to hold that the doctrine imposes an *affirmative* obligation on states to preserve trust resources for the benefit of the public.[225]

Uses of trust resources that are inconsistent with the doctrine are revocable, and the government never loses its power to revoke those uses.[226] Thus, the government has the equivalent of a perpetual "easement" over trust resources that "permanently burdens their ownership in favor of the general public."[227]

> The State can no more abdicate its trust over property in which

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(holding state properly exercised its fiduciary duties to protect lakeside ecosystem by maintaining high water levels which it had created by raising lake's water level); Aspen Wilderness Workshop v. Colorado Water Conservation Bd., 901 P.2d 1251, 1257 (Colo. 1995) (en banc) (holding state could not allow appropriation of water needed to preserve natural environment for ski resort's snowmaking purposes). Some scholars have recommended the expansion of the doctrine to protect entire ecosystems. *See* Eric·T. Freyfogle, *Ownership and Ecology*, 43 CASE W. RES. L. REV. 1269, 1289-90 (1993) (arguing for expanding the settings in which the legal concept of public trust could be applied); Alison Rieser, *Ecological Preservation as a Public Property Right: An Emerging Doctrine in Search of a Theory*, 15 HARV. ENVTL. L. REV. 393 (1991)(explaining various theoretical bases for expansion of the doctrine to protect naturally functioning ecosystems).

224. Wood, *Protecting the Wildlife Trust*, *supra* note 222, at 612; *see also* Commonwealth v. Alger, 61 Mass. (7 Cush.) 53, 83 (1851) ("[W]hether this power be traced to the right of property or right of sovereignty as its principle source, it must be regarded as held in trust for the best interest of the public . . . ."); Wilkinson, *The Public Trust Doctrine*, *infra* note 283, at 313 (suggesting courts should construe federal laws "to effectuate Congress' intent to act as a trustee charged with the duty of protecting and preserving the public resources" and to limit agency discretion).

225. Babcock, *Protecting Where the Wild things Are*, supra note 217, at 891 (saying this application of the doctrine is "even more controversial than the doctrine itself"); *see also* Deborah G. Musiker, Tom France & Lisa Hallenbeck, *The Public Trust and* Parens Patriae *Doctrines: Protecting Wildlife in Uncertain Political Times*, 16 PUB. LAND L. REV. 87, 109 (1995) (saying neither "the state's police power, state constitutions, . . . [nor] state and federal legislation . . . render the public trust doctrine obsolete" or lessen its importance for wildlife protection); New Jersey Dep't of Envtl. Prot. v. Jersey Cent. Power & Light Co., 336 A.2d 750, 759 (N.J. Super. Ct. App. Div. 1975), *rev'd on other grounds*, 352 A.2d 337 (N.J. 1976) ("The State has not only the right, but also the affirmative fiduciary obligation to ensure that the rights of the public to a viable marine environment are protected, and to seek compensation for any diminution in that trust corpus."); Puerto Rico v. S.S. Zoe Colocotroni, 456 F. Supp. 1327 (D.P.R. 1978), *aff'd in part and vacated in part*, 628 F.2d 652 (1st Cir. 1980) (awarding Puerto Rican government $6 million for replacement of its marine resources damaged by oil spill).

226. Babcock, *Protecting Where the Wild Things Are*, *supra* note 217, at 892.

227. *Id.* at 893 ("One cannot construct a common law canon more offensive to the notion of absolute private rights in property than the public trust doctrine.").

> the whole people are interested, like navigable waters and the soils under them, so as to leave them entirely under the use and control of private parties . . . than it can abdicate its police powers in the administration of government and the preservation of the peace.[228]

This is not to say the public trust resources can never be alienated. They can be conveyed to private hands if the alienation will serve the public interest without harming trust uses in the remaining land.[229] In fact, there can be private title in trust resources as long as the private use of trust resources is consistent the trust's purposes, does not interfere with uses protected by that doctrine, and will preserve those purposes for both present and future generations.[230]

However, when courts are confronted with the conveyance of trust resources for some private purpose, they react in different ways. Some courts require only that the government agency consider potential adverse impacts to the public trust in its review of a proposed activity and allow the action to proceed if the impacts on the remaining trust resources are minor.[231] Other courts apply a balancing approach when conflicts arise over the

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228. Ill. Cent. R.R., 146 U.S. 387, 453 (1892). *See also id.* at 452-53 (the public trust doctrine does not "sanction the abdication of the general control of the State over lands under the navigable waters of an entire harbor or bay, or of a sea or lake").

229. *Id.* at 453 ("The control of the State for the purposes of the trust can never be lost, except as to such parcels as are used in promoting the interest of the public therein, or can be disposed of without any substantial impairment of the public interest in the lands and waters remaining."); *see also* Nat'l Audubon Soc'y v. Superior Court of Alpine County (*Mono Lake Case*), 658 P.2d 709, 724 (Cal. 1983) ("The public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage[,]. . . surrendering that right . . . only in rare cases when the abandonment of that right is consistent with the purpose of the trust.") The public purpose that will be served by a conveyance of trust lands cannot be "incidental, remote or secondary." Eichenberg &Vestal, *Improving the Legal Framework for Aquaculture, supra* note 82, at 349.

230. Ill. Cent. R.R., 146 U.S. at 453; *see also* Britton, *Privatization of the American Fishery, supra* note 190, at 249 (saying the doctrine could provide "a framework for recognizing private property interests in fisheries resources, which could be recognized in the form of a long-term lease interest in catch quotas," which could, in turn, "be allocated to community or regional groups in a cooperative management system").

231. Musiker et al., *supra* note 224, at 98 (saying some courts allow action in derogation of the public trust "to proceed only if the impacts are minimal or necessary"); *see also* Ill. Cent. R.R., 146 U.S. at 433, 453, 455 (imposing on states the duty to prevent "substantial impairment" of trust resources); Nat'l Audubon Soc'y, 658 P.2d 709, 728-29 (1983) (saying the state can authorize the diversion of water to meet public needs, but cannot do so "without consideration of the public trust" and must maintain "continuing supervision of the taking" to be sure the public trust is not unnecessarily harmed).

use of trust resources;[232] while still others allow alienation of trust resources upon legislative authorization.[233] Although courts vary in the standards they use to evaluate the permissibility of transferring trust resources to private holdings, all courts scrutinize the transfer to see if the trust lands' "utility for public trust purposes" will be diminished by private use.[234] Courts "look with considerable skepticism upon *any* governmental conduct which is calculated *either* to reallocate [a public] resource to more restricted uses *or* to subject public uses to the self-interest of private parties."[235]

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232. *See, e.g.*, Nat'l. Audubon Soc'y, 658 P.2d at 728 ("This is not a case in which the Legislature, the Water Board, or any judicial body has determined that the needs of Los Angeles outweigh the needs of the Mono Basin, that the benefit gained is worth the price. Neither has any responsible body determined whether some lesser taking would better balance the diverse interests.").

See also Musiker et al., *supra* note 224, at 98 and supporting citations (saying some courts "have advocated more of a balancing approach"); Babcock, *Wetlands and Coastal Barrier Beaches*, *supra* note 217, at 46, n. 261 (discussing balancing under the public trust doctrine); Bader, *Public Trust Doctrine*, *supra* note 216, at 762 (criticizing the Mono Lake court's use of the public trust doctrine as being "essentially procedural, with a weak substantive component," "procedurally" requiring courts to do no more than direct environmental decisionmakers to "embark upon a policy balancing analysis, and substantively . . . [only] attempt to minimize environmental harms"). Bader argues that his more muscular interpretation of the doctrine would require a court "to ask if the proposed water diversions [from Mono Lake] posed a substantial threat to the diversity and stability of the ecosystem for which the lake is a focal point," which would lead the court into a variety of scientific inquiries, which, depending on their outcome, could "obligate[d]" the court "to issue either an injunction or specific compliance orders eliminating the threat posed by Los Angeles's water demands." *Id. But see* Meyers, *Protection of Wildlife*, *supra* note 212, at 732 (interpreting *Mono Lake* as protecting the lake's "biological and ecosystem integrity . . . by requiring the state to reconsider its allocation of water from the lake to Los Angeles County").

233. Eichenberg & Vestal, *Improving the Legal Framework for Aquaculture*, *supra* note 82, at 349 (saying "trust lands may only be conveyed for purposes approved by the legislature as public uses."). *See also* Gould v. Greylock Reservation Comm'n, 215 N.E.2d 114, 123-24 (1966) (finding law authorizing commercial lease of state reserved land too vague to authorize construction of ski area); Babcock, *Wetlands and Coastal Barrier Beaches*, *supra* note 217, at 44-45 (saying the legislature must find the proposed conveyance in furtherance of the public interest or will not destroy the public's interest in remaining trust resources). Baer suggests that requiring specific legislative approval before trust resources can be alienated "curtail[s] agency discretion" and gives "elected officials, not agency bureaucrats" "the power to control trust resources," although this may allow too much congressional interference in agency action. Susan D. Baer, *The Public Trust Doctrine – A Tool to Make Federal Administrative Agencies Increase Protection of Public Land and Its Resources*, 15 B.C. ENVTL. AFF. L. REV. 385, 426 (1988).

234. Eichenberg & Vestal, *supra* note 82, at 349; *see also* Musiker et al., *supra* note 224, at 98 ("In sum, the *Mono Lake* decision stands for the proposition that state agencies should undertake advance consideration of public trust values, act to preserve those values, and continually supervise conduct that affects those values.").

235. Sax, *Public Trust*, *supra* note 215, at 490.

Ocean fish ranching could contravene the public trust doctrine in several ways.[236] First, an ocean fish rancher encloses portions of the ocean with net pens for the purpose of commercially cultivating fish. In doing so, she essentially claims an exclusive right to use public resources (surface water, the water column, and the ocean bottom), thus monopolizing trust resources for a private use.[237] A second conversion of public trust resources could occur if ocean ranchers appropriate wild fish for their use as seed stock for farmed fish when those fish would otherwise be available for public fishing.[238] A third potential violation of the doctrine may arise if ocean fish ranching facilities interfere with traditional public trust activities like fishing and navigation.[239] To the extent that ocean fish ranching runs afoul of the public trust doctrine, any governmental action authorizing the closure could be nullified. At a minimum a court would closely scrutinize that action to see if it passes muster under its chosen standard for determining legitimacy of a transfer of trust resources into private hands.

Although a strong case can thus be made that ocean fish ranching violates the public trust doctrine, some states, especially those that see an economic advantage in supporting the industry,[240] may be unwilling to apply the doctrine in their waters. They could, with some justification, argue that aquaculture fits comfortably within the doctrine, since "fishing"[241] is a long recognized use of

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236. *See* Dowie, *Salmon and the Caesar*, *supra* note 81, at 1 (describing the public trust doctrine as "one of the biggest obstacles faced by the Bush Administration in its plan to promote ocean aquaculture").

237. *See* Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 8 ("Aquaculture is, in essence, an effort to privatize the classic common pool resources of fisheries.").

238. *See* Eichenberg & Vestal, *supra* note 82, at 357-58 (raising this concern with respect to the removal of shellfish from public waters for private cultivation).

239. Fernandez, *Public Trust, Riparian Rights, and Aquaculture*, *supra* note 16, at 297 (saying traditional fishers "argue that aquaculture conflicts with the public's right of navigation and fishery").

240. *See* Eichenberg & Vestal, *supra* note 82, at 354-55 (setting out aquaculturists' argument "that the lease fees and economic benefits" should give aquaculture "priority over conflicting uses for trust lands leases"); *cf.* Gorina-Ysern, *World Ocean Public Trust*, *supra* note 9, at 705 n.227 (blaming the failure to regulate overfishing on governments having "to make decisions that reconcile the objectives of generating employment and income with the imperative of conservation and rehabilitation of fish stocks").

241. However, aquaculture is more like farming than fishing because it involves raising or cultivating animals not taking or capturing them, which is the essence of fishing. *See* Pazolt v. Director of the Div. of Marine Fisheries, 631 N.E.2d 547, 551 (Mass. 1994) (finding aquaculture not within boundaries of reserved right of public fishing, and saying "[a]quaculture is a contemporary method of farming shellfish. . . . [I]t is not incidental to or reasonably related to or a natural derivative of the public's right to fish"); *see also* Julia

public trust resources. State courts may also find sufficient public benefit associated with ocean fish ranching to compensate for the "award of private use" rights,[242] choosing to let that benefit trump the activity's adverse environmental and socioeconomic impacts. However, whether or not a coastal state applies the public trust doctrine to fish ranching within its territorial waters is beside the point for the purposes of this article, which examines the question of whether the doctrine attaches to the 200 mile federal EEZ. The article now turns to that issue.

A. *Extending the Public Trust Doctrine to the EEZ*

Even though the oceans and their resources share the attributes of classic public trust resources, making them an excellent candidate for application of the public trust doctrine, it is far from clear that the doctrine actually extends to the waters and resources of the EEZ. The public trust doctrine has been used largely at the state level as a creature of state common law to protect state resources,[243] and there is almost no case law involving

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M. Underwood, *Intertidal Zone Aquaculture and the Public Trust Doctrine*, 2 OCEAN & COASTAL L.J. 383, 387-92 (1997) (analyzing *Pazolt* opinion); Eichenberg & Vestal, *supra* note 82, at 354 (saying in any state that "narrowly adhere[s] to an historic interpretation of the public trust doctrine," aquaculture would not be considered a traditional form of fishing). An advantage of aquaculture being considered "fishing" is that the SFA would apply, and NMFS and the Regional Councils would have to take "measures to prevent, mitigate or minimize any adverse effects" from aquaculture activities on essential fish habitats. Englebrecht, *The Magnuson-Stevens Fishery Conservation Act*, *supra* note 4, at 1213-14 (internal citation omitted); *cf.* Richard G. Hildreth, *The Public Trust Doctrine and Coastal and Ocean Resources Management*, 8 J. ENVTL. L. & LITIG. 221, 230 (1993) (saying "the public trust doctrine provides little assistance in resolving ocean resource use conflicts, because . . . [it] does not assign priorities among the permissible public trust uses," and recommending instead "specific rules of use priority" such as favoring renewable uses over nonrenewable ones, non-exclusive uses over exclusive ones, or ocean dependent uses over non-ocean dependent ones).

242. Eichenberg & Vestal, *supra* note 82, at 354 (saying the "fees and economic benefits . . . [from] aquaculture . . . improve the state's ability to manage its common resource and increase the common wealth, resulting in a public benefit that adequately compensates for the award of private use of public resources"); *see also id.* at 372 (saying "[s]tates have an obligation to manage public trust lands to produce public benefits," and recommending states consider a wide variety of benefits and costs, including "possibility of incompatible uses (e.g., capture fishing, navigation, [and] public recreation) in making this public benefits assessment").

243. *See, e.g.*, McCready v. Virginia, 94 U.S. 391, 397 (1876) (sustaining Virginia law prohibiting citizens from other states from seeding oysters in Virginia's tidal waters); Dunham v. Lamphere, 69 Mass. 268 (1855) (upholding law banning purse seines within one mile of Nantucket); Manchester v. Massachusetts, 139 U.S. 240 (1891) (sustaining state law limiting methods for catching menhaden); Blumm & Ritchie, *The Pioneer Spirit*

its application to federal trust resources. However, there are two arguments that can be made for extending the public trust doctrine to the EEZ. One may argue that there is a federal common law public trust doctrine. Or, one may argue that state regulatory authority over fisheries beyond their territorial waters extends the state common law public trust doctrine to the EEZ.

1. The federal government has trust responsibilities in the EEZ.

This part of the article posits that the public trust doctrine attaches to the EEZ because the waters and ocean bottom in the EEZ are public domain lands to which various trust doctrines apply, [244] including the public trust doctrine. Alternatively, the doctrine applies because it attaches to the wild fish that inhabit these public domain waters. [245]

The language of the Magnuson-Stevens Act giving the federal government "sovereign rights" to exploit, conserve, and manage the resources of the "seabed and subsoil and the superjacent waters" makes it clear that the subsoil and waters of the EEZ are within the public domain.[246] Congress's explicit assumption "'of

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and the Public Trust, *supra* note 18, at 695 (describing Smith v. Maryland, 59 U.S. 71, 75 (1855), as holding that Maryland's "proprietary interest in submerged lands" gave it regulatory authority over "the taking of oysters embedded within its tidelands"); *see also* Dowie, *supra* note 81, at 2 (quoting an unnamed New York state decision saying "[t]he control and regulation of navigable waters and tideways was a matter of deep concern to sovereign governments dating back to the Romans. . . . The entire ecological system supporting the waterways is an integral part of them and must necessarily be included within the purview of the trust.").

244. The title that states have to the soils under navigable waters, "necessarily carries with it control over the waters above them." Ill. Cent. R.R. v. Illinois, 146 U.S. 387, 452 (1892). A similar principle applies to the federal government. United States v. Rio Grande Dam & Irrigation Co., 174 U.S. 690, 703 (1899) ("First, that, in the absence of specific authority from congress, a state cannot, by its legislation, destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters, so far, at least, as may be necessary for the beneficial uses of the government property; second, that it is limited by the superior power of the general government to secure the uninterrupted navigability of all navigable streams within the limits of the United States.").

245. On possible constitutional sources for a federal public trust doctrine, see United States v. Ruby Co., 588 F.2d 697, 704 (9th Cir. 1978) (finding a basis for the public trust doctrine in the Property Clause); Baer, *supra* note 232, at 424-425 (finding potential constitutional support for the doctrine in the "penumbra of unenumerated rights" in the Ninth Amendment).

246. *See, e.g.*, Magnuson-Stevens Fishery Conservation & Management Act of 1976, 16 U.S.C §§ 1801-1883, 1181 (Westlaw 2000) (extending exclusive United States fisheries jurisdiction 200 miles offshore); Proclamation No. 5030, 48 Fed. Reg. 10,605 (1983) (asserting federal sovereignty over the natural resources of the EEZ); Am. Pelagic Fishing Co. v. United States, 379 F.3d 1363, 1378-79 (Fed. Cir. 2004) (referring to the 1986

sovereign rights and exclusive fishery management authority over all fish' in the EEZ. . . . indisputably encompasses all rights to fish in the EEZ."[247] Therefore, the EEZ is on a par with terrestrial lands managed by the federal government; they are both within the public domain.

However, arguing that the EEZ is within the public domain does not automatically invoke the public trust doctrine because the doctrine has rarely been applied to public lands.[248] However, this is because there is no need to apply the doctrine to terrestrial public domain lands: a variety of federal laws already impose trust obligations on the federal government with respect to those lands.[249] The federal government holds all of its lands and waters in

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amendments to the Magnuson Act and saying "[p]ursuant to the Magnuson Act, the 'conservation and management of the EEZ' belongs to the sovereign, and this necessarily includes the right to fish in the zone"); Massachusetts v. Andrus, 594 F.2d 872, 891 (1st Cir. 1979) (finding that the Magnuson Act is "no less an assertion of a federal interest in conserving fishery resources in the waters of the Outer Continental Shelf" than the OCSLA itself was with respect to the development of oil and gas resources of the subsoil and seabed in the same area); Parravano v. Babbitt, 861 F. Supp. 914, 928 (N.D. Cal. 1994) *aff'd*, 70 F.3d 539 (9th Cir. 1995). ("Thus, the Magnuson Act confers on the Secretary of Commerce authority to manage the fishery resources in the EEZ for conservation. It does not confer on commercial fishermen any right or title in the fishery resources under the Department of Commerce's authority."). Although the Magnuson Act allowed states to retain regulatory jurisdiction over fisheries within their waters, the federal government can intervene "if the Secretary [of Commerce] finds that state action or inaction . . . will 'substantially and adversely affect' an FMP covering a fishery that is predominately within the EEZ." Christie, *Living Marine Resources Management*, *supra* note 12, at 164-65 (quoting 16 U.S.C. § 1856(b) (Westlaw 2000)).

247. Am. Pelagic Fishing Co., 379 F.3d 1363, 1378 (Fed. Cir. 2004).

248. *But see* United States v. Burlington N. R.R. Co., 710 F. Supp. 1286, 1287 (D. Neb. 1989) (finding the federal government could sue to recover for damages to one of its wildfowl production areas as *parens patriae*, noting public trust doctrine has been applied to the federal government, even though it has more "traditionally been asserted by the States"); City of Alameda v. Todd Shipyards Corp., 632 F. Supp. 333, 335-37, 341 (N.D. Cal. 1985) (applying public trust doctrine to void conveyance by United States of former tidelands to a private party and imposing on federal government the duty "to hold the land in trust for navigation and public use"); United States v. 1.58 Acres of Land, 523 F. Supp. 120, 124-25 (D. Mass. 1981) (holding public trust doctrine restricted both Massachusetts' and federal government's prerogatives with respect to submerged lands); *In re* Steuart Transp. Co, 495 F. Supp. 38, 40 (E.D. Va. 1980) (relying on public trust and *parens patriae* doctrines to allow federal recovery of damages for wildlife killed by oil spill and saying "state of Virginia and the United States have the right and duty to protect and preserve the public's interest in natural wildlife resources"); *cf.* Palila v. Haw. Dep't of Land & Natural Res., 471 F. Supp. 985, 995 n.40 (D. Haw. 1979), ("The importance of preserving such a natural resource [an endangered species] may be of such magnitude as to rise to the level of a federal property interest.").

249. *See* Sierra Club v. Block, 622 F. Supp. 842, 866 (D. Colo. 1985) (finding "the government has a duty under [the public trust doctrine] to protect and preserve [wilderness] for the public's common heritage," but since the Wilderness Act already

trust for the citizens of the United States,[250] and courts have repeatedly impressed these statutory trust duties on federal agencies with respect to their public resources management decisions.[251]

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imposed public trust duties on the Secretary the doctrine was not necessary to protect these particular trust resources); Sierra Club v. Andrus, 487 F. Supp. 443, 449 (D.D.C. 1980) (finding the Secretary of Interior's trust duties to manage national park resources indistinguishable from his statutory duties and any distinction between them "unfounded"); Conservation Law Found. v. Clark, 590 F. Supp. 1467, 1480 n.8 (D. Mass. 1984) (finding a consideration of "general implied public trust duties . . . inconsequential" in light of the National Park Services' statutory duties to protect Cape Cod National Seashore, even while recognizing agency had duty to see that "none of the public domain is wasted"); *see also* Baer, *supra* note 232, at 393-400 (analyzing various laws, including the Wild Free-Roaming Horses and Burros Act, 16 U.S.C. §§ 1331-1340 (Westlaw 1982), the Federal Land Policy and Management Act, 43 U.S.C. §§ 1701-1784 (Westlaw 1982 & Supp. IV 1986), the National Park Service Act, 16 U.S.C. §§ 1-460 (Westlaw 1982 & Supp. III 1985), and the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9657 (Westlaw 1982 & Supp. III 1985), as examples of where Congress "implicitly delegated to various federal administrative agencies the power to protect public trust property"). Baer also identifies language in the Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1451-1464 (Westlaw 1982 & Supp. IV 1986), that refers to the federal government's intergenerational responsibilities. *Id.* at 393 n.56 (citing 16 U.S.C. §1453 (Westlaw 1982)). The Wilderness Act, 16 U.S.C. §§ 1131-1336 (Westlaw 1982 & Supp. IV 1986), and the National Environmental Policy Act, 3342 U.S.C. §§ 4321-4370 (Westlaw 1982 & Supp. III 1985), both contain language that imposes a duty on the federal government to preserve for present and future generations the benefits of these statutory regimens. *Id.*; *see* Cathy J. Lewis, *The Timid Approach of the Federal Courts to the Public Trust Doctrine: Justified Reluctance or Dereliction of Duty?*, 19 PUB. LAND & RES. L. REV. 51, 69 (1998) (suggesting that courts "could find a trust duty under NEPA . . . easily . . . [and then] build upon NEPA's trust language to construct a public trust duty" for federal agencies, in this case the Forest Service).

250. Even before these laws were enacted, courts considered that the federal government had trust responsibilities over the public domain and that these lands "should be protected for future generations." Baer, *supra* note 232, at 391-92 (citing Knight v. United States Land Ass'n, 142 U.S. 161, 181 (1891) impressing on the Secretary of the Interior, as "guardian of the people of the United States over the public lands," the duty neither to waste those lands nor to dispose of them to people who were not entitled to them); *see also* Light v. United States, 220 U.S. 523, 537 (1911) (finding federal government had trust responsibilities over the national forests on behalf of "the people of the whole country"); United States v. Trinidad Coal & Coking Co., 137 U.S. 160, 170 (1890) (noting that the United States' land is "held in trust for all the people"); United States v. Beebe, 127 U.S. 338, 342 (1888) (noting that the federal government holds public domain lands in trust, and saying "[t]he government is charged with the duty, and clothed with the power, to protect it [the public domain] from trespass and unlawful appropriation").

251. *See, e.g.*, Sierra Club v. Dep't of the Interior, 398 F. Supp. 284, 287 (N.D. Cal. 1975) (following holding in Knight v. United States Land Ass'n, 124 U.S. 161 (1891), that Secretary of Interior is bound both by statutory duties to protect national park resources and the public trust); Kleppe v. New Mexico, 426 U.S. 529 (1976) (upholding federal government's authority over wild horses and burros on federal lands under the Property Clause); Light, 220 U.S. at 537 (saying "it is for Congress to determine" how the trust will

The government's statutory trust responsibilities over its lands mirror those underlying the common law public trust doctrine. Whenever the federal government decides to sell, lease, permit, or develop these lands in any way, it has a duty to protect the public interest in them.[252] With limited exceptions, these lands are accessible to the public[253] and not available for individual appropriation. The government's responsibilities over these lands are irrevocable,[254] and the public can call the government to account if it shirks its trust responsibilities.[255] In such situations, applying the common law public trust doctrine would be redundant, since a statutory responsibility is functionally equivalent. Therefore, it is no surprise that no court has ever specifically applied the doctrine to federal public lands. However, no pervasive federal regulatory program exists to protect the resources of the EEZ, thus necessitating the application of the public trust doctrine.[256]

It is no answer to conflate the absence of judicial implementation of the federal common law version of this doctrine with an indication that no such doctrine exists. In other words, merely because public lands are already protected under laws that contain equivalent trust concepts does not mean that there is no federal public trust doctrine.[257] No federal court has

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be administered).

252. *See, e.g.*, the Federal Land Policy & Management Act, 43 U.S.C. § 1713 (authorizing the sale of public domain lands only where "disposal of such tract[s] will serve important public objectives").

253. *See, e.g.*, Camfield v. United States, 167 U.S. 518 (1897) (holding the federal government can prevent construction of fence on private land if the effect is to enclose public lands); United States v. Curtis-Nevada Mines, Inc., 611 F.2d 1277 (9th Cir. 1980) (holding the federal government, as trustee of nation's public lands, can prevent the owner of an unpatented mine claim from restricting public access to, and recreational use of, the surface of his claim).

254. Knight, 142 U.S. at 181 ("The secretary is the guardian of the people of United States over the public lands. The obligations of his oath of office oblige him to see that the law is carried out, and that none of the public domain is wasted or is disposed of to a party not entitled to it. He represents the government, which is a party in interest in every case involving the surveying and disposal of the public lands.").

255. *See, e.g.*, Sierra Club v. Dep't of the Interior, 398 F. Supp. 284 (N.D. Cal. 1975) (finding Department of Interior had both a statutory and a trust duty to conserve scenery and natural resources, including wildlife).

256. *See supra* Part I.D.

257. *See* District of Columbia v. Air Florida, Inc., 750 F.2d 1077, 1085 (D.C. Cir. 1984) (saying the court "must determine whether the public trust duties that have been recognized under state law as pertaining to state governments also apply to the federal government when it holds title to the shores and bed of a river"). While the court declined

ever abrogated the doctrine or said that it does not apply to public lands should there be a reason to invoke it. The doctrine in its original incarnation applied to the King, and although in this country the doctrine became a feature of state law, that is because the people took on the attributes of sovereignty, which then passed to the states.[258] However, since "federal and state governments each exist for the benefit of the members of the public each serves," and each "holds title to land and natural resources as a representative of members of the public each serves,"[259] there seem to be good

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to apply the doctrine to the federal government in that case because the argument was raised for the first time on appeal, it cited *1.58 Acres of Land*, and *Steuart* as proof that federal courts have applied it to the federal government. *Id.* at 1083-84; *see* Baer, *supra* note 232, at 408 (saying the absence of the federal government from the case and the possibility that the Rivers and Harbors Appropriation Act "may preempt all, or part, of the [government's] alleged federal common law duties" also persuaded the court not to entertain the District's public trust argument); *see also* Dowie, *Salmon and the Caesar*, *supra* note 81, at 3 (saying the Supreme Court's failure to declare the public trust doctrine federal common law "doesn't mean the public trust doctrine is not federal; it just means it has never been established as such"). *But see* Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 J. LAND RESOURCES & ENVTL. L. 173, 175 (2004) (saying "to the extent [the federal public trust doctrine] has force and effect in federal law at all, [it] supplements federal power rather than restricts it," and in this respect is quite "divergent" from the doctrine under state law).

258. *See, e.g.*, Martin v. Waddell, 41 U.S. 367, 410 (1842) ("[W]hen the Revolution took place, the people of each State became themselves sovereign; and in that character held the absolute right to all their navigable waters, and the soils under them, for their own common use, subject only to the rights since surrendered by the constitution to the general government.").

259. Pearson, *The Public Trust Doctrine in Federal Law*, *supra* note 256, at 177. Pearson also points out that the Property Clause basis for the federal government to manage public lands "is essentially indistinguishable from the constitutional authority" for the states' police power and that both authorities "are exceedingly broad." *Id. But see* Baer, *supra* note 232, at 423 n.302 (citing Nevada v. United States, 512 F. Supp. 166, 172 (D. Nev. 1981) (distinguishing the federal government's trust responsibilities over the country's natural resources from those of a private trustee with respect to the assets it holds) and Alabama v. Texas, 347 U.S. 272, 277 (1954) (Reed, J., concurring) (making same distinction)). *See also* Massachusetts v. Andrus, 594 F.2d 872 (1st Cir. 1979), *quoted in* Lewis, *Public Trust Doctrine*, *supra* note 248, at 69 ("The . . . Court characterized the Secretary of the Interior as the 'guardian' of the public domain, 'whose legal duty embraces a solemn responsibility to see that the great life systems of the ocean are not unreasonably jeopardized by activities undertaken to extract oil and gas from the seabed.'"); Utah Power & Light Co. v. United States, 243 U.S. 389, 405 (1917) ("[I]nclusion within a state of lands of the United States does not take from Congress the power to control their occupancy and use, to protect them from trespass and injury, and to prescribe the conditions upon which others may obtain rights in them . . . ."); Kleppe v. New Mexico, 426 U.S. 529, 539 (1976) ("[W]hile the furthest reaches of the power granted by the Property Clause have not yet been definitively resolved, we have repeatedly observed that '[t]he power over the public land thus entrusted to Congress is without limitation.'" (quoting United States v. San Francisco, 310 U.S. 16, 29 (1940))).

arguments that the doctrine could apply to the federal waters of the EEZ.

However, for there to be a *federal* common law of public trust, the activity or subject matter area must be one where courts can create federal common law. Courts do not create federal common law lightly.[260] In fact, they only do so when "a federal rule of decision is 'necessary to protect uniquely federal interests,'" or where Congress has explicitly "given the courts power to develop substantive law."[261] Since Congress has not empowered the courts to develop substantive law with respect to aquaculture, only the first rationale holds any promise.

The Supreme Court has interpreted the first rationale as requiring a showing that "our federal system does not permit the controversy to be resolved under state law, either because the authority and duties of the United States as sovereign are intimately involved or because the interstate or international nature of the controversy makes it inappropriate for state law to control."[262] Thus, for there to be a *federal* common law of public trust, the courts "must find that a federally recognized public trust doctrine implicates 'uniquely federal interests,' and where 'the authority and duties of the United States as sovereign are intimately involved,' such a unique federal interest can be found."[263] It is not hard to see that "uniquely federal interests" are involved on the EEZ. The mere possibility that interstate, or even international, controversies, which only the federal government

260. *See* Tex. Indus., Inc. v. Radcliff Materials, Inc., 451 U.S. 630, 638 (1981) (saying federal rights are created either by Congress, "expressly or by clear implication," or by federal courts in limited circumstances); *see also* Lewis, *supra* note 248, at 71 ("The Supreme Court has recognized the need and authority of courts to fashion federal common law in a 'few and restricted' instances." (quoting Texas Industries, 451 U.S. at 640)).

261. Texas Industries, 451 U.S. at 640 (internal citations omitted).

262. *Id.* at 641.

263. J. Wallace Malley, Jr. & Jeffrey M. Silverstein, *The Public Trust Doctrine and Federal Condemnation: A Call for Recognition of a Federal Common Law*, 15 VT. L. REV. 501, 520-521 (1991). The development of this line of argument owes much to Malley and Silverstein's article, notwithstanding that they apply the doctrine to public lands that the federal government wants to condemn and turn over to private interests, rather than to the EEZ. Lewis argues that the restrictions on fashioning federal common law should not apply because "the roots of the public trust doctrine are believed to reach back to the constitution, or to the State Enabling Acts." Lewis, *supra* note 248, at 63 n. 68 (citing Charles F. Wilkinson, *The Headwaters of the Public Trust: Some of the Traditional Doctrine*, 19 ENVTL. L. 425, 458-59 (1989) (saying the doctrine derives from statehood acts or from the Commerce Clause, like the navigational servitude which then passed to the states upon statehood)).

can resolve, could arise on the EEZ should be sufficient to create a "uniquely federal interest" in the area. Additionally, the Magnuson-Stevens Act, the Endangered Species Act, and other comparable statutes create uniquely federal duties in those waters.[264]

While Congress can always oust federal common law,[265] until that happens federal courts can continue to create federal common law and apply it.[266] Here there are no preemptive federal

264. Malley and Silverstein additionally maintain that *Illinois Central R.R.* "seems to suggest that a sovereign's duty to observe the trust may never be lost;" therefore, federal condemnation of that property merely transfers that duty to the federal sovereign for as long as it holds the land. Malley, Jr. & Silverstein, *Public Trust Doctrine, supra* note 262, at 521. They also propose two other theories that might justify a federal common law public trust doctrine: the first theory would consider the state and federal governments co-trustees, with the federal government having dominant power in any situation where its interests might conflict with those of the state's, relying on *United States v. 1.58 Acres of Land*, 423 F. Supp. 120, 123 (D. Mass. 1981); the second theory would recognize the United States as a "temporary" sole trustee until the land passes back to the state, relying on *Shively v. Bowlby*, 152 U.S. 1 (1893) and *United States v. 11.037 Acres of Land*, 685 F. Supp. 214 (N.D. Cal. 1988). Malley, Jr. & Silverstein, *supra* note 262, at 521-23; *see also* Peter Egan, *Applying Public Trust Tests to Congressional Attempts to Close National Park Areas*, 25 B.C. ENVTL. AFF. L. REV. 717, 729 (1998) (saying since "[t]he federal government was created by the individual states . . . . [it] cannot have powers superior to bodies responsible for its creation. . . . [and] [t]herefore, like the states . . . cannot abdicate its public trust responsibilities"); Wilkinson, *Headwaters of the Public Trust, supra* note 262, at 453-54 (finding the Court's ubiquitous references to "a state" and the absence of citations to any particular state law as justifying his belief the opinion relied on federal law).

265. City of Milwaukee v. Illinois, 451 U.S. 304, 317 (1980) (recognizing the existence of federal common law but holding passage of the Clean Water Act with its pervasive regulatory program sufficiently occupied the field to displace a federal common law nuisance action). As the Court explained in *Milwaukee*, "when Congress addresses a question previously governed by a decision rested on federal common law, the need for such an unusual exercise of lawmaking by federal courts disappears." Milwaukee v. Illinois, 451 U.S. at 314. A second prudential doctrine, abstention, might lead federal courts to decline to hear public trust claims. *See* United States Reserve Mining Co., 394 F. Supp. 233 (D. Minn. 1974), *cited in* Lewis, *supra* note 248, at 73 (describing the case as holding that a public trust claim involving water pollution was "best left to the state courts to develop"). However, the courts generally find abstention to be appropriate in only three limited situations, none of which would apply here: the *Burford* exception arising where "'difficult questions of state law bearing on policy problems of substantial import whose importance transcends the result in the case then at bar,'"; the *Pullman* exception where federal constitutional questions are presented "'which might be mooted or presented in a different posture by a state court determination of pertinent state law,'"; and the *Younger* exception, which applies only when state criminal proceedings are involved. Lewis, *supra* note 248, at 74 (discussing the application of abstention to federal public trust claims) (internal citations omitted).

266. Illinois v. City of Milwaukee, 406 U.S. 91, 107 (1972) (referring to federal common law of nuisance and saying that until "new federal laws and new federal regulations . . . pre-empt the field . . . . federal courts will be empowered to appraise the equities of the suits alleging creation of a public nuisance by water pollution").

laws involving the management of fishery resources in the EEZ;[267] Congress has neither spoken directly to the issue nor occupied the field.[268] Congressional regulation of fishery resources in the EEZ is piecemeal, occasionally creating overlapping agency jurisdictions or areas where there is no regulation at all.[269] Thus, there is no immediate danger of a federal common law public trust doctrine being ousted from the EEZ by a "comprehensive regulatory program supervised by an expert administrative agency."[270] Unlike areas of federal regulation such as water pollution, where the federal government has essentially "occupied the field [so] as to displace" federal common law,[271] in the fishery context there are, in fact, significant "interstices" that need to be filled by the use of a federal common law doctrine.[272]

A second basis for finding that the federal government has trust responsibilities over the EEZ and its resources is through the wildlife trust.[273] Although the idea that states own wildlife, including fish,[274] was overturned in *Hughes v. Oklahoma*,[275] the

267. *See supra* pp. 30-32. [discussion lack of federal regulatory programs]

268. *See* Milwaukee, 451 U.S. at 313 (saying federal common law applies "[w]hen Congress has not spoken to a particular issue").

269. *See infra* Part IV.A.

270. Milwaukee, 451 U.S. at 317.

271. Malley, Jr. & Silverstein, *supra* note 262, at 526.

272. *See id.* (citing *Milwaukee*, 451 U.S. at 324, for the proposition that "[n]o interstices remained to be filled by the continued use of federal common law" in the context of the Clean Water Act); *see also* Lewis, *supra* note 248, at 59 (commenting that the federal courts' reluctance "to embrace the public trust doctrine is not warranted" because federal statutes have not "wholly occupied" the field of water resources management and that "the finding of a duty on the part of a federal agency is entirely appropriate and a proper complement to existing state law where the threatened harm is not addressed by a state resource protection statute," and thus there is no need for courts to abstain).

273. *See generally* Wood, *supra* note 222, at 608; Babcock, *Protecting Where the Wild Things Are*, *supra* note 217, at 882.

274. *See, e.g.*, People v. Truckee Lumber Co., 48 P. 374, 399-400 (Cal. 1897) (enjoining operation of private sawmill that was polluting the Truckee River, and saying "[t]he fish within our waters, constitute the most important constituent of that species of property commonly designated as wild game, the general right and ownership of which is in the people of the State . . . ; and the right and power to protect and preserve such property for the common use and benefit is one of the recognized prerogatives of the sovereign, coming to us from the common law . . . ."); Pullen v. Ulmer, 923 P.2d 54, 57 (Alaska 1996) ("[S]almon are public assets of the state which may not be appropriated by initiative."); Attorney Gen. v. Hermes, 339 N.W.2d 545, 550 (Mich. Ct. App. 1983) (authorizing state to bring civil action for damages for unlawful taking of perch and whitefish from public waters because the "state is 'public trustee' of these resources, which are held in trust for all the people of the state in their collective capacity"); *see also* Blumm & Ritchie, *The Pioneer Spirit and the Public Trust*, *supra* note 162, at 708 n.236 (listing state cases that have "judicially endorsed . . . wildlife trust principles," including many involving

concept of a wildlife trust still has currency today.[276] In American jurisprudence, the "rule of wildlife capture . . . has always been fitted to meet the felt necessities of societies that employed it. . . . [and] has always been restrained by state authority."[277] This state authority includes the wildlife trust doctrine because "the rule of capture and the wildlife trust are inextricably tied, and they have been—in one form or another—for centuries."[278] Thus, to the extent the application of the rule of capture has given fishers

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fish). Wood suggests using the wildlife trust to interpret federal laws to "force a sea-change" in how the FWS implements section 7(a)(2) of the Endangered Species Act by limiting the agency's discretion. Wood, *supra* note 222, at 613, 617-18 (saying the "[t]he sheer scope of ESA federal regulation now demands" application of "broader trust principles," displacing whatever claims states might have to regulatory primacy).

275. 441 U.S. 322 (1979). The state ownership doctrine held sway until the early twentieth century when the Court began to reject it, first as "a slender reed," Missouri v. Holland, 252 U.S. 416, 434 (1920) (sustaining constitutionality of Migratory Bird Treaty Act), then as "a fiction expressive in legal shorthand of the importance to its people that a State have power to preserve and regulate the exploitation of an important resource," Toomer v. Witsell, 334 U.S. 385, 402 (1948) (rejecting the notion of exclusive state authority over shrimp), then as "pure fantasy," Douglas v. Seacoast Products, Inc, 431 U.S. 265, 284 (1977), until finally in it was firmly overturned in *Hughes*. Macinko & Bromley, *Seeking Coherence from Legal and Economic Doctrines*, 28 VT. L. REV. 623, 630-31 (2004) (summarizing the state ownership doctrine's "demise"). Macinko and Bromley believe that even though the "popular legacy" of the doctrine's death says it is about ownership of wildlife, its end was not about who owned fish, but about federalism. *Id.* at 633-34 ("Ownership of wildlife, by the states, is problematic not so much because it is ownership of an elusive object (*ferae naturae*), but because it can be used as an advantage in the age-old struggle between state and federal authority that *is* federalism.").

276. *See* Blumm & Ritchie, *Background Principles as Categorical Takings Defenses*, *supra* note 215, at 352 n. 205 (characterizing Supreme Court opinions "dismiss[ing] the state ownership doctrine" as "narrow, overriding the states' proprietary interest in wildlife only when it conflicts with federal law"); Blumm & Ritchie, *The Pioneer Spirit and the Public Trust*, *supra* note 18, at 706 ("[*Hughes*] did not dislodge the states' trustee relation with wildlife that had been confirmed in *Geer*."); Oliver A. Houck, *Why Do We Protect Endangered Species, and What Does That Say About Whether Restrictions on Private Property to Protect Them Constitute "Takings"?*, 80 IOWA L. REV. 297, 311 n.77 (1995) (saying *Hughes* "did not, and could not, overrule principles dating back to Roman Law" and that "[t]he trust analogy announced in *Geer* . . . remains the most accurate expression of this state interest"); Wood, *supra* note 222, at 609 n.17 (distinguishing between the "derivative" state ownership doctrine and the "broad principles of sovereign trust over wildlife").

277. Blumm & Ritchie, *The Pioneer Spirit and the Public Trust*, *supra* note 18, at 720. For a more thorough discussion of the origins of the rule of capture and its development and replacement by the state ownership of wildlife doctrine, see generally Blumm & Ritchie, *The Pioneer Spirit and the Public Trust*, *supra* note 18.

278. *Id.* at 720; *see also* Dale Goble, *Three Cases/Four Tales: Commons, Capture, the Public Trust, and Property in Land*, 35 ENVTL. L. 807 (2005) (examining the rule of capture). The rule of capture is best set out in "the American keystone" case of *Pierson v. Post*, 3 Cai. 175 (N.Y. Sup. Ct. 1805), involving a hapless fox and setting out the principle that "the first to control property acquires ownership of it." Frank Lupo, *The Rule of Capture and Its Consequences*, 35 ENVTL. L. 647, 647 (2005).

ownership of fish, that ownership has long been constrained by trust concepts, most importantly the sovereign's duty to protect the trust *res*—fish.

The existence of a wildlife trust means that the government exercises its power over wildlife for the public's benefit, and not for its own interests or for the benefit of private entities.[279] Wood suggests that the doctrine's "foundational principles apply to protecting biodiversity as a whole," not just game animals,[280] its traditional focus.[281] In this, the wildlife trust doctrine and the public trust doctrine are parallel.[282] "The public trust doctrine protects natural resources, and therefore the public, from the failure of legislatures, state agencies, and administrative personnel

279. Geer v. Connecticut, 161 U.S. 519, 529 (1896), *quoted in* Macinko & Bromley, *Seeking Coherence from Legal and Economic Doctrines*, *supra* note 274, at 630; *see also* Babcock, *Protecting Where the Wild Things Are*, *supra* note 217, at 885-86 (saying when the Court overruled *Geer* in *Hughes*, it pointedly left the concept of a state wildlife trust standing); Goble, *Three Cases/Four Tales*, *supra* note 277, at 853 ("[T]he public's interest in wildlife – whether characterized as a trust, state ownership, state custodianship, or a 'substantial interest in preserving' such animals – gives the state a special authority and responsibility to ensure the preservation of wildlife.").

280. However, the wildlife trust doctrine's traditional focus on protecting harvesting of game as a "valuable food supply," has direct application to protecting valuable food supply of wild fish. Geer, 161 U.S. at 534.

281. Wood, *supra* note 222, at 611; *see also id.* at 643 (saying "[a] trust framework treats biodiversity as a natural asset held in trust by the sovereign for the benefit of the public, including both present and future generations," imposing on the sovereign trustee the "continuing and inalienable duty to protect the corpus of the trust"); Johnson & Galloway, *The Public Trust Doctrine*, *supra* note 212, at 30 (saying the public trust doctrine "has a great potential for protecting biodiversity"); Bader, *Public Trust Doctrine*, *supra* note 216, at 756 (advocating using public trust doctrine "*to maintain the general health of natural systems*"); Goble, *supra* note 277, at 853 (finding "ample power to conserve the nation's biodiversity and the ecosystem services on which we depend").

282. *See* Wood, *supra* note 222, at 608 ("The wildlife trust doctrine [is] a branch of the well-known public trust doctrine . . . ."); Blumm & Ritchie, *The Pioneer Spirit and the Public Trust*, *supra* note 18, at 714 ("[B]ecause the sovereign trusteeship over wildlife is part of a larger body of law concerning 'public trust' principles that developed outside the context of wildlife regulation, public trust law remains directly relevant to states' wildlife trust responsibilities."); *id.* at 695 (quoting Smith v. Maryland, 59 U.S. (18 How.) 71, 76 (Curtis, J.) (holding that the state's power over harvesting of oysters "results from the ownership of the soil, from the legislative jurisdiction of the State over it, and from the duty to preserve unimpaired those public uses for which the soil is held")); Meyers, *Protection of Wildlife*, *supra* note 212, at 729 (noting similarities between wildlife and water because neither can be owned and to the extent they can be owned, ownership is an attribute of sovereignty); *id.* (citing Geer, 161 U.S. at 525, for the proposition that wildlife is a type of community property that, "having no owner, [was] considered as belonging in common to all citizens of the state"); Macinko, *Public or Private: U.S. Commercial Fisheries*, *supra* note 26, at 940 ("The core meaning of the public trust doctrine *is* found in the class relations of old world game laws . . . [and] in a 19th century struggle between populist and progressive visions for the American political economy.").

to recognize the state's duty to protect the corpus of the wildlife trust for future generations."[283]

Furthermore, the concept of a wildlife trust, like the public trust doctrine, is not restricted to the states. Wood asserts that "[state] cases make clear that the wildlife trust arises as an attribute of sovereignty" and thus should apply to the federal, as well as state, sovereign.[284] She argues, with respect to the species listed under the Endangered Species Act, that the federal government has "a public trustee's duty of care" arising out of its assertion of regulatory authority over those species, and that those species, in turn, are "definable [trust] asset[s]. . . and are owed traditional protections deriving from property law accorded to public natural assets."[285] The same rationale should apply to fish given the existence of analogous federal legislation protecting fish.[286]

Thus, while

> [t]he issue of the existence of the federal public trust doctrine has not yet been settled by the courts; arguably the federal government should be subject to the same fiduciary responsibility as the state governments in managing the resource for the benefit of the public, and should not be able to terminate public interests or convey an interest in this property without an explicit finding of public benefit.[287]

2. *Alternatively, the state-based public trust doctrine extends to the EEZ.*

Courts and commentators appear to agree that the public trust doctrine applies to "the three nautical mile belt created by the SLA" around the United States coastline, even though the statute is silent about imposing public trust obligations on states.[288] If one

283. Musiker et al., *supra* note 224, at 109.

284. Wood, *supra* note 222, at 614-15; *see also id.* at 616 (quoting Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. DAVIS L. REV. 269, 299 (1980) ("Thus we can expect courts today, like courts in earlier eras, to characterize Congress' modern legislative scheme as imposing a public trust on the public resources.")).

285. Wood, *supra* note 222, at 616-17.

286. *See, e.g.*, Murphy v. Dept. of Natural Res., 837 F. Supp. 1217, 1221 (S.D. Fla. 1993) (saying Congress intended the Submerged Lands Act "to further the Public Trust Doctrine"); *cf.* Parravano v. Babbitt, 70 F.3d 539, 546 (9th Cir. 1995) (holding federal government had trust responsibility to protect tribal fisheries under the Magnuson Act).

287. Eichenberg & Vestal, *supra* note 82, at 347.

288. Hildreth, *supra* note 240, at 229; *see also id.* (saying there is little debate about

adopts the view that the public trust doctrine is a creature of state common law, the challenge becomes finding sufficient state presence in the waters of the EEZ for its application.[289] That basis can be found both in the states' historical and continuing regulatory presence over fisheries—including those found in the EEZ[290]—and in the authority the CZMA gives to states, allowing them to disapprove of a federal activity that will affect their coastal zones in a way that is inconsistent with their coastal zone management plans ("CZMPs").[291] To the extent that coastal states have explicitly or implicitly incorporated public trust principles into their CZMPs, and fish ranching activities will affect individual states' coastal zones, then these principles will extend to applications by ocean fish ranchers for federal authorization to conduct their activities in the EEZ. Each of these points is developed more fully below.

A "significant proportion of fisheries resources occur within state waters," and decisions about how those resources are to be managed have profound social and economic effects on local communities.[292] As a result, states have historically managed

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the doctrine applying to "state internal waters," such as estuaries, bays, embayments, and sounds, i.e. those waters "*landward* of the baseline from which the U.S. territorial sea is measured").

289. Lewis argues that federal courts can apply state common law public trust doctrine principles in diversity cases (citing Erie Railroad Co. v. Tompkins, 304 U.S. 64 (1938), noting that most public trust claims heard by courts have been in diversity cases). Lewis, *supra* note 248, at 59-60.

290. *See, e.g.* Magnuson-Stevens Fishery Conservation & Management Act of 1976, 16 U.S.C § 1856(b) (Westlaw 2006) (retaining state jurisdiction to manage fish stocks within state territorial waters and preempting that jurisdiction only when Secretary of Commerce finds state action or inaction will adversely affect implementation of fish management plan for a fishery that is predominantly within the EEZ); *see id.* § 1856(a)(3) (authorizing states to regulate fishing vessels outside state territorial waters under certain circumstances); Submerged Lands Act of 1953, 43 U.S.C. § 1311(a) (Westlaw 2006) (granting states "title to and ownership of . . . natural resources," including the "right and power to manage, administer, lease, develop, and use" marine resources). *See also* Christie, *Living Marine Resources Management*, *supra* note 12, at 164-68 (describing federal and state jurisdiction over fishery resources).

291. Coastal Zone Management Act of 1972, 16 U.S.C. § 1456 (Westlaw 2006) (requiring that federal actions affecting a state's coastal zone be consistent with that state's coastal zone management plans to the maximum extent practicable).

292. Christie, *Living Marine Resources Management*, *supra* note 12, at 164. Commons scholars, like Ostrom and McCay, have searched for alternative solutions to privatization and regulation as a means of avoiding the despoliation of the commons, most frequently turning to local control emanating from the communities that depend on fishing for their livelihoods. But these solutions have problems as well. What may be sufficient to solve the problems of a local fishery for a discrete species fails when extended to regional, let alone

fisheries whether or not the fish were within their waters, and have retained regulatory authority over fish that leave their waters and travel into the EEZ.[293] This authority continues so long as there is either no federal Fisheries Management Plan ("FMP") or other preemptive federal regulation, or when there is an FMP or federal regulation consistent with state law.[294] Courts have held that where there is no conflict with federal or international law, "a state's interest in preserving nearby fisheries is sufficiently strong to permit such extra-territorial enforcement of its laws enacted for that purpose."[295] Fishing boats registered under state law remain within that state's regulatory jurisdiction, even when those boats fish in the EEZ.[296]

Briscoe writes that regulation of fisheries "provides the classic model for extra-territorial exercise of the police power."[297] Thus, "a state may reasonably extend its jurisdiction to control fish and game resources outside the limited area of its territorial sovereignty, if such an exercise is based on the conservation principles inherent in their [fish's] migratory characteristics."[298]

In addition, states, under the aegis of their coastal zone

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national or international fisheries for many different species. *See* Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 25 (saying "oceans and their resources are an obvious . . . mismatch" with the regulatory authority); Christie, *Living Marine Resources Management*, *supra* note 12, at 112 (discussing inability of states to manage distant water and foreign fishing fleets).

293. *See* Christie, *Living Marine Resources Management*, *supra* note 12, at 111; *see also* Skiriotes v. Florida, 313 U.S. 69, 77 (1941) (recognizing a state's right to regulate fishing by its citizens beyond state waters, saying "If the United States may control the conduct of its citizens upon the high seas, we see no reason why the State of Florida may not likewise govern the conduct of its citizens upon the high seas with respect to matters in which the State has a legitimate interest and where there is no conflict with acts of Congress"); *see also id.* (quoting State v. Bundrant, 546 P.2d 530, 552, 554-56 (Alaska 1976) (holding that the importance of a crab fishery gave the state "legitimate interest" in its offshore regulation)).

294. 16 U.S.C. § 1856(a)(3)(A) (Westlaw 2006). Even after the Magnuson Act was amended in 1996, considerable confusion remained over the extent to which federal law preempted state laws regulating fishing boats by continuing to allow states significant regulatory authority over these boats, including boats not registered under their laws. Christie, *Living Marine Resources Management*, *supra* note 12, at 165-66. *But see id.* at 166 n.428 (noting several courts have found more restrictive state regulations "inconsistent" with the limits set in a FMP).

295. People v. Weeren, 26 Cal.3d 654, 666 (1980), *cited in* John Briscoe, *The Effect of President Reagan's 12-Mile Territorial Sea Proclamation on the Boundaries and Extraterritorial Powers of the Coastal States*, 2 TERRITORIAL SEA J. 225, 278 (1992).

296. Christie, *Living Marine Resources Management*, *supra* note 12, at 165.

297. Briscoe, *supra* note 294, at 278.

298. *Bundrant*, 546 P.2d at 554, *quoted in* Briscoe, *supra* note 292, at 278; *but see id.* n.114 (questioning the decision's viability after the Magnuson Act).

management programs, can determine the consistency of federal activities in the EEZ with their laws.[299] For example, the CZMA's consistency provisions have been applied to offshore oil and gas leasing programs in the waters off Massachusetts[300] and California.[301] Ocean fish ranching can directly affect fishery resources in the coastal zone through disease, pollution, and escaped fish, as well as the economic livelihood of coastal fishing communities. Therefore, these impacts should be cognizable under the CZMA.[302]

Many states have incorporated public trust principles into their laws, and, in some cases, their constitutions.[303] To the extent that these laws are part of the "enforceable policies"[304] of an approved state coastal zone management plan, then state common law public trust principles incorporated into those plans extend to the EEZ. These principles can be applied to stop ocean fish ranching activities that prevent access to the waters and resources of the EEZ on the ground that such limitations are inconsistent with the state's coastal zone management plan. In the alternative, these principles might also be used to reform fish ranching activities. For instance, the state could move the location of the net pens so that

299. *See* Briscoe, *supra* note 294, at 283-85 (discussing the reach of the CZMA to federal activities beyond state waters, and noting that passage of the SLA "enhanced" the states' consistency powers by dropping language from that act which had limited a state's consistency power to federal activities directly affecting their coastal zones); *see also* Englebrecht, *supra* note 4, at 1204 (saying federal consistency review "is required for any federally funded or authorized project located in the Exclusive Economic Zone . . . . [thus affording states] some say in the regulatory process for aquaculture projects in federal waters adjacent to their boundaries").

300. Conservation Law Found. v. Watt, 560 F. Supp. 561 (D. Mass. 1983), *cited in* Schatzberg, *supra* note 5, at 274.

301. Exxon Corp. v. Fischer, 807 F.2d 842 (9th Cir. 1987), *cited in* Schatzberg, *supra* note 5, at 275.

302. *See* Schatzberg, *supra* note 5, at 275-76 (saying that because of the "risks" associated with ocean aquaculture, "offshore salmon fish farming may affect Alaska's and Washington's coastal zones in ways inconsistent with the habitat protection goals included in both states' enforceable policies").

303. *See*, e.g., Owsichek v. State Guide Licensing & Control Bd., 763 P.2d 488, 493 (Alaska 1988) (noting that the purpose of the Alaska Constitution's "common use" clause "was achieved by constitutionalizing common law principles imposing upon the state a public trust duty with regard to the management of fish, wildlife and waters"); Dowie, *supra* note 81, at 2 (saying that Louisiana, among other states, wrote the public trust doctrine "directly" into its constitution).

304. 16 U.S.C. § 1456(c)(1)(A) (Westlaw 2006) (Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.)

they do not interfere with commercial fishing, thereby ensuring consistency with the public trust. In summary, the public trust doctrine can apply to ocean aquaculture on any of several grounds: (1) the EEZ is federal land to which the public trust attaches; (2) there is an independent federal common law doctrine; (3) state common law doctrine applies to the waters of the EEZ because state regulatory authority extends into the EEZ; or (4) state common law doctrine applies to the waters of the EEZ because of the operation of the CZMA.

V. APPLYING THE PUBLIC TRUST DOCTRINE WOULD FILL A REGULATORY GAP AND MAKES GOOD POLICY SENSE

Currently, there is no effective and comprehensive regulatory regime governing ocean fish ranching.[305] There is no clear sense of "which laws apply and which agency is accountable for oversight at different stages of aquaculture ventures."[306] The current "piecemeal approach [to ocean fish ranching] has resulted in gaps and inefficiency."[307] Applying the public trust doctrine would protect ocean resources from the adverse impacts of fish ranching until a comprehensive, effective regulatory program evolves to fill those gaps–something privatizing those resources cannot do.[308] Further, applying the public trust doctrine makes good policy sense, as it "imposes a duty" on government to protect natural resources that exceeds any it has under specific enabling laws or police power authority.[309]

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305. Englebrecht, *supra* note 4, at 1199 (saying "this piecemeal approach has left many environmental impacts overlooked, particularly the protection of essential marine habitat"); Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 9 ("The mixed-media nature of aquaculture and its risks, coupled with the lack of any one prime regulator, has to date left aquaculture subject to incomplete and arguably ineffective regulation."). Buzbee goes on to say that the emergence of a primary regulator seems unlikely given the fact that there is no governmental institution with the jurisdictional reach to address the broad ecosystem risks of aquaculture, *id.* at 9-10, and "potential regulators have few incentives to see aquaculture as an attractive subject of regulation." *Id.* at 10.

306. Englebrecht, *The Magnuson-Stevens Fishery Conservation Act*, *supra* note 4, at 1203.

307. *Id.* at 1202.

308. *See, e.g.*, Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986); James L. Huffman, *A Fish Out of Water: The Public Trust Doctrine in a Constitutional Democracy*, 19 ENVTL. L. 527 (1989) (saying that the expansion of the doctrine's scope has taken it beyond its legal roots in property law); *See generally supra* Part II. The realization that there is a regulatory gap should quell objections by some scholars to the use of the public trust doctrine where there are effective regulatory frameworks.

309. Musiker, *supra* note 224, at 114-15 (saying that this duty "extends beyond any

A. *The Disabling Effect of Regulatory Gaps*

The regulatory context for ocean fish ranching exemplifies what Professor Buzbee labels a "regulatory commons." A regulatory commons arises when more than one potential regulator shares potential jurisdiction over "a regulatory opportunity" and there is "a mismatch" between the regulators' jurisdictions and the injurious activity's causes and effects.[310] In other words, "the underlying social ill . . . lacks a matching political-legal regime."[311] A regulatory commons is problematic because it means that those searching for regulation will "fragment" their demands because they will not know where to go to get relief,[312] thus unintentionally diminishing the regulator's perception that there is a problem that she should address. A regulatory commons also creates disincentives for regulators to step in and take initiative, leaving some "social ills" under-regulated or entirely unregulated.[313]

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duty imposed under the police power, constitution, or statutes"); *id.* at 109 (commenting that "recent threats to state and federal legislative protections may trigger a greater need to harness this elusive doctrine to protect the wildlife resource"); *see also id.* at 114 (distinguishing between NEPA, requiring that government agencies only "consider a range of alternatives" to the proposed action, and the public trust doctrine, imposing a duty on agencies to "adopt the most feasible alternative that will least impair the corpus of the trust," and also saying that courts applying the doctrine are not constrained by the "parameters embodied in the language of the statutes").

310. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 6 (defining a "'regulatory opportunity' as a commons resource"). *But see* Buzbee, *Contextual Environmental Federalism*, *supra* note 6, at 122-26 (extolling some "benefits of regulatory overlap and interaction," and saying they can actually "reduce[s] the risk of the regulatory commons problem of inattention or inaction" and "provide a valuable antidote to inaction incentives").

311. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 13.

312. *Id.* at 6 (saying a regulatory commons, with its "fragmented political-legal structures that do not match a social ill in cause or effect" provides opportunities for those opposing regulation to "exploit this complexity," and like "fragmented property interests that predictably lead to underinvestment in anticommons property . . . .[,]prompt political underinvestment"); *see also* Buzbee, *The Regulatory Fragmentation Continuum*, *supra* note 6, at 349-50 ("Fragmentation can thus lead to a failure to perceive or address broad social ills, can lead to myopia and failure to empower one actor able to make broader perspective strategic evaluations and decisions, or can empower a sequence of reviewing regulators who may create a drag on or veto a project.").

313. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 5. *see also id.* at 28-29 (comparing the regulator's dilemma faced with a regulatory commons to that of a fisher viewing a common pool resource like an ocean, and saying "[i]n neither case would fishers or potential regulators have strong incentives to invest in efforts to gather information about the resource harms, lead collective efforts to devise curative strategies, or design a responsive strategy. The shared nature of the underlying resource – be it a natural resource or a regulatory opportunity – creates disincentives for such resource stewardship.").

Buzbee believes that "complex legal systems create predictable dynamics that create incentives for regulatory gaps."[314] The resulting "uncertain regulatory turf" creates "demand and supply-side incentives for regulatory inattention."[315] When these incentives are combined with the preference of most regulators and the regulated industry to maintain the status quo,[316] it is unlikely that the regulatory picture will change in the short term.[317]

Buzbee finds that aquaculture is a quintessential example of a regulatory commons[318] because there is no clear principal regulatory authority, let alone one that has any incentive to take the lead in regulating the activity.[319] He blames "environmental federalism"—by which he means "the shar[ing of] regulatory turf in uncertain sorts of ways" between federal, state, and local governments—for "the political-legal fragmentation and overlap."[320] Given the breadth of potential environmental and socioeconomic harms from aquaculture activities, it is unlikely that they will all fall under the regulatory authority of any one jurisdiction.[321] Local officials, who are often in the best position to control particular nearshore aquaculture operations, are instead more interested in promoting these local businesses. Thus, local officials often have no reason to invest in either researching aquaculture's risks or "policing" its impacts.[322]

Ocean fish ranching exhibits these and other features of a regulatory commons. A regulatory commons exists where the

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314. *Id.* at 6.

315. *Id.* at 14. "Supply side," in this context, refers to government actors, and "demand side" refers to the regulated industry. *Id.* at 27.

316. *Id.* at 36 (explaining that regulators and those "benefiting from the status quo" have little incentive to change it because they "have sunk money and effort" into maintaining it and "are likely to become attached to it").

317. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 37 ("Regulatory commons dynamics thus create logical incentives for lack of political investment in regulatory solutions."). While one cure for the regulatory commons is to end the fragmentation by asking agencies to "surrender turf to other agencies," Buzbee acknowledges that this "would likely meet with staunch resistance." *Id.* at 50.

318. *Id.* at 8.

319. *Id.* at 9 (saying the absence of a "primary regulator" means that no one is responsible for "transboundary or ecosystem aquaculture risks," nor is there a single entity "likely to be blamed for [any] harms" that might arise). Buzbee also says regulatory commons problems can occur "outside the setting of commons resource management disputes." *Id.* at 7, n.8.

320. *Id.* at 23.

321. *Id.* at 9.

322. *Id.*

regulatory reach of any given institution cannot adequately grapple with what are essentially inter-jurisdictional harms. Here, the inter-jurisdictional harms are escaped fish and widely dispersed pollution.[323] Such regulatory commons also exists where the sheer geographic breadth of the resource, here the oceans, dwarfs the scope of the regulatory mechanism.[324] Finally, a regulatory commons may occur in ocean fish ranching insofar as the "social ill [caused by ocean fish ranching] arises out of dynamics, incentives, or actors outside of a government's jurisdiction."[325] In this case, the industry developed largely in response to "intensified international competition to produce cheap fish" after wild fish stocks "plummeted."[326]

Buzbee posits that crisis conditions may eventually spur "unusual political activism on the part of citizens, politicians, and regulators," leading to changes in the regulatory commons and the emergence of a regulatory response.[327] However, the harms from ocean fish ranching may be sufficiently dispersed and distant to prevent those conditions from arising.[328] Moreover, those harms may most affect those with the least political power to effect a change–impoverished fishing communities. Thus, it seems unlikely that ocean fish ranching will soon emerge from its regulatory commons.

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323. *Id.* (describing the regional or even global "ripple effects" of escaped non-indigenous or bioengineered fish on the marine environment).

324. *Id.* at 25 (citing oceans and marine resources as an "obvious example of a . . . mismatch" between the size of the regulatory authority and the underlying resource).

325. *Id.*

326. *Id.* at 25-26. Even though the international legal framework offered by the Third United Nations Conference on the Law of the Sea, (further developed at the 1992 United Nations Conference on the Environment and Development, which addressed conservation of marine resources and produced the UN Biodiversity Convention, the Rio Declaration on Environment and Development, and Agenda 21), and the 1995 FAO Code of Conduct for Responsible Fisheries, includes "emerging principles" like the precautionary principle, the duty of states to cooperate in mitigating transboundary environmental problems, and the duty to share information, UNCLOS III has done little to address the problems of over-fishing. *See* Wilson, *supra* note 36, at 503; *see also id.* at 508-09 (calling international solutions to over-fishing "imperfect" because they rely on voluntary cooperation and do not incorporate local stakeholders in solutions).

327. Buzbee, *Recognizing the Regulatory Commons*, *supra* note 6, at 54; *id.* at 55 ("[A] combination of external events, political incentives, and changing information and political perceptions can create conditions for enactment of unlikely regulatory schemes").

328. Even Buzbee concedes that unlike urban sprawl and global climate change, where some improbable "collective efforts" have arisen, "aquaculture's fragmented regulation remains unaddressed." *Id.* at 55-56.

B. *Applying the Public Trust Doctrine to the EEZ Makes Good Policy Sense*

There are several good policy reasons for applying the public trust doctrine to ocean fish ranching. First, applying the doctrine would eliminate many of the regulatory commons-induced disabilities that afflict the waters of the EEZ. For example, the doctrine could be used to fill existing regulatory gaps, such as preventing the placement of net pens in traditional fishing grounds or requiring that pens be constructed in a way to prevent the escape of farmed fish. The public trust doctrine could also be used to protect trust resources where the problem is not a gap in regulation but conflicting or overlapping regulatory programs. In such a case, the doctrine would not be preempted because there is no comprehensive federal regulatory regime to prevent its use. Since public rights in those resources would be protected,[329] the regulatory commons would vanish until a comprehensive regulatory program could be developed and implemented to supersede the current patchwork of federal and state regulation.

Second, application of the public trust doctrine could impose an obligation on government agencies to scrutinize individual proposals,[330] including those seeking to enclose portions of the EEZ. This would assure that conversion of trust resources serves a public purpose and "do[es] not substantially impair the public interest in the lands and waters remaining." [331] Given the environmental risks associated with ocean fish ranching and its incompatibility with traditional uses of navigable water like fishing,

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329. *See* Babcock, *Wetlands and Coastal Barrier Beaches*, *supra* note 217, at 45 n.256 and accompanying text (listing articles exploring potential use of public trust doctrine's use to protect important natural resources that otherwise might be unprotected). Applying the doctrine of ocean fish ranching is less of a stretch than applying the doctrine to some land-based resources, as has been done in modern times. *See id.* at 37.

330. *See* Hildreth, *supra* note 240, at 230 ("The public trust doctrine's application further seaward makes possible closer judicial scrutiny of state ocean management activities, and such scrutiny can stimulate legislative and administrative improvements."); Baer, *supra* note 232, at 433-35 (suggesting using the doctrine as (1) a "rule of construction" that would "construe public land statutes liberally and in favor of public trust beneficiaries"; (2) as part of the "hard look doctrine," resulting in judicial stricter scrutiny and a higher standard of agency performance, and (3) as a "general principle of environmental law," to determine whether the federal government considered both environmental and economic uses of public lands when Congress has directed it to, or more broadly, that it function as a "conceptual framework [within which courts can] exercise judicial review,").

331. Illinois Central Railroad, 146 U.S. at 452.

navigation, and recreation, it may be difficult for an agency to authorize the activity without requiring mitigating preconditions. Agencies might insist that fish ranchers choose facility locations that do not interfere with traditional water uses, or that they compensate individuals or communities who are harmed by side effects such as loss of wild fish stocks.[332] In its strongest incarnation, the doctrine might block the conveyance of trust resources to fish ranchers entirely.

Applying the public trust doctrine to the EEZ makes good policy sense for a third reason. Since the doctrine constrains state police power authority, it acts as a check on potential abuses by the states. For example, while currently a state could readily use its police power to authorize destruction of wildlife or wildlife habitat in the furtherance of general welfare, this would be much more difficult to do under the rigorous standards required by application of the public trust doctrine.[333]

Fourth, applying the doctrine would protect strong *national* interests in the waters and resources of the EEZ. What the Court said about wild birds in *Missouri v. Holland* could as easily be said of migratory wild fish:

> Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter [migratory birds] is only transitorily within the state and has no permanent habitat therein. But for the treaty and the statute there soon might be no birds for any powers to deal with . . . . It is not sufficient to rely upon the States.[334]

Similarly, today wild fish stocks have reached a stage of crisis.

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332. *See* Eichenberg & Vestal, *supra* note 232, at 372-74 (recommending integration of "broad public trust criteria" into aquaculture leasing laws, including a required finding that the lease "is in the public interest or confers a public benefit," and that it will not "unreasonab[ly]" interfere with riparian access to coastal waters, navigation, or fishing, as well as criteria for setting "priorities among multiple non-aquaculture uses competing with aquaculture applicants for the same site,").

333. Musiker *et al.*, *supra* note 224, at 111-12, (discussing the courts' deference toward state exercise of the police power, and *citing* Sax, *supra* note 203, at 478 (judicial review of government action under the public trust doctrine is "more rigorous than that applicable to governmental activity generally"); *see also* Meyers, *Protection of Wildlife*, *supra* note 212, at 735 ("[A]pplication of legal standards that require clear legislative intent before wildlife habitat is alienated, or that require a compelling purpose before those resources can be adversely affected, will lead us to greater degrees of ecosystemic decision making").

334. Missouri v. Holland, 252 U.S. 416, 435 (1920).

According to Sax, one function of the public trust doctrine is to avoid destabilizing changes that might occur as a result of an environmental crisis, such as the sudden decline of a species.[335] Here, application of the public trust doctrine is particularly warranted to head off the destabilization that may occur as wild fish stocks decline from the adverse effects of ocean fish ranching.

A fifth advantage of the public trust doctrine is that it would blunt any takings challenges ocean fish ranchers might deploy to block regulation of their activities.[336] While it is generally agreed that there is no legally cognizable property interest in wild stocks of fish and that fishers who use their boats to fish in the EEZ are "simply . . . enjoying a use of their property that the government cho[o]se[s] not to disturb,"[337] ocean fish ranchers' property rights and interests may be different. Fish ranchers may have a property interest in the net pens and other facilities they locate in the EEZ. A court might consider those facilities to be a form of constitutionally protected personal property,[338] making it difficult for the government to restrict their use once they are set or to order their removal. Additionally, if ocean fish ranchers are seen as cultivators of a crop, not fishers, they may have a property right in the fish themselves, especially if they have stocked those pens with hatchery reared fish. However, under the public trust doctrine, an owner of trust resources can do nothing to alienate them in her favor, as she is no more than a custodian of those resources for the benefit of present and future generations.[339]

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335. Joseph L. Sax, *Liberating the Public Trust Doctrine from Its Historical Shackles*, 14 U.C. DAVIS L. REV. 185, 188-89 (1980).

336. *See* Babcock, *Things that Go Bump in the Night*, *supra* note 217, at 892-98.

337. Am. Pelagic Fishing Co. 379 F.3d 1363, 1377 (Fed. Cir. 2004); *see also* Parravano v. Babbitt, 861 F. Supp. 914, 928 (N.D. Cal. 1994) *aff'd*, 70 F.3d 539 (9th Cir. 1995) (Magnuson Act does not confer on commercial fishermen "any right or title in the fishery resources" under the government's regulatory authority); *see also* Britton, *supra* note 229, at 247 ("Despite the many characteristics of property that ITQs possess, it remains apparent that the rights afforded to ITQ holders exist only as a result of permissive government legislation, which may in the future be revoked like any other 'privilege.'")

338. *Cf.* Britton, *supra* note 229, at 239 ("Courts have regularly acknowledged the compensable nature of leaseholds, both inside and outside of the context of fisheries related leaseholds.").

339. *See* Boston Waterfront Dev. Corp. v. Commonwealth, 393 N.E.2d 356, 367 (Mass. 1979) ("The land in question is not, like ordinary private land held in fee simple absolute, subject to development at the sole whim of the owner, but is impressed with a public trust, which gives the public's representatives an interest and responsibility in its development."); *see also* Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding* Lucas v. South Carolina Coastal Council, 45 STAN. L. REV. 1433, 1452 (1993) (suggesting a usufructuary model of property right as an analogue to the concept of

Doctrinally, the right to convert a trust resource to a private use is simply not included in the bundle of ownership sticks she might otherwise possess. Therefore, any governmental restriction on the uses of those resources cannot constitute a taking of private property.[340] Applying these doctrinal principles to ocean fish ranchers means that any ownership interest they might declare in their equipment or the fish themselves, both of which this Article posits are subject to the public trust doctrine, would fall before the dominant public interest in the ocean and fisheries resource and could not block their regulation.

Courts have applied the public trust doctrine to a wide range of resources and activities where statutory regulatory regimes have not been sufficient to protect important public resources.[341] While applying the doctrine to the EEZ has its challenges, the effort to do so is worthwhile, especially if it could displace the regulatory commons that afflicts ocean fish ranching. The potential harms from fish ranching are too great and the public resources of the EEZ too valuable to be left in the limbo created by a patchwork of poorly coordinated regulations.

VI. CONCLUSION

> It is a fact, as singular as it was unexpected in the jurisprudence of our state, that the taking [of] a few bushels of oysters . . . should involve in it questions momentous in their nature as well as in their magnitude . . . and embracing, in their investigation, the laws of nations and of England, the relative rights of sovereign and subjects, as well as the municipal regulations of our country.[342]

While there are beneficial aspects to ocean fish ranching, there are also perils. At present, these perils are either unregulated or subject to a cacophony of conflicting and overlapping regulation. This situation creates the unfortunate conditions of a regulatory commons, allowing many of the potential harms of fish ranching

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custodianship).

340. *See generally* Babcock, *Things that Go Bump in the Night*, *supra* note 217, at 892-98; Babcock, *Wetlands and Coastal Barrier Beaches*, *supra* note 217, at 55-59.

341. Babcock, *Where the Wild Things Are*, *supra* note 217, at 891 (discussing the expansion in the doctrine's geographic scope and the uses it protects).

342. Arnold v. Mundy, 6 N.J.L. 1 (1821), *quoted in* Macinko *supra* note 26, at 936. Macinko notes the country has "moved from finding great national principles at stake in the disposition of rights to a few bushels of oysters to a barely concealed yawn" when these same principles are applied to "the disposition of rights to the entire halibut resource off Alaska." *Id.* at 954.

to go unchecked.

While the thrust of the public trust doctrine suggests that it might be used to protect the natural resources of the EEZ until a coherent regulatory regime develops, it has been unclear whether the doctrine applies so far from shore. This Article suggests that it can apply, either based on the existence of a federal public trust doctrine or on the expansion of state common law to the EEZ. As illustrated by the experience with IFQs, allotting private property rights does not fill this regulatory gap as successfully as applying the public trust doctrine to the resources of the EEZ. Since the environmental and socioeconomic harms of ocean fish ranching are largely external, there is little incentive for the rancher to abate them. Allowing fish ranchers to enclose the ocean for their own commercial purposes will not protect, let alone conserve, the fishery resources of the EEZ, nor will it serve social justice. Private property rights do not account for the public benefit and offer no antidote to the perils of a regulatory commons. Only the public trust doctrine assures proper oversight of ocean fish ranching and consideration of public benefits until a comprehensive regulatory program is developed. Unless the doctrine is applied to the EEZ as an interim measure, the perils associated with ocean fish ranching may continue, and rather than taking pressure off of wild fish stocks, may cause their demise.

The Public Trust Doctrine and Coastal Zone Management in Washington State

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The Public Trust Doctrine and Coastal Zone Management in Washington State

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for

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I. Introduction and Executive Summary

A. Introduction

The use and management of Washington state's coastal resources is a subject of intense interest to many different groups: state and local government agencies responsible for shoreline management, courts adjudicating policy and administrative issues, and of course, the public that owns and utilizes the tidelands, shorelands, and waters of Washington's rivers, lakes, and coastline. Statutes and regulations proliferate as governments attempt to regulate and protect the coastal environment. One state statute in particular, the Shoreline Management Act of 1971,[1] attempts a comprehensive approach to managing the coastal area, and implicates local, state and federal actions in its implementation.

In recent years, an ancient legal concept has been rediscovered as a renewed tool for coastal resource management. The public trust doctrine is rooted in Roman tradition, but courts throughout the United States have recently shown great interest in the doctrine as a flexible method for judicial protection of public interests in coastal lands, waters and water beds. Simply stated, the public trust doctrine provides protection of public ownership interests in certain uses of navigable waters and underlying lands, including navigation, commerce, fisheries, recreation and environmental quality. While tidelands may be sold into private ownership through conveyance of the jus privatum, the public trust doctrine reserves a public property interest, the jus publicum, in these lands and the waters flowing over them. Indeed, the public trust interests in these lands and waters is so strong that government can defeat the public right only by express legislation, and then only to promote other public rather than private values. The doctrine also applies to state owned lands, and imposes duties on state government and state agencies with respect to uses that can be made of these lands.

The public trust doctrine differs from regulatory schemes for coastal management in several respects. First, the doctrine is created, developed and enforced by the judiciary. While the doctrine is fully binding law on state government, it stems from the courts rather than the legislature. The doctrine also contains several features not generally found in statutes. Its scope is flexible, and courts may expand or limit it on a case-by-case basis. When properly invoked, the doctrine can limit private property rights while avoiding claims of unconstitutional takings. Unlike statutes, the doctrine has a quasi-constitutional nature. The legislature may extinguish the doctrine, but only in limited, explicitly-stated circumstances, and only for other public purposes.

[1] **Wash. Rev. Code** ch. 90.58 (1989).

The public trust doctrine arises out of the universally recognized need to protect public access to and use of such unique resources as navigable waters, beds, and adjacent lands.[2] This public need is met through recognition of a burden akin to an easement, a burden that is owned by the state and subject to state control for the benefit of the public interest in navigation, commerce, environmental quality, recreation, etc. This public interest is a property right, like an easement. If the state wishes to control the use of this burden, including use by either the private owner or by the public, the state is merely controlling a right that it already owns.[3] It is not regulating private property. The exercise of these state management or ownership rights do not therefore raise "takings" questions under the federal or state constitution because no regulation of private property is involved.

This Article considers several elements of the public trust doctrine. First, the public trust is a state law doctrine, and its geographic scope and the interests it protects vary from state to state.[4] Second, the doctrine is a product of judicial decisionmaking; it was initially recognized in the courts of the United States and England as an incident of sovereignty and is explained and implemented in these courts. The courts continue to determine its scope and usage.[5] A member of the public has legal standing to bring suit to protect public trust resources.[6] The suit can be brought against a private landowner who threatens to interfere

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[2]The law has long recognized special public rights for navigable waterways. The public has a clear right of navigation and fishery in such waters. Even on non-navigable-for-title waters an appropriator is prohibited in Washington from pumping water out and lowering the lake level to the damage of other lakeside owners. We accept the existence of state and federal navigation servitudes with their respective implications for private property. We accept without reservation that a local or state government can zone navigable waters for "natural" uses or open space only. In Washington we accept the rule illustrated by Bach v. Sarich, 74 Wash. 2d 575 (1968) that all riparians have rights to prohibit nonriparian (non-water-dependent) fills or construction out into lakes. Such activity is presumed to be unreasonable if it is not riparian.

[3]A distinction should be made here. We consider three kinds of ownership; (1) where the state has title to the beds of navigable waters or other land subject to the public trust easement, (2) where title to the land has been conveyed into private ownership, but the land is still subject to the public trust easement, and (3) where the state "owns" the public trust easement on privately owned land. With regard to (1) and (2) the state does not "regulate" the use of these property interests under the police power, rather it manages these interests as an owner on behalf of the public.

Some early cases and statutes assumed the states "owned" the fish and waters and could therefore regulate fishing, and the allocation and use of waters. Current jurisprudence rejects the ownership concept for wild fish and waters in lakes and streams, saying that these resources are "unowned." The current trend is to hold that the state power to regulate fisheries and water allocation is based on retained sovereign state police power. The ownership concept simply does not fit this relationship. See Hughes v. Oklahoma, 441 U.S. 322 (1979). States need not own waterbeds, or waters, or fish, in order to exercise regulatory authority.

[4]Phillips Petroleum Co. v. Mississippi, 481 U.S. 469, 475 (1988); Shively v. Bowlby, 152 U.S. 1, 26 (1893).

[5]See, e.g., Owsichek v. State, Guide Licensing and Control Board, 763 P.2d 488 (Alaska, 1988); CWC Fisheries, Inc. v. Bunker, 755 P. 2d 1115 (Alaska, 1988); Wilbour v. Gallagher, 77 Wash. 2d 306, 462 P.2d 232 (1969), cert. denied, 400 U.S. 878 (1970).

[6]Marks v. Whitney, 6 Cal. 3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971); Wilbour v. Gallagher, 77 Wash. 2d 306, 462 P.2d 232, (1969), cert. denied, 400 U.S. 878 (1970).

with or destroy public trust resources, or against a state agency where it fails to protect public trust interests in the management of state-owned land.

Third, the public trust is a true common law doctrine -- it is flexible, and courts enlarge and diminish it according to changing public needs on the one hand, and legitimate private expectations on the other. The doctrine defines both the public interest in private property and the uses that can be made of such property consistent with the doctrine. It also determines the policies that control management of publicly owned lands.[7] In sum, it determines the intersection of private ownership and public trust rights, as well as the intersection of public ownership and public trust duties.

B. Scope of Study

This Article examines the relationship of the public trust doctrine with legislatively promulgated coastal resource management laws. The Shoreline Management Act and other state environmental statutes rely on a combination of the public trust doctrine and the state "police" or regulatory power that governs the use of private property. The interrelationship of the public trust doctrine with the regulatory power expressed in these statutes is an important part of this Article.

Part II presents a history of the development of the public trust doctrine. Roman jurists first eludicated the doctrine, and courts imported it into the United States by way of English common law. Part II presents a brief history of the doctrine's origins and early history, then traces the chronological development of the public trust doctrine in Washington. The state constitution contains several articles that embody public trust principles. The doctrine has also been developed by the Washington courts. In early cases the Washington Supreme Court recognized certain public rights, such as the right of navigation, but did not explicitly label these decisions as public trust doctrine cases. The 1969 case of Wilbour v. Gallagher[8] is such an example. Two 1987 cases explicitly identified the doctrine as part of Washington law.[9]

Part II continues with an examination of several state statutes that express the values of the doctrine. The harbor area system,[10] the Seashore Conservation Act, the Shoreline Management Act,[11] and the Water Resources Act[12] each regulate either public or private

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[7] See Orion Corporation v. State, 109 Wash. 2d 621, 747 P.2d 1062 (1987), cert. denied, 108 S. Ct. 1996 (1988).

[8] 77 Wash. 2d 306, 462 P.2d 232 (1969), cert. denied, 400 U.S. 878 (1970).

[9] Caminiti v. Boyle, 107 Wash. 2d 662, 732 P.2d 989 (1987); Orion Corp. v. State, 109 Wash. 2d 621, 747 P.2d 1062 (1987).

[10] **Wash. Const.,** art. XV; **Wash. Rev. Code** 79.90.010-.070.

[11] **Wash. Rev. Code** ch. 90.58.

lands and waters subject to the public trust. The Aquatic Lands Act[13] has set forth proprietary goals and standards for management of state lands. This section identifies congruities found between the regulatory goals of these statutes and the values expressed by the public trust doctrine.

This section also analyzes the obligations placed on state government for management of state-owned lands that are subject to the public trust doctrine.

Part III examines the practical elements of the doctrine, including its geographic scope and the variety of interests it protects. The doctrine is not extensively developed in Washington, but the state Supreme Court has indicated it may be expanded to cover new interests and areas. This Article therefore examines decisions from state courts around the country that address relevant coastal management issues, and that may provide guidance to Washington courts and practitioners in predicting the future scope of the doctrine. Part III also sets forth the ways in which the public trust may be defeated, both by state and private action, and describes the various remedies available for conduct inconsistent with the public trust. Part III concludes with an analysis of the interrelationship of the public trust doctrine as a state law doctrine with federal legal principles, including takings doctrine, supremacy and preemption, and the consistency requirements of the federal Coastal Zone Management Act (CZMA), the federal counterpart of the state Shoreline Act.

Part IV concludes with observations about the possible future direction and use of the public trust doctrine in this state.

C. General Observations

The public trust doctrine is part of Washington law. Its complete geographic scope and the interests it protects are, however, not yet known. Many of the interests protected by the public trust doctrine can also be protected by state exercise of its regulatory power. Although constitutional takings questions may be raised when regulations are used, there is ample evidence that these challenges will ordinarily be rejected if the regulations are designed properly. Why then do we need the public trust doctrine? Or, to put it another way, what are the significant differences between reliance on the public trust doctrine and reliance on the regulatory power of the state?

The public trust doctrine is a judicial doctrine, with ancient common law roots. History tells us that the interests protected by this doctrine are so important that their protection cannot be entrusted entirely to unfettered control by state legislatures.[14] Some courts speak about the public trust doctrine as if it were a constitutional clause. In fact it lies somewhere between an

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[12]**Wash. Rev. Code** ch. 90.54.

[13]**Wash. Rev. Code** chs. 79.90 - 79.96.

[14]See Illinois Central Railway v. Illinois, 146 U.S. 387 (1892).

ordinary rule of law, and a constitutional requirement. It is more powerful than the ordinary rule of law, but not quite so powerful as a constitutional clause that justifies striking down inconsistent legislation. It might be labeled a "quasi"-constitutional doctrine.

Police power regulation is a product of the legislative process. This process can be slow, unwieldy, and costly, and in the meantime permanent damage may be done to public trust interests. Once navigable waters have been filled, or buildings built, they are seldom removed. The loss of open space, wetlands, navigable capacity, fish and wildlife, is often permanent. The public trust doctrine is premised on the belief that these interests are so profoundly important that they justify judicial review of legislation adversely impacting them, involving both the courts and the legislature in coastal management.

As a practical matter, successful reliance on the public trust doctrine means that the takings issue is significantly diminished, if not avoided altogether. In addition, whereas individual citizens often have no standing in court to enforce environmental regulations, they generally do have standing to file suit under the public trust doctrine. Also, legislation may provide only partial protection for the interests involved, contain "loopholes," and may become out-of-date. Enforcement of legislation may be spotty, or inadequate. The public trust doctrine is premised on the theory that these limitations in the legislative approach justify continuation and indeed expansion of the public trust doctrine.

The decisions of other state courts suggest future directions for consideration by Washington courts in interpreting the scope of the public trust doctrine. Other courts have, for example, applied the doctrine to cover the dry sand area of beaches, non-navigable tributaries, related wetlands, and the surfaces of non-navigable waters. Other state courts have also recognized evolving public trust values, such as aesthetic beauty and the right of the public to walk over privately owned tidelands. These cases suggest possible applications of the doctrine that may be accepted by the Washington courts, and are examined in detail below.

The public trust doctrine initially applied to all state owned beds of navigable rivers, lakes, and salt waters when the state of Washington entered the Union in 1889. Subsequent to statehood, about 60% of the tidelands on Puget Sound were conveyed into private ownership. Nothing was said in these conveyances about abolishing the public trust doctrine. In other states when such "bare legal title" conveyances have occurred, the public trust burden was not destroyed.[15] The Washington court has also supported this view. The Washington Supreme Court has described the public trust doctrine as similar to a covenant running with the land. Unlike other burdens on private property, however, landowners need receive no express notice of the public trust burden on their lands.

[15] See, e.g., Berkeley v. Superior Court of Alameda Co., 162 Cal Rptr. 327, 606 P.2d 362 (1980); People v. California Fish Co., 166 Cal. 576, 138 P. 79 (1913).

State and local officials must consider the public trust doctrine and its values when issuing permits or making administrative decisions affecting public trust resources. State statutes often incorporate or reflect public trust values. If the state law appear to be inconsistent with public trust values, the law should be implemented only when that inconsistency is clearly intended by the legislation.

II. History of the Public Trust Doctrine

A. Origins and Early History

The public trust doctrine originated from the widespread public practice, since ancient times, of using navigable waters as public highways for navigation, commerce, and fisheries. The earliest articulation of the doctrine is sometimes attributed to the Institutes of Justinian of 533 A.D.[16] which provided that the doctrine applied to the air, running water, the sea, and the seashores.

In England the doctrine was well established by the time of the Magna Charta.[17] Leading English court decisions[18] recognized that the Crown held the beds of navigable waters in trust for the people for navigation,[19] commerce, and fisheries.[20] Even the Crown could not destroy this trust.[21]

In the United States cases as early as Arnold v. Mundy,[22] decided in 1821, recognized and upheld the doctrine. In Mundy the New Jersey court declared the trust as we know it today. The dispute concerned an oyster bed which was part of a pre-statehood conveyance from the King of England. Conveyances eventually led to Arnold's ownership and use as a private oyster bed. This exclusive use was challenged by Mundy, who insisted the public had a right to take oysters in this area as it had done for many years. The court ruled in favor of Mundy, giving the first clear formulation to the doctrine. It said that under the natural law, civil law,

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[16]J. Inst. 2.1.1. The Institutes of Justinian, a general textbook of Roman law, was issued around 533 A.D. **B. Nicholas, An Introduction to Roman Law** 41 (1962). See Lazarus, Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine, 71 Iowa L.Rev. 631 at 633-34 (1986).

[17]Clause 33, Magna Charta. See U.S. Fish & Wildlife Service Region 1, Ecological Services, "Public Trust Rights," (1978) (prepared by Helen F. Althaus) for a comprehensive analysis of Roman, civil law, and common law development of the public trust doctrine.

[18]See 2 **H. Bracton, On the Laws and Customs of England**, 16-17, 39-40 (S. Thorne, trans. 1968).

[19]Attorney General v. Parmeter, 10 Price 378, 147 Eng. Rep. 345 (Ex. 1811) aff'd by the House of Lords, under the name of Parmeter v. Gibbs, 10 Price 412, 147 Eng. Rep. 356 (H.L. 1813).

[20]The Royal Fishery of the River Banne, Davis 55, 80 Eng. Rep. 540 (K.B. 1610). Carter v. Murcot, 4 Burr. 2162, 98 Eng.Rep. 127 (K.B. 1768). See 1 **Water and Water Rights** at 179-80 (Clark, Ed. (1970)).

[21]See "Public Trust Rights," supra note 17. The author summarizes the English authorities, saying that the king had a private right (jus privatum) which could be granted to others but the public right (jus publicum) was held by the Crown for his subjects and "could not be alienated."

[22]6 N.J.L. 1 (1821).

and common law, the navigable rivers in which the tide ebbs and flows, and the beds and waters of the seacoast are held by the sovereign in trust for the people.[23]

The court said that the states, being sovereign governments, had succeeded to the English trust which was held by the Crown and that a grant purporting to divest the citizens of these common rights was void. The people, through their government, may regulate public trust resources, by building ports, basins, docks and wharves, reclaiming land, building dams, locks and bridges, and improving fishing places, but the sovereign power itself "cannot . . . make a direct and absolute grant of the waters of the state, divesting all the citizens of their common right."[24]

Seventy years later, in Illinois Central Railway v. Illinois, the United States Supreme Court built upon the principles articulated in Mundy and used the public trust doctrine to invalidate one of the more outrageous land giveaways of the 19th century.[25] In 1869 the Illinois legislature deeded the bed of Lake Michigan along the entire Chicago waterfront to the Illinois Central Railroad. In 1873 the legislature, suffering pangs of conscience, repealed the grant. Ten years later the state sued in state court to establish the invalidity of the railroad's continued assertion of ownership over the harbor bed.[26] The Supreme Court held the revocation valid, saying that a grant of all the lands under navigable waters of a state was "if not void on its face, [then] subject to revocation." The state cannot "abdicate its trust over property in which the whole people are interested... [any more than it can]...abdicate its police powers."[27]

Mundy and Illinois Central establish the public trust doctrine as part of the common law adopted by the various States. These cases hold that legislatures will be held to a high standard, a trust-like standard, with regard to public trust resources. The language of the two opinions suggests that the doctrine may even limit legislative power. At the least, the doctrine establishes a potent rule of construction, requiring that legislatures conveying away or changing the status of public trust resources must do so explicitly.

In England the doctrine was applied primarily to the bed of the sea and to tidelands.[28] The United States, in contrast, has large navigable rivers, such as the Mississippi and the

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[23] Id. at 76-77.

[24] Id. at 78.

[25] 146 U.S. 387 (1892).

[26] The company removed the case to federal court, raising the issue whether the repeal offended the contracts clause and the fourteenth amendment due process clause of the federal constitution. Id. at 433.

[27] Id. at 453-54.

[28] Illinois Central Railroad Co. v. Illinois, 146 U.S. 387 (1892). More contemporary authors contend the public trust doctrine applied to navigable fresh waters in England too. 4 **Waters and Water Rights** 105 (R. Clark, ed. 1970); "Public Trust Rights," supra note ___, at 29 (1978).

Columbia, flowing inland for hundreds of miles. Not surprisingly the United States courts extended the doctrine to cover navigable fresh waters.[29] Thus in this country the doctrine covers all waters "navigable in fact," whether fresh or salt. Under the equal footing doctrine the title to the beds of all navigable waters, fresh or salt, automatically went to each state at statehood.[30] As the original thirteen states held title to the beds of navigable waters, so must each new state hold such title if they are to be on an equal footing with the original thirteen. Accordingly, analysis of navigability for title determines what lands left the federal domain and passed to the states at statehood. Because state law cannot control the disposition of the federal domain, the test of navigability for title is necessarily a federal test,[31] and is determined as of the date the state entered the union.[32] The subsequent disposition of these lands is a matter solely of state law. Prior to statehood the federal government held title to these lands, which were chiefly valuable for "commerce, navigation, and fisheries . . . in trust for the future states."[33] The government could convey these beds away only in case of some "international duty or public exigency."[34]

At a minimum the public trust doctrine protects the public interest in the beds of navigable waters, up to mean high tide on the ocean, and mean high water mark on fresh waters.[35] No use can be made of the beds of such waters without meeting conditions imposed by the doctrine. Beyond this, other states have interpreted the doctrine as applying to waters that are only navigable for recreational uses, even though the beds are privately owned. In other words, in some courts the public trust doctrine is not limited to those waters and beds which the state owns, or once owned, under the equal footing doctrine.

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[29]Oregon ex rel. State Land Board v. Corvallis Sand and Gravel Co., 429 U.S. 363 (1977).

[30]The equal footing doctrine arises by implication from the United States Constitution, and provides that new states must be admitted on an equal footing with the original thirteen states. New states therefore have the same governing powers, including the power of governance over federal lands, as the original states. New states also acquire, as of the instant of statehood, the title to the beds of navigable rivers and lakes, because the original thirteen states held such titles. Martin v. Waddell, 41 U.S. (16 Pet.) 367 (1842).

[31]United States v. Utah, 283 U.S. 64 (1931); United States v. Holt State Bank, 270 U.S. 49 (1926); and Brewer-Elliott Oil & Gas Co. v. United States, 260 U.S. 77 (1922).

[32]United States v. Appalachian Elec. Power Co., 311 U.S. 377 (1941); United States v. Utah, 283 U.S. 64, 75 (1931).

[33]Shively v. Bowlby, 152 U.S. 1, 49-50 (1894).

[34]Id. at 50. These duties include performance of international obligations, improvements to facilitate commerce with foreign nations or among the states. Id. at 48.

[35]Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988). Most states extend public trust rights from the seaward limit of the territorial sea to the mean high tide line. A handful of states, however, only recognize full public trust protection seaward of the low tide line. These states include Delaware, Maine, Massachusetts, Pennsylvania, and Virginia. See **D. Slade, et al., Putting the Public Trust Doctrine to Work** 59 (1990).

Federal courts have had little occasion to speak about the parameters of the doctrine, with the exception of Illinois Central Railway v. Illinois,[36] and recently, Phillips Petroleum Co. v. Mississippi.[37] The task of defining the scope of the doctrine has been left largely to state courts. California and Massachusetts have developed the doctrine more extensively than most states, with Wisconsin, Minnesota, New Jersey, Michigan, and a few other states not far behind. The doctrine has not been totally rejected in any state, although its application varies state by state and its application to particular facts has been denied.[38]

Courts around the country have employed the public trust doctrine in literally hundreds of cases in recent years.[39] Several trends are apparent. First, courts are applying the doctrine in new geographical contexts in order to reach and promote new interests. In particular, courts are finding and preserving public access to coast and shorelines.[40] A second important trend is the use of the doctrine as a method of environmental protection.[41]

Finally, coastal resource managers and state agencies are beginning to incorporate the public trust doctrine into the administrative decision making process. State officials must identify both known and potential parameters of the doctrine, and determine the extent to which current regulatory decisions should be scrutinized for adherence to public trust values. Officials must also determine whether any past decisions are subject to public trust review as well.[42]

B. Chronological Development of the Public Trust Doctrine in Washington Law

Washington courts have only recently explicitly addressed the public trust doctrine in state cases. Nonetheless, the public trust has existed in Washington since statehood, and burdens all public trust resources, including tidelands, shorelands, and beds of navigable waters as well as the waters themselves. Certain uses of these resources are specially protected by the doctrine, including navigation, commercial fisheries, and "incidental rights of fishing,

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[36] 146 U.S. 387 (1892).

[37] 484 U.S. 469 (1988).

[38] See, e.g., Bell v. Town of Wells, 557 A.2d 168 (Me. 1989); MacGibbon v. Bd. of Appeals of Duxbury, 369 Mass. 512, 340 N.E.2d 487 (1976); O'Neill v. State Highway Dep't, 50 N.J. 307, 235 A.2d 10 (1967).

[39] See **D. Slade, et al.,** supra note 35.

[40] See, e.g., Owsichek v. State, 763 P.2d 488 (Alaska 1988); Matthews v. Bay Head Improvement Assoc., 95 N.J. 306, 471 A.2d 355 (1984).

[41] See infra Section III.C.l.

[42] See, e.g.,, National Audubon Society v. Sup'r Court of Alpine County, 33 Cal.3d 419 (1983).

boating, swimming, water skiing, and other related interests."[43] Because the public trust doctrine is dynamic and may change with contemporary needs, the scope of the doctrine will probably expand in the future.[44] This section traces the development and current status of the doctrine in Washington law, constitutional, judicial, and statutory.

1. Constitution

Prior to and at the time of statehood, tidelands and shorelands fronting harbor areas were areas of intensive economic development and interest. Following much lobbying and debate, the state constitutional convention approved three articles addressing ownership and management of the new state's tidelands and shorelands.[45] Each of these articles has direct bearing on the scope of the state's public trust powers and obligations.

First, the state Constitution declares state ownership of the beds and shores of all navigable waters, except where a federal patent was perfected prior to statehood.[46] Second, the Constitution invalidated prior acts of the territorial legislature granting tidelands to railroad companies and establishing riparian rights.[47] Finally, the Constitution established harbor boundaries, and placed a restraint on disposition of beds underlying navigable waters outside of certain harbor lines.[48] This article directed the legislature to provide for the appointment of a commission to draw harbor lines in the navigable waters that lie within or in front of the corporate limits of any city, or within one mile on either side. The state may not alienate any rights whatever in the waters beyond such harbor lines. Areas lying between harbor lines and the line of ordinary high water, within specified limits, are reserved for landings, wharves, streets, and other conveniences of navigation and commerce.[49]

The public policy expressed in these constitutional provisions is generally consistent with public trust principles, the state reserving complete ownership in the beds and shores of

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[43]Mentor Harbor Yacht Club v. Mentor Lagoons, 170 Ohio St. 193, 199, 163 N.E.2d 373, 377 (1959) (holding that if waters were naturally navigable, then an artificial extension of a channel brought the extended waters under the public trust doctrine).

[44]See infra Section III for a detailed analysis of the current scope of the public trust doctrine.

[45]K. Conte, The Disposition of Tidelands and Shorelands, Washington State Policy 1889-1982, at 10-20 (unpublished master's thesis, 1982).

[46]**Wash. Const.** art. XVII.

[47]**Wash. Const.** art. XXVII, § 2.

[48]**Wash. Const.** art. XV.

[49]**Wash. Const.** art. XV, §§ 1, 2. See also Johnson & Cooney, Harbor Lines and the Public Trust Doctrine in Washington Navigable Waters, 54 **Wash. L. Rev.** 275 (1978).

navigable waters.[50] The Constitution did not, however, prohibit the sale of tidelands and shorelands. Instead, the state was permitted to dispose of first class tide[51] and shore[52] lands, which it did under statutory authorization until 1971.[53] Second class tide[54] and shore[55] lands continue to be eligible for sale only to public entities.[56]

2. Cases

Early Washington cases, although not relying explicitly on the public trust doctrine, recognized legally protectable public interests in the state's navigable waters and underlying beds.[57] In Hill v. Newell,[58] the court explicitly approved the reasoning of the leading California public trust case.[59] In State v. Sturtevant,[60] the court acknowledged that the state held the right of navigation "in trust for the whole people of this state."[61] The court did not

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[50]See Section II.B.3.6.(1) infra for further discussion of the interrelationship between the statutory harbor line system and the public trust doctrine.

[51]The term "first class tidelands" means the shores of navigable tidal waters belonging to the state, lying within or in front of the corporate limits or any city, or within one mile thereof upon either side and between the line of ordinary high tide and the inner harbor line; and within two miles of the corporate limits on either side and between the line of ordinary high tide and the line of extreme low tide. **Wash. Rev. Code** § 79.90.030.

[52]"First class shorelands" means the shores of a navigable lake or river belonging to the state, not subject to tidal flow, lying between the line of ordinary high water and the line of navigability, or inner harbor line where established and within or in front of the corporate limits of any city or within two miles thereof upon either side. Id. § 79.90.040.

[53]See Hughes v. State, 67 Wash. 2d 799, 410 P.2d 20 (1966) for additional historical information.

[54]"Second class tidelands" means the shores of navigable tidal waters belonging to the state, lying outside of and more than two miles from the corporate limits of any city, and between the line of ordinary high tide and the line of extreme low tide. **Wash. Rev. Code** § 79.90.035.

[55]"Second class shorelands" means the shores of a navigable lake or river belonging to the state, not subject to tidal flow, lying between the line of ordinary high water and the line of navigability, and more than two miles from the corporate limits of any city. Id. § 79.90.045.

[56]Id. § 9.94.150(2). See Conte, supra note 45, at 170-84, for an account of the controversy surrounding the enactment of this statute.

[57]Madson v. Spokane Valley Land & Water Co., 40 Wash. 414, 82 P. 718 (1905); Dawson v. McMillan, 34 Wash. 269, 75 P. 807 (1904).

[58]86 Wash. 227, 149 P. 951 (1915).

[59]People v. California Fish Co., 166 Cal. 576, 138 P. 79 (1913). The court noted that the reasoning of the California court expressed its own views. 86 Wash. at 231.

[60]76 Wash. 158, 135 P. 1035 (1913)

[61]Id. at 165, 135 P. at 1037.

expressly use the term "public trust" in Wilbour v. Gallagher,[62] but it gave strong protection to the public right of navigation, one of the interests traditionally protected under the public trust doctrine.

More explicit judicial recognition of the public trust doctrine in Washington occurred in 1987, in Caminiti v. Boyle.[63] Principles and policies of the doctrine are evident in our state law, however, going back as far as 1891. One line of early cases examined the nature of the state's ownership of tidelands and the beds of navigable waters. The state Supreme Court concluded in a series of decisions over several decades that the state owned these lands in fee, and that entry into statehood extinguished all riparian rights of adjacent landowners to navigable waters.[64] This proprietary ownership, as contrasted with sovereign trusteeship, enabled the state to dispose of tidelands, in fee, as provided by statute.[65] But, the state conveyed only the bare legal title, leaving the public trust in place.

A parallel line of cases at this time examined both the nature of the state's disposition of tidelands and the remaining public interests in the lands and waters above them. In Eisenbach, the Court cited public interests in preservation of navigation and fishing as a necessary basis for the state's power to grant lands into private hands.[66] New Whatcom v. Fairhaven Land Co. analogized the state's ownership of lands to that exercised by the king of England, and described the public's interest as "an easement in [all navigable waters] for the purposes of travel."[67] Sequim Bay Canning Co. v. Bugge[68] acknowledged a public right to navigable waters and fisheries, but denied a public right of clamming on privately leased lands between the high and low water marks.[69]

In State v. Sturtevant the state Supreme Court commented that the state was charged only with preserving the public interest in navigation following grant of shorelands into private ownership.[70] On rehearing, the court left open the question whether a public right to fisheries

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[62]77 Wash. 2d 306, 462 P.2d 1232, cert. denied, 400 U.S. 878 (1969).

[63]107 Wash. 2d 662, 732 P.2d 989 (1987).

[64]Eisenbach v. Hatfield, 2 Wash. 236, 26 P. 539 (1891).

[65]Grays Harbor Boom Co. v. Lownsdale, 54 Wash. 83, 89, 102 P. 1041 (1909); Lownsdale v. Grays Harbor Boom Co., 54 Wash. 542, 551, 103 P. 833 (1909).

[66]2 Wash. 236, 253, 102 P. 1041 (1891).

[67]24 Wash. 493, 504, 64 P. 735 (1901).

[68]49 Wash. 127, 94 P. 922 (1908).

[69]See infra Section III.C.2.a for a discussion of the current state of this issue.

[70]76 Wash. 158, 165, 138 P. 650 (1913).

was reserved out of tideland grants.[71] Concurrently, the Court decided two cases explicitly discussing the public interests remaining in tidelands[72] and an abandoned navigable riverbed[73] conveyed into private ownership. The court found all public interests to have been extinguished.

Two important points emerge from these cases. First, the Washington legislature early followed a strong public policy encouraging private ownership of tidelands and concomitant development and industrial expansion. The state Supreme Court implicitly approved this policy in its decisions.[74]

Second, although the Court did not use the term "public trust doctrine" when analyzing these cases, it did invoke the leading public trust doctrine cases of the day, including Illinois Central[75] and California Fish,[76] as authority for its analysis. The Court did not, however, apply the presumption against destruction of public trust interests that is the hallmark of the contemporary cases on the public trust doctrine. Instead, particularly with Palmer[77] and Hill,[78] the court engaged in perfunctory review of the statutes enabling the grants at issue, and their negative impact on public trust interests.[79]

Wilbour v. Gallagher[80] marks the modern genesis of public trust doctrine decisions in Washington. The Court found that a shoreland owner's right to develop intermittently submerged property was circumscribed by the public interest in navigation at high water. The thirteenth footnote is particularly significant where the Court encouraged a more

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[71]86 Wash. 1, 149 P. 33 (1915).

[72]Palmer v. Peterson, 56 Wash. 74, 105 P. 179 (1909).

[73]Hill v. Newell, 86 Wash. 227, 149 P. 951 (1915).

[74]See. e.g., Harris v. Hylebos Industries, Inc., 87 Wash. 2d 770, 505 P.2d 457 (1974); Grays Harbor Boom Co., supra note 65.

[75]Illinois Central R.R. v. Illinois, 146 U.S. 387 (1892), cited in Palmer v. Peterson, 56 Wash. at 76.

[76]People v. California Fish Co., 166 Cal. 576, 138 P. 79 (1913), cited in Hill v. Newell, 86 Wash. at 231-32.

[77]56 Wash. 74, 105 P. 179.

[78]86 Wash. 227, 149 P. 951.

[79]This problem continues. Recently, Division I of the Washington State Court of Appeals failed to analyze the extinguishment of public trust interests in tidelands, despite its review obligations. See, Reed v. State (unpublished opinion), Dkt. No. 25106-6-I (5-21-90).

[80]77 Wash. 2d 306, 462 P.2d 232 (1969).

systematic method of permitting fill.[81] This footnote is generally thought to have inspired the Shoreline Management Act of 1971.[82]

Nevertheless, doctrinal development of the public trust remained inconsistent even after Wilbour. The court in Harris v. Hylebos Industries, Inc.[83] found that the "legislative intent regarding use of tidelands in harbors of cities is manifestly that . . . such harbors . . . shall consist of commercial waterways, and that the filling and reclaiming of the tidelands . . . shall be encouraged."[84] The Court did note that the recently enacted Shoreline Act was not argued in the case as evidence of legislative policy reversal.[85]

More recently, the state Supreme Court has explicitly addressed the role of the public trust doctrine in Washington's coastal management in two cases. In Caminiti v. Boyle,[86] the Court found that the public trust doctrine had always existed in Washington law.[87] While acknowledging the power and extent of the public trust doctrine the Court nevertheless found the legislative act at issue, a revocable license to waterside owners to build private recreational docks on state-owned tidelands and shorelands,[88] not inconsistent with public trust interests in navigable waters.

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[81] Id. at 316. Footnote 13 of the opinion states:

> We are concerned at the absence of any representation in this action by the Town or County of Chelan, or of the State of Washington, all of whom would seem to have some interest and concern in what, if any, and where, if at all, fills and structures are to be permitted (and under what conditions) between the upper and lower levels of Lake Chelan. There undoubtedly are places on the shore of the lake where developments, such as those of the defendants, would be desirable and appropriate. This presents a problem for the interested public authorities and perhaps could be solved by the establishment of harbor lines in certain areas within which fills could be made, together with carefully planned zoning by appropriate authorities to preserve for the people of this state the lake's navigational and recreational possibilities. Otherwise there exists a new type of privately owned shorelands of little value except as a place to pitch a tent when the lands are not submerged.

[82] Laws of 1971, ch. 286, p. 1496 (now codified at **Wash. Rev. Code** Ch. 90.58).

[83] 81 Wash. 2d 770, 786, 505 P.2d 457.

[84] Id. at 786.

[85] Id. at n.11.

[86] 107 Wash. 2d 662, 732 P.2d 989 (1987).

[87] Caminiti involved state-owned land, and focused on management of state land consistent with the doctrine rather than regulation of private land.

[88] **Wash. Rev. Code** § 79.90.105. Abutting residential owners may maintain docks without charge if such docks are used exclusively for private recreational purposes and the area is not subject to prior rights. Permission is subject to local regulation and may be revoked by the state upon a finding of public necessity.

The Court in Orion Corp. v. State[89] made affirmative use of the public trust doctrine in curtailing development of privately owned land where the fills and housing would conflict with public interests in navigable waters. While the state clearly had the power to dispose of tidelands and shorelands, that disposition was not unqualified. Rather, it was limited by public trust concepts of public access for navigation and fisheries. Orion is particularly noteworthy for its analysis of a constitutional "takings" claim. The tidelands owner argued that its property had been taken without just compensation as required by the state and federal constitutions. The Court remanded the case to the trial court for consideration of the relation of the public trust to the burden it placed on the property.

These cases indicate that the public trust doctrine has been adopted into Washington law, but has not been fully delineated. They do suggest direction for the future development of the doctrine and provide analytic foundations for that development.

3. Legislation

To what extent do legislative enactments, addressing coastal resource management, embody and even supplant the public trust doctrine? The public trust doctrine represents two distinct concepts: first, the judicial function is expanded, from its usual rational basis review, to scrutinize legislative and administrative acts. Second, when engaged in this review, the courts compare challenged laws or governmental actions with specific values, i.e., public interests in navigation, commerce, fisheries, and other uses of trust resources.

a. Judicial Review Function

Usually the judiciary will defer to legislative judgment when reviewing statutes. If a court can find a "rational basis" for a challenged statute, it will decline to substitute its own judgment for that of the legislature.[90] The courts make an exception to this deferential review, however, when certain constitutional issues are implicated. Courts will, for example, strictly scrutinize statutes that violate principles of equal protection and certain fundamental rights.[91]

The public trust doctrine invites another form of heightened judicial scrutiny, not necessarily based on constitutional foundations[92] but on historical common law traditions and the unique

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[89]109 Wash. 2d 621, 642, 747 P.2d 1062, 1073 (1987).

[90]Duke Power v. Carolina Environmental Study Group, 438 U.S. 59 (1978); Williams v. Lee Optical Co., 348 U.S. 483 (1955); State v. Brayman, 110 Wash. 2d 183, 751 P.2d 294 (1988).

[91]Washington v. Seattle School Dist. No. 1, 458 U.S. 457 (1982); Moore v. East Cleveland, 431 U.S. 494 (1977); Myrick v. Board of Pierce Cy. Comm'rs, 102 Wash. 2d 698, 677 P.2d 140, 687 P.2d 1152 (1984).

[92]Although courts in other states have so implied. See H. Dunning, Instream Flows, The Public Trust, and the Future of the West, presented at Instream Flow Protection in the Western United States: A Practical Symposium (Mar. 31-Apr. 1, 1988) (conference proceedings available from Natural Resources Law Center, University of Colorado).

value and importance of navigable waters and coastlines.[93] Thus, the courts have used the public trust doctrine to carefully examine statutes for consistency with public trust principles. Rather than deferring to legislative judgment about coastal management, the doctrine enables courts to compare that judgment with public trust values.[94]

Can a statute preclude the traditional heightened scrutiny that the public trust doctrine requires? Presumably, because the public trust doctrine is a judicially created law that may be invoked by judicial notice, the legislature cannot divest the courts of their responsibility to consider the public trust doctrine. Neither can the judiciary relinquish its public trust doctrine obligations. In other words, while the public trust doctrine may not direct the outcome of any given case, it does require courts to take a stronger than usual look at legislation that may negatively impact public trust interests.

b. Statutes

(1) Harbor Line System

The constitutionally mandated harbor line system[95] gave rise to the first state statutes addressing public trust interests. The harbor line system provides for state ownership and management of all lands lying outside of established harbor lines. The proprietary interest reflected in the constitutional articles providing for the system,[96] and the implementing statutes,[97] clearly embody the public trust interest in these lands. The geographic scope of the public trust doctrine exceeds that of the harbor line system, but where they correlate, they are the same. As Johnson & Cooney noted:

> ". . . The existence of the [public trust] doctrine in Washington is important because . . . harbor lines have been established in only a small percentage of the state's waters, and even where harbor lines do exist, they do not perfectly reflect contemporary public values in navigation and in the beds of navigable waters. The public trust doctrine may be available to protects these values in a proper case."[98]

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[93]See supra Section II.A.

[94]Caminiti v. Boyle, 107 Wash. 2d 662, 732 P.2d 989 (1987); People v. California Fish Co., 166 Cal. 576, 138 P. 79 (1913); Sax, The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention, 68 **Mich. L. Rev.** 471 (1970).

[95]**Wash. Const.** art. XV, § 1.

[96]**Wash. Const**. art. XVII. See supra Section II.B.l.

[97]**Wash. Rev. Code** §§ 79.90.010 - .090.

[98]Johnson & Cooney, supra note 49, at 287.

The purposes of the harbor line system and the public trust doctrine also correlate. The harbor line system serves to limit the uses of harbor areas to "landings, wharves, streets, and other conveniences of navigation and commerce."[99] These purposes mandate public use of the harbor area and in fact embody historic public trust uses.

> "Nothing in the Washington harbor line system . . . should be taken to negate the public trust doctrine in this state. . . .The harbor line system has reduced the need for reliance on the public trust doctrine and has, at least until recently, given adequate protection to many of the same public interests which otherwise would have received public trust doctrine protection."[100]

While the harbor line system seeks to reserve and retain public control and access over important commercial waterfronts, it is not clear how other public trust interests, such as fisheries and recreation, would fare in conflict with the harbor line system.

State policy during the first eight decades of statehood clearly favored disposition of tidelands and shorelands into private ownership,[101] a policy contemplated and advanced by the harbor line system. Several statutes delineated the functions of the Harbor Line Commission and established programs for the sale of tidelands and leases of navigable water beds.[102] In 1971, the state legislature halted further sales of tidelands and shorelands into private ownership.[103] By that time, however, 60% of all tidelands and 30% of all shorelands were, and remain, privately owned.[104] Importantly, this private ownership does not extinguish public trust interests.

(2) The Shoreline Management Act

In 1971, the state legislature enacted the Shoreline Management Act.[105] The Shoreline Act establishes a management scheme and ethic for local[106] comprehensive planning and land use control for all shorelines of the state, extending from extreme low tide inland 200 feet, for all

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[99] **Wash. Const.** art XV, § 1.

[100] Johnson & Cooney, supra note 49, at 286.

[101] See Conte, supra note 45.

[102] See **Wash. Rev. Code** Titles 43, 53, and 79.

[103] Wash. Laws 1971, Ex. Sess., ch. 217, § 2 (now codified **Wash. Rev. Code** § 79.94.150).

[104] Conte, **supra** note 45, at Introduction, p. x.

[105] **Wash. Rev. Code** Ch. 90.58.

[106] The state retains power of approval over local master programs to insure consistency with the policies of the Act. **Wash. Rev. Code** § 90.58.090.

streams and rivers with flows greater than twenty cubic feet per second, for all lakes twenty acres and larger, and for all associated wetlands.[107] Many of these waters and underlying lands are public trust resources. Whether the doctrine extends to cover all of the lands and waters subject to the jurisdiction of the Shoreline Act is a question yet unanswered by the Washington courts.

The Shoreline Act reflects a legislative intent to protect public trust resources. The statute designs a land use program that governs both state-owned and private lands that fall under its jurisdiction.[108] The Act emphasizes preservation of these waters for public access and water-related or water-dependent uses, and promotes environmental and aesthetic values.

As a multi-purpose planning statute, the Shoreline Act's goals and functions are far broader than those of the public trust doctrine. Nevertheless, certain public trust values are reflected in the Act's legislative findings, use preferences, and guidelines for master program contents. The Orion Court observed that the Shoreline Act reflects public trust principles in its underlying policy, that is, "protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto."[109]

While the Shoreline Act represents an exercise of state regulatory power, the public trust doctrine supplements execution of the Act. When regulatory power is applied to trust resources, limiting them to specific trust uses, no takings issue arises. Private land is subject to the trust burden, which pre-dates virtually all private ownership. A takings issue can arise if regulations exceed public trust protections. For example, the Orion court found that the public trust easement on the tidelands at issue precluded their fill and residential development. The tidelands could, however, be used for aquacultural activities under the public trust burden, but not under the Shoreline Act. Hence, Orion Corporation could claim a regulatory taking of its tidelands equal to their value as an aquaculture site, but not for other development.[110] The public trust doctrine effectively shields the state's regulatory actions from takings claims, where those actions mirror the scope of the doctrine.

Although the Orion court clearly distinguished between the public trust doctrine and the Shoreline Act, earlier cases indicate the doctrine was nearly merged into the Act. The Court in Caminiti noted that "the requirements of the "public trust doctrine" are fully met by the

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[107] Id. § 90.58.030(2).

[108] This authority may be contrasted with that of other statutes and departments, which exercise authority only over state-owned lands.

[109] Orion Corp. v. State, 109 Wash. 2d 621, 641 (1987)(citing Portage Bay-Roanoke Park Comm'ty Coun. v. Shorelines Hearings Bd., 92 Wash. 2d at 641 n. 10, 747 P.2d at 1073 n. 10. (1979)).

[110] Id. at 660-62. The Court remanded for factfinding on this issue.

legislatively drawn controls imposed by the Shoreline Act of 1971."[111] Previously, the court observed that ". . . any common-law public benefit doctrine this state may have had prior to 1971 . . . has been superseded and the Shoreline Act is the present declaration of that doctrine."[112] In Orion, however, the public trust doctrine made a strong appearance in contrast to the Shoreline Act. Thus, while the Shoreline Act may reflect elements and policies of the public trust doctrine, it does not supersede it.

(3) The Waters Resources Act

The Water Resources Act of 1971[113] (WRA) promulgates state policy governing the "utilization and management of the waters of the state," providing guidelines and priorities for allocation and use of primarily freshwater bodies, especially rivers. This statute represents an intersection between the prior appropriation[114] and public trust doctrines, and is explicitly binding on local governments and agencies.[115] While the statute does not address navigation interests, it does cite environmental quality, particularly with respect to wildlife, as a priority in water allocation.[116] The statute also implies a requirement of base flows to support navigation.[117]

The geographic scope of the WRA covers all waters contained in lakes and streams in Washington, and groundwater resources, most of which are public trust resources. Waters in navigable lakes and streams are clearly protected by the public trust doctrine. Waters that are only recreationally navigable may also be subject to the doctrine. Underground waters are not protected by the doctrine, unless their use affects the quantity or quality of surface water resources.

The WRA's function is to provide policy guidance on the use of state waters, such that they are "protected and fully utilized for the greatest benefit to the people of the state."[118] A number of the Act's administrative guidelines are clearly congruent with public trust values,

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[111]Caminiti, at 670 (quoting Portage Bay). Nevertheless, the residential preference cited as authoritative in Portage Bay is, arguably, in conflict with public access goals of the public trust doctrine, even though the Shoreline Act cites residential preference as facilitating public access.

[112]Id. at 4 (citation omitted).

[113]**Wash. Rev. Code** ch. 90.54.

[114]A common law system of water allocation based on the principle of "first in time, first in right."

[115]**Wash. Rev. Code** § 90.54.090.

[116]Id. § 90.54.020(3).

[117]Id.

[118]Id. § 90.54.010.

although important exemptions exist. For example, the Act seeks to protect water quality and explicitly requires consideration of base flows in lakes and streams in order to protect environmental quality and fish and wildlife resources.[119] The WRA also, however, provides for a variety of other uses, private and public, and exempts existing water rights from the policies of the Act.[120] Public trust values are in fact only a few of many interests to be considered.

The Water Code of 1917[121] is the basic water appropriation code in Washington, and created the process for establishing priorities among various diverters. The Water Code is potentially inconsistent with the public trust doctrine in that it purports to issue water consumptive use rights that sometimes damage and destroy public trust interests. The public trust doctrine, or the interests protected by that doctrine, were not discussed or considered when the code was adopted. Because no explicit intent to abolish the public trust doctrine is evident in the 1917 Code, or permits issued thereunder, the public trust doctrine should still be applicable to prior appropriation water rights.[122]

(4) The State Environmental Policy Act

The State Environmental Policy Act of 1971 (SEPA)[123] was the third in the trilogy of environmental statutes enacted in that year. SEPA is designed to achieve a balance between resource utilization and environmental protection through evaluation of state and local governmental activities. This evaluation provides a comprehensive analysis of development activities and their impacts in light of potential environmental impacts. The use of and impacts on public trust resources are only one element to be considered in environmental evaluations under SEPA. Nevertheless, the statute substantively guarantees aesthetic and environmental quality to the state's residents. These rights are congruent with those protected by the public trust doctrine, and public trust jurisprudence may support claims to environmental quality of trust resources made through the SEPA process.

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[119] Id. § 90.54.120(2).

[120] Id. § 90.54.900.

[121] **Wash. Rev. Code** Ann. § 90.44.010-.900 (1962 and Supp. 1990).

[122] See infra Section III.B.2.a for a discussion of the retroactive effect of the public trust doctrine on water diversion permits issue in California.

[123] **Wash. Rev. Code** ch. 43.21C.

(5) The Aquatics Land Act

In 1982, the legislature enacted the Aquatic Lands Act (ALA), consolidating a number of separate statutes relating to the lease and sale of state-owned tidelands and shorelands.[124] The ALA was further revised in 1984.

The ALA covers a significant portion of public trust lands. Aquatic lands are defined as "all state-owned tidelands, shorelands, harbor areas, and the beds of navigable waters."[125] The scope of the common law public trust doctrine differs in that it also embraces privately-owned aquatic lands, and may extend further inland than the line of high water and high tide.[126]

The policies and administration of the ALA have important implications for the public trust doctrine, and the ALA is a prime example of legislation providing for management of state-owned public trust resources in a manner consistent with the doctrine. The ALA recites the great value of aquatic lands and requires that they be managed to benefit the public.[127] The Act provides guidelines prioritizing use of aquatic lands: public use and access, water-dependent use, environmental protection, and renewable resource use are the most important public benefits to be promoted.[128] State-wide interests are preferred over local interests. Non-water-dependent uses are permitted only under exceptional circumstances, where compatible with water-dependent uses. When evaluating tideland lease proposals, the managing agency, the state Department of Natural Resources, is instructed to consider the natural values of the land as wildlife habitat, natural area preserve, representative ecosystem, or spawning area, and it may withhold leasing where it finds the lands have significant natural values.[129]

A specific provision of the ALA was at issue in Caminiti v. Boyle,[130] the first case in which the state Supreme Court explicitly acknowledged the public trust doctrine as a part of Washington law. The court found a harmony between the challenged statute and the Shoreline Act, which it cited as a legislative manifestation of the public trust doctrine. The court upheld the ALA provision at issue, finding it was not in conflict with public trust values.

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[124] Id. chs. 79.90 - 79.96.

[125] Id. § 79.90.010.

[126] See infra Section III.B.

[127] **Wash. Rev. Code** § 79.90.450.

[128] Id. § 79.90.455.

[129] Id. § 79.90.460.

[130] 107 Wash. 2d 662, 732 P.2d 989 (1987).

(6) The Seashore Conservation Act

The most recent legislative protection for public trust resources was enacted in the 1988 amendments to the Seashore Conservation Act (SCA).[131] Originally enacted in 1967, the SCA explicitly dedicates Washington state ocean beaches to public recreation. The function of the statute is to preserve this public trust resource for public use in perpetuity. The SCA declares that "[t]he ocean beaches within the Seashore Conservation Area are ... declared a public highway and shall remain forever open to the use of the public...."[132] The legislature based this policy on the increasing public pressure for recreational use of the ocean beaches,[133] including swimming, surfing, hiking, hunting, fishing, clamming and boating. General public recreational use is anticipated, but choices and priorities are also expressed, e.g., that most of the beaches shall be available only for pedestrians, not motor vehicles.[134] Management of these lands is vested under the jurisdiction of the Washington State Parks and Recreation Commission.

The Seashore Conservation Act expresses the policies of the public trust doctrine, and provides rules and a system for management of these important state lands for the public benefit.

C. Summary

The public trust doctrine has burdened all pertinent lands in Washington since statehood. Early cases referenced trust interests without explicitly calling them such. Recently, the state Supreme court has explicitly recognized the doctrine and adopted it into the law. The state Constitution also identifies and promotes the state's interests in public trust resources, and provides a basis for legislative manifestations of the doctrine. Congruence between public trust values and several statutes governing use of the state's natural resources is common. These statutes have become increasingly important resource management tools, and the extent to which they embody or reflect public trust values has increased over time as well.

III. Description, Analysis and Potential Application of the Public Trust Doctrine.

This section begins with a discussion of the fact that the public trust doctrine is primarily a state law doctrine with varying degrees of development from state to state. The following subsections describe the geographical scope of the doctrine, the interests protected by the

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[131] **Wash. Rev. Code** §§ 43.51.650-.765.

[132] Id. § 43.51.760.

[133] Id. § 43.51.650.

[134] Id. § 43.51.710.

doctrine, and actions by the state and by individuals that are inconsistent with the public trust doctrine. Each of these subsections begins with a discussion of what can clearly be discerned from Washington case law. The scope of the discussion in each subsection then expands to consider how Washington courts might develop the doctrine in light of cases from other jurisdictions, state legislative policies, and academic commentary. This approach is supported by the Washington Supreme Court's reference to all of these sources in discussing the public trust doctrine.[135]

Next, this section turns to several other matters that can impact the effectiveness of the public trust doctrine. First, there is a subsection which discusses who can bring an action for activities that are inconsistent with the public trust doctrine. Second, there is a subsection discussing how the public trust doctrine affects takings claims under both the federal and Washington State Constitutions. Finally, there is a subsection on the interplay of federal and state powers, and its effects on the public trust doctrine.

A. The Public Trust Doctrine--Primarily a State Law Doctrine

Although the United States Supreme Court has articulated many of the basic public trust principles in a few Supreme Court decisions, the public trust doctrine remains primarily a state law doctrine. The Court's description in Shiveley v. Bowlby of the variation among state assertions of title to tidelands is equally applicable to the public trust doctrine:

> [T]here is no universal and uniform law on the subject; . . . each State has dealt with the lands under the tide waters within its borders according to its own views of justice and policy . . . . Great caution, therefore, is necessary in applying precedents in one State to cases arising in another.[136]

Thus one could say that there is not one, but many, public trust doctrines in America, or at least many different forms of that doctrine.

Variations in the doctrine from state to state are the product of decisions made after statehood. Under the equal footing doctrine, each state entered the Union with the same ownership rights as the original states possessed in lands beneath navigable waters and waters affected by the ebb and flow of the tides.[137] The federal government held those lands in trust for the state, and upon statehood the state gained title to those lands. Federal law controls whether waters are navigable for title, i.e. navigable so that the state acquired title at

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[135] See, e.g., Orion Corp., 109 Wash. 2d at 639-42, 747 P.2d at 1072-72.

[136] Shively v. Bowlby, 152 U.S. 1, 26 (1894).

[137] Martin v. Waddell, 41 U.S. (16 Pet.) 367 (1842).

statehood under the equal footing doctrine.[138] Subsequent developments in state law, however, control the scope of the doctrine in each state.[139] Some states have conveyed much of these lands into private hands, and recognize fairly limited public trust interests in them.[140] Other states, such as California and New Jersey, have been at the forefront in expanding the doctrine.

There is some support for a federal public trust doctrine which requires the federal government to act in accordance with trust principles. This may be important in states where the federal government owns large areas of coastal property. After tracing the growing preservationist attitude in public land law, one academic authority said that a federal public trust may exist which places several limits on federal power by 1) constraining congressional action, 2) constraining administrative action, 3) providing a rule of construction for federal legislation that protects trust interests, and 4) forcing the federal government to undertake actions to protect trust resources.[141] Court decisions have reached varying conclusions about the existence of a federal public trust doctrine that would constrain management of federal resources.[142]

There is a federal doctrine, the navigation servitude, that closely parallels the public trust doctrine. The federal navigation servitude, though not denominated a federal public trust doctrine, shares common features with the state doctrine. The navigation servitude imposes a

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[138]Under federal law, navigability for title is determined by considering the condition of the waters at the time the state was admitted to the Union. See Utah v. United States, 403 U.S. 9, 10 (1971); United States v. Oregon, 295 U.S. 1, 14 (1935).

[139]Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988).

[140]Delaware, Pennsylvania, and Virginia recognize that an upland grant from the state extends seaward to the low water mark. Massachusetts and Maine give upland owners the right to tidelands out to the low water mark, or to 100 rods from the high water mark, whichever is less. **D. Slade et al.,** supra note 35, at 48 n.60 (1990). Consistent with the preference for private property, states like Massachusetts and Maine have construed public rights to lands between the high and low water marks narrowly. See, e.g., Bell v. Town of Wells, 557 A.2d 168 (Me. 1989) (holding that state legislation giving the public a right to use privately owned intertidal lands for recreation was an unconstitutional taking under both the U.S. and Maine constitutions); In re Opinion of the Justices 313 N.E. 2d 561 (Mass. 1974) (finding a public right to fish, fowl and navigate, but no public right of passage on foot). See infra, Section III.C.2.a.

[141]Wilkinson, The Public Trust Doctrine in Public Land Law, 14 **U.C. Davis L.Rev.** 269 (1980).

[142]See, e.g., United States v. 1.58 Acres of Land, 523 F. Supp. 120 (D. Mass. 1981) (finding dual sovereign nature of public trust when Coast Guard condemned land near Boston Harbor); City of Alameda v. Todd Shipyards Corp. 632 F. Supp. 333 (N.D. Cal. 1986) and 635 F. Supp. 1447 (N.D. Cal. 1986) (holding that clause in original conveyance from state to city barring transfer of the trust lands to private ownership also prohibited the federal government from transferring the land to private ownership after it had exercised eminent domain); but cf. U.S. v. 11.037 Acres, 685 F. Supp. 214 (N.D. Cal 1988) (holding that when the federal government exercises its power of eminent domain, the state public trust easement is extinguished).

dominant easement on navigable waters and beds.[143] One of its primary functions is to justify nonpayment of compensation to private persons who claim their property interests have been damaged or destroyed by a government project on navigable waters in aid of navigation.[144] The navigation servitude protects the public interest in navigation and commerce. It derives from the fact that at statehood the federal government was delegated a servitude under the constitution's commerce clause which applies to federal projects in aid of navigation on all navigable waters. Navigability, for purposes of the navigation servitude, is considerably broader than navigation for the equal footing doctrine.[145] States also have navigation servitudes, having delegated to the federal government only a portion of their reserved sovereign power over navigation. Some state navigation servitudes, as in Alaska,[146] require that the state project be in aid of navigation to trigger the servitude. Others, such as California,[147] apply the servitude even though the state project damages or destroys navigation. The state navigation servitude is closely related to the public trust doctrine, and may, in fact, be considered a special branch of that doctrine. All three of these doctrines, the federal navigation servitude, the state navigation servitude, and the public trust doctrine, reduce the government's obligation to pay damages for taking or damaging private property. Federal management of navigable waters and their beds constitutes management of the federal government's own servitude, and is not regulation of private property.[148] In all three situations the relevant doctrine imposes a pre-existing burden on private property. When the government applies or regulates this burden it is managing its own property rather than that of a private owner.

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[143]The navigation servitude, however, applies to waters that are navigable in fact. This is a broader definition, covering more waters, than are covered in the navigable for title test.

[144]See, e.g., United States v. Rands, 389 U.S. 121 (1967); see also Johnson, Public Trust Protection for Stream Flows and Lake Levels, 14 **U.C. Davis** 233, 246-48 (1980).

[145]As United States v. Appalachian Elec. Power Co., 311 U.S. 377, 408-09 (1940), made clear, the class of waters that are navigable for purposes of Congress' commerce power are much broader than the class of waters that are navigable for title. Congress' commerce power extends not only to those waters navigable at statehood, but also those that are capable of being navigable. Therefore, the federal navigation servitude, based on Congress' commerce power, extends to more waters than the equal footing doctrine does.

The U.S. Supreme Court has even held that the federal navigation servitude applies to non-navigable tributaries of navigable waters, where the purpose of a project was to aid navigation on the lower, navigable part of a river. United States v. Grand River Dam Auth., 363 U.S. 229 (1960). In Grand River Dam the U.S. Supreme Court held that the U.S. government owed no compensation for waterpower values in a dam site it had condemned as part of a flood control and navigation project. But cf. United States v. Kansas City Life Ins., Co., 339 U.S. 799 (1950) (granting compensation to farmer whose farm was ruined when the United States raised the level of the Mississippi, thereby backing up water on the non-navigable tributary on which the farm lay).

[146]Wernberg v. State, 516 P.2d 1191 (AK 1974).

[147]Colberg, Inc. v. State ex rel. Dept. of Public Works, 67 Cal. 2d 408, 62 Cal. Rptr. 401, 432 P.2d 3 (1967), cert. denied, 390 U.S. 949 (1968).

[148]See infra Section III.H.1.

A federal public trust doctrine, if found to exist, would presumably apply only to federal lands. It would not override state public trust doctrines as applied to state or private lands, or the interpretation of the doctrine by state courts. Theoretically, Congress could enact explicit legislation preempting this field of law, but it has not done so, and is unlikely to do so in the future.[149]

If there is a federal public trust doctrine, it might mean that the federal government has an obligation to protect public trust interests in federal lands.[150] The federal consistency requirement of the Coastal Zone Management Act[151] may diminish the significance of a federal public trust doctrine. The consistency requirement shows Congress' explicit intent to leave coastal management under state control. It obligates federal agencies and federal permittees to comply with state coastal management programs. State coastal management programs include relevant state judicial and administrative decisions that define and apply state property law.[152] This includes the public trust doctrine. The federal government must act consistent with this aspect of the state coastal management program, as with other aspects of the state's program. Therefore, the discussion which follows focuses on the definition and application of Washington's public trust doctrine.

B. The Geographical Scope of the Doctrine

1. The Established Geographical Scope in Washington

As mentioned earlier, under the equal footing doctrine each state obtained title to the beds of its navigable waters and waters subject to the ebb and flow of the tides. At statehood Washington asserted in its state constitution all possible rights under the equal footing doctrine: "The state of Washington asserts its ownership to the beds and shores of all navigable waters in the state up to and including the line of ordinary high tide, in waters where the tide ebbs and flows, and up to and including the line of ordinary high water within

[149]See infra notes Section III.H.1.

[150]Wilkinson, supra note 45, citing Sierra Club v. Department of the Interior, 376 F. Supp. 90 (N.D. Cal. 1974); Sierra Club v. Department of the Interior, 398 F. Supp. 284 (N.D. Cal. 1975); Sierra Club v. Department of the Interior, 424 F. Supp. 172 (N.D. Cal. 1976).

[151]16 U.S.C. § 1456 (198); see infra notes Section III.H.2.

[152]16 U.S.C.A. § 1453 (6a) (Supp. 1991).

the banks of all navigable rivers and lakes . . . ."[153] The state constitution, however, was silent on the issue of the use and sale of state-owned shorelands and tidelands, leaving that issue to the politics of future legislatures and to the interpretation to be given Article 17 by the Washington Supreme Court.[154] Washington State was eager to encourage growth and development, so it transferred approximately sixty-one percent of its tidelands and thirty percent of its shorelands into private hands between 1889 and 1979.[155] Those transfers, however, did not in themselves extinguish the jus publicum, or public interest, in tidelands and shorelands. Public and private interests co-exist in those parcels conveyed into private hands,[156] so long as these lands are still usable for public trust purposes.

Washington's Supreme Court has not expressly addressed the geographical scope of the public trust doctrine. The Washington Supreme Court's opinions in Orion and Caminiti suggest, however, that the geographical scope of the public trust doctrine extends at least to the tidelands and shorelands that the state held title to at the time of statehood.[157] In Caminiti, the court may have applied the doctrine up onto upland owners' lands for limited purposes when it said that the public must be able to get around docks built on state-owned

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[153]**Wash. Const**. art. XVII, § 1. In Hughes v. State, the Washington Supreme Court defined the line of ordinary high tide: "[W]e deem the word `ordinary' to be used in its everyday context. The `line of ordinary high tide' is not to be fixed by singular, uncommon, or exceptionally high tides, but by the regular, normal, customary, average, and usual high tides. . . . Thus the line of `ordinary high tide' is the average of all high tides during the tidal cycle." 67 Wash. 2d 799, 810, 410 P.2d 20, 26, (1966) rev'd on other grounds, 389 U.S. 290 (1967). The language of the opinion and the diagram the court provided in the opinion, further suggest that the line of ordinary high tide is synonymous with the line of vegetation. Id. at 803, 410 P.2d at 22. As Professor Corker noted, the court's decision to fix the boundary between tidelands and uplands at the vegetation line lacked both significant legal precedent and practical justification. Corker, Where Does the Beach Begin, and to What Extent is This a Federal Question, 42 **Wash. L. Rev.** 33, 43-54 (1966). The Washington Court's fixing the boundary between uplands and tidelands at the vegetation line differs from the federal test announced in Borax Consolidated, Ltd. v. Los Angeles, 296 U.S. 10 (1935) which adopted a boundary of the mean high tide established by the average elevation of all tides as observed at a location through a tidal cycle of 18.6 years. Professor Corker's assertion that in case of divergence between these two lines, the vegetation line will always be inland, appears sound. Corker, supra, at 41 n.29. Thus, the Washington Supreme Court's interpretation of the term "ordinary high tide" means that through its constitution the state of Washington asserted ownership up to the level of vegetation, creating a broad area of publicly owned intertidal lands. As the discussion below indicates, however, natural and man-made changes may affect the state's ownership rights. See infra, notes Section H.3.a.

Significantly, the United States Supreme Court recently confirmed a state's right to claim any lands subject to the ebb and flow of the tides, rejecting the argument that public trust lands are only those beneath navigable waters. Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988).

[154]Hughes, 67 Wash. 2d at 805, 410 P.2d at 23.

[155]K. Conte, supra note 45, at Introduction, p. x.

[156]Orion Corp. v. State, 109 Wash. 2d 621, 639, 747 P.2d 1062, 1072 (1987); Caminiti v. Boyle, 107 Wash. 2d 662, 668-69, 732 P.2d 989, 993-94 (1987).

[157]**Orion,** 109 Wash. 2d at 639, 747 P.2d at 1072; **Caminiti**, 107 Wash. 2d at 666-67, 732 P.2d at 992.

tidelands and shorelands.[158] These cases should not, however, be read as strictly limiting the geographic scope of the doctrine in Washington. No cases have tested how far the Washington Supreme Court will extend the scope of the doctrine. In deciding the scope of the doctrine, the court would likely consider precedents from other jurisdictions, state legislative policies, and academic commentary.

2. Does the Doctrine apply to Lands Other than those Under Navigable-for-Title Waters or Beneath Tidal Waters

a. Non-navigable for Title Tributaries

The California Supreme Court applied the public trust doctrine to cover non-navigable tributaries in National Audubon Society v. Superior Court of Alpine County (the Mono Lake case).[159] Mono Lake is a large, navigable, scenic lake that sits at the base of the Sierra Nevadas in California. While this saline lake contains no fish, it does contain brine shrimp, which are a source of food for large numbers of migratory and nesting birds. Small islands in the middle of the lake serve as nesting grounds for many of these birds. In 1940, the California Division of Water Resources granted Los Angeles a permit to divert water from the non-navigable tributaries of Mono Lake. Since that time, Los Angeles had been diverting virtually the entire flow of four of the five non-navigable tributaries that originally fed the lake. In this hot, arid, region those diversions had a devastating impact on the lake. By the time the California court heard the case, the surface area of the lake had shrunk by a third and many of the islands in the lake became linked to the mainland, exposing the birds to predators.[160]

The plaintiffs in Mono Lake filed suit to enjoin the diversions on the theory that the public trust protects the shores, bed and waters of Mono Lake. Thus, the California Supreme Court squarely faced the issue of whether public trust principles covered activities on non-navigable tributaries that affected navigable waters. The court concluded that the public trust doctrine "protects navigable waters from harm caused by diversion of nonnavigable tributaries."[161] It follows from the logic of the Mono Lake case that California might regulate other types of upland activities that cause harmful spillover effects on public trust resources.[162] Under this interpretation upstream pollution and appropriations of water which

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[158]The court should logically extend the application of the doctrine so as to allow portages over private lands to get around obstacles or dangerous rapids in streams. See Montana Coalition for Stream Access v. Hildreth, 684 P.2d 1088 (Mont. 1984); Montana Coalition for Stream Access v. Curran, 682 P.2d 163 (Mont. 1984).

[159]33 Cal.3d 419, 658 P.2d 709, 189 Cal. Rptr. 346, cert. denied, 464 U.S. 977 (1983).

[160]33 Cal.3d at 425, 658 P.2d at 711, 189 Cal.3d at 348.

[161]Id. at 437, 658 P.2d at 721, 189 Cal. Rptr. at 357.

[162]Admittedly, one could just as easily denominate the result of Mono Lake an extension of the public trust doctrine to upland uses rather than an extension of the geographic scope of the doctrine.

reduce the volume, and therefore the assimilative capacity of the public trust resources, would be subject to state control under the public trust doctrine. The Washington Supreme Court has not had occasion to address this issue. Other states have cited the Mono Lake decision favorably,[163] and academics have generally praised the decision[164] but no public trust decisions have actually applied (or rejected) the Mono Lake principle to prior appropriation rights.[165]

b. Related Wetlands and Uplands

Recognizing the interconnectedness of water systems and the importance of wetlands to water quality and wildlife preservation, courts in some states have extended the public trust doctrine to cover wetlands and even uplands related to navigable water bodies. For example, the high court of Massachusetts extended the doctrine to cover state parks[166] and swamps.[167] The Wisconsin Supreme Court in Just v. Marinette County [168] considered a case in which landowners had filled wetlands without obtaining the necessary permit. The court recognized that Wisconsin had an active duty under the doctrine to preserve water quality, and it noted that wetlands serve a vital role in purifying the waters in the state's lakes and streams.[169] The Wisconsin Supreme Court therefore concluded that filling of wetlands implicated the state's duties under the public trust doctrine.[170] The Washington Court has not

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[163]See, e.g., State v. Central Vermont Railway, 571 A.2d 1128 (Vt. 1989); CWC Fisheries, Inc. v. Bunker, 755 P.2d 1115, 1118, 1121 n. 15 (Alaska 1988); Kootenai Environmental Alliance, Inc., v. Panhandle Yacht Club, Inc., 671 P.2d 1085, 1093-94 (Idaho 1983).

[164]See, e.g., Wilkinson, The Headwaters of the Public Trust: Some Thoughts on the Source and Scope of the Traditional Doctrine, 19 Envtl. L. 425, 466 (1989); Sax, The Limits of Private Rights in Public Waters, 19 **Envtl. L.** 473, 474 (1989); Dunning, The Public Trust: A Fundamental Doctrine of American Property Law, 19 **Envtl. L.** 515, 518 (1989).

[165]Subsequent California appellate decisions have touched on the relation between the public trust doctrine and the prior appropriation system. Golden Feather Community Assoc. v. Thermalito Irrigation District, 199 Cal. App. 3d 422, 244 Cal. Rptr. 830 (1988), reh'g granted, 209 Cal. App. 3d 1276, 257 Cal Rptr. 836 (1989) (declining to apply public trust doctrine to prevent appropriators from a non-navigable tributary of an artificial lake from lowering the level of the lake); United States v. State Water Resources Control Bd., 182 Cal. App. 3d 82, 150, 227 Cal. Rptr. 161, 201 (1986) (confirming the water board's authority under the public trust doctrine to supervise appropriators to protect fish and wildlife).

[166]Gould v. Greylock Reservation Comm., 350 Mass. 410, 215 N.E.2d 114 (1966).

[167]Robbins v. Department of Public Works, 355 Mass. 328, 244 N.E.2d 577 (1969).

[168]56 Wis.2d 7, 201 N.W.2d 761 (1972).

[169]201 N.W.2d at 769.

[170]Id.

addressed this issue directly.[171] If the Washington court follows Wisconsin it might rule that the doctrine covers wetlands and related uplands that affect public trust interests.

It should be remembered, as stated earlier, that regulation can accomplish many of the same objectives as the public trust doctrine. Frequently police power regulations and the public trust doctrine can be considered as alternatives to the same goal.

c. The Dry Sand Area

Courts have employed numerous legal doctrines, including the public trust doctrine, and "custom" to recognize public rights in the dry sand area of ocean beaches (i.e. those areas above ordinary high tide).[172] For example, in Matthews v. Bay Head Improvement Assoc.[173] the New Jersey Supreme Court recognized that in order for the public to fully exercise its right to swim and bathe below the mean high water mark, the public must also have both a right of access and a right to use the dry sand area of beaches. In other words, in New Jersey the public is not only entitled to cross private dry sand areas; it also has the right to sunbathe and generally enjoy recreational activities. The court, however, stopped short of saying that all dry sand areas will be subject to public rights, by saying that the extent of the public's rights under the doctrine will depend on the circumstances.[174]

The Oregon Supreme Court recognized public rights in the dry sand area of all state beaches through the ancient doctrine of custom in State ex rel Thornton v. Hay.[175] The Oregon Court listed a seven-part test to determine whether the public had acquired a customary right to Oregon's ocean beaches. First, the public's use must be ancient and used "so long `that the memory of man runneth not to the contrary."[176] Second, the customary right must be exercised without interruption.[177] Third, the customary use must be peaceable and free from dispute.[178] The fourth requirement is that the customary right be reasonable.[179] The fifth

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[171]The Court did, however, cite Just in Orion. Orion Corp. v. State, 109 Wash.2d 621, 641 n.10, 747 P.2d 1062, 1073 n.10 (1987).

[172]Other legal theories, such as implied dedication (Gion v. Santa Cruz, 2 Cal.3d 29, 465 P.2d 50, 84 Cal. Rptr. 162 (1970)) and prescriptive easements have also been used to find public rights, but these are generally applied only to site-specific locations.

[173]95 N.J. 306, 471 A.2d 355 (1984).

[174] 471 A.2d at 365.

[175]254 Or. 584, 462 P.2d 671 (1969). The Oregon relied in part on Native Americans' ancient use to establish customary public rights.

[176]Id., 462 P.2d at 677 (quoting 1 **Blackstone, Commentaries** 75-78).

[177]Id., 462 P.2d at 677.

[178]Id.

requirement, certainty, was satisfied by the visible boundaries of the dry sand area and the character of the land.[180] Sixth, the custom must be obligatory; "that is . . . not left to the option of each owner whether or not he will recognize the public's right to go upon the sand area for recreational purposes."[181] Finally, custom must not be repugnant, or inconsistent, with other customs or with other laws.[182] The Oregon Supreme Court found that all seven requirements of the doctrine of custom had been satisfied and declared the public's customary right to the dry sand area of beaches. Courts in other states have also recognized the doctrine of custom as a way to protect public rights.[183]

Other states have recognized the public's rights in the dry sand area through statutes and state constitutional provisions. For example, under a Texas statute, all parts of the Gulf of Mexico beach between the vegetation line and the mean low tide line are subject to the public's right of ingress and egress regardless of private ownership where the public has acquired a right through prescription, dedication, or continuous right.[184] California's Constitution recognizes the public's right of access to tidelands and shorelands.[185]

Once again, the Washington Supreme Court has never had the opportunity to directly address the issue of whether public trust rights exist in the dry sand areas of beaches in this state.[186] The Shoreline Management Act of 1971 clearly favors uses which promote public access to and recreation along tidelands and shorelands.[187] A Washington State attorney general's opinion concludes that the public has the right to use and enjoy the dry sand area of ocean

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[179]Id.

[180]Id.

[181]Id.

[182]Id.

[183]Matcha v. Mattox, 711 S.W. 2d 95, 98-99 (Tex. App. 1986); State ex rel. Haman v. Fox, 100 Idaho 140, 594 P.2d 1093, 1101 (1979); City of Daytona Beach v. Tona-Rama, Inc., 294 So.2d 73, 78 (Fla. 1974); County of Hawaii v. Sotomura, 517 P.2d 57, 61 (Haw. 1973); but cf Graham v. Walker, 78 Conn. 130, 133-34, 61 A. 98, 99 (1905).

[184]**Tex. Nat. Res. Code Ann.** § 61.011 (1978).

[185]**CA Const.** art. X, § 4. California courts have recognized this section of California's Constitution as a codification of the public trust doctrine. Carstens v. California Coastal Commission, 182 Cal. App. 3d 277, 289, 227 Cal. Rptr. 135, 143 (1986); see also Golden Feather Community Assoc. v. Termalite Irrigation Dist., 209 Cal. App. 3d 1284, 257 Cal. Rptr. 836, 842 (1989) (looking to Cal. Const., art X, § 4, to define the scope of the public trust doctrine).

[186]For a discussion of the public's right to walk over privately held tidelands, see infra Section III.C.2.a.

[187]**Wash. Rev. Code** § 90.58.020 (1989).

beaches through the doctrine of "custom" recognized by the Oregon Supreme Court in Thornton.[188]

Whether the court would go beyond recognizing the public's right of ingress and egress and recognize public rights in sunbathing and recreating in the dry sand area, as the court did in New Jersey, is unclear. Alternatively, the Washington Supreme Court might follow those courts reluctant to expand public access at the expense of private property.[189]

d. State Legislation Also Supports a Broad Geographic Scope for the Public Trust Doctrine

In defining the geographic scope of the public trust doctrine, Washington courts might also look to the Shoreline Act for legislative policy support. The coverage of the Shoreline Act is extremely broad, covering all navigable salt water, all navigable-for-title fresh water, and most waters that are navigable only for pleasure craft. The Act's coverage extends to all uplands lands lying within two hundred feet of the high water mark of all navigable waters and most non-navigable for title waters, both rivers and lakes.[190] It also covers flood plains, flood ways, bogs, swamps and river deltas.[191] Because of an expansive definition of shorelines, the Act covers shorelines on lakes and streams which could not meet the test for navigability for title,[192] and thus covers lands that were never owned by the state under the equal footing doctrine. The Shoreline Act and the public trust doctrine are distinctly different, though symbiotically related.[193] Recently the court found it worth noting that public trust principles are reflected in the Shoreline Act's underlying policies.[194] This

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[188]AGO 1970 No. 27.

[189]Maine and Massachusetts probably would not recognize public rights in the dry sand area. Those states even refuse to recognize a public right to recreate or walk over privately owned intertidal lands. Bell v. Town of Wells, 557 A.2d 168 (Me. 1989); In re Opinion of the Justices, 313 A.2d 561 (Mass. 1974); see infra, notes xx-xx and accompanying text.

[190]**Wash. Rev. Code** § 90.58.030 (f) (1989). The "ordinary high water mark" itself extends all the way up to the vegetation line. **Wash. Rev. Code** § 90.58.030 (b) (1989).

[191]**Wash. Rev. Code** § 90.58.030 (f), (g) (1989); **Wash. Admin Code** § 173.22 (1989).

[192]**Wash. Rev. Code** § 90.58.030 (d) (1989) provides that shorelines "means all of the water areas of the state, including reservoirs, and their associated wetlands, together with the lands underlying them except (i) shorelines of state-wide significance; (ii) shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream segments; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such lakes . . . ." (emphasis added).

[193]See infra, Section II.B.3.b.(2).

[194]For example, in Orion the court noted that "We have also observed that trust principles are reflected in the SMA's underlying policy . . . ." Orion Corp. v. State, 109 Wash.2d 621, 641 n.11, 747 P.2d 1062, 1073 (1987) citing Portage Bay-Roanoke Park Comm'ty Council v. Shorelines Hearings Bd., 92 Wash.2d 1, 4, 593 P.2d 151 (1979).

suggests that the legislature is both aware of the public trust doctrine, and willing to enact legislation in furtherance of the goals of the doctrine.

This legislative expression of policy could lend encouragement to the Washington Court, as Wisconsin and other courts have done, to rule that the public trust doctrine applies to waters navigable only for recreational purposes, where title to the beds are privately owned and never passed through state ownership. Extension of the public trust doctrine to the areas covered by the Shoreline Act could conceivably help control harmful spillover effects from many non-navigable tributaries and uplands and assure public access--values which other state courts have considered important when extending the geographic scope of the public trust doctrine.

All state owned lands within the coverage of the public trust doctrine are also subject to state management regulations. The Seashore Conservation Act[195] is an example. Under this Act all state-owned ocean beaches between ordinary high tide and extreme low tide are declared public highways, forever open to the use of the public. These lands are managed by the Washington parks and recreation commission for public recreational purposes. A second example is the extensive Aquatic Lands Act,[196] covering all state-owned tidelands, shorelands, harbor areas, and the beds of navigable waters.[197] This Act contains detailed instructions for management of these lands by the state, primarily through the Department of Natural Resources. Presumably the geographic scope of the public trust doctrine could be extended to protect lands subject to these regulations from harmful upland uses.

[195]**Wash. Rev. Code** § 43.51.650 et seq.

[196]**Wash. Rev. Code** ch. 79.90.

[197]**Wash. Rev. Code** § 79.90.010

e. Rights of Riparians and the Public to Use the Surfaces of Non-navigable-for-title Waters

Although public and riparian rights to use the surface of non-navigable-for-title waters are not always denominated as public trust interests, recognition of these rights illustrates an important application of the concept of public rights, nearly identical in function if not in name, with public trust rights. As the state's population and the public interest in recreation continue to grow, rights to use the surface of non-navigable streams and lakes will continue to increase in importance.

Washington cases on riparian and public rights to non-navigable streams are neither recent nor logically consistent. In Griffith v. Holman,[198] decided in 1900, the court took a dim view of public rights to boat and fish on non-navigable streams. The plaintiff sued for trespass because the defendant had cut a wire fence the plaintiff had put across the Little Spokane River and caught fish while floating across plaintiff's property. The State Supreme Court upheld the trial court's award of $250 for damaging the fence, and $250 for the fish--no small award in those days.[199] Paradoxically, a year later the court recognized the right of loggers to float their logs down non-navigable streams in Watkins v. Dorris.[200] In a relatively more recent case, Snively v. Jaber[201] the court held that riparians and their licensees have the right to use the entire surface of non-navigable-for-title lakes.[202] This sounds, at first blush, different than saying that the "public" has a right to use the surface of these waters. But the difference is more apparent than real. Other riparians, and their licensees, can use these lake surfaces. Licensees include anyone who has the riparian's permission, whether that permission is obtained by fee, or for free. The state is a riparian if it acquires an access road to a lake. The state can allow the public as licensees to use this access. By comparison, if the law said the "public" has a right to use these waters, this public right would only be available to those who could get onto the lake without trespassing on private property.[203] That is, the public must, in effect, be licensees of a riparian.

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[198]23 Wash. 347, 63 P. 239 (1900).

[199]Later, in Snively v. Jaber, 48 Wash. 2d 815, 296 P.2d 1015 (1956), the court said that the Griffith decision was based on a fencing statute.

[200]24 Wash. 636, 64 P. 840 (1901).

[201]48 Wash. 2d 815, 296 P.2d 1015 (1956).

[202]For a long while the state's Department of Wildlife followed a policy of obtaining waterfront lots along non-navigable lakes, thereby becoming riparians and opening up lakes to public use. But there are limits to this practice, as the court indicated in Botton v. State, 69 Wash. 2d 751, 420 P.2d 352 (1966). There the court held that although the state may admit the public to use the lake, the state's failure to control public use of the lake was an unreasonable interference with the riparian rights of private lakefront owners.

[203]A float plane could land on a non-navigable-for-title lake without trespassing. But the number of such incidents is so small as to be virtually irrelevant.

These differences in Washington law between lakes and streams can best be explained in terms of the social and economic needs of the time.[204] Supporting logging operations has been important since the earliest days in Washington's history. Recreation on non-navigable lakes was also deemed important, whereas irrigation appropriations from lakes is relatively less significant. With the growing social and economic importance of recreational uses of small streams, it is likely that the Washington Supreme Court would either distinguish or overrule Griffith today. As the population of the state grows, the public demand for recreational uses of small streams will continue to increase. Several other western states have recognized public rights of navigation on streams that are not commercially navigable but are navigable for pleasure craft only.[205] Washington may follow the example set by those other states for streams. It has already done so for lakes.

3. Other Issues Affecting the Geographical Scope

a. Additions and Losses of Public Trust Land and Waters Due to Natural and Artificial Changes

(1) Accretions/Reliction

The natural world, always dynamic, pays little heed to the boundaries set by humans. Coasts and shores change. The Long Beach Peninsula, located in Pacific County in southwestern Washington State, is a good example. In historical times, large accretions have extended the ocean beaches along this peninsula hundreds of feet to the west.[206] Thus, the question of ownership of accretions in our state is not just an academic one; it implicates very real, and valuable, public and private interests.

The general rule in most states is that gradual changes by accretion or reliction change the boundaries of privately owned uplands and public trust lands. Washington follows this rule for shorelines along fresh water rivers and lakes.[207]

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[204]Johnson, Riparian and Public Rights to Lakes and Streams, 35 **Wash. L. Rev.** 580, 612-14 (1960).

[205]See Montana Coalition for Stream Access v. Curran, 682 P.2d 163 (Mont. 1984); People ex rel. Younger v. County of El Dorado, 96 Cal. App. 3d 403, 157 Cal. Rptr. 815 (1979); Hitchings v. Del Rio Woods Recreation & Park Dist., 55 Cal. App. 3d 560, 127 Cal. Rptr. 830 (1976); People v. Mack, 19 Cal. App. 3d 1040, 97 Cal. Rptr. 448 (1971); Day v. Armstrong, 362 P.2d 137 (Wyo. 1961); but cf. People v. Emmert, 597 P.2d 1025 (Colo. 1979) (holding that the public has no right to use waters overlying private lands for recreational purposes). In 1987, the Oregon Legislature enacted two statutes that apply the public trust doctrine to all waters of the state. **Or. Rev. Stat.** §§ 537.336, .460 (1987).

[206]Washington State Parks and Recreation Commission, The Evolution of Accreted Lands Ownership on the Ocean Beaches of the Long Beach Peninsula, 3 (Unpublished Report, 1981).

[207]Ghione v. State, 26 Wash. 2d 635 , 644, 175 P.2d 955, 961 (1946); Spinning v. Pugh, 65 Wash. 490, 118 P. 635 (1911).

The state does, however, assert ownership to accretions to ocean beaches that occurred after 1889 statehood. In Hughes v. State,[208] the Washington Supreme Court held that accretions to ocean beaches that occurred after statehood in 1889 belonged to the State of Washington, not the upland owner. Mrs. Hughes appealed the case to the U.S. Supreme Court. The high court held that because Mrs. Hughes' predecessor in title had received the property from the U.S. prior to Washington statehood, her right to accretions to her land was governed by federal, not state law. According to the Court, under federal common law Mrs. Hughes was entitled to the accretions to her property.[209] After a brief flirtation with expanding the role of federal common law in determining the rights of federal patentees, the Court limited the application of federal law to cases like Hughes where ocean front property was involved on the ground that international relations were implicated.[210]

The Seashore Conservation Act[211] provides that all accretions along the ocean shores owned by the state are declared public highways the same as ocean tidelands. The Washington State Parks and Recreation Commission, however, has established a negotiation system to try and solve the management issues for these accreted lands.[212]

(2) Avulsion

Under Washington law, the addition or loss of land due to avulsion or sudden catastrophe does not affect the seaward boundary.[213] Most other states adhere to this fixed boundary rule

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[208]67 Wash. 2d 799, 410 P.2d 20, 29 (1966) rev'd 389 U.S. 290 (1967); see also Wash. Rev. Code § 79.94.310 (1989).

[209]The Court in Hughes did not address the question of whether the federal rule applied to accretions to property where the title was acquired from the federal government after statehood. Description of the Hughes holding in California ex rel. State Lands Commission, 457 U.S. 273, 280 (1982), suggests that this federal rule on accretion ownership applies to all federal patents along oceanfronts, not just pre-statehood patents.

[210]Oregon ex rel. State Land Bd. v. Corvallis Sand & Gravel Co., 429 U.S. 363, 377 n.6 (1977). In a more recent decision, California States Lands Commission v. United States, 457 U.S. 273, 279-82 (1982), the United States Supreme Court reaffirmed the application of federal law to accretions along the ocean when it held that federal law dictates that accretions to federal lands belong to the federal government.

[211]**Wash. Rev. Code** § 43.51.650.

[212]In April, 1968, negotiations between private landowners and WSPRC [Washington State Parks and Recreation Commission] led to the establishment of a Seashore Conservation Line [SCL], and a program to secure dedications west of this line from persons who had clear title up to the Pacific Ocean. As a result, the boundary of the SCA [Seashore Conservation Area] has changed -- where applicable -- to this new coordinate line, established by WSPRC, approximately 150 feet east of the line of vegetation on the peninsula. The agreement also required the SCA to be reestablished in 1980 and every ten years thereafter to insure it remains the same distance from the line of mean high tide.

T. Terich & S. Snyder, The Evolution of Accreted Land Claims on the Long Beach Peninsula of Washington State, 59 (Western Washington University).

[213]Harper v. Holston, 119 Wash. 436, 442, 205 P. 1062, 1064 (1922).

for avulsive changes.[214] Thus if a navigable river changed its course suddenly by avulsion, title to the original bed would remain in the state, and would still be subject to the public trust doctrine. The new location of the river would also be subject to the public trust doctrine, although the bed would be privately owned.

(3) Artificial Changes

States generally treat artificial changes in the shoreline the same as avulsive changes--i.e. boundaries remain fixed. This is particularly true if the owner of the upland property brings about the change to add to his/her property.[215] Where the owner of property is not involved in, or is a "stranger" to, the cause of the change, several courts have held that title will vest in the upland owner.[216] Such changes in the shoreline often occur where a neighboring owner or the state has erected a seawall, pier, or breakwater.

Artificial changes along coastlines and shorelines may also raise other issues besides title. For example, if a waterside owner fills or alters tidelands, will they still be subject to the public trust? The California Supreme Court in Berkeley v. Superior Court balanced the interests of the public and of landowners when it stated that the trust still applies to tidelands "still physically adaptable for trust uses" but not to lands "rendered substantially valueless for those purposes."[217] The Washington Supreme Court quoted Berkeley on this point in Orion,[218] and might follow a similar rule.[219]

Yet another issue is whether the public trust doctrine applies to artificially created tidelands, shorelands, bottomlands or submerged lands. Some states courts have held that the trust does not apply to such lands,[220] but another court held that it does.[221]

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[214]See e.g., Cinque Bambini Partnership v. State, 491 So.2d 508, 520 (Miss. 1986), aff'd 484 U.S. 469 (1988) ("By way of contrast to our law regarding accretion and reliction, boundaries and titles are not affected by avulsions.").

[215]See, e.g., Menominee River Lumber Co. v. Seidl, 149 Wis.2d 316, 320, 135 N.W. 854 (1912).

[216]See, e.g., State Dept. of Natural Resources v. Pankratz, 538 P.2d 984, 989 (Alaska, 1975).

[217]26 Cal.3d 515, 606 P.2d 362, 162 Cal. Rptr. 327, cert. denied, Santa Fe Land Improvement Co. v. Berkeley, 449 U.S. 840 (1980). In applying this test, the court said that tidelands that have been filled, whether or not they have been substantially improved, are free from the trust to the extent that they are no longer subject to tidal action. The court noted that parcels which no longer have Bay frontage were obvious examples of where the trust had been extinguished. Id. at 534, 162 Cal. Rptr. at 338-39.

[218]109 Wash. 2d 621, 640 n.9, 747 P.2d 1062, 1072 n.9 (1987).

[219]The Washington Supreme Court's decision in Wilbour v. Gallagher, 77 Wash. 2d 306, 462 P.2d 232 (1969), cert. denied. 400 U.S. 878 (1970) suggests that our Court will have little tolerance for those who fill public trust lands. In that case, the court required that fill be removed from Lake Chelan.

[220]See, e.g., Cinque Bambini Partnership v. State, 491 So.2d 508, 520 (Miss. 1986); O'Neill v. State Highway Dept., 50 N.J. 307, 235 A.2d 10 (1967).

b. Lands Exempt from the Public Trust Doctrine

There are also several categories of land that may be exempt from the public trust doctrine. These fall under three categories: 1) lands conveyed prior to statehood, 2) federal acquisitions of state public trust lands and 3) lands covered by Indian treaties.

First, it is possible that tidelands and shorelands conveyed prior to statehood may not be subject to the public trust. Extingishment of the trust could only occur where the words of the original grant expressly and unequivocally expressed that intent.[222] Given the federal government's responsibility to hold lands in trust, the amount of federal grants that extinguish the public trust interest is likely to be small.

The history of federal grants in Washington, however, indicates that the public trust continues to apply to pre-statehood grants in this state. Many pre-statehood grants to private parties suggest that the boundary of their lands extended out to the meander line. The government meander line, when compared to the line of mean high tide, is often far out in the water. Government surveyors in the 1870s and 1880s were paid by the mile, and often did not adhere to the actual contours of the shoreline, but followed the path of least resistance.[223] The federal government, however, generally had no right to convey lands below the high water mark, but held those lands in trust for future states under the equal footing doctrine.

> Nevertheless, the Washington State Constitution provided that this section [declaring public ownership] shall not be construed so as to debar any person from asserting his claim to vested rights in the courts of the state.[224]

While on its face, this phrase appears to be only a disclaimer of ownership to lands that the federal government validly conveyed into private hands, the Washington Supreme Court early in its history held that this provision of the Constitution was a present grant of the State's interest in lands that had been previously patented.[225] As the court wrote in Scurry v. Jones:

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[221] Mentor Harbor Yacht Club v. Mentor Lagoons, 170 Ohio St. 193, 199, 163 N.E.2d 373, 377 (1959) (holding that if waters were naturally navigable, then an artificial extension of a channel brought the extended waters under the public trust doctrine).

[222] East Haven v. Hemingway, 7 Conn. 186, 199 (1828) (A pre-statement grant could convey public rights into private hands, but only with "words so unequivocal, as to leave no reasonable doubt concerning the meaning.")

[223] K. Conte, supra note 45.

[224] Was. Const. art. xvii, § 1.

[225] See, e.g., Cogswell v. Forest, 14 Wash. 1, 43 P. 1098 (1896); Scurry v. Jones, 4 Wash. 468, 30 P. 726 (1892). Subsequent cases following Scurry include Smith Tug & Barge v. Columbia-Pac., 78 Wash. 2nd 975, 978-79, 482 P.2d 769 (1971); Bleakley v. Lake Washington Mill Co., 65 Wash. 215, 221-23, 118 P. 5 (1911); Washougal Transp. Co. v. Dalles, etc. Nav. Co., 27 Wash. 490, 68 P. 74 (1902).

> And as the state, in the section immediately preceding this, had asserted its title to all such lands, whether occupied or unoccupied, which had not been thus patented, it seems clear to us that the evident intent of the disclaimer was to ratify the action of the United States in the issuance of such patents. In our opinion, the interest of the state passed as fully to the grantees in such patents, or to those holding under them, as it would have done had there been express words of grant used in the constitution. Any other interpretation of the language used would deprive it of any beneficial force whatever.[226]

Thus it was the state, not the federal government, that actually gave these lands to private parties. The state is bound by the public trust doctrine, and any conveyances of tidelands that the disclaimer clause did make to private parties would not have destroyed the public trust interest in those land.[227]

Congress may convey public trust lands prior to statehood in accordance with international obligations. In Shively v. Bowlby the Supreme Court stated that "Congress has the power to make grants of lands below high water mark of navigable waters in any Territory of the United States, whenever it becomes necessary to do so in order to perform international obligations . . . ."[228] Second, when the federal government exercises its power of eminent

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[226] Scurry, 4 Wash. at 470.

[227] Recently, there was a dispute over the waterward boundary between uplands owned by a private landowner and tidelands owned by Washington State. See State's Memorandum in Support of Summary Judgment and in Opposition to Defendant's Request for a Preliminary Injunction, State v. Lund, No. 249864 (Pierce County, filed Aug. 4, 1989). Although the case ultimately settled, the state's memo raises several interesting issues, such as whether post-statehood patentees also had a waterward boundary of the meander line, and whether such a boundary is a moving boundary so that an erosion occurred along the Lunds' property, their property line moved landward.

[228] 152 U.S. 1, 48 (1894). The United States Supreme Court's decision in Summa Corp. v. California Land Commission, 466 U.S. 198 (1984) comes closest to an example of an extinguishment of the public trust doctrine in accordance with the federal government's international obligations. The Summa case involved the question of whether a lagoon near Los Angeles was subject to the public trust doctrine. Summa Corporation's title dated back to an 1839 Mexican title. Pursuant to the 1848 Treaty of Guadalupe Hidalgo, Congress set up a Board of Land Commissioners in 1851 to decide the rights of those claiming title to lands under the Spanish or Mexican governments. Id. at 203. Summa Corporation's predecessors in title finally had their rights in the land at issue confirmed in 1873. While the Court acknowledged that ordinary federal patents purporting to convey tidelands located within a states are invalid because the federal government holds such tidelands in trust for states, the situation was different with patents confirmed under the 1851 Act, because the United States was discharging its international obligations. The Court held that California's failure to assert its public trust interest during the confirmation process precluded it from claiming a public trust easement applied at the present time.

domain to acquire trust burdened lands, those lands may become exempt from the trust. The few case precedents on this issue, however, are conflicting.[229]

Third, lands may be exempt from the public trust doctrine because of an Indian treaty or agreement[230] entered into prior to statehood. Presumably the trust would not apply to Indian country because of the rule that state law does not apply to Indian reservations unless Congress clearly expresses such an intent.[231] Whether a treaty gives a tribe title to the beds underlying navigable waters, involves conflicting presumptions. On the one hand, a fundamental principle in interpreting Indian treaties is that they are to be interpreted in the way the Indians would have understood them.[232] Most Indians presumably believed they were receiving the water bodies and beds within or alongside their reservations. On the other hand, under the equal footing doctrine, the federal government held the lands underlying navigable waters in trust for each future state until they entered the Union. These two legal principles collided directly in Montana v. United States.[233] The Court there found that the Crow treaty language did not overcome the presumption that the beds of navigable waters remain in trust for future states and pass to the new states when they assume sovereignty. The Court noted that the Crow Tribe had historically depended on buffalo and other upland game rather than on fishing. Therefore, it concluded that the state, not the tribe, held title to the bed of the Big Horn River. Whether an Indian tribe or the state holds title to the bed of navigable waters is likely to turn on the language of the treaty or agreement, and on whether the tribe has historically depended on resources located in the water or on submerged land.[234] If the tribe has title then the public trust interest under state law is probably extinguished, on the theory that state law does not generally apply on an Indian reservation unless Congress clearly expresses such an intent.[235]

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[229] See, e.g., U.S. v. 1.58 Acres, 523 F. Supp. 120, 124 (D. Mass. 1981) (noting that the federal government is as restricted in its ability as states are in abdicating its sovereign jus publicum to private individuals); but cf. United States v. 11.037 Acres, 695 F.Supp. 214 (N.D. Cal. 1988) (holding that where the federal government exercises its powers of eminent domain, the state public trust doctrine is extinguished). See also supra Section III.A. for a discussion of the existence of a federal public trust doctrine.

[230] No treaties were signed with Indian tribes after 1871. However, reservations were created thereafter, usually by agreement between the tribe and the Executive, approved by Congress. Additional reservations were created by Executive Order and by congressional legislation. **F. Cohen, Federal Indian Law** 103 (1982 ed.).

[231] For a general discussion of federal preemption of state law, see **Cohen**, supra at 270-79.

[232] United States v. Winans, 198 U.S. 371 (1905).

[233] 450 U.S. 544 (1981).

[234] For a recent case where the court found that a tribe had title to the water beneath a navigable waterway, see Puyallup Indian Tribe v. Port of Tacoma, 717 F.2d 1251 (9th Cir. 1983), cert. denied, 465 U.S. 1049 (1984). See also Note, Not on Clams Alone: Determining Indian Title to Intertidal Lands, 65 **Wash. L. Rev.** 713 (1990).

[235] **Cohen,** supra at 270-79.

C. Interests Protected by the Doctrine

1. Interests Protected Under Washington Law

The classic list of interests protected by the public trust include commerce, navigation, and fisheries.[236] The Washington Supreme Court has followed the general trend by recognizing a broad range of public interests. The court noted in Orion that it had extended "the doctrine beyond navigational and commercial fishing rights to include `incidental rights of fishing, boating, swimming, water skiing, and other related recreational purposes.'"[237]

Under Washington law, environmental quality and water quality are probably also protected interests. The public's interest in fishing can only be realized if water quality and quantity are adequate to support fish.[238] Moreover, the Washington Supreme Court indicated in Orion that it would look favorably on a claim that protecting the environment is a public trust interest. The court noted how it has found trust principles embodied in Shoreline Act underlying policy, "which contemplates `protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life . . .'"[239] Moreover, in another footnote, the court cited Marks v. Whitney, a California case which recognized the public interest not only in ecological values, but also in preserving tidelands in their natural state.[240] Therefore, given the proper case, the Washington Supreme Court may well follow several other states by recognizing water quality and environmental

[236]Johnson, Water Pollution and the Public Trust Doctrine, 19 **Envtl. L.** 485, 495 (1989). Even early cases like Arnold v. Mundy, 6 N.J.L. 1, 12 (1821) recognized a broad spectrum of public interests that included "fishing, fowling, sustenance and all other uses of the water and its products."

[237]Orion Corp. v. State, 109 Wash. 2d 621, 641, 747 P.2d 1062, 1073 (1987), quoting Wilbour v. Gallagher, 77 Wash. 2d 306, 316, 462 P.2d 232 (1969) cert. denied, 400 U.S. 878 (1970).

[238]United States v. State Water Resources Board, 182 Cal. App. 3d 150, 227 Cal. Rptr. 161, 201 (1986) (holding that Water Board had authority to supervise appropriators under the public trust doctrine to protect fish and wildlife); Johnson, Water Pollution and the Public Trust Doctrine, 19 **Envtl. L.** 485, 488 (1989).

[239]Orion, 109 Wash. 2d at 641 n.11, 747 P.2d at 1073 n. 11, quoting Portage Bay-Roanoke Park Comm'ty Council v. Shorelines Hearings Bd., 92 Wash. 2d 1, 4, 593 P.2d 151 (1979).

[240]Orion, 109 Wash. 2d at 641 n. 10, 747 P.2d at 1073 n.10.

preservation as public trust interests.[241] If water quality is a protected interest, then the public trust doctrine might affect activities which degrade water quality, including discharges of wastes into public waters, activities which cause erosion and thus silting of waterbodies, and prior appropriations which reduce the assimilative capacity of waterbodies and thus result in quality degradation.[242] Needless to say, any application of the public trust doctrine in these areas would have to take account of existing federal and state laws on water pollution, the prior appropriation code, and the legitimate economic expectations of those affected.

Early courts did not often expressly address environmental quality as a protected public trust right. It was widely thought that nature's bounty was limitless. More recent experience has shown that pollution can limit or destroy public enjoyment of trust resources just as much as filling or committing tidelands and shorelands to private, monopoly uses.[243] In the past, the public trust doctrine did not allow such monopolization; now that the threat to public environmental rights is in the form of pollution and environmental degradation, the courts are expanding their interpretation of the public trust doctrine to protect the public rights from that threat.

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[241]Several courts have recognized environmental quality as a public trust interest. See, e.g., National Audubon Society v. Superior Court of Alpine County, 33 Cal.3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983); Marks v. Whitney, 6 Cal.3d 251, 259-60, 491 P.2d 374, 380, 98 Cal. Rptr. 790, 796 (1971); Kootenai Environmental Alliance v. Panhandle Yacht Club, 105 Idaho 622, 632, 671 P.2d 1085, 1095 (1983) (extending the doctrine to cover "navigation, fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, and water quality"); Treuting v. Bridge and Park Commission of Biloxi, 199 So.2d 627 (Miss. 1967); Just v. Marinette, 56 Wis. 7, 17, 201 N.W. 761, 768-69 (1972) (finding a public right to preserve wetlands because "they serve a vital role in nature"). In 1987 the Oregon Legislature enacted two statutes indicating that the public trust doctrine covers water quality. **Or. Rev. Stat.** §§ 537.336, .460 (1987). See also Johnson, supra note 235, at 496-98. But cf. MacGibbon v. Board of Appeals of Duxbury, 369 Mass. 512, 517-18, 340 N.E.2d 487, (1976) (holding that preservation of ocean food chain and tidelands in natural state was not as "practical" or "productive" as dredging and filling wetlands).

[242]Johnson, supra note 35, at 505.

[243]**D. Slade, et al.,** supra note 35, at 133.

2. Interests Potentially Protected in Washington

a. Right of Public to Walk and/or Harvest shellfish on Privately Owned Tidelands

The Washington Supreme Court has not had an opportunity to consider whether the public has a right to walk across privately owned tidelands, or whether the public may dig clams on those tidelands. One commentator notes that nearly all states recognize that the public trust doctrine provides the public a right to pass and repass over public trust tidelands.[244] While states' courts have issued opinions which generally lend support to the public's right of access, precious few have directly addressed the issue of whether the public has a right to walk across privately owned tidelands.

For example, the Rhode Island Supreme Court in Jackvony v. Powel,[245] looked to Rhode Island's Constitution which guarantees to the people "all the privileges of the shore," and concluded that one of those privileges included the right to pass along the shore.[246] The case did not, however, involve the public's rights to pass along a privately held beach. It involved an attempt by a beach commission to fence off a beach owned by the city of Newport. Similarly, in Tucci v. Salzhauer,[247] a New York court held that the public had a right to pass and repass over lands owned by the Town of Hempstead. Thus, Tucci, like Jackvony, recognized a public right of passage, but did not specifically address the question of whether the public would have a right to pass over privately held tidelands.

New Jersey Supreme Court decisions suggest that the public would have a right to walk over privately held tidelands. The public's rights to use tidal lands and water "encompasses navigation, fishing and recreational uses, including bathing, swimming and other shore activities."[248] Presumably, "other shore activities" would include the right to walk along tidelands. Also significant is the fact that New Jersey has recognized the public's right to use the dry sand area of privately owned beaches under the public trust doctrine.[249] Because the New Jersey Supreme Court was willing to go so far as to recognize public's right to use privately owned dry sand areas of beaches, it probably would not have a problem recognizing the public's right to walk over privately held tidelands.

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[244] **D. Slade et al.,** supra note 35, at 162.

[245] 21 A.2d 554 (R.I. 1941).

[246] Id. at 558. See also Nixon, Evolution of Public and Private Rights to Rhode Island's Shore, 24 **Suffolk U.L. Rev.** 313, 325-26 (1990) (discussing a recent amendment to the Rhode Island Constitution that listed a right to pass along the shore as a public right).

[247] 40 A.D. 2d 712, 336 N.Y.S.2d 721 (1972). The court noted that the public's right of passage even included the right to push a baby carriage along the shore. Id., 336 N.Y.S.2d at 724.

[248] Matthews v. Bay Head Improvement Association, 471 A.2d 355 (N.J. 1984).

[249] Id.

California would also probably recognize the public's right to walk along privately held tidelands. In Marks v. Whitney,[250] the California Supreme Court noted that the public trust easement on privately held lands includes the public's "right to fish, hunt, bathe, swim, to use for boating and general recreation purposes the navigable waters of the state. . . . The public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs."[251] This language suggests that California would recognize a public right to walk over privately held tidelands.

In Massachusetts and Maine, however, the public's rights do not include the right to pass over privately held tidelands. In In re Opinion of the Justices,[252] the Massachusetts Supreme Court considered the constitutionality of a proposed statute that would have given the public a right of passage over privately held tidelands. In determining the scope of public rights remaining in privately held tidelands, the court considered the colonial ordinance of 1641-47. In that ordinance the Massachusetts colony extended the titles of upland owners to encompass land as far as the mean low water line or 100 rods from the mean high water line, whichever was less. The court found that the original ordinance had only reserved the public's rights in fishing, fowling, and navigation, and it refused to take a more expansive view of public rights which would include the right to pass along, or enjoy recreation on, privately held tidelands.[253] Therefore, it found the proposed ordinance to be an unconstitutional taking of private property without compensation.

The Supreme Court of Maine recently followed Massachusetts's course in a close 4-3 opinion, Bell v. Town of Wells.[254] Maine, which was originally a district of Massachusetts, shares a common legal history with that state. The majority in Bell found that Maine's constitution had confirmed the seventeenth century Massachusetts statute giving upland owners title to tidelands. The court traced the description of public rights through cases from Massachusetts and Maine. Its conclusion mirrored that of the Massachusetts court: the public's rights are limited to those of navigation, fishing and fowling.[255] The court specifically mentioned "recreational walking" as a right that it refused to recognize.[256]

The results of the Massachusetts and Maine decisions are somewhat anomalous. As one commentator noted, Massachusetts's approach does not in fact preclude the public from

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[250] 6 Cal. 3d 251, 98 Cal. Rptr. 790, 491 P.2d 374 (1971),

[251] Id. at 259, 98 Cal. Rptr. at 796, 491 P.2d at 380.

[252] 313 N.E.2d 561, 566-67 (1974).

[253] Id. at 567.

[254] 557 A.2d 168 (Me. 1989).

[255] Id. at 175-76.

[256] Id. at 175.

walking on the foreshore. Instead, it simply requires that a person desiring to stroll along the shore carry a fishing line or net.[257]

Washington has no ordinances similar to Massachusetts' 1641-47 ordinance which gave upland owners title to tidelands. Our court has also recently recognized a broad range of recreational rights under the public trust doctrine.[258] These facts suggest that the Washington Supreme Court might support the public's right to walk over privately held tidelands, but the eventual outcome on this issue remains uncertain.

Similarly, the public's right to gather shellfish on privately held lands also remains uncertain in Washington. An early Washington case, Sequim Bay Canning Co. v. Bugge,[259] favored private rights to shellfish over public rights. The plaintiff canning company leased tidelands from the state, and raised local and eastern clams on them. The defendants were a competing cannery and had its employees, who happened to be Indians, go on to the plaintiff's tidelands and collect shellfish. The court held that plaintiffs were entitled to injunctive relief prohibiting the defendant or his employees from trespassing and digging clams. The court reasoned that because clams live in the soil under the waters, they belong to private owners or lessees of the tidelands.[260]

Sequim Bay Canning, however, is not solid authority against a public trust right to harvest shellfish. First, the plaintiff in that case leased lands for the specific purpose of artificially raising clams.[261] Without a secure right to raise clams on those lands, the company's lease would have been worthless.[262] Where a party owns or leases tidelands for a purpose other

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[257]Comment, Coastal Recreation: Legal Methods for Securing Public Rights in the Seashore, 33 Me. L.Rev. 69, 83 (1981).

[258]The public's rights include "`incidental rights of fishing, boating, swimming, water skiing, and other related recreational purposes . . .'" Orion Corp. v. State, 109 Wash. 2d 621, 641, 747 P.2d 1062, 1073 (1987) (quoting Wilbour v. Gallagher, 77 Wash. 2d 306, 316, 462 P.2d 232 (1969), cert. denied, 400 U.S. 878 (1970)). Moreover, on ocean beaches, a Washington State Attorney General's Opinion has recognized the public's customary rights, and those rights would presumably include the public's right to walk along tidelands. AGO 1970 No. 27. The public might also resort to other legal theories, such as dedication and prescription.

[259]49 Wash. 127, 94 P. 922 (1908).

[260]49 Wash. at 131. Similarly, in Palmer v. Peterson, 56 Wash. 74, 105 P. 179 (1909), the Washington Supreme Court held that when the state deeded oyster lands to a private party, that party received a right to exclusive possession of those tidelands. A later decision, State v. Van Vlack, 101 Wash. 503, 505-06, 172 P. 563 (1918), also described shellfish as private property. The appellant in that case claimed that the state could not prohibit private owners of tidelands from harvesting shellfish between April 1 and September 1 (which is when shellfish reproduce) because the shellfish were their property. The court acknowledged the public's interest in shellfish by upholding the state's efforts to limit the harvesting of shellfish as a valid exercise of the state's police power.

[261]The Department of Natural Resources still issues leases to private parties for raising oysters, geoducks, shellfish and other agricultural uses. **Wash. Rev. Code** ch. 79.96.

[262]49 Wash. at 129.

than raising shellfish, it is unclear that the court would find such a compelling private property interest in shellfish located on that land. Second, Sequim Bay Canning did not involve the general public's right to gather clams. It involved hostile efforts by one cannery to destroy another. Therefore, if the Washington Supreme Court faced the issue of whether the public has a right to gather shellfish on privately owned tidelands, Sequim Bay Canning might not be controlling. Significantly, even states like Maine and Massachusetts, which have been very conservative about expanding the public's rights to privately owned tidelands, have recognized the public's right to gather shellfish on privately held tidelands.[263]

b. Rights of Riparians and the Public to Boat and Fish on the Surfaces of Non-navigable for Title Waters

This subject was previously discussed as an extension of the geographic scope of the public trust doctrine.[264] Alternatively, one may view it as a public interest.

c. Aesthetic Beauty

Extension of the list of protected public trust interests to include preservation of aesthetic or scenic beauty is rather unproblematic. Indeed, for the sightseer, the enjoyment of natural beauty is a form of recreation, which the court has already recognized as a protected interest.[265] Several other states have recognized aesthetic beauty as a legitimate public trust interest.[266] Aesthetic beauty is also a value mentioned in the Shoreline Act.[267]

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[263]See Bell v. Town of Wells, 557 A.2d 168, 173 (Me. 1989) (Broadly construing the public's right to fish to include "digging for worms, clams and shellfish"); Town of Wellfleet v. Glaze, 525 N.E. 2d 1298, 1301 (Mass. 1988). "While the public clearly has the right to take shellfish on tidal flats, there is no general right in the public to pass over the land, or use it for bathing purposes." Other states, such as North Carolina and Florida have decisions which strongly support the public's right to shellfish. State ex rel. Rohrer v. Credle, 369 S.E.2d 825, 831-32 (N.C. 1988); State v. Gerbing, 47 So. 353, 356 (Fla. 1908).

[264]See supra Section III.B.2.e.

[265]Orion, 109 Wash. 2d at 641 n.10 (citing In re Stevart Transp. Co., 495 F.Supp. 38 (E.D. Va. 1980).

[266]See, e.g., National Audubon Society v. Superior Court of Alpine County, 33 Cal.3d 419, 658 P.2d 709, 189 Cal. Rptr. 346 (1983) (holding that protection of the scenic views of Mono Lake and its shore are covered by the public trust); Marks v. Whitney, 6 Cal.3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971); Kootenai Environmental Alliance v. Panhandle Yacht Club, 105 Idaho 622, 632, 671 P.2d 1085, 1095 (1983) (including the protection of "aesthetic beauty" under the public trust doctrine); State v. Trudeau 139 Wis. 2d 91, 104, 408 WN.W.2d 337 (1987) (rights of citizens in bodies of water held in trust by the state include the enjoyment of natural scenic beauty).

[267]**Wash. Rev. Code** § 90.58.020 (1989).

d. The Future for Recognizing New Interests Protected by the Doctrine.

As a "dynamic common law principle" courts will likely continue to shape the public trust doctrine to fit the ever-evolving public interest.[268] The Washington Supreme Court has explicitly stated that it has not defined the total scope of the doctrine,[269] thus suggesting that it might extend the doctrine even further in the future to meet evolving public needs, especially where those needs were not taken into account when private rights were acquired.

As the list of protected public trust uses grows, new questions arise. Conflicts will arise between two or more public trust interests.[270] For example, what should happen when the interests of commerce or recreation conflict with the interest in preserving the environmental integrity of trust resources? It is unlikely that courts will or even should set up a rigid hierarchy of public trust uses. Perhaps the best answer is balancing competing uses. Currently, the Shoreline Management Act balances competing uses, while giving priority to certain values and uses, such as water dependent uses, and furthering public access and enjoyment of the states waters.[271]

D. Public Trust Restrictions on State Power

When Washington became a state, it asserted ownership over tidelands and shorelands. Seeking to foster economic development, however, the state has sold 60% of tidelands and 30% of shorelands prior to 1971. Early Washington cases recognized an almost unfettered power of the legislature to dispose of those lands.[272]

More recently, in Caminiti, the Washington Supreme Court dealt with the application of the public trust doctrine to public lands. Preliminarily, the court discussed the origin and background of the doctrine, as well as its application to private property, saying that while the state could convey private interests in tidelands and shorelands, it could never "sell or

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[268]Orion Corp. v. State, 109 Wash.2d 621, 640-41, 747 P.2d 1062, 1073 (1987) ("Recognizing modern science's ability to identify the public need, state courts have extended the doctrine beyond its navigational aspects."); Marks v. Whitney, 6 Cal. 3d 251, 259, 98 Cal. Rptr. 790, 796, 491 P.2d 374 (19871) ("The public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs.") But cf. Lazarus, Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine, 71 Iowa L. Rev. 631, 656 (1986) (describing the public trust doctrine as a convenient legal fiction used by courts to avoid judicially perceived limitations or consequences of existing rules of law).

[269]Orion Corp. v. State, 109 Wash. 2d 621, 641, 747 P.2d 1062, 1073 (1987).

[270]See, e.g., Carstens v. California Coastal Commission, 182 Cal. App. 3d 277, 227 Cal Rptr. 135 (1986).

[271]**Wash. Rev. Code** § 90.58.020 (1989).

[272]Eisenbach v. Hatfield, 2 Wash. 236, 244-45, 26 P. 539, 541 (1891) (stating that tidelands "belong to the state in actual proprietary, and that the state has full power to dispose of the same, subject to no restrictions, save those imposed upon the legislature by the constitution of the state and the constitution of the United States . . .").

otherwise abdicate state sovereignty" over them.[273] According to the court, "The state can no more convey or give away this jus publicum interest than it can `abdicate its police powers in the administration of government and the preservation of the peace.'"[274] In adopting this position the Court adopted a role as reviewer of state conveyances to assure they are consistent with public trust obligations.[275]

The Washington Supreme Court in Caminiti adopted a test for determining when state legislation modifies the public trust doctrine as applied to state lands. The court relied heavily on the U.S. Supreme Court's seminal opinion in Illinois Central Railroad v. Illinois.[276] First, the court must inquire whether the state, by reason of the legislation, has given up its right to control the jus publicum.[277] If the court finds that it has, then the court must determine whether by doing so the state has promoted the interests of the public in the jus publicum or has not substantially impaired the jus publicum.[278]

The court nonetheless held that the statute at issue in Caminiti did not violate the public trust doctrine.[279] In Caminiti, the plaintiffs had challenged the validity of a statute which granted private landowners the right to build recreational docks out onto abutting public shorelands and tidelands without paying money to the state.[280] The court began its discussion by commenting on the interrelationship of the public trust doctrine and the Shoreline Act. It noted that the requirements of the public trust are met by the legislatively drawn controls of the Shoreline Act. The Shoreline Act lists among its preferred uses single family residences and piers. Therefore, the court concluded that the statute at issue in Caminiti was consistent with the Shoreline Act, and, by implication, with the public trust doctrine.[281] The court found that the state did not give up its right of control over the jus publicum by allowing private landowners to build docks on public shorelands and tidelands, supporting its position by several arguments, including that: the statute did not allow for private docks in harbor areas; private docks were only to be used for recreational purposes; the Department of

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[273]Caminiti v. Boyle, 107 Wash. 2d 662, 666, 732 P.2d 989, 992 (1987).

[274]Id. at 669, 732 P.2d at 994, quoting Illinois Central R.R. v. Illinois, 146 U.S. 387, 453 (1892).

[275]For the crucial role of the judiciary in enforcing the public trust, see Sax, The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention, 68 **Mich. L. Rev.** 471 (1970).

[276]146 U.S. 387 (1892).

[277]Caminiti, 107 Wash. 2d at 670, 732 P.2d at 994.

[278]Id. at 670, 732 P.2d at 994-95.

[279]For a critique of the Caminiti case, see Allison, The Public Trust Doctrine in Washington, 10 **U. Puget Sound L. Rev.** 633, 671-73 (1987).

[280]**Wash. Rev. Code** § 79.90.105 (1989).

[281]Caminiti, 107 Wash. 2d at 670, 732 P.2d at 995.

Natural Resources has the authority to revoke a property owner's right to maintain such a dock; and these residential private docks are subject to local regulations governing construction, size and length.[282] Thus the government retained adequate control over the docks to satisfy the requirements of the public trust doctrine.

Next, the court found that the construction of private docks on public tidelands and shorelands actually promoted the public's interest in the jus publicum as defined in the Shoreline Act.[283] Finally, the court concluded that such docks do not impair the public interest.

Although the court set forth a test indicating that it would seriously scrutinize legislative actions affecting trust property, in actual practice it barely scrutinized the legislation at issue in Caminiti. As a result, the outcome of future cases is unclear. Will the court give real substance to the test it enunciated, or will it continue to defer to the legislature?

1. State Projects

The Shoreline Act applies to all shorelines owned and administered by the state and local governments.[284] Therefore, under Caminiti, state projects that fall within the Shoreline Act list of preferred uses would likely be consistent with the public trust doctrine.[285]

2. Application of the Public Trust Doctrine in State and Local Land Use Planning

Washington state policy strongly encourages comprehensive planning.[286] In general, comprehensive planning helps to coordinate administrative decisions involving the physical development and use of land, air, and water resources. The time at which planners balance alternatives and develop recommendations may be an opportune time for consideration of public trust values. Significantly, the Washington Supreme Court's Orion decision involved

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[282] Id. at 672, 732 P.2d at 996.

[283] Id. at 673-74, 732 P.2d at 996.

[284] **Wash. Rev. Code** § 90.58.280 (1989).

[285] Of course, the state project would also have to pass under other state environmental regulation, such as the State Environmental Policy Act. **Wash. Rev. Code** ch. 43.21c (1989).

[286] With the passage of the Growth Management Act in 1990, the emphasis on comprehensive planning in Washington is stronger than ever before. For example, the 1990 Growth Management Act requires that more populous counties that have recently experienced growth (this includes all twelve Puget Sound counties and the cities within them) adopt comprehensive plans by July 1, 1993. Wash. Rev. Code Ann. § 36.70A.040 (1991). Zoning consistent with those plans must be adopted within a year thereafter. **Wash. Rev. Code Ann.** § 36.70A.120 (1991).

the legitimacy of two comprehensive plans, and the court implicitly approved comprehensive planning as a method of protecting public trust resources and uses.[287]

The scope and scale of planning varies, depending on the resource, the purpose, jurisdictional authority, and the need for coordination. Planning efforts may be state-wide and quite complex in organization. However, the fundamentals of the planning process--assessing needs, determining relative costs and benefits, and presenting alternatives--remain basically the same. Accordingly, comprehensive planning is done at both the state and local levels. The state generally assumes responsibility for ensuring coordination, technical assistance, policy compliance, and consistency.

Authority for regional planning is delegated principally to counties, but extends to all levels of government through the Planning Enabling Act.[288] The Act describes planning as an essential process to insure multiple uses of environmental resources.[289] On both the state and local levels, comprehensive plans serve a wide variety of functions, including state agency operating plans, port and harbor improvement districts, aquatic lands leasing and utility operations. Each comprehensive plan must promote the public interest, where appropriate, and include both mandatory and optional elements.[290] The planning process delineates resources and uses traditionally found under the public trust doctrine, designing standards that allow them to coexist with surrounding uses. Despite their acknowledged importance, comprehensive plans do not directly regulate property rights or land uses.[291] Traditionally, comprehensive plans have been a kind of "blueprint" which influence regulatory regimes such as local zoning codes and environment designations. They have also guided political decision-making. The 1990 Growth Management Act, however, further enhances the

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[287]The two comprehensive plans in Orion were the Skagit County Shoreline Master Program and the Padilla Bay National Estuarine Research Reserve Management Plan.

[288]**Wash. Rev. Code** ch. 36.70; see also **Wash. Rev. Code** ch. 35A.63 (providing for planning and zoning in code cities).

[289]According to the Act, the purpose of planning is ". . . assuring the highest standards of environment for living, and the operation of commerce, industry, agriculture, and recreation, and assuring the maximum economies and conserving the highest degree of public health, safety, morals, and welfare." **Wash. Rev. Code** § 36.70.010 (1989). The language of the Act clearly aligns planning with the regulatory police powers of government.

[290]See **Wash. Rev. Code** § 36.70.470 regarding promotion of the public interest. Under **Wash. Rev. Code** § 36.70.340 and .350, required elements include land use, circulation, and supporting materials such as maps, diagrams and charts. Optional elements include conservation, recreation, rights of way, ports, harbors and public use. An analysis of these elements would entail consideration of public trust lands, waters and uses if they are present in the geographic area under review.

[291]**Wash. Rev. Code** § 35A.63.080 (1989).

importance of comprehensive plans in those counties and cities covered by the Act by requiring that development regulations be consistent with their plans.[292]

Some forms of comprehensive planning bear directly on preserving elements of the public trust. The Shoreline Management Act which requires a combination of state and local planning, is an example. The SMA clearly states the need for comprehensive planning to allow multiple uses of the state's shorelines while protecting the public interest.[293] Such planning is essential to the creation of local shoreline master programs (SMP)[294] which implement the plans. In general SMPs regulate use in, on, or over shorelines. This feature appears in zoning classifications including natural, conservation, rural, and urban which specify appropriate, conditional, and prohibited uses for each environment. SMPs may also incorporate any other element deemed appropriate or necessary to effectuate the policy of the SMA.[295] This clause is an open invitation for local SMPs to incorporate explicitly public trust doctrine principles. Finally, SMPs, unlike other comprehensive plans, are adopted as WACs and become part of the state's Shoreline Master Program. As such, all local SMP rules, regulations, designations and guidelines become state law and are enforceable.[296] In this manner, protection of public trust resources and uses becomes binding.

Comprehensive planning also coordinates environmental review. The State Environmental Policy Act of 1971 (SEPA) established a state-wide review process for evaluation and decision-making on land use proposals.[297] The intent of SEPA is to ascertain the proper balance between development and environmental protection. In reality, SEPA review is made effective only through comprehensive planning. As part of its review criteria, SEPA

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[292]**Wash. Rev. Code Ann.** § 36.70A.120 (1991). The Act requires counties which adopt plans under the Act to designate wetlands, steep slopes, and flood plains, and adopt critical area protection regulations. Counties and cities that are not required or do not choose to regulate under the provisions of the Growth Management Act must also develop regulations to protect critical areas by March 1, 1992. Washington Act Relating to Growth Strategies, Reengrossed Substitute House Bill 1025 (July 16, 1991). This may provide additional opportunities to consider public trust values.

[293]**Wash. Rev. Code** 90.58, and WAC 173-14 through 28. Language from 90.58.020 specifically states, ". . . coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest." Broadly stated, the public interest is to be held superior to private rights when planning.

[294]WAC 173. SMPs are defined as comprehensive plans in RCW § 90.58.03(3)(a). These plans are developed locally and must be consistent with the policies of RCW 90.58 before approval by the Department of Ecology. For the most part, the state functions in an advisory capacity but has the authority to revise, amend, or reject SMPs until they are compliant.

[295]**Wash. Rev. Code** 90.58.100(2)(h).

[296]Id. § 98.59.100.

[297]Id. ch. 43.21C and WAC 197.

does establish a "trustee" responsibility;[298] it seeks the widest range of beneficial uses; and looks to preserve important cultural, and natural aspects of our national heritage.[299] This invites consideration of the public trust doctrine. In practice, however, SEPA reviews are handled in a generic fashion, rarely (if ever) explicitly referring to the public trust doctrine. But because many proposals fall under SEPA, and because this review may be linked to more stringent reviews such as shoreline substantial development permits,[300] it is important to note that opportunities to apply public trust doctrine principles exist.

From a land management perspective, area management programs should reflect both public trust principles and comprehensive planning.[301] Balancing appropriate uses to provide the greatest public benefit or interest is a commonly stated goal of both management and the public trust. Area management programs diverge primarily in matters of detail. However, when viewed cumulatively, they embody most of the principles found under the public trust doctrine.[302]

In summary, comprehensive planning implemented on both state and local levels allows for consideration of public trust principles, resources, and uses. Zoning in the local SMPs implements these principles.

3. Licensees and Lessees of the State

By licensing and leasing public trust resources, states can control their use and receive revenue. In this section we are explicitly concerned with state management of state-owned land, which was the central issue in Caminiti. In other words, what duties are imposed on the state by the public trust doctrine in the management of state-owned lands that are covered by the Seashore Conservation Act, and Aquatic Lands Act?

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[298] **Wash. Rev. Code** § 43.21C.020(2)(a).

[299] Id. § 43.21C.020 (2)(d).

[300] Id. 90.58.030(e) and WAC 173-14-064. In general, the projects over $2,500 dollars in value, or for projects that may substantially effect the public's use and interests in the shoreline.

[301] There are numerous examples of area management programs which protect and preserve public trust rights and lands including: DNR multiple use management (**Wash. Rev. Code** 79.68.90); Natural area preserves (**Wash. Rev. Code** 79.70); Natural resource conservation area (**Wash. Rev. Code** 79.92); Scenic Rivers System (**Wash. Rev. Code** 79.92); Aquatic lands leasing (**Wash. Rev. Code** 79.90, WAC 332-30); Shellfish harvesting areas (**Wash. Rev. Code** 75.08.080; Habitat preserves (**Wash. Rev. Code** 77.12.650); Integrated transportation systems (**Wash. Rev. Code** 47.01.071); Seashore conservation area (**Wash. Rev. Code** 43.51.660); and State park system (**Wash. Rev. Code** 43.51, WAC 352).

[302] One observer has even argued that the Department of Natural Resources Aquatic Land Enhancement Account (ALEA) is a direct application of the public trust doctrine in management. Snow, "The Aquatic Land Enhancement Account: Operationalizing the Public Trust in Washington Submerged land Management" (Masters Thesis, 1989).

First, a court will inquire whether the legislature has relinquished control of the trust resource. Caminiti indicated that if the state imposes conditions in state licenses, and the rights of the licensee are subject to revocation, then a court may find that the state has not relinquished control of the resource. As a practical matter, however, if a state tries to maintain too much control over shorelands and tidelands, it may discourage all development. For example, if a state agency attempted to lease tidelands subject to too many conditions, for a short term with no right of renewal, private investors would not likely undertake development. Prospects for a return on investment would be too uncertain, and financing would be difficult. In Washington, DNR leases generally may not exceed fifty-five years for tidelands and shorelands;[303] thirty years for the beds of navigable waters;[304] and ten years for leases for mariculture.[305] DNR has various other ways to strengthen state control, such as canceling the leases of those out of compliance and refusing renewals.

State relinquishment of control over a trust resource will be upheld only if it promotes, or does not substantially impair that interest. The Washington Supreme Court decision in Caminiti indicates that it may look to the Shoreline Act for guidance on whether a given use promotes the public interest. Even though the Shoreline Act has dubious preferences such as the one for single family residences, it nonetheless provides some protection for the public interest. For example, one of the stated preferences in the Shoreline Act is for water uses that are "unique to or dependent upon use of the state's shoreline."[306]

In defining the scope of the public interest, the court could also look to its list of public trust interests in Orion, as well as interests recognized by other courts.[307] The whole idea of "promoting the public interest" raises several other issues as well. For example, would it be inconsistent with the public trust doctrine to allow leasing or licensing of uses which are neither within the Shoreline Act's list of preferred uses nor within the judicially recognized list of public interests, but which are accessory or incidental to permitted uses? Could the state lease or license land for a use that would not further the public trust if the developer agreed to take measures, such as public accessways that would promote the public interest?[308]

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[303]**Wash. Rev. Code** § 79.94.150(3) (1989). Interestingly, however, the state recently issued a 99 year lease of Smith Cove, site of Pier 91.

[304]**Wash. Rev. Code** § 79.95.020 (1989).

[305]**Wash. Rev. Code** § 79.96.010 (1989).

[306]**Wash. Rev. Code** § 90.58.020 (1989).

[307]For a discussion of the public trust interests which the court has recognized or might recognize in Washington, see supra Section III.C.2.d.

[308]See **D. Connors & J. Archer, The Public Trust Doctrine: Its Role in Managing America's Coasts** 48 n.100 (Aug. 2, 1990 Draft) (suggesting that a state agency might be able to lease or license land under both of these circumstances).

4. State obligation to abide by public trust principles on state owned land.

Because Caminiti is the only major Washington case in which state action has been challenged on the theory that it was inconsistent with the public trust doctrine, state law is not well developed in this area. The Washington Supreme Court could, however, derive some valuable principles and learn some valuable lessons by looking at cases from other states.

First, the California Supreme Court's decision in National Audubon Society (the Mono Lake case) indicated that the state had an on-going duty to uphold public trust values. The original Water Board decision allocating the waters in the Mono Basin had not taken public trust interests into account when it approved Los Angeles's appropriation permit. In Mono Lake the court remanded the case to the Water Board to reconsider the allocation of water in the basin in light of public trust values. Similarly, the Washington Supreme Court could require the state to re-evaluate permits, licenses and leases made in the past in light of evolving public trust doctrine principles.

Some courts have allowed legislatures to convey trust lands for purposes that have nothing to do with public trust uses, only requiring some advancement of the general public interest, as opposed to a public trust interest. For example, courts have found conveyances of land valid for offshore oil production,[309] marketability of title for structures,[310] construction of a YMCA,[311] a restaurant, a bar and a shopping complex,[312] because they were in the public interest. It is unlikely that the Washington Supreme Court would take such an approach if it continues to look to the Shoreline Act for policy guidance. Generally, the Shoreline Act has a preference for water-related uses, so the court will likely limit the scope of the public interest in a more principled manner.

E. Private actions that are inconsistent with the Public Trust Doctrine.

Even where the state has conveyed tidelands and shorelands to private individuals, those lands generally continue to be burdened by the public trust doctrine.[313] One way the Washington Supreme Court has conceptualized this is by saying that the ownership of tidelands and shorelands has two different aspects, the jus privatum or proprietary interest which may be conveyed by the state, and the jus publicum, or public authority interest which

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[309]Boone v. Kingsbury, 206 Cal. 148, 189-93, 273 P.2d 797, 815-16 (1928).

[310]Opinion of the Justices, 383 Mass. 972, (1981).

[311]People v. City of Long Beach, 51 Cal.2d 875, 879-80, 338 P.2d 177, 179 (1959).

[312]Martin v. Smith, 184 Cal. App. 2d 571, 578, 7 Cal. Rptr. 725, 728 (1960).

[313]Orion Corp. v. State, 109 Wash. 2d 621, 640, 747 P.2d 1062, 1072 (1987).

cannot be conveyed.[314] Thus, when the state conveys tidelands and shorelands to a private individual, it conveys only the jus privatum, and retains the jus publicum, or public authority interest, for itself. The court has also likened the trust to "'a covenant running with the land (or lake or marsh or shore) for the benefit of the public and the land's dependent wildlife.'"[315] Private citizens or the attorney general[316] may bring suits to enjoin private landowners from damaging public trust interests.

Tidelands and shorelands in private hands are not, however, invariably burdened by the public trust. As has already been mentioned, where land is no longer adaptable to trust uses, then it is no longer burdened by the trust.[317] It should not follow, however, that the public trust burden should be applied less stringently to tidelands which are still usable for trust purposes, but are surrounded by built-up tidelands.[318]

Although the Washington Supreme Court has not had the opportunity to address the issue, it could find that prior appropriators, who significantly reduce the flow of rivers or dry up waterbodies, are acting inconsistently with the public trust.[319] The California Supreme Court in National Audubon Society (the Mono Lake case) found that Los Angeles appropriations from the tributaries of Mono Lake were damaging public trust resources by lowering the level of the lake. This increased the salinity (pollution) of the lake and endangered the brine shrimp that were a major source of food of the bird population. Therefore, the court required the Water Board to reconsider Los Angeles's appropriation permit in light of the public trust doctrine. Although the Washington Supreme Court has not had occasion to hold that appropriative rights are subject to the public trust doctrine, it has held that appropriations of water from lakes that lower lake levels can unreasonably interfere with riparian rights. In In re Martha Lake,[320] the Washington Supreme Court held that appropriators could not damage riparian rights by lowering the level of the lake by twelve inches, thus exposing eight to fifty

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[314]Id. at 639, 747 P.2d at 1072.

[315]Id. at 640, 747 P.2d at 1072-73, quoting Reed, The Public Trust Doctrine: Is it Amphibious? 1 **Envtl. L. & Litigation** 107, 118 (1986).

[316]For a discussion of who can bring an action to enforce the public trust doctrine, see infra Section III.F.

[317]Orion, 109 Wash. 2d at 640 n.9, 747 P.2d at 1072, quoting Berkeley v. Superior Court, 26 Cal.3d 515, 606 P.2d 362, 162 Cal. Rptr. 327, cert. denied, 449 U.S. 840 (1980).

[318]In State Department of Ecology v. Ballard Elks Club, the court suggested that part of the reason the Elks Club could build its non-water-dependent lodge over tidelands was because the site was located in a densely developed portion of Shilshole Bay, where other non-water-dependent structures extended out over tidelands. Now that the court has more firmly committed itself to the public trust doctrine, it seems less likely that the court would allow a non-water-dependent use such as this, considering the overall cumulative impact.

[319]See Johnson, Public Trust Protection for Stream Flows and Lake Levels, 14 **U.C. Davis L.Rev.** 233, 257-58 (1980).

[320]152 Wash. 53, 277 P. 382 (1929).

feet of muddy lake bottom in front of the riparian lands. The court might also limit appropriations which adversely affect public trust rights.[321] The state's strong policy of preserving minimum instream flows would add further support for protection of public trust resources from damage by prior appropriators.[322]

F. Judicial Remedies for Conduct Inconsistent with the Public Trust Doctrine

1. Enforcement by the Attorney General

The attorney general has the power to protect state and public interests by bringing suit to enforce the public trust doctrine.[323] Also the attorney general has authority to enforce the Shoreline Act.[324]

2. Enforcement by Private Citizens and Private Groups

The issue of standing should not pose a serious obstacle to suits by private citizens and private groups. In Caminiti, the plaintiffs were an individual, Ms. Caminiti, and the members of the Committee for Public Shorelines Rights.[325] They challenged a state statute which allowed private upland owners to build docks on public tidelands and shorelands without paying any rent to the state. The plaintiffs contended that they had an interest in the amount of revenue collected by the state, and they contended that the presence of private recreational docks affected their access to use public lands.[326] These uses included, but were not limited to, their ability to fish, swim, navigate, water ski, beachcomb, procure shellfish, sunbathe, observe natural and undisturbed wildlife, play on open beaches, and enjoy seclusion.[327] There appears to have been no serious issue over standing, because the court in Caminiti never addressed the matter. Therefore, if private citizens or citizens groups can allege that their interests in public trust resources are affected by state or private action, and can specifically list their personal interests, then standing should not be a barrier to a suit. In doctrinal terms, this would be adequate to establish that there was an injury in fact and that

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[321] See Johnson, Public Trust Protection for Stream Flows and Lake Levels, 14 **U.C. Davis L. Rev.** 233, 244-45 (1980).

[322] See **Wash. Rev. Code** ch. 90.22, ch. 90.54 (1989).

[323] **Wash. Rev. Code** § 43.10.030 (1989).

[324] **Wash. Rev. Code** § 90.58.210 (1989).

[325] 107 Wash. 2d 662, 732 P.2d 989 (1987).

[326] Id. at 665, 732 P.2d at 992.

[327] Id.

the plaintiffs are among the injured parties. This liberal standard for standing is in accord with the national trend toward loosening standing requirements in environmental suits.[328]

3. Other Ways for Public Trust Issues to Come Before the Court

Yet another way that the courts will have to address public trust issues is when a private property owner takes the initiative by claiming that state regulation has caused the inverse condemnation of his or her property. As the following section will demonstrate, the public trust doctrine must be considered in determining whether a taking by excessive regulation has occurred.

G. Interface of the Public Trust Doctrine with the Takings Clause of the Washington and Federal Constitutions.

1. Application of the Public Trust Doctrine to Avoid Takings Claims

Even where the state has conveyed tidelands and shorelands to private individuals, those lands are still burdened by the public trust. The trust resembles a "covenant running with the land" for the benefit of the public.[329] As a result, private property owners never had the right to do anything that was inconsistent with the public trust.

Private landowners cannot claim a taking has occurred when regulations prevent them from doing things that would adversely affect public trust interests. Whether or not the landowner had notice of the burden the public trust doctrine imposed on the land is irrelevant; no restrictions need to be in the original conveyance by the state.[330] Instead, courts impose the public trust doctrine as a matter of law. The U.S. Supreme Court's recent opinion in Phillips Petroleum Co. v. Mississippi[331] illustrates the fact that explicit notice about the public trust to private landowners is unnecessary. In Phillips Petroleum the Court held that lands beneath non-navigable streams which were influenced by the ebb and flow of tides from the Gulf of Mexico were public trust lands and passed to Mississippi upon statehood under the equal footing doctrine. The Court rejected the equitable arguments of the landowners, who insisted that they were entitled to the land because they held the lands under a pre-statehood grant, and they had paid taxes on the lands. The Court insisted that earlier Mississippi cases had

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[328] See, e.g., Duke Power Co. v. Carolina Envt'l Study Group, Inc., 438 U.S. 59 (1978); United States v. S.C.R.A.P., 412 U.S. 669 (1973); see also **L. Tribe, American Constitutional Law** 107-29 (2d ed. 1988).

[329] Orion Corp. v. State, 109 Wash. 2d 621, 640, 747 P.2d 1072 (1987).

[330] By contrast, Washington state requires all other encumbrances and liens to be registered so as to protect purchasers. **Wash. Rev. Code** § 58.19.010 (1989). At least one commentator has suggested that public rights such as access ought to be similarly registered. J. Scott, An Evaluation of Access to Washington's Shorelines Since Passage of the Shoreline Management Act of 1971, Washington State Department of Ecology, Shorelands Division (Sept. 1983).

[331] 484 U.S. 469 (1988).

made the state's claim to private tidelands clear.[332] If the Court considers such notice adequate to allow states to take possession of tidelands, a fortiori such notice should be adequate to apprise private land owner's of the public trust easement covering their property.

In Orion[333] the Washington Supreme Court explored the relationship between takings claims and the public trust doctrine. Orion Corporation owned a large part of the tidelands in Padilla Bay, an ecologically important estuary that is navigable at high tide. Orion planned to dredge and fill the bay in order to create a residential, Venetian-style community. In 1971 the Shoreline Act identified the bay as a shoreline of statewide significance, and declared that state policy required preservation and protection of the area. The Skagit County Shoreline Management Master Program (SCSMMP) was later approved by the state, and it designated Orion's lands as "aquatic," thus prohibiting dredging and filling. The only possible uses of any value were nonintensive recreation and aquaculture, the latter of which required a conditional use permit.[334]

In Orion the court decided that the tidelands of Padilla Bay were burdened by the public trust doctrine. The court concluded that "Orion never had the right to dredge and fill its tidelands, either for a residential community or farmland. Since a `property right must exist before it can be taken,' [citation omitted] neither the Shoreline Act nor the SCSMMP effected a taking by prohibiting Orion's dredge and fill project."[335] Thus, the public trust doctrine can largely preclude a successful takings claim because private property owners never had a right to act in a manner inconsistent with public trust interests.

The court in Orion indicated, however, that a takings issue might still be present if the regulation of Orion's land unduly burdened uses that would be consistent with the public trust doctrine. Under the SCSMMP, Orion was strictly limited to using the bay for non-intensive aquaculture and recreation. Orion claimed that its property might be usable for other purposes that were consistent with the public trust. Because the trial court record did not disclose whether Orion's property was adaptable to any of these other uses, the court remanded the case for further proceedings at the trial court level.

The public trust doctrine does not bar all takings challenges. If state and local regulation significantly burden uses that would be consistent with the public trust, then private landowners may have a takings action. As the Washington Supreme Court's opinion in Orion indicates, the test for whether a regulatory taking has occurred is somewhat unclear, but presumably the legitimacy of the state's interest, and the impact on the landowner's reasonable, investment-backed expectations would be factors in determining whether a

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[332] But cf. Justice O'Connor's spirited dissent. 484 U.S. at 485.

[333] Orion Corp. v. State, 109 Wash. 2d 621, 641, 747 P.2d 1062, 1073 (1987).

[334] Id. at 626-29, 747 P.2d at 1065-67.

[335] Id. at 641-42, 747 P.2d at 1073.

taking has occurred.[336] The Washington Supreme Court has indicated that although the state's analytical approach may be different, the breadth of constitutional protection against takings without compensation is virtually the same under both the state and federal constitutions.[337]

2. Takings Claims That May Be Raised by the Extension of the Trust Doctrine

While it is true that application of the public trust doctrine to lands traditionally within the trust will successfully prevent most takings challenges, extension of the public trust doctrine to tributaries, uplands and related lands may raise more serious takings issues. The U.S. Supreme Court in Phillips Petroleum v. Mississippi[338] indicated that there are no constitutional limits on states from recognizing preexisting public trust rights, for example, to lands subject to the ebb and flow of the tide and lands under navigable for title waterways. As indicated above, however, the geographic scope of the public trust doctrine has been expanded by some courts to regulate appropriations on non-navigable tributaries, regulate related wetlands, guarantee public access to the dry sand areas of beaches, and extend the public's right to use non-navigable lakes and streams.[339]

Those extensions of the doctrine could raise takings issues. For example, one commentator has suggested that the Wisconsin court's extension of the doctrine to wetlands may be constitutionally suspect.[340] Another commentator, Professor Lazarus, insists that where the state tries to extend the doctrine beyond those lands that it acquired at statehood, landowners should have a valid takings claim against the state.[341] Several courts, however, have looked to the practical and environmental realities of preserving public rights in extending the scope of the doctrine. For example, the New Jersey Supreme Court recognized the practical problem that inadequate access poses to the full exercise of public rights, and extended the doctrine to the privately owned dry sand area of beaches. Other courts, such as the Supreme Court of Wisconsin, have recognized the interconnectedness of water resources, and extended the scope of the doctrine to prevent indiscriminate filling of wetlands. In extending the doctrine to cover these areas, courts have sought to preserve and effectuate public rights, not to adhere to inflexible legal doctrine.

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[336] Id. at 655-56, 747 P.2d at 1080-81.

[337] Id. at 657, 747 P.2d at 1082.

[338] 484 U.S. 469 (1988).

[339] See supra Section III.C.2.

[340] Note, The Public Trust Doctrine: Accommodating the Public Need Within Constitutional Bounds, 63 **Wash. L. Rev.** 1087, 1106-07 (1988) (discussing the Wisconsin court's opinion in Just v. Marinette, 56 Wis. 2d 7, 201 N.W.2d 761 (1972).

[341] Lazarus, supra note 268, at 648-49.

3. Banishing the Spectre of the Nollan Decision

Armed with the Supreme Court's decision in Nollan v. California Coastal Commission,[342] many owners of land along beaches and shores claim a taking has occurred whenever the state seeks to provide public access to and along beaches. In Nollan, the California Coastal Commission tried to condition its grant of permission to rebuild a house on the transfer of an easement across private beachfront property. The easement would have secured lateral public passage along the beach, across the Nollan's property in the dry sand area, i.e. a strip of sand between the mean high tide line and a seawall. The U.S. Supreme Court found that a taking had occurred because there was no nexus between the governmental purpose of the permit condition and the development ban.

The Nollan decision does not, however, limit the application of the public trust doctrine. First, the parties did not raise the public trust doctrine as an issue.[343] If, as some courts have held, the public trust doctrine covers the dry sand area,[344] a state would not need to obtain such an easement. It would simply state what is already law. Similarly, if the doctrine of "custom" provides the public a right to the dry sand area of beaches, then public access does not constitute a taking of private property. Second, even if we apply the Nollan reasoning, a state may be able to meet the nexus requirement by adequately showing that a permit condition such as a lateral access easement is related to legitimate state interests affected by the development. Perhaps if a state raised the public trust doctrine and the multitude of public interests protected by the doctrine, a court would be more likely to realize that beachfront and shorefront development does affect a substantial, legally recognized, public interest.

H. Federal/State Powers and the Public Trust Doctrine

1. Limitations on State Power: Supremacy, Preemption, and Federal Sovereign Immunity

State attempts to use the public trust doctrine can run up against federal power. Under the Supremacy Clause of the federal Constitution, the "Constitution, and the Laws of the United States which shall be made in pursuance thereof; and all treaties made, . . . shall be the Supreme Law of the Land."[345] Accordingly, the courts have developed the doctrine of federal preemption to determine when federal legislation prevents states from enacting laws. The Supreme Court has succinctly described its preemption analysis:

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[342]483 U.S. 825 (1987).

[343]In dissent, Justice Blackmun specifically stated that Nollan did not implicate in any way the public trust doctrine. Id. at 865.

[344]See, e.g., Matthews v. Bay Head Improvement Assoc., 95 N.J. 306, 471 A.2d 355 (1984).

[345]U.S. Const. art. VI, cl. 2.

> [S]tate law can be preempted in either of two general ways. If Congress evidences an intent to occupy a given field, any state law falling within that field is preempted. If Congress has not entirely displaced state regulation over the matter in question, state law is still preempted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law, or where the state law stands as an obstacle to the accomplishment of the full purposes of Congress.[346]

Congress may also preempt state law by expressly stating its intention to do so in a federal statute. Generally, however, Congress does not expressly address the preemption issue, so courts must look to legislative history to determine Congress's intent.

In general, state attempts to protect public trust resources are not likely to run up against too many preemption problems.[347] The Court maintains a presumption against federal preemption when federal legislation enters an area of traditional state power.[348] The public trust doctrine, which protects local public interests and the environment, is clearly in an area traditionally governed by the states. Furthermore, the federal government's efforts to protect the environment have generally stressed the importance of a collaborative effort between the states and the federal government.[349] The U.S. Supreme Court has found that some state laws, however, such as bans on supertankers over a certain size, and standards for vessel design, construction, and navigational equipment, were preempted by the federal Ports and Waterways Safety Act.[350] The Court found that the federal legislation demonstrated congressional intent that there be national uniformity in tanker design standards.[351] Nevertheless, the Court's most recent case involving the issue of preemption of a state environmental law, California Coastal Commission v. Granite Rock Co.,[352] indicates the court's continued reluctance to find preemption of state laws that protect the environment.

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[346]Silkwood v. Kerr-McGee Corp., 464 U.S. 238, xxx (1984).

[347]For a discussion of federal preemption and state efforts to control oil pollution, see Johnson, Oil and the Public Trust Doctrine in Washington, 14 **U.P.S.L. Rev.** 671 (1991).

[348]Rice v. Santa Fe Elevator, 331 U.S. 218, 230 (1947).

[349]See, e.g., The Federal Water Pollution Prevention and Control Act (The Clean Water Act) 33 U.S.C. § 1251 (b) (1988); Askew v. American Waterways Operators, Inc., 411 U.S. 325 (1973).

[350]Ray v. Atlantic Richfield Co., 435 U.S. 151 (1978); but cf. Chevron U.S.A., Inc., v. Hammond, 726 F.2d 483 (9th Cir 1984) (holding that Alaska's deballasting statute covering tankers was not preempted because it was covered tanker operations that could affect the environment, not a design feature).

[351]Ray, 435 U.S. at 165-68.

[352]480 U.S. 572 (1987) (upholding California's right to review and require a permit for a private mining project on U.S. Forest Service lands, despite federal legislation such as the Federal Land Policy and Management Act, the National Forest Management Act, and the Coastal Zone Management Act).

In addition, state public trust activities may be precluded as an encroachment upon Congress's commerce power.[353] Congress's power over navigation under the commerce clause extends primarily to waterbodies that are navigable in fact.[354] Although Congress has paramount power over state law in the area of interstate navigation, state regulation of navigation is given substantial leeway where there is no applicable congressional act, no need for national uniformity, and no evidence that state action impedes interstate commerce.[355]

The federal government's sovereign immunity may also prohibit states from enforcing the public trust doctrine against federal projects. Federal projects "are subject to state regulation only when and to the extent that Congressional authorization is clear and unambiguous."[356] In practice, however, state regulation of federal projects has often been allowed because of the policies Congress has set forth that suggest that federal and state governments share responsibility in environmental protection and natural resource management.[357]

In Friends of the Earth v. U.S. Navy,[358] the Ninth Circuit recently rejected the Navy's claim that Washington's Shoreline Act could not regulate its project because of sovereign immunity. The Clean Water Act, however, waives federal sovereign immunity with respect to state programs to control the discharge of dredged or fill material and to control and abate water pollution.[359] The court reasoned that Washington's Shoreline Act was such a program, and therefore the Navy could not assert sovereign immunity to avoid the Act's requirements.[360] The Friends of the Earth decision indicates that courts are likely to have little tolerance for the antiquated doctrine of sovereign immunity in light of states' legitimate interests in preserving their coastal environments.

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[353]**U.S. Const.** art. I, § 8, cl.3.

[354]Waterbodies are navigable in fact if "they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce over which trade and travel are or may be conducted in the customary modes of trade and travel on water." Daniel Ball, 10 Wall. 577, 563. Waterbodies need not be navigable in their original state, but only need to be made navigable by reasonable improvements in order to be navigable in fact. United States v. Appalachian Power Co., 311 U.S. 377 (1940).

[355]**D. Connors & J. Archer, The Public Trust Doctrine: Its Role in Managing America's Coasts,** 282-83 (Aug. 2, 1990 Draft).

[356]Environmental Protection Agency v. California ex rel. State Water Resources Control Bd., 426 U.S. 200, 211 (1976).

[357]See, e.g., California Coastal Commission v. Granite Rock, 107 S.Ct. 1419, 1425 (1987); Kleppe v. New Mexico, 426 U.S. 529, 543 (1976); Hancock v. Train, 426 U.S. 167, 179 (1977).

[358]841 F.2d 927 (9th Cir. 1988).

[359]Id. at 934-35.

[360]Id.

2. A Self-Imposed Limitation on Federal Power: The Consistency Requirement of the Coastal Zone Management Act

Under their coastal zone management programs, states can limit, modify or prohibit activities of federal agencies and private actions requiring federal permits under the consistency provisions of the federal Coastal Zone Management Act.[361] By including public trust principles in their coastal zone management programs, states can effectively influence federal activities and avoid federal preemption questions.

Under the consistency requirement, federal agency activities directly affecting the coastal zone must be consistent "to the maximum extent practicable" with the enforceable policies of approved state management programs.[362] "Enforceable policies" include not only state policies contained in constitutional provisions, laws, regulations, land use plans and ordinances, but also judicial or administrative decisions.[363] Therefore, federal agency activity must be consistent not only with legislative and regulatory expressions of the public trust doctrine; federal agency activity must also be consistent with the public trust doctrine as expressed by state courts. The National Oceanic and Atmospheric Administration's regulations have interpreted the phrase "to the maximum extent practicable" to require "full consistency" unless federal law prevents the federal agency from meeting this requirement.[364] Although the regulations provide for mediation of disputes between the states and federal agencies, in practice the states have generally gone to federal court to get injunctions against federal agencies.[365]

If private activity affects the land or water of the coastal zone, an applicant for a federal permit must certify to the relevant federal agency that the activity or project is consistent with the state's enforceable policies.[366] Once again, "enforceable policies" means not only state laws and regulations, but also judicial opinions such as Orion[367] and Caminiti[368] which recognize the public trust doctrine in Washington. If the state objects to the proposed project, the only way for the project to get approved is for the Secretary of Commerce to override the state's objection. The Secretary of Commerce, however, can only override a

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[361] 16 U.S.C.A. § 1456 (Supp. 1991).

[362] 16 U.S.C.A. § 1456(c)(1)(A) (Supp. 1991). The term "federal activity" means any functions performed by or on behalf of a federal agency in the exercise of its statutory responsibilities. 15 C.F.R. § 930.31 (1991).

[363] 16 U.S.C.A. § 1453(6a) (Supp. 1991).

[364] 15 C.F.R. § 930.32 (1990).

[365] **Connors & Archer,** supra note 355, at 296.

[366] 16 U.S.C.A. §§ 1456(c)(3)(A), (B) (Supp. 1991).

[367] Orion Corp. v. State, 109 Wash.2d 621, 747 P.2d 1062 (1987).

[368] Caminiti v. Boyle, 107 Wash.2d 662, 732 P.2d 989 (1987).

state objection if the project is consistent with the national objectives of the federal Coastal Zone Management Act or the activity is necessary for national security.[369]

The state of Washington has clearly indicated in the Shoreline Act that it will enforce the federal consistency requirement: "Where federal or interstate agency plans, activities or procedures conflict with state policies, all reasonable steps available shall be taken by the state to preserve the integrity of its policies."[370] In addition to following the Shoreline Act, federal agency activity and federal permittees must also follow several other state legislative programs.[371] The Department of Ecology, which manages the state coastal management program, conducts the federal consistency reviews for the state of Washington. The geographic scope of the coastal zone is very large in Washington state, covering all fifteen Pacific Ocean and Puget Sound Coastal counties. The Department of Ecology even reviews federal activities outside of the coastal zone, but west of the crest of the Cascade Range, to avert potential spillover effects that directly affect the coastal zone.[372]

Therefore, the consistency requirement of the Coastal Zone Management Act provides an important mechanism for protecting public trust resources from federal agency activity or federally permitted activity. Those activities must not only be consistent with state laws, regulations and plans which protect public trust resources; they must also be consistent with judicial pronouncements of the doctrine.

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[369]16 U.S.C.A. §§ 1456(c)(3)(A), (B) (Supp. 1991); 15 C.F.R. §§ 930.120 -.134 (1990).

[370]**Wash. Rev. Code** § 90.58.260 (1989).

[371]See State of Washington Federal Consistency Procedures. These include the State Environmental Policy Act, **Wash. Rev. Code** ch. 43.21C; the Water Pollution Control Act, **Wash. Rev. Code** ch. 90.48; the Clean Air Act, **Wash. Rev. Code** ch. 70.94, and the Energy Facility Site Evaluation Council, **Wash. Rev. Code** ch. 80.50.

[372]State of Washington Federal Consistency Procedures at 7.

IV. Conclusions and Recommendations

The public trust doctrine is now firmly established in Washington law. Its complete geographic, scope and the interests it will protect are, however, not yet known. Several findings are pertinent.

State statutes such as the Shoreline Act and Aquatic Lands Act use public trust values to express and reach regulatory goals. These statutes do not supplant the doctrine, but reflect it in part. As a consequence, when considering the geographic extent of the public trust doctrine, or whether it protects a given interest, courts may look to these statutes for guidance in recognizing public values.

The decisions of other state courts may also provide guidance for Washington's courts in developing the public trust doctrine. Other courts have applied the doctrine to cover the dry sand area of beaches, non-navigable-for-title waters tributaries, related wetlands, and the surfaces of recreationally navigable waters. Other state courts have also recognized new public trust values, such as aesthetic beauty and the right of the public to walk over and harvest shellfish on privately owned tidelands.

The public trust doctrine applied to state lands upon entry into the Union, and predates most private ownership of trust resources. When considering whether property has been "taken" by regulatory action, the public trust doctrine effectively shields government from such a claim if, in fact, trust resources and interests are at issue. Thus, the public trust doctrine diminishes the impact of the U.S. Supreme Court decision in Nollan v. California Coastal Commission,[373] which found a taking of beachfront property by California coastal zone regulations. The public trust doctrine was not posed as a defense or otherwise considered in that case. The Washington Supreme Court has described the public trust doctrine as a covenant running with the land. Unlike other burdens on private property, however, landowners need receive no express notice of the public trust burden on their lands.

When considering and developing the public trust doctrine, courts distinguish between the property-based concepts of the public trust doctrine, and the police power basis of regulatory statutes. Each may influence the other, but they remain separate, the public trust doctrine providing a substantive review function over governmental activity that purports to advance public interests.

While the doctrine contains a degree of flexibility, to accommodate changing public priorities, past jurisprudence provides guidelines to courts when incrementally developing new public trust protected interests.

[373] 483 U.S. 825 (1987).

When confronted with choices between competing public trust values, a balancing process can be anticipated. It is not possible to compile a set hierarchy of public trust values; priorities must be determined on a case-by-case basis.

Regulators should consider the public trust doctrine and its values when making decisions affecting public trust resources. State statutes incorporate or reflect public trust values, but agency administrators must ensure that statutes and regulations are strictly congruent with those values and that activities do in fact consider and promote the public trust.

Attachement 3 (for endote xv) to Victim Statement on Behalf of the Northwest Atlantic Marine Alliance

September 7, 2017

Re: United States of America v. Rafael
case number 1:16-cr-10124-WGY

OCEANS

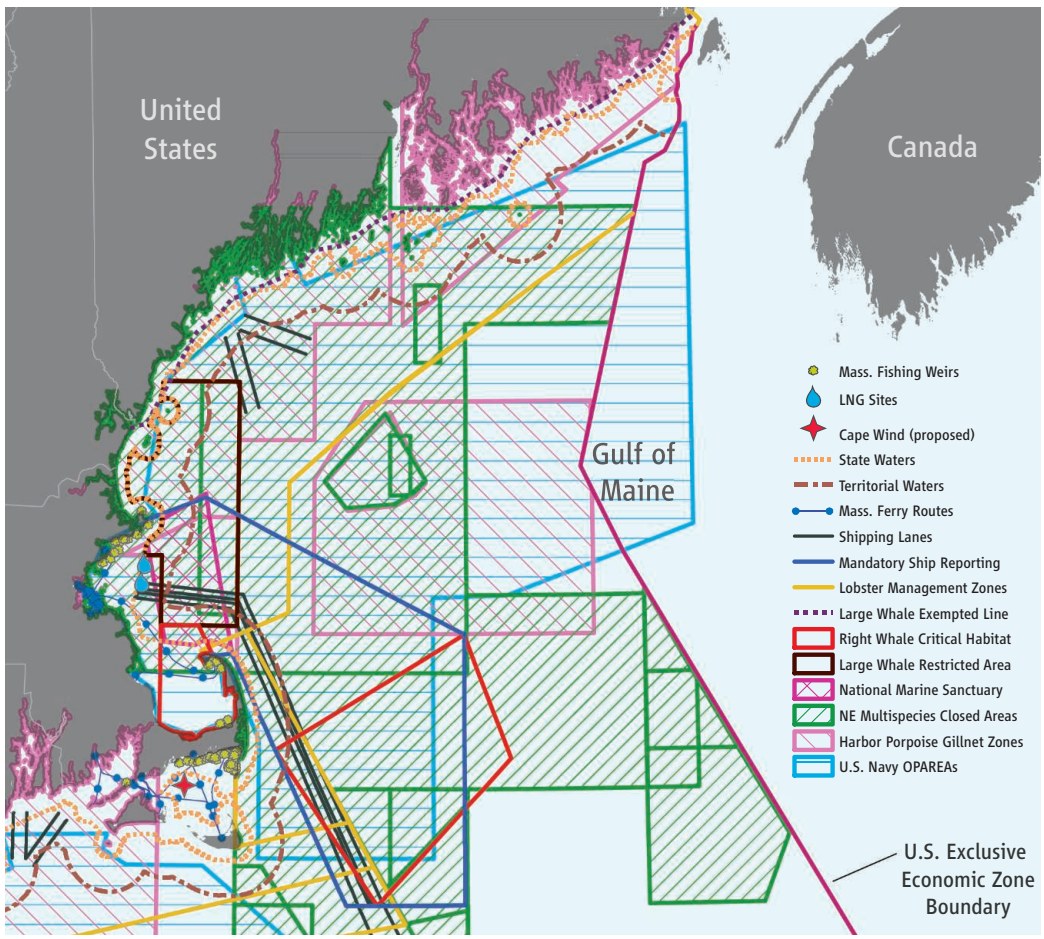
Legal Bedrock for Rebuilding America's Ocean Ecosystems

The public trust doctrine would provide a powerful framework for restructuring the way we manage U.S. oceans.

Mary Turnipseed,[1]* Larry B. Crowder,[2] Raphael D. Sagarin,[3] Stephen E. Roady[1,4]

Recent discussions about ocean policy reform have focused on ecosystem-based management, which fully incorporates humans and considers the cumulative impacts of their activities on ecosystems and the services they provide (*1*). This approach is logical given the highly interconnected social-ecological systems of the ocean (*2*) and may be best realized through comprehensive marine spatial planning and ocean zoning (*3*). But U.S. ocean governance as currently configured cannot easily accommodate ecosystem-based management (*4*).

Federal waters, which include the territorial sea and the Exclusive Economic Zone (EEZ), reach from the 3- or 9-nm (nautical mile) borders of state waters out to the 200-nm outer boundary of the EEZ, an ocean area in which the United States has rights to explore, exploit, and manage living and nonliving resources (*5*–*7*). Because of the United States' extensive coastlines and territorial holdings, these waters cover 3.6 million nautical square miles (11.4 km^2), an area that is larger than the combined land area of the 50 states. Over 20 federal agencies operating under dozens of laws regulate activities, support ocean-based commerce, and protect marine species and habitats in the territorial sea and EEZ (*8*) (see figure, right). These agencies separately manage parts of marine ecosystems, without any systematic effort to coordinate their actions for the public good (*9*).



Uncoordinated sectoral ocean governance. A cacophony of activities, most regulated by separate federal agencies, crowd ocean waters in the Gulf of Maine. A federal public trust doctrine extended to all U.S. ocean waters would identify these agencies as trustees of the U.S. ocean public trust, unifying them for the first time under a common mandate to manage marine resources sustainably. LNG, liquified natural gas; OPAREAs, Operating areas.

With new leadership in place in Washington, U.S. ocean policy is poised for a long-overdue transformation. Since two national ocean commissions highlighted the need for dramatic reform 5 years ago (*8*, *10*), progress has been made toward understanding how to rebuild ocean ecosystems [e.g. (*11*, *12*)]. But implementing a new, ecosystem-based policy regime for federal ocean waters will require a solid legal foundation that provides the authority for, and imposes responsibility upon, disparate federal agencies to collaborate in their management of ocean resources. The public trust doctrine would provide this critical foundation.

The doctrine is a simple but powerful legal concept that obliges state governments to manage certain natural resources in the best interests of their citizens (*13*). More generally, a "trust" is a legal relationship in which a person or entity (the "trustee") manages a property or resource for the benefit of another person or group. The trustee is legally bound to preserve the assets of the trust, allowing only judicious use of the assets and repairing the trust should it be harmed. The trustee must also manage the trust exclusively in the interests of the beneficiaries (*14*). The beneficiaries of states' public

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trusts include living and future citizens (*15*). Thus, inherent to the doctrine is the idea of intergenerational equity; trustees must manage trust assets so that needs of current beneficiaries are met without sacrificing needs of future beneficiaries. A federal public trust doctrine, if formally extended from state waters to the outer edges of the EEZ, would identify federal agencies as having responsibility for marine resources as trustees of the U.S. ocean public trust and U.S. citizens as the sole beneficiaries.

Many analysts, including the presidentially appointed U.S. Commission on Ocean Policy, have assumed that the doctrine already encompasses the vast space of the territorial sea and EEZ (*8*) [supporting online material (SOM) text]. But our recent review (*16*) reveals that the legal authority and responsibility of the federal government to manage marine resources in the best interests of U.S. citizens as a trustee under a federal public trust doctrine have not been formally articulated by the courts or established in statutory law. Instead, the doctrine is well established in the United States only at the state level (*15*), where courts have consistently held that the public trust doctrine requires state agencies and attorneys general to seek legal action against private parties infringing on the public trust. Furthermore, state trustees cannot abdicate their responsibility to manage the trust; if they do, the doctrine enables citizens to seek judicial review of their actions [or inaction (SOM text)]. In some states, courts have used the public trust doctrine to protect coastal ecosystem services (*17*, *18*), and Massachusetts recently passed the first state law mandating a comprehensive ocean management plan "to ensure its effective stewardship of the ocean waters held in trust for the benefit of the public" (*19*). Although states do work cooperatively with federal agencies on issues such as coastal zone and fisheries management, they alone cannot protect U.S. ocean resources and the services they provide. Ocean ecosystems are interconnected across state and federal political lines, and states have limited authority in federal waters (SOM text).

In addition to providing a consistent framework for federal ocean agencies implementing ecosystem-based management, a public trust doctrine for U.S. federal waters would be a policy backstop for these agencies to enforce the public trust against infringing parties. The doctrine would also extend greater standing to U.S. citizens to protect their interests in the management of ocean trust resources in the instance of abuse or neglect of the trust (SOM text). And, with the current scientific understanding of the necessity of coordinated, comprehensive action to stem the widespread decline of U.S. marine ecosystems (*9*), it would be difficult for a federal agency operating under a public trust mandate to avoid working cooperatively with agencies that manage other components of the ocean ecosystem. Therefore, explicitly mandating the common responsibility of these agencies to protect the ocean public trust could catalyze interagency ecosystem-based management in U.S. oceans.

A federal public trust doctrine for U.S. ocean waters could be established in a number of ways:

Executive order: The president could make expanding the doctrine a signature of his administration through an executive order that directs all federal ocean agencies to apply their resources toward cooperatively and sustainably managing the ocean public trust (SOM text).

Judicial interpretation: Federal judges could extend the doctrine into the territorial sea and EEZ by invoking the same instruments relied upon by state courts to enlarge the reach of the doctrine—judicial precedents, language in existing statutes, and the common law (SOM text).

Congressional mandate: The Congress could unambiguously write the doctrine into federal oceans law. As one example, the National Oceanic and Atmospheric Administration (NOAA) could be given the following directive: "NOAA's mission is to manage and protect public trust resources within the waters and atmosphere of the U.S. with the cooperation of other federal and state agencies." Once mandated, the doctrine could be put into practice via agency memoranda—a top-down approach to implementing broad changes in agency practice for which there is ample precedent [e.g. (*20*)]—directing all workers to carry out the legislated work of their agencies under their newly articulated duties as trustees of the ocean public trust.

Just as assets in our economy are inextricably linked, assets in our ocean trust portfolio are linked with one another. To move past the failing status quo in U.S. ocean management and to build a vigorous mandate that provides both the authority and the responsibility for federal agencies to jointly work to manage U.S. oceans as whole ecosystems will require that we answer, as soon as possible, two critical questions: For whom should our country's oceans be managed, and for what purpose? The public trust doctrine answers both of these questions. By insisting that federal agencies manage the U.S. ocean public trust for the long-term benefit of all American citizens, citizens and the governments they elect can begin to harmonize the concepts of representative democracy and sustainable resource use and stewardship.

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Supporting Online Material

www.sciencemag.org/cgi/content/full/324/5923/183/DC1

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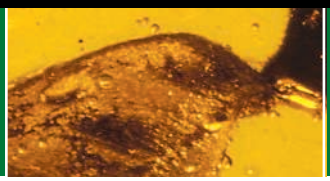
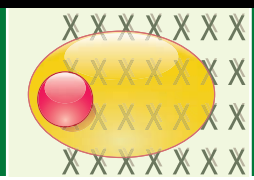
The chemistry of carboniferous amber 51



How to generate hypotheses 53



LETTERS | BOOKS | POLICY FORUM | EDUCATION FORUM | PERSPECTIVES

LETTERS

edited by Jennifer Sills

Think Big, Eat Small

B. WORM *ET AL.* ("REBUILDING GLOBAL FISHERIES," RESEARCH ARTICLES, 31 JULY, P. 578) REPORTED cases in which effective fisheries management was based on catch restriction, gear modification, and closed areas. Consumers can also play a role in the future of fisheries. The demand for fish continues to increase yearly—is it possible to maintain the benefits of fish consumption while minimizing the risks to both human health and global fisheries?

Sardines. Small pelagic fish such as sardines contain more nutrients and fewer contaminants than larger types of fish.

Harvesting from higher trophic levels in the marine food chain eventually leads us to make nutritionally and ecologically incompetent choices. We are eating the wrong kinds of fish and too many of them.

There is good indication that some of the smaller fish species have more to offer to human health with less risk than larger fish closer to the top of the food chain. There are several reasons for this. Fish at the top of the food chain can become significant repositories for a range of contaminants both natural and anthropogenic and may also have low concentrations of key nutrients. The flesh of most large predator fish from warm water fisheries (big tuna, swordfish, marlin, shark) usually is low in omega-3 fatty acids and high in mercury/selenium ratios (*1*).

Small pelagic fish, such as sardines, herrings, anchovies, and mackerel, however, have not been subject to the same overfishing pressure that has befallen almost all of the larger fish species. They not only provide higher levels of beneficial nutrients but are also significantly lower in contaminants ubiquitous to the marine food chain. They are also very affordable.

Consumers' choices are more and more influenced by health and environmental considerations. That could make a difference.

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Public Trust Doctrine: Too Limited

AS SOMEONE WHO HAS LONG ADVOCATED A coherent national ocean policy, I agree with M. Turnipseed and her colleagues that properly framed public trust concepts regarding the United States's marine environments could be an important component of federal oceans law ("Legal bedrock for rebuilding America's ocean ecosystems," Policy Forum, 10 April, p. 183). However, the public trust doctrine—described by Turnipseed *et al*. as a "legal concept that obliges state governments to manage certain natural resources in the best interests of their citizens"—is not necessarily the "legal bedrock" that the authors portray it to be, particularly if the goal is broad-based ecosystem management.

The authors rely heavily on California's public trust doctrine, which is one of the two most expansive and ecologically protective versions of the public trust doctrines in the United States (Hawaii's is the other). Each state has its own version of the doctrine, and most have not been nearly so willing to extend their public trust law to aquatic ecosystem protection.

Indeed, as framed by the U.S. Supreme Court in the seminal case of *Illinois Central Railroad Co.* v. *Illinois*, 146 U.S. 387 (1892), the public trust doctrine has two main components. First, it prevents states from giving private persons control over the beds and banks of navigable waters, and hence control over the waters themselves. Thus, the resources protected under the doctrine include only bed-based natural resources such as oil and gas, gravel, and occasionally shellfish.

Second, the public trust doctrine classically preserves only three public uses of the navigable waters themselves: navigation, commerce, and fishing. This last use underscores the need to carefully construct any public trust doctrine for the United States's marine waters. Many marine fish populations are in dire trouble (*1*–*4*), and enshrining a right to fish in federal law would undermine, rather than promote, effective ocean ecosystem management.

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Public Trust Doctrine: Too Broad

IN THEIR POLICY FORUM ("LEGAL BEDROCK for rebuilding America's ocean ecosystems," 10 April, p. 183), M. Turnipseed *et al.* claim that extending the "public trust doctrine" to all U.S. ocean waters would more effectively promote cooperation in ocean governance than the "failing status quo." However, the authors fail to consider viable nonregulatory solutions to ocean management, such as long-term leases, second-bid

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auctions, and other public-private contractual arrangements—alternative governance mechanisms that are now commonly used to manage a wide variety of common-pool natural resources, including public lands, fisheries, and water resources (*1*).

In addition to conservation goals, federal ocean agencies must balance an array of competing uses of ocean resources, including energy, fishing, shipping, tourism, and military. With so many competing stakeholders in play, the public trust doctrine is too broad to provide effective guidance in ocean management. Instead of a top-down, one-size-fits-all approach, Congress should confer on U.S. ocean agencies the legal authority to experiment with alternative mechanisms to determine which solutions best promote efficiency and equity among these myriad competing uses.

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Public Trust Doctrine: In Need of Integration

THE POLICY FORUM "LEGAL BEDROCK FOR rebuilding America's ocean ecosystems" (M. Turnipseed *et al.*, 10 April, p. 183) brings much-needed attention to ocean policy reform. The authors address the problem of too many agencies having management authority with little overall coordination. The authors' focus on the public trust doctrine as a solution seems misplaced, however.

Most of the agencies managing resources in the Exclusive Economic Zone (EEZ) already work under a public-benefit mandate. The problem is that these agencies do not coordinate or integrate their work. It is unclear how the extension of the public trust doctrine out to the EEZ through executive order, legislation, or judicial interpretation would lead to more integrated management.

Before we introduce new laws and regulatory bodies or give existing agencies further mandates, we must research the success (or failure) of existing legislation that aims to protect the public trust. I worked for 8 years implementing the Massachusetts regulatory program that administers the state's Public Waterfront Act of 1866. The Act protects the public's right in tidelands for "fishing, fowling, and navigating" and draws its legal basis from the public trust doctrine (*1*). Many properties within the jurisdiction of this program are not in compliance. The problem is not the lack of a legal basis but rather the limited resources allocated for compliance and enforcement with the law's mandate (*2*).

To jump-start integrated management in the EEZ, we need much more than legislative, judicial, or executive backing of fundamental principles. We need regulatory mechanisms that have been proven to be effective in other comparable contexts, as well as recognition of the regional benefits of the wise use of the sea.

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Response

We welcome Craig's support for the notion that establishing public trust doctrine principles in the United States Exclusive Economic Zone (EEZ) could prove important to federal oceans law and policy. Notwithstanding her concerns, the doctrine has burst out of its original confines—courts in many states (such as Florida, Louisiana, New Jersey, and Virginia) have expanded the doctrine's scope to protect various natural resources and public uses, and in so doing have authorized the protection of aquatic ecosystems (*1*–*4*). Additionally, several courts have concluded that the corpus of public trusts must be preserved—not just for the benefit of the current generation, but also for future generations [e.g., (*5*)]. Thus, far from enshrining a right of today's citizens to fish, applying the public trust doctrine would impose an obligation to manage fishing in federal ocean waters in a sustainable manner. Moreover, improved understanding of the interconnectedness of ocean ecosystems lends weight to the conclusion that ensuring the ability of future generations to fish will require an ecosystem-based management regime created by means of a coastal and marine spatial planning framework (*6*, *7*).

Guerra-Pujol asserts that we promote a public trust doctrine–based ocean policy at the expense of property rights–based management programs. However, a federal public trust doctrine would not preclude the establishment of, for example, oil, gas, and renewable energy leases and fisheries catch-share programs; instead, it would guide the development of these policies such that they protect the public interest (*8*).

Finally, Portman questions the added value of a federal ocean public trust doctrine when ocean-related agencies already have various mandates to act for the benefit of the U.S. public. But firmly establishing the public trust doctrine in the EEZ would explicitly impart a suite of specific duties and responsibilities to federal ocean trustees of the kind that are assumed by trustees of public, private, and charitable trusts (*8*, *9*). The duties include those mentioned above—to preserve the trust corpus and to deal impartially among all beneficiaries (both present and future)—as well as the duties to administer the trust solely in the interest of the beneficiaries and to provide complete and accurate information to trust beneficiaries regarding the management of the trust (*10*).

The Massachusetts Public Waterfront Act regulatory framework has not been successful because of noncompliance and lack of enforcement. Such a circumstance should not disqualify the public trust doctrine from informing national ocean policy. Indeed, it did not prevent the Massachusetts Ocean Management Plan from identifying its impetus as the state's public trust doctrine (*11*).

Would applying the public trust doctrine to the EEZ help to establish the necessary incentives, responsibilities, and powers for federal agencies to work in an integrated fashion toward long-term sustainable ocean management? We think so; by providing a common, overarching public trust mandate, as well as a suite of enforceable trusteeship duties, the doctrine would work at multiple levels to help Congress and federal agencies

Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 3 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

reshape the regulatory framework used to manage U.S. ocean space and resources. It would provide the bedrock for the new national ocean policy envisioned by the president—a policy that emphasizes both intergenerational ecosystem protection and stewardship (*7*).

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CORRECTIONS AND CLARIFICATIONS

News of the Week, *Science*Insider: "From the *Science* policy blog" (7 August, p. 665). Richard E. Besser is the former acting director of the Centers for Disease Control and Prevention. His first name is listed correctly in the online *Science*Insider blog.

Reports: "The C-Ala domain brings together editing and aminoacylation functions on one tRNA" by M. Guo *et al*. (7 August, p. 744). On p. 747, the citation to Fig. 4D should instead cite fig. S6.

News of the Week: "NOAA project to measure gravity aims to improve coastal monitoring" by B. Johnson (24 July, p. 378). The article incorrectly described how gravity is calculated. Gravity is determined through the difference between the measurement of an onboard gravimeter and aircraft accelerations from GPS positioning. NASA's Gravity Recovery and Climate Experiment satellite is a source of global gravity data but not a source of vertical accelerations for the aircraft.

News Focus: "Deadly flights" by A. Curry (24 July, p. 386). The ultrasonic calls made by the bat *Nyctalus noctula* are around 22 KhZ, not 32 KhZ as noted in the story.

This Week in *Science*: "Swimming through sand" (17 July, p. 242). The credit for the image should have been "Ryan Maladen and Yang Ding; Ryan Maladen and Lionel London (inset)." The online version has been corrected.

Perspectives: "How did the turtle get its shell?" by O. Rieppel (10 July, p. 154). The photograph shows a North American snapping turtle (*Chelydra serpentina*), not a Chinese softshelled turtle (*Pelodiscus sinensis*) as indicated by the caption.

Reports: "Ventral tegmental area BDNF induces an opiate-dependent–like reward state in naïve rats" by H. Vargas-Perez *et al*. (26 June, p. 1732). The second author of the paper was credited incorrectly in the author list. His name should be listed as Ryan Ting-A-Kee. The name has been corrected in the HTML version online.

Perspectives: "Extreme spinning tops" by M. Kramer (12 June, p. 1396). In the first paragraph, the rotation rate of neutrons stars was mistakenly given as up to 43,000 times per second. It should have read 43,000 times per minute.

Table of Contents: (13 March, p. 1395). In the description of the Report "Paternal control of embryonic patterning in *Arabidopsis thaliana*" by M. Bayer *et al*., the term "cytoplasmic gene" was incorrect. The sentence should read "Transcripts of an IRAK/Pelle-like kinase gene from sperm are translated after fertilization and control asymmetric zygotic division."

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Attachement 4 to Victim Statement on Behalf of the Northwest Atlantic Marine Alliance

September 7, 2017

Re: United States of America v. Rafael case number 1:16-cr-10124-WGY

Brewer, J. F. 2011. Paper fish and policy conflict: catch shares and ecosystem-based management in Maine's groundfishery. *Ecology and Society* **16**(1): 15. [online] URL: http://www.ecologyandsociety.org/vol16/iss1/art15/

Research

Paper Fish and Policy Conflict: Catch Shares and Ecosystem-Based Management in Maine's Groundfishery

Jennifer F. Brewer [1]

ABSTRACT. The National Oceanic and Atmospheric Administration professes support for ecosystem-based fisheries management, as mandated by Congress in the Fishery Conservation and Management Act, and as endorsed by the Obama Administration's national ocean policy. Nonetheless, driving agency policies, including catch shares and fishing quotas, focus principally on individual species, diverting attention from ecosystem considerations such as habitat, migratory patterns, trophic relationships, fishing gear, and firm-level decision making. Environmental non-governmental organization (ENGO) agendas manifest similar inconsistencies. A case study of Maine's groundfishery demonstrates implications of this policy conflict at the local level. There, multigenerational fishing villages have historically pursued diversified and adaptive livelihood strategies, supported by local ecological knowledge. This tradition is increasingly eroded by regulatory constraints, including catch shares. Field observation, interviews, survey data, and archival review reveal that industry-supported, ecosystem-focused proposals have been rejected by the New England Fishery Management Council, despite the apparent failure of single-species approaches to sustain fish populations, fished ecosystems, and fishing-dependent communities. The creation of groundfishery catch share sectors is likely to perpetuate industry consolidation and political entrenchment under more mobile capital, following precedent set by days-at-sea, and making area protections and gear restrictions less likely. Pending marine spatial planning efforts could enhance social–ecological resilience by creating new opportunities for transdisciplinary decision support, and broader public participation and accountability.

Key Words: *catch shares; ecosystem-based management; fisheries; Fishery Management Council; groundfish; ITQs; Maine; New England; NOAA; quotas*

INTRODUCTION

On 19 July 2010, President Obama signed a National Ocean Policy executive order endorsing findings of the Administration's Interagency Ocean Policy Task Force, including "ecosystem-based" and "adaptive" marine resource management (Interagency Ocean Policy Task Force 2009). Meanwhile, the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA) was finalizing a national policy encouraging the use of fishery catch shares. Catch shares include limited access privileges, individual fishing quotas (ITQs), and quotas held by groups such as harvest cooperatives or fleet sectors (NOAA 2009). Both policies were informed by years of environmental non-governmental organizations (ENGOs) lobbying of NOAA and the White House Council on Environmental Quality, by Congressional mandates embedded in the Magnuson-Stevens Fishery Conservation and Management Act (FCMA)—particularly its amendments in 1996 and 2006—and by reports from bodies such as the National Academy of Sciences, U.S. Oceans Commission, and Pew Oceans Commission (National Research Council 1999, 2006, Pew Oceans Commission 2003, U.S. Commission on Ocean Policy 2004, Joint Oceans Commission Initiative 2009). Despite this breadth of input, public discussion appears not to consider the possibility that ecosystem-based management and catch shares are at odds: historically intertwined, but conceptually divergent.

Although policy conflict is nothing new, this particular divergence provides entrée to more empirically robust conversations about the future of marine resource management. Evidence from the nation's oldest commercial fishery, the New

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England groundfishery (which includes bottom-dwelling species, such as cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), winter flounder (*Pleuronectes americanus*), dabs (*Hippoglossoides platessoides*), grey sole (*Glyptocephalus cynoglossus*), pollock (*Pollachius virens*), whiting (*Merluccius bilinearis*), red hake (*Urophycis chuss*), and redfish (*Sebastes fasciatus*)) and, especially, case material from the state of Maine suggest that catch shares may deter the development of ecosystem-based management. Catch shares shift the attention of managers, fishermen, and the public away from integrated understandings of fished ecosystems and fishing practices, and toward paper fish. The term "paper fish" was coined by fishermen to refer to federal permits allowing fishing activities based on single-species stock assessments, implying that the assessments are detached from the complexities of real-world fishing practice and fished ecosystems. (The few fisherwomen in New England self-identify as "fishermen," so that term is used here.)

The National Oceanic and Atmospheric Administration now boasts 14 catch share programs in the United States. Although some fishermen have implemented catch shares with relative enthusiasm, others are deeply concerned about long-term social–ecological damage. Public comments collected by NOAA in 2010 and summarized in Appendix 1 revealed a strong opposition to catch shares among both commercial and recreational fishermen, reaching 83% and 90% respectively. Maine's fishing communities have long been among the most resistant to catch shares. Opposition grows principally from socioeconomic considerations, specifically the concern that catch shares consolidate fishery access and decision making in the hands of fewer, larger, and less locally committed firms, but it also reflects concerns about ecosystem impacts. Similar objections are raised by fishermen in other locales, but often with less unanimity.

Pursuant to this argument, this paper briefly summarizes scholarship on ecosystem- and catch share-based fisheries policy in the U.S. context, presents the groundfish case study and discusses its implications, and concludes with a glance toward possible futures.

Ecosystem-Based Management

Ecosystem-oriented decision support for resource management originates at least as early as the 1930s and 1940s when biologists began advocating the protection of biodiversity and ecosystem services using politically adaptive strategies (Grumbine 1994, Scheiber 1997). Despite profound differences in conceptual and normative orientation, this history runs parallel to the evolution of fisheries yield models, which originated earlier in the 20th century, and flourished in the 1930s through 1970s (Larkin 1977). Yield models grew out of agricultural and industrial production models developed to maximize economic output–input ratios, paired with increasing biological knowledge about species population dynamics, and more-or-less nuanced conceptions of carrying capacity (Baranov 1918, Ricker 1948, Schaefer 1954, Beverton and Holt 1957).

Although principles of ecosystem management gained traction more rapidly in government agencies responsible for terrestrial resources, such as forests and wildlife, 1996 and 2006 reauthorizations of the FCMA include language intended to advance a more ecosystemic orientation in fisheries policy (McLeod and Leslie 2009). In the last decade, a veritable cottage industry of papers, reports, and special journal issues has produced proposals for more ecosystem-based fisheries management (Ecological Society of America 1998, Ecosystem Principles Advisory Panel 1999, Link 2002, United Nations Food and Agriculture Organization 2002, Pikitch et al. 2004, Browman and Stergiou 2005, Cury and Christensen 2005, McLeod et al. 2005, National Research Council 2006, Murawski 2007, Varjopuro et al. 2008, Rosenberg 2009, Tallis et al. 2010).

Central principles found in many of these frameworks include:

1. Future provision of ecosystem goods and services.

2. Adaptability and resilience to accommodate change and surprise in complex systems.

3. Interconnectedness of human and environmental variables.

4. Broad social learning despite uncertainties.

5. Place-based understanding of cumulative impacts and cross-scalar interactions.

6. Public accountability for management trade-offs (Ecological Society of America 1998, Ecosystem Principles Advisory Panel 1999, United Nations Food and Agriculture Organization 2002, Tallis et al. 2010).

Although some fisheries scholars and managers question the feasibility of ecosystem-based management, especially given current legal constraints and limited financial, human, and information resources, few object substantively to its core mission. Biologists employed or funded by NOAA are developing multi-species population models, and ENGOs have embraced at least the ecosystem-oriented phraseology, especially to support broader and more precautionary regulatory attention to species and habitat.

Share-Based Management

Share-based fishery management renames a policy trend pursued more or less actively in the United States since the 1980s, borrowing from Canadian experiences of the 1970s (National Research Council 1999). Finding that reductions in the issue of fishing permits were insufficient to prevent fish population declines, some economists advocated quota allocations of harvestable species to individual firms, often arguing that market transferability would create a conservation incentive because future quota values would rise with the availability of future fish populations (Christy 1973, Rettig and Ginter 1978, Copes 1979). These discussions were directly informed by older debates in economic theory between preferences for public or private stewardship of fisheries and other natural resources (Gordon 1953, Scott 1955). Advocates for individual quotas argue that the mechanism distributes fishing effort more evenly across time, thereby increasing prices and safety, reducing fleet overcapitalization, and potentially increasing conservation incentives by creating a market to internalize at least species-specific externalities (National Research Council 1999).

Much empirical evidence on catch shares is inconclusive or depicts mixed outcomes. A study of 121 individual quota fisheries and 11,014 non-quota fisheries found that individual quotas reduce or reverse rates of fishery decline (Costello et al. 2008). The study estimated fishery status by comparing historical harvest levels, however, not living fish populations or other ecosystem variables, and did not control for differences among fisheries or management mechanisms that might be implemented simultaneously with quotas. Even examining the single case of British Columbia halibut ITQs, two recent papers found evidence supporting rather different arguments. One found that market distortions around capital and information access necessary for quota leasing undermine broad distribution of public goods (Pinkerton and Edwards 2009). Another argued that ITQs nonetheless increase halibut landings and overall income (Turris 2010). Although these findings are not incongruent, they remind us that different truths become more and less salient at different scales of analysis, and that policy decisions require difficult trade-offs among competing social priorities. Given evidence of social–ecological externalities in the groundfish case, it may be that quotas are better for target fish populations and capital investors than for social–ecological diversity, or collateral ecosystem goods and services.

In the U.S., ITQs were created for Atlantic surf clams and quahogs in 1990, for South Atlantic wreckfish in 1992, and for Alaska halibut and sablefish in 1995 following more protracted public debate. Shortly thereafter, the 1996 FCMA amendment encouraging ecosystem approaches to management also imposed a moratorium on ITQs and commissioned a National Academy of Sciences study, responding to concerns about privatization of public trust resources voiced by both less capitalized fishing firms and ENGOs. The Academy study underscored social and ecological concerns about ITQs, but recommended that they be permitted with provisions for detailed oversight and review (National Research Council 1999). Major national ENGOs largely opposed, expressed concern about, or were neutral on ITQs through the mid 2000s, and some lobbied for close federal oversight in FCMA 2006 reauthorization (Marine Fish Conservation Network 2007). The Environmental Defense Fund, however, has long advocated individual transferable fishing quotas with few restrictions on transferability, true to its belief in the ability of private property rights to resolve environmental problems (Environmental Defense Fund 1994).

In 2004, the Bush Administration announced support for "dedicated access privileges," meant to encompass individual and group quotas (Office of the President 2004). Reauthorization of the FCMA in 2006 subsequently lifted the ITQ moratorium, and replaced it with industry referendum requirements only for any New England ITQ proposal. In 2008, Environmental Defense's Board Vice Chair was appointed as NOAA's top administrator, and in 2009, a Pew report expressed support for catch shares (Pew Environment Group 2009). Subsequently, the Obama Administration endorsed ITQs along with less market-driven quota systems, and devoted NOAA resources to implementation (Catch Shares Working Group 2008, National Oceanic and Atmospheric Administration 2009). By summer of 2009, when public comment was submitted on a transformative sector quota proposal in New England's groundfishery, pivotal marine ENGOs including the Ocean Conservancy, Conservation Law Foundation, Environmental Defense, and Pew Environment Group endorsed catch shares and facilitated the electronic submission of 9245 form letters from their supporters across the country. Close affiliate Oceana supported catch shares in principle, but feared that New England sectors might be held up by legal challenges because they sidestepped industry referendums. By this time, Environmental Defense had hired fishing community organizers to promote catch shares from coast to coast.

Individual transferable fishing quotas and related catch share programs have raised objections from many social scientists and small-boat fishing groups, reflecting arguments that:

1. Quota supporters overestimate conservation incentives because they overlook the significance of informal social norms, bounded rationality, and regulatory non-compliance.

2. Because quotas are usually transferable, legally or illegally, industry consolidation is virtually inevitable, so that less capitalized firms and more remote fishing harbors lose fishery access or become harvesting contractors to vertically integrated firms.

3. Quotas are usually allocated based on past fishery participation, granting windfall profits to firms with the highest landings.

4. Quotas do not sufficiently internalize habitat and cross-species externalities.

5. Conservation success of quotas requires that the total fishery-wide allowable catch limit is set appropriately.

6. Many quota programs lack transparency and public accountability, partly because advocates employ neoclassical economic theory to espouse quota shareholders' capacity for self-governance.

7. Quotas become capitalized, politically entrenched, and difficult to rescind, even with codified review or sunset provisions.

8. Market distortions, rent-seeking, information asymmetries, and path dependencies arise (Copes 1986, Davis 1996, Rieser 1997, National Research Council 1999, Criddle and Macinko 2000, McCay 2004, Degnbol et al. 2006, Bromley 2009, Pinkerton and Edwards 2009).

These authors cite more than two decades of accumulated evidence critiquing neoclassical economic theory through empirical studies of common property resource management institutions, especially informal social relations not codified in law (National Research Council 2002, Dolšak and Ostrom 2003, Berkes 2008, Hanna 2008, Ramirez-Sanchez and Pinkerton 2009). A few further question the undergirding concepts of total allowable catch and maximum sustainable yield upon which catch shares are predicated, arguing that without more precautionary or ecosystem-cognizant implementation, these aggregate targets can prioritize management attention to single-species populations and thereby discourage consideration of habitat and cross-species variables (Larkin 1977, Wilson et al. 1996, Walters et al. 2005, Finley 2009). More recently, at least one author has suggested that catch shares might discourage ecosystem stewardship (Gibbs 2009, 2010). Although this argument is not new to some long-time fishery participants and observers, it is not yet established in the scholarly literature and merits further empirical support as provided in the case study below.

METHODS

This study uses a modified grounded theory methodology (Glaser and Strauss 1967, Strauss and Corbin 1990, Glaser 1994). Grounded theory is not social theory per se, but methodological practice, standard among social scientists relying mainly on qualitative data sets. It iterates phases of data collection and textual and discourse analysis, often producing a series of nested sampling frames, and a multi-level explanatory framework. This includes first-order analyses with the greatest internal validity, often of more prospective use to local field professionals than to theoretical interpretation, and higher-order analyses with greater external validity and conceptual relevance. Analysis is premised on constant comparison, or the trained researcher's persistent and rigorous comparison of new data with an emerging conceptual framework, including the production of extensive field notes and memos. Although less transparent than quantitative methods, this qualitative approach can answer research questions for which quantitative methods may be inadequate or impractical. Unlike public opinion polling, for example, discourse analysis allows subtle contextual cues to compensate for the reality that individuals simultaneously hold varied and inconsistent opinions, and that the relative weighting of these within a single individual's rationality and corresponding behavioral and rhetorical choices fluctuates and evolves over time (Haraway 1988, Sen 2009). In a utopian world, with unlimited public venues in which to clarify values, exchange information, and compare conflicting viewpoints, individual and collective rationalities would be easier to fix and quantify. The reality of marine resource policy, like most human arenas, is much less tidy.

The case material presented here was developed through synthesis of existing scholarship; archival review of government documents, news media, fishing industry and ENGO publications, and local histories; and common social science field data collection techniques. It synthesizes research from several smaller projects conducted between 1998 and 2010, primarily in Maine, but also in Washington, D.C., elsewhere in New England, the southeastern U.S., Alaska, and abroad. I conducted extended in-person interviews ranging from a half-hour to several hours in length, included formal and informal conversations with more than 165 fishing industry members, public servants, NGO staff, scientists, and other coastal residents and professionals. Of these, the vast majority were purposively sampled. That is, I selected them individually to represent particular groups or viewpoints. In particular, I chose fishing industry members to represent a range of business models, target species, gear types, career histories, and home harbors, as summarized in Appendix 2. I conducted shorter, informal, substantively research-related conversations with at least another 200 members of the same groups. I also collected 49 mail survey responses from three randomized samples of state license holders for commercial marine harvesting and commercial lobster fishing. These solicited information about personal fishing histories, opinions on selected management issues, and perceptions of industry participation in management. Research assistants conducted telephone interviews with a stratified random sample of 36 Maine-based federal groundfish permit holders and crew members. These focused again on personal fishing histories, especially as these were affected by groundfish management. I convened four focus groups in eastern Maine on local experiences of fishery management impacts. I undertook participant observation at more than 40 public meetings and more than 35 non-public policy briefings, conferences, and project meetings in New England, Washington, D.C., North Carolina, and Alaska; and in fishing households, on fishing vessels, on piers, and on other fishing-related premises. Some participant observation took place as dedicated scientific investigation, some during 4 years of experience as a policy and resource management professional in federal and state government and non-profit organizations.

CASE STUDY RESULTS

Maine's Historically Adaptive Fleet

Whereas virtually all fishermen consider atmospheric, oceanographic, and inter-species phenomena on annual and interannual scales, small-boat, diversified, multi-generational owner-operators often have fewer financial and technological buffers between their business plans and ecosystem change and may accumulate a richer store of ecosystem knowledge, at least on a local scale. Maine retains more firms of this type than do most U.S. states. Reviewing the historical evolution of the industry helps clarify its legacy of ecosystem-based thinking. The first centuries of this history are not unlike those experienced by other fishing states

on the eastern seaboard. In the last century, however, the easternmost state's relative distance from urban markets facilitated the continued passage of local ecological observations from one generation to the next.

Although England colonized the Maine coast in the early 1600s with the immediate intent of exporting dried codfish to Europe, when domestic markets grew in the 19th century they also diversified, first to include mackerel, halibut, haddock, pollock and hake, then soft-shelled clams, herring, lobsters, crabs, scallops, salmon, shad, alewives, smelt, striped bass, eels, sturgeon, and porgies (Vickers 1994, Lipfert et al. 1995, O'Leary 1996, Lear 1998). In the 20th century, new markets emerged for species such as flounder, whiting, redfish, tuna, shrimp, mussels, quahogs, urchins, periwinkles, dogfish, skates, and sea cucumbers. Fishing gear historically included dip nets, hand rakes, hand lines, gill nets, weirs or beach seines, fyke nets, pots and traps, stop seines, and spears. Tub trawls, or setlines, came into use in the second half of the 19th century in Maine, using longer rope coiled in tubs with many more hooks to catch groundfish, but as late as 1930, some boats were still using hand lines (Lear 1998). Small-boat diversified fishermen still use tub trawls for halibut, although in the 1970s most shifted to wire longlines, which are more stable on bottom. Net trawls of sorts were used in New England in the 19th century, and in the 1930s, some Mainers adopted the otter trawl, which is a bag-shaped net kept open to catch more fish with each tow by heavy wooden or metal doors mounted along the lines between the net and boat. Although it required a more powerful boat engine, it enabled year-round groundfishing because most groundfish will not take baited hooks during summer months when they prey on migratory herring schools.

Maine's fishing fleet has long been dominated by boats smaller than 12 m in length, except for a few decades of capital investment and ownership concentration in the second half of the 19th century. Concentrated investment ended with the innovation of refrigerated rail cars to travel more southerly routes, market promotions by the emerging meatpacking industry, changing urban tastes, and cheap Canadian salt cod. Small Maine boats with local crews have historically ventured to grounds as distant as the Grand Banks, Gulf of St. Lawrence, and shores of Newfoundland and Labrador (O'Leary 1996), but most have always preferred to fish close to home for reasons of comfort and safety. Few individuals in the state have ever owned more than one fishing vessel at a time, most owners captain their own boats for the majority of their career, and in the past, crew and shareholders were mainly close kin (O'Leary 1996). With future fishing access now less certain due to both population declines and regulatory constraints, kinship remains a powerful factor in industry relationships, but is supplemented with a somewhat broader array of social ties (Brewer 2010). In the last two decades, regulatory trends outlined below have favored larger, more mobile boats.

Until the late 20th century when entry limits were implemented, first in federally managed fisheries and then in state-managed fisheries, the vast majority of Maine fishermen targeted a number of marine species in seasonal livelihood strategies reliant on fishing and non-fishing incomes, barter arrangements, and subsistence (Brewer 2010). As one fisherman said in 2003, referring to his experience fishing for lobster, herring, shrimp, groundfish, and scallops, "[M]y way of fishing, for 30 years, is I've done a little of everything to survive. And if you look at Maine, that's what we did for three or four hundred years. If it wasn't herring, it was groundfish... And the further down east you go, the more they depended upon diversity to survive, not just lobstering" (field interview, 27 August 2003, Casco Bay, Maine).

Typical non-fishing activities included fishing gear construction and repair, smallholder forestry and woodcutting, hunting, building trades, woodworking, boatbuilding, gardening, handicrafts, and services for summer residents and visitors. As in many other small-boat diversified fleets, fishing pressure was flexible, varying annually and interannually with species populations, markets, weather, and local availability of labor, capital, and information (Wilson 1982, Acheson 1988, Griffith 1999, Brewer 2010). New fishery participants were limited at the local harbor level through informal social sanctions, with consideration of social–ecological factors (Acheson 1988, Wilson 1990, Brewer 2010). Today, however, the overwhelming majority of Maine's more than 6000 commercial fishermen rely primarily on lobster, partly because catch shares and fish population declines pushed them out of groundfish and other fisheries.

The Evolution of Catch Shares and Alternatives

In the 1960s, Maine and New England witnessed large fleets of factory-scale trawlers from Europe and Asia fishing within sight of land. Congress responded in 1976 by creating the U.S. Exclusive Economic Zone, expelling foreign vessels, offering loans and savings programs for new and bigger domestic boats, and creating eight Regional Fishery Management Councils. Council members have comprised mostly fishermen and state managers, originally tasked to advise NOAA on how to build up and regulate the U.S. fleet. Various share-based regulations have been imposed since, often with mixed results, as described below and summarized in Fig. 1.

Fleet Quotas

Fleet quotas were the first experiment in groundfish catch shares, and a disastrous one. In 1977, NOAA set a preliminary total allowable catch for New England groundfish, triggering a fishing derby among firms fearing a fishery shutdown, and causing prices to collapse. Some boats landed fish in small harbors where they could avoid reporting. Others caught or falsely reported harvests from Canadian waters, which fell under a separate quota (Hennessey and Healey 2000). Attempts to allocate fleet quotas by vessel size, and by quarter year, failed to prevent derbies and non-compliance (Murawski et al. 1997, Groundfish Task Force 2004). Larger boats that previously fished offshore started fishing closer in because quotas could be achieved more rapidly with less travel time (Hennessey and Healey 2000). When fleet quotas were discontinued in the early 1980s, fishermen were already noticing nearshore groundfish depletions. As one lifelong Casco Bay fishermen said in 2003, "[W]e found that the fish were just getting farther and farther offshore. I was used to making a good living within 20 or 30 miles of the coast. But then we got off to 70. And more nets, more nets. When I first started we had 24 nets and when I ended we had like 46" (field interview, 27 August 2003, Casco Bay, Maine).

Trip Quotas

Along with fleet quotas came trip quotas. Starting in 1977, daily and weekly trip limits were set for cod, triggering regulatory discards. Interview and participant observation data document that, in some places, at some times, experienced captains can avoid non-target groundfish species, but at other times, in other places, they find themselves with large hauls they are forbidden to land. When forced to dump already-dead fish, forbidden even from donating them to the needy, they typically respond with intial feelings of horror, outrage, disgust, and eventually helplessness and disillusionment at the failure of management to prevent ecological tragedy as well as financial loss. Expression of such sentiments by Gulf of Maine fishermen has been well documented by Council staff (New England Fishery Management Council (NEFMC) and National Marine Fisheries Service 2003). As one persistently conservation-minded Council member and fisherman argued prior to a trip limit vote, "I would say this Council better do some soul searching and better do it real quickly...[T]hrowing everything over the side solves nothing. Quite frankly I think it's a disgrace. I think we should have never done it in any stock. I've been opposed to it from day one" (field audio recording and notes, 23 June 2010, Portland, Maine, NEFMC meeting). The imposition of trip limits for cod, haddock, and other species resulted in undocumented reports of up to 8000 pounds of cod discards per boat per day, but was repeated at least six times through 2010 as the New England Council struggled to comply with NOAA's total annual catch targets (Hennessey and Healey 2000, NOAA 2001, Groundfish Task Force 2004).

Gear Restrictions

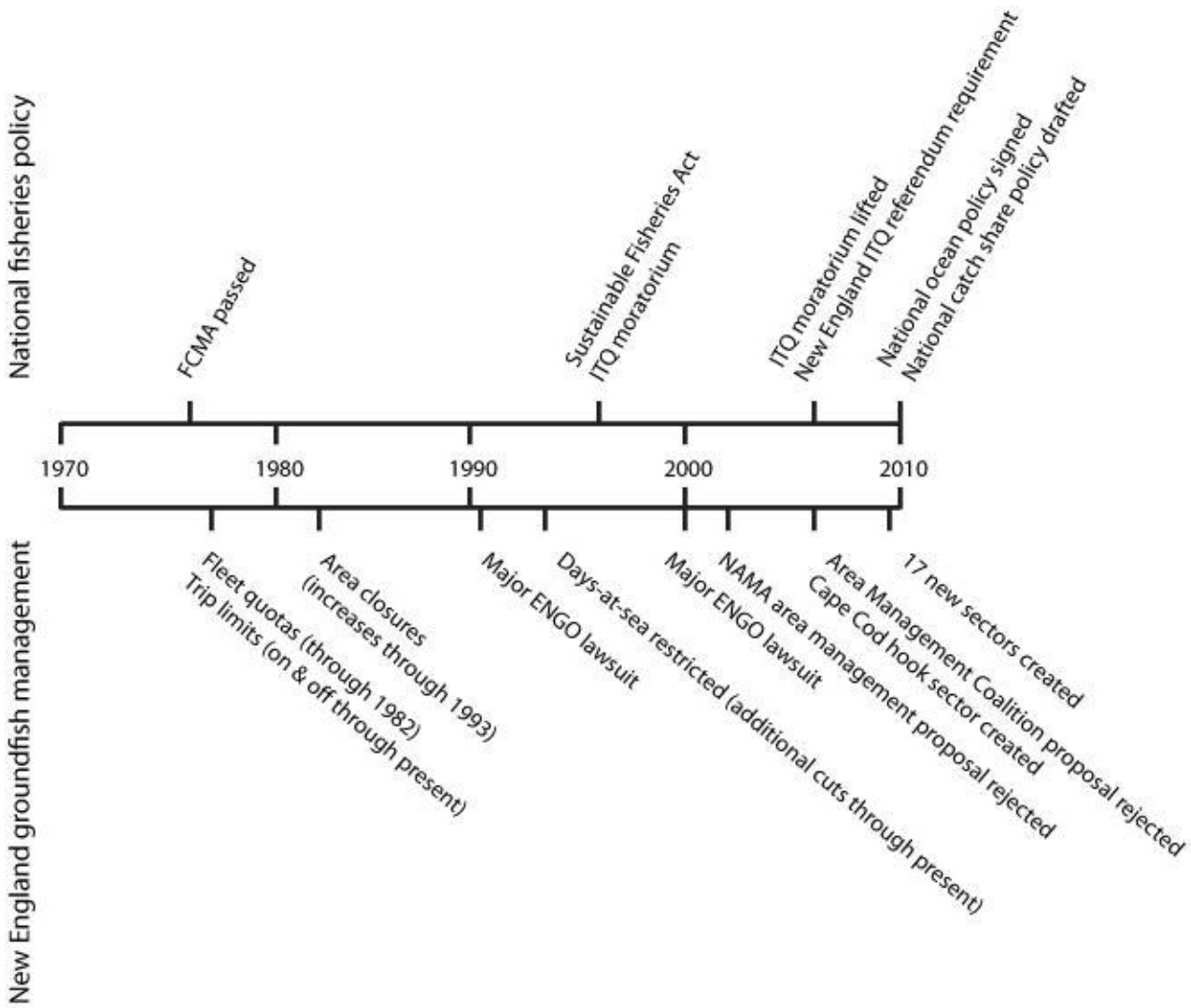
Fishing gear restrictions represent a non-catch share management alternative, one that has been used in the groundfishery, but not as much as it could be. Minimum net mesh sizes were established in 1953 and have been increased many times since (NOAA 2004). Extended field observation, interviews, and archival review show that a small but increasing number of fishermen have repeatedly proposed additional gear restrictions such as:

1. Reducing numbers of gillnets allowed per boat.

2. Increasing gillnet mesh sizes to increase survival rates of smaller fish.

3. Increasing the frequency of gillnet tending and reducing bycatch mortality.

Fig. 1. Timeline of key national policy and regional management events in the New England groundfishery since federalization.



4. Increasing trawl net mesh sizes to increase survival rates of smaller fish.

5. Incentivizing hook fishing to reduce benthic impacts and low selectivity by otter trawls, and non-target species bycatch in gillnets.

6. Installing panels of trawl net mesh on the square instead of the diamond, to keep net openings larger while being dragged through the water so more fish can escape, especially round-bodied species like cod.

7. Limiting the size of rubber rollers on otter trawls, to deter dragging on rough bottom, which is preferred habitat for some groundfish species.

8. Limiting the length of otter trawl ground cables, to reduce mud clouds that induce fish to move toward the net.

9. Banning nighttime otter trawling, to prevent capture of cod when they aggregate on bottom to spawn, and to reduce gear conflicts with

lobster traps (Northwest Atlantic Marine Alliance 2002, Area Management Coalition 2006).

In the 1980s, few fishermen were willing to support such proposals, as they were unwilling to support most management proposals in general. As the fishery has declined, however, and as NOAA has increasingly promoted catch share options, more fishermen agree that gear restrictions would be better than catch shares, for fished populations, for habitat and non-target species, and for the long-term sustainability of fishing-dependent businesses and communities. The Council rejected all but the first two of the gear restrictions above, however. In the case of roller sizes, cable length limits, and nighttime trawl bans, Council staff indicated that credit could not be granted toward the achievement of total catch targets, because of insufficient data to project corresponding effort reductions (email comm., 12 August 2010, southern Maine).

Away from public scrutiny and regulatory posturing, increasing numbers of non-otter-trawl fishermen, including some former otter trawlers, privately support proposals to restrict otter trawling, citing impacts on benthic habitat and non-target species. The vast majority of Maine fishermen fervently advocate bans on midwater trawls, which are used to harvest herring, again citing (1) bycatch of groundfish and other species because the non-selective nets use small mesh and harvest large volumes in short time periods, (2) the ability of trawls to harvest entire aggregations of densely schooled fish, whereas seines can only remove smaller and less densely schooled volumes, and (3) benthic impacts because the gear can sometimes fish on bottom. In a non-random sample of dozens of industry members over several years, the level of this industry sentiment surpassed 99%, including even Maine-based midwater trawler crew (pers. comm., 2003, Damariscotta, Maine).

Area Management

Gear restrictions have long been linked to area management, both being input restrictions whereas catch shares are output restrictions. The New England Council began implementing area closures in 1982, first seasonal ones, then permanent (Murawski et al. 1997, Groundfish Task Force 2004). Many closures have eventually won industry support because they are recognized to protect nursery and spawning grounds, migration corridors, and non-target species (Northwest Atlantic Marine Alliance 2002, Area Management Coalition 2006). As a third-generation mid-coast Maine trawl boat captain wrote, "[G]roundfishing was banned in five designated areas off New England's shores...[T]here is no bottom trawling allowed in these areas, and there shouldn't be." (Libby 2010) Some fishermen assert that closures would be more effective if timed differently, if increased or decreased in size, or if opened and closed using real-time observational data, and a few have proposed additional area closures. Many fishermen, including a few otter trawlers, privately support proposals to restrict otter trawls from additional near-shore waters, especially known spawning areas. One second-generation trawl boat owner–operator admitted, "[P]rotection of [spawning area] sites is paramount to any successful recovery of our fishery in the long term" (email comm., 26 September 2005, mid-coast Maine).

The most persistent industry-originated calls for area management have been formalized by a Maine-centered network of grassroots organizations including Penobscot East Resource Center (Penobscot East), its predecessors and allies the Northwest Atlantic Marine Alliance and Stonington Fisheries Alliance, the less active Independent Fishermen Investing in Sustainable Harvesting, and the newer and highly active Midcoast Fishermen's Association (Northwest Atlantic Marine Alliance 2002, Area Management Coalition 2006). By 2009, an Area Management Coalition proposal was supported by all these organizations, collecting signatures from 25 eastern Maine fishermen and fishing community members, plus the Ocean Conservancy and Conservation Law Foundation, and two fishing community-focused NGOs. It was verbally supported by dozens more southern Maine fishermen who attended a series of coalition meetings in 2005 and 2006. Coalition organizers estimated the number of industry supporters at 200 in 2006 when the proposal was submitted to the Council (email comm., 18 August 2010, southern Maine). Another letter of support had been endorsed by 84 marine scientists in 2003. Even though the proposal would have implemented area management only in the Gulf of Maine, where traction for the idea seemed high, the Council declined to pursue it.

Such area-focused proposals build on the local knowledge of groundfishermen who recall place-specific, near-shore, annual cod and haddock

spawning aggregations that have been fished out (Ames 1997). Although spawning aggregations also take place offshore, many industry-recognized locales are in or near river mouths. Some of the most experienced and attentive fishermen further observe differentiated skin colorations between what they believe to be resident and migratory subpopulations. This work has informed a developing scientific consensus that cod and perhaps other groundfish species may have substock population structures more complex and place-dependent than presently accounted for in NOAA population models used to project management outcomes (Wilson et al. 1999, Ruzzante et al. 2001, Ames 2004, Brodziak et al. 2008).

Days-at-Sea

Rather than focusing on area management or gear restrictions, in the last two decades, an unusual and heavily used management tool in the New England groundfishery has been days-at-sea. This developed in the mid 1990s, following a fisherman's proposal that each boat report some number of days out of the fishery. This was intended to partially fulfill new harvest limits in the wake of a landmark 1991 lawsuit by the Conservation Law Foundation and Massachusetts Audubon Society citing NOAA's failure to prevent overfishing of cod, haddock, and yellowtail flounder. When the Council instead elected to count active fishing days instead of non-fishing days, tied fishing days to permits, and placed a moratorium on new permits, a potentially transferable property right was created. Although a day-at-sea is not a catch share per se, because it represents a fishing input not an output or quota, it does represent a discrete and individual fishing opportunity, and manifests many of the same operational features as an individual fishing quota. Individual days-at-sea were allocated and repeatedly reduced based on permit landing histories in Council-selected years, have become legally transferable across permits by lease or by permit sale, and can be aggregated from several permits onto one boat. Considerable industry consolidation has taken place as a result. There is also less transparency of permit ownership and decision making because more permit holders are now incorporated, and processors and other non-fishing interests have become more active investors.

Dozens of interviews reveal the perverse incentives created by days-at-sea. Simultaneous with days-at-sea reductions to meet NOAA effort reduction requirements, firms have learned to use limited fishing time more efficiently, even at risk to human life when captains become more reluctant to end a fishing day early because of gear malfunctions, weather, or other problems. Because boats must make the maximum profit possible for every hour at sea, they broadcast their effort less widely and focus on proven grounds. This may aggravate the depletion of localized substocks below recovery thresholds, and can raise rates of non-target species discards because captains encountering non-target species are less willing to spend time steaming elsewhere. According to one second-generation groundfish and shrimp trawler, "Personally, I think that protecting small fish is a high priority. Small fish live in spawning areas. Under the current rules, days at sea, a fisherman is almost compelled to catch as many as he can regardless of size of the fish or if he is in a spawning area because that clock is ticking. There is no time to go searching for larger fish because you are losing precious time" (email comm. 26 September 2005, mid-coast Maine).

Under days-at-sea, larger otter trawlers are again tempted to fish closer to shore to minimize travel time, decimating inshore populations. Firms with several boats have been more able to influence differential cuts in days-at-sea allocations and rules for leasing of days because they are more able to afford lobbyists and travel to Council meetings whereas owner–operators are fishing. Non-owner boat captains are less likely to make operating decisions that would accommodate habitat and non-target species considerations because their decision horizons are shorter than if they could count on fishing the same grounds in a few years or pass the business on to younger kin or neighbors. As one lifelong fisherman from southern Maine with experience both as an owner–operator and hired captain explained, captains running larger boats spend less time on deck and are rarely informed of the crew's observation of ecological evidence, such as bottom sediments or corals clinging to gear, harvested quantities of non-target predator or prey species, visible indicators of feeding or spawning behavior at the time of harvest, or even fish size, sex, weight, or apparent health (pers. comm., 2004, Washington, D.C.).

Policy Failure

From 1991 until the late 2000s, low cod populations remained a prevailing driver of groundfish regulation in the Gulf of Maine, initially coupled

with low haddock populations. Haddock were recovering by the early 2000s, and NOAA no longer believed overfishing to be occurring. Cod followed suit by 2008, but concern arose about flounder, especially on Georges Bank, the offshore perimeter of the Gulf of Maine (NOAA 2008).

In 1994, Maine had 587 federally permitted groundfish vessels, or 19% of the New England total of 3033 permits. By 2007, only 71 Maine boats were somewhat active in groundfishing, comprising 12% of the New England fleet of 574. By 2009, 24 permits were held in the eastern third of the state, but only five had any remaining usable days-at-sea. Because landings were insufficient to support local buyers, virtually all harvests and sales had shifted to western Maine. By contrast, further south, a single firm in New Bedford, Massachusetts held 30 active permits in 2009. Calculating an average harvest baseline from 1980s landings, and a conservative local economic multiplier, losses to eastern Maine alone have been estimated at $26 million per year for more than two and a half decades. Even using a lower 1990s average baseline, those annual losses still reach $15 million (Penobscot East Resource Center 2007). In 2007, with the urging of Penobscot East, Maine's legislature unanimously passed a joint resolution urging the Council to adopt alternatives to days-at-sea that "recogniz[e]... ecological differences between ocean regions and species" (123rd Maine State Legislature 2007). Extensive participant observation and interview data reveal that fishermen's keen awareness that days-at-sea are a poor effort measure, and their associated moral outrage at the socioeconomic and ecological impacts of management failure, decrease industry confidence in the good faith and expertise of NOAA, and in fishery recovery, thereby increasing non-compliance with, and public complaints about, fishery regulation overall.

Sectors

Despite New England's persistent resistance to catch shares, the failure of days-at-sea to conserve fish populations, coupled with funding from NOAA and several foundations for groups of permit holders organizing quota-holding "sectors," made the deeper entrenchment of catch shares a virtual inevitability by 2009.

It should be noted that NOAA staff routinely demonstrate sincere dedication to public service while enduring criticism from the fishing industry, ENGOs, elected officials, and academics. Perhaps with this in mind, as well as bio-economic arguments noted above, NOAA's catch share policy facilitates agency disengagement from fishery access allocation battles, delegating these to share-holding entities that may ultimately include not only fishing firms and parent companies, but NGOs. This move was anticipated by the creation of share-based sectors, pioneered by a group of Cape Cod hook fishermen who held days-at-sea and agreed to accept an aggregate annual quota allocation. This move garnered them political support from ENGOs, financial support from private foundations for administrative and advocacy work, and NOAA exemptions from daily trip limits, hook maximums, and area closures.

In 2010, the Council and NOAA granted additional share allocations to 17 newly self-identifying sectors. Many permit holders were forced into these organized groups of fishing firms by pending 32% cuts to non-sector days-at-sea. Share allocations were based on landings histories between 1996 and 2006, so that the most aggressive users of days-at-sea control the most quota, and small boats plying depleted inshore waters will own little. Sectors are not subject to days-at-sea, are exempt from many area closures, are allowed to roll some overages to following years, and are thus far allowed to transfer shares freely, with virtually no caps on maximum share holdings. Although sectors were never favored by the vast majority of Maine firms, viable alternatives are now moot. Several sectors have already effectively distributed ITQs to their members, but Penobscot East convinced several small eastern Maine boats to partner with several from Martha's Vinyard, Massachusetts, and organize cooperative governance mechanisms whereby socioeconomic and ecological drawbacks of individual shares might be tempered by small-scale, local, hook gear allocations, and continuing efforts to achieve spawning area closures.

Despite any best intentions, sector-level decision making is less transparent than Council and NOAA processes, avoiding public notification, comment, and other provisions of the National Environmental Policy and Administrative Procedures Acts. Although full environmental impact statements, informed by public hearings, are prepared for many Council-level decisions, thus far sectors are only required to prepare environmental assessments, which are shorter and have no public hearing requirement. Other than Environmental Defense,

which holds a Council seat, ENGOs that once regularly sent staff to New England Council meetings rarely do so now. Thus far, sectors have also circumvented the 2006 amendment to the FCMA requiring that specifics of any New England ITQ program be approved by two-thirds of fishery permit holders, a provision intended to ameliorate industry consolidation away from owner–operators. One sector has already been created with the express intention of holding quotas for lease to other sectors, and each sector risks elimination if it cannot marshal considerable organizational and financial resources to meet NOAA reporting requirements. In 2009, NOAA expended about $30 million to support the preparation of sector operations plans and environmental assessments, but seems unlikely to support administrative, monitoring, reporting, and enforcement costs after the first year or few. Although a few conservation-oriented sectors have foundation funding, including those affiliated with Penobscot East, Midcoast Fishermen's Association, and the Cape Cod Hook Fishermen's Association, others are governed almost exclusively by financial interests. Many sectors have already defaulted to voting mechanisms determined by landings history, granting the most management power to permit holders with the largest and least resource-conserving boats.

Although there is potential for involvement by state or local governments as quota holders, it seems more likely that sector-level decision making will be increasingly vulnerable to influence from more mobile capital and a few NGOs, and less accountable to the broader public or to any ecosystem-based vision. Although Penobscot East and allies have asked repeatedly and without success for restrictions on trawl gear, its efforts have now been diverted to the securing and administration of quotas. Evidence from the Cape Cod hook fishermen and elsewhere in the northeast demonstrates that members of sectors ostensibly opposed to ITQs nonetheless position themselves favorably for any future individual quota distribution that might be implemented if more cooperative efforts fail (Pinto da Silva and Kitts 2006). Similarly, since at the least the early 1990s, Maine fishermen have observed that "what you don't use, you lose," meaning that permits not used to maximum capacity are likely to be rescinded. Evidence from Alaskan harvest cooperatives, which preceded and resemble New England sectors, shows that although transaction costs and rent-seeking may be lowered at the Council level, less transparent political maneuvering at the cooperative level, and even Congressional intervention, can narrow the range of fishery beneficiaries, and can introduce further rent-seeking around share allocations (Criddle and Macinko 2000). Incentives have also risen for other Maine fishermen to narrow their scope of ecological concern. In the past, thousands of lobster fishermen encountering groundfish that entered their traps would take larger ones home to eat, and release smaller ones with the expectation of later harvesting them or their offspring. Virtually all now spear the smaller ones as bait because they have little hope of ever owning groundfish quotas (Brewer 2010). In the words of one Council member and mid-sized trawler owner who has long opposed catch shares, countering the argument that common conservation interests shared among sector members will foster collective governance and self-enforcement around trip limits, "I can also tell you from personal experience, there's no spirit of kumbaya here whatsoever. Nobody wants to share anything. Matter of fact, they'd gut you and eviscerate you and toss you in the harbor over a hundred pounds of fish. So this whole idea of people are going to sing kumbaya and manage this as a community, I don't know where that came from." (field audio recording and notes, 23 June 2010, NEFMC meeting, Portland, Maine).

Fishing in a Brave New World

Catch shares have changed the way fishermen think about fishing and fishery management. Field data and archival review confirm that on several occasions, the Council has been told by NOAA or Council staff that their hard-fought regulatory proposals would meet total catch targets based on species population models, only to learn some months later that the regulations required revision because NOAA population estimates had been revised with new data or modeling techniques; because industry responses to regulatory or ecological changes had altered landings, bycatch, reporting, or compliance rates; or because a court decision or ENGO action had raised the level of legal risk. These experiences reinforce industry skepticism about fisheries science and management in general, but especially about the likelihood that future catch share quotas will reward any present conservation efforts. One patriarch of a multi-generational fishing family expressed a commonly held sentiment, "These guys and their fuzzy math.

They have these impossible equations that we'll never possibly reach. They are about control, not conservation" (field interview, summer 2001, Port Clyde, Maine).

Fishermen have learned that, under a catch share system, individual species landings targets will trump more ecologically oriented regulatory proposals. Without confidence that species targets alone will conserve fish populations, most now invest their support in proposals that allow them to catch as many fish as possible before they and their family must leave the fishery forever, and/or will allow them to sell a permit for as high a sum as possible. They cynically negotiate for access to paper fish, suppressing their own observations of fish life histories, spatial patterns, and inter-species and habitat interactions. For example, the perceived illegitimacy of trip limits as conservation mechanisms due to discarding, especially if paired with higher ex-vessel prices for trip-limited species due to low landings, spur some boats to intentionally catch the maximum quantity allowed, instead of avoiding that species. Many fear that not catching the maximum limit could jeopardize future individual allocations because days-at-sea are based on catch histories, and individual quotas would likely be allocated similarly (audio recording and meeting summary, 29 November 2006, Portsmouth, New Hampshire, NEFMC scoping meeting for Multispecies Fishery Management Plan Amendment 16). In New Hampshire and Massachusetts, where larger cod spawning aggregations can be harvested closer to shore, some captains speak of catching "my" or "our" cod, meaning the boat's allotment or quota for the trip, to which they now apparently feel entitled. In the words of one high ranking NOAA Fisheries regional staff member, "Sometimes a trip limit becomes a goal instead of a constraint" (field audio recording and notes, 23 June 2010, Portland, Maine, NEFMC meeting).

Some lifelong opponents of ITQs who still hold useable groundfish permits now express support for ITQs as the last available option under the present catch share constraints, finding the administrative and political transaction costs of sectors to be too high, and anticipating that the largest firms will increasingly control sector administration and decision making. For example, one part-owner of a relatively large trawler spent some years fishing in Alaska and always detested ITQs after seeing excessive discards of small fish from boats wishing to fill their quota with larger and higher value fish. He privately supports basic tenets of area management and gear restrictions, but cannot endorse such proposals because he fears implementation overlaid on already existing regulations would put him out of business. Given the catch share constraints within which he must select a narrow range of regulatory options, he now expresses public support for ITQs as the most viable alternative, despite his continued ethical and ecological concerns (pers. comm. 2005, Portland, Maine; pers. comm., March 2010, Rockland, Maine). His father and business partner, however, still conveys that catch shares are "a travesty for New England and a disaster for Maine!" (written public comment on NOAA draft catch share policy, 2010).

DISCUSSION

Divergent Policies

In the case study presented here, even nascent share-based fishery management mechanisms manifest ecosystem drawbacks in line with the literature summarized above on individual quota systems:

1. Fishing firms' consideration of habitat and inter-species variables, occupational ethics, and regulatory compliance are dampened by their limited faith in NOAA's information base and egalitarianism.

2. Fishing effort is consolidating away from smaller boat harbors and shows tendencies toward vertical integration and more mobile capital.

3. Shares are allocated to permit holders with large landings histories, eliminating diversified and flexible boats that reduced groundfishing effort when population depletions became apparent.

4. Shares do not internalize ecosystem services provided by habitat or inter-species relationships, or ecological goods represented by non-target species.

5. Aggregate catch targets based on the best available science have not been sufficient for widespread groundfish recovery.

6. Sectors seem likely to decrease transparency and accountability by criteria other than catch share totals, with governance mechanisms being uncertain.

7. A sense of individual firm ownership or legal right to access, already developed around days-at-sea, is emerging around catch shares, entrenching political haggling over paper fish and discouraging thoughtful trade-offs among ecological goods and services.

8. Any rent-seeking, market distortions, information asymmetries, and path dependencies arising at the sector level will be difficult to discern or remedy because of reduced transparency and public scrutiny.

It would be unfair to judge sector management conclusively only a few months into implementation, but we can consider the experiences of fleet quotas, trip limits, and early indications of industry transformation under sectors. Under these mechanisms, little movement is visible toward ecosystem-based management goals gleaned from the existing literature, as summarized above:

1. The recovery of groundfish populations has been slow, and habitat and non-target species are not necessarily protected.

2. Total catch-focused management has not been very responsive to industry information, concerns, or conservation proposals and has been slow to reverse species population declines, suggesting limited capacity to respond strategically to changes in biophysical or social dimensions of the fished ecosystem.

3. Scientific understanding of social variables and the complexity of human–environment relationships has not been formally considered, even to the extent that conversations about differential gear impacts on habitat and species rarely take place.

4. Learning activities seem to be less focused on accommodating ecological uncertainties than on maximizing firms' fishing access, or anticipating the risk of legal action against NOAA.

5. Area closures and other spatially explicit considerations have thus far been trumped by catch shares.

6. Trade-offs are often driven by least-common denominators in the highly polarized Council process, rarely by broad and thoughtful public input.

Implications for Resilience

Conclusive evidence that catch shares do or do not benefit targeted fish populations is not provided by this nor other published studies, but this case does demonstrate that possible social–ecological drawbacks of catch shares merit further consideration, both from management and scientific perspectives. The question then becomes how to launch such efforts. As noted by scholars of coupled human–environment systems, resilience can be facilitated by scientific attention to (1) links between social and biophysical systems, (2) trade-offs among ecosystem goods and services across scales and prospective ecosystem states, and (3) double-loop learning or adaptive organizational models that permit operational changes in response to new information (Argyris and Schön 1978, Berkes and Folke 1998, Walker et al. 2006, Leslie and Kinzig 2009).

In this vein, the Council brings considerable personal familiarity with human–environment systems, trade-offs, and flexible business organizational models to the table. It does not presently use scientific information derived from a human–environment perspective, prospective trade-offs, or social learning, however. Rather, the Council relies primarily on target species population assessments, as required by FCMA, supplemented with limited information about habitat and social and economic domains. These information streams are rarely integrated or synthesized, discouraging rigorous consideration of relationships among biological, environmental, and social variables.

Social domains of social–ecological systems, like ecological domains, exhibit path dependencies. If resilient and ecosystem-based fishery management approaches are to gain traction, considerable human resources would be required for their thoughtful

development. As discussed above, theoretical groundwork has been laid by natural and social scientists. Effective operationalization also requires administrative expertise, local knowledge, and more iterative and bidirectional exchanges between scientific and practical perspectives, however. Presently, New England fishermen, Council members, and perhaps fisheries managers, are administratively overextended coping with the brave new world of catch shares. In this reactive mode, they have no time to hone or advance arguments for innovative alternatives. Even groups formerly active on area management and gear restrictions, such as the Northwest Atlantic Marine Alliance and Penobscot East Resource Center, have had to refocus staff time to sort out the administrative requirements of, and political retrenchments around, sector quota allocations. Their financial, political, and human resource investment in catch shares may preclude opportunities to pursue more ecosystem-based management options indefinitely. Institutional memories are waning, as more recently hired staff do not have the same familiarity with previous area- and gear-focused proposals. Similarly, fishermen will likely become accustomed to sectors, as those uncomfortable with sectors drop out of them, and as firms favoring ITQs are likely to control some sectors, so that interest in non-sector and non-ITQ alternatives may diminish.

Pending Spatial Planning Opportunities

In light of the apparent disjuncture between catch shares and ecosystem-based fishery management, we can hope that a nascent federal framework for spatial marine planning included in the Obama Administration's national ocean policy might establish new venues for ecosystem-based thinking, especially if the Administration thoroughly operationalizes its stated intentions to incorporate natural and social sciences, and public input (Interagency Ocean Policy Task Force 2009). Place-specific collaboration across ecological, social science, fishing, and policy perspectives could stimulate considerable innovation in marine resource management, perhaps focused on empirically supported proposals for area-specific gear restrictions. Impending climate-driven bio-oceanographic changes, and increasing scholarly attention to how social–ecological variables interact and manifest differently across spatial scales, also encourage more adaptive and integrative approaches. Although most public conversations about marine spatial planning carefully sidestep jurisdictional questions about relationships between planning processes and the Fishery Management Councils, many planning advocates implicitly assume the Fishery Councils will ultimately answer to newly empowered and overriding decision bodies.

Because the Council system is widely perceived as being so dysfunctional, we might stake some hope on the possibility that the broader scope of marine governance could reinvigorate science-decision relationships around marine resource management in a way that is more integrative and synthetic. Given the inevitability of continued change in marine systems, including climate-related changes, the success of more comprehensive marine governance will require rigorous empirical understandings of social–ecological resilience and adaptive capacity. If decision-support systems and public participation processes are to be designed for this purpose, we can hope that our cautionary tale of Maine groundfish will be considered as an example of how ecosystem perspectives were made available to decision makers, but underused. As new decision networks arise from the national ocean policy and spatial planning initiative, we would be wise to build in the provision of information on human–environment links, ecosystem trade-offs, and institutional adaptiveness that is sorely missing in the groundfish case.

CONCLUSION

The groundfish case offers an opportunity to reflect on the potentially conflictual relationship between catch shares and ecosystem-based management. It cannot argue that a majority of New England fishermen explicitly endorse ecosystem-based management. Indeed, most have never heard the term, have no concrete idea about what it might mean, or express concern that it sounds like a conservationist crusade. Nonetheless, a majority of fishermen have long been inclined to think about fisheries management in ecological terms, and have vehemently opposed catch shares partly for this reason. Until the expansion of sectors as a pivotal catch share management mechanism in New England, an increasing number of fishermen in Maine were actively supporting specific proposals for ecosystem-oriented area management and gear restrictions. These proposals were repeatedly

rejected by the New England Fishery Management Council. Sectors have instead become the primary Council focus, partly because of encouragement from NOAA, as both the agency and major ENGOs are promoting catch shares nationwide. With the discourse thus shifted, groups formerly active in support of area management and gear restrictions now find their resources absorbed in trying to make catch shares work, largely sidelining more ecologically cognizant proposals.

If this apparent policy divergence is not ameliorated, fishing interests will likely become more consolidated and vertically integrated under mobile capital, more politically entrenched, and more oblivious to lessons of the social–ecological past. From a short-term, purely monetary perspective, strong groundfish populations paired with continuing ecosystem decline under sector management might not be undesirable for some New England interests. Large mobile trawlers can work offshore waters and land product in southern New England ports, while small lobster boats remain inshore and provide local jobs, at least for the present. Loss of habitat, bio-economic diversity, local knowledge, and ecological stewardship are likely in this scenario, however, and are difficult to reverse. We may find ourselves with a fisheries management regime that is ostensibly successful in single-species terms, but not resilient to the longer term inevitability of environmental perturbations.

These policy challenges also play out in other North American fisheries, but often with even less public attention, perhaps due to their shorter post-colonial histories and less iconic cultural status. Cursory field data collection suggests that small-boat fishermen fear loss of fishery access and ecosystem impacts associated with industry consolidation under catch shares in places such as Alaska (field notes, 2 October 2006, Anchorage, Alaska, Alaska Fishing Communities conference; pers. comm., April 2007, Homer, Alaska), British Columbia (pers. comm., March 2004, Washington, D.C.; pers. comm., 15 April 2009, Columbia, North Carolina), California (pers. comm., January 2009, California), Florida (pers. comm., 2004, Washington, D.C.), North Carolina (pers. comm., 14 April, 2009, Duck, North Carolina, Mid-Atlantic Fishery Management Council meeting; pers. comm., 26 August 2009. Hatteras, North Carolina, Hatteras Connection meeting), New York (pers. comm., September 2005, Providence, Rhode Island, NEFMC meeting,), Nova Scotia (field notes, 1999, Rockland, Maine, Fishermen's Forum; field notes, 2003, Stonington, Maine, Turning the Tide meeting), and even the Ohio shores of Lake Erie (field observation, October, 2006, Port Clinton, Ohio). Similar observations are made by practitioners and scholars working overseas, especially those with an international development orientation (Berkes et al. 2001). In those settings, parallels with the experience of peasants and smallholders in the Green Revolution, including ecosystem impacts of consolidated land tenure, can be drawn more readily. In the United States, by contrast, although the implicit argument that catch shares discourage ecosystem resilience has long simmered within fishing communities, it has been less articulated in management and policy venues. Although many in the industry are certainly responsible for any number of other resource stewardship transgressions, this particular argument surely merits more vigorous scientific and public discussion. To miss such an opportunity is to erode public confidence in the ability of government to engage meaningfully with its diverse, if sometimes disorganized and belligerent, constituencies. If resource management is to be accountable and resilient, it must seek avenues for mutual learning among public, private, and non-governmental groups. As Upton Sinclair wrote, "[i]t is difficult to get a man to understand something, when his salary depends upon his not understanding it!" (Sinclair 1935).

Responses to this article can be read online at:
http://www.ecologyandsociety.org/vol16/iss1/art15/responses/

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APPENDIX 1

Summary of fishing industry public comments on NOAA's draft catch share policy

Table A1.1

Identifiable commercial fishermen and family members stating clear opinions on catch shares, $n = 64$	
Opposing catch shares	83%
Supporting catch shares	11%
Ambivalent	6%

Table A1.2

Identifiable recreational fishermen stating clear opinions on catch shares, $n = 83$	
Opposing catch shares	90%
Supporting catch shares	5%
Opposing recreational but supporting commercial catch shares	3%
Ambivalent	1%

APPENDIX 2

Partial data summary

Table A2.1

Partial summary of extended in-person interviewees by location
(Excludes larger number of shorter, informal conversations.)

Principal base of operations, *n* = 166	Number of interviewees
Maine	140
New Hampshire	1
Massachusetts	8
Rhode Island	2
North Carolina	5
Alaska	5
Elsewhere	5

Table A2.2

Partial summary of extended in-person interviewees by relationship to fishing industry
(Some interviewees fit more than one category. Excludes larger number of shorter, informal conversations. Excludes normal professional conversations with academic colleagues.)

Relationship to industry, *n* = 166	Number of interviewees
Fisherman	122
Fishing family member, not primarily fisherman	8
Fishing dependent business, not primarily fishing	12
Non-profit organization	13
Government	10
Management advisory group	25
Scientist	6

Table A2.3

Partial list of public meetings attended
(Excludes private meetings, academic conferences, and site visits.)

Year	Location	Purpose	Estimated time attended
~1991	Portland, ME	NEFMC scoping meeting	2 hours
~1991	Portland, ME	NEFMC hearing	2 hours
1999	Machias, ME	Maine DMR lobster zone meeting	2 hours
1999	Bar Harbor, ME	Maine DMR lobster zone meeting	2 hours
1999	Stonington, ME	Maine DMR lobster zone meeting	2 hours

1999	Kennebunk, ME	Maine DMR lobster zone meeting	2 hours
1999	York, ME	Maine DMR lobster zone meeting	2 hours
1999	Rockland, ME	Fishermen's Forum	3.5 days
1999	eastern ME	Maine DMR urchin zone meeting	3 hours
2000	Rockland, ME	Fishermen's Forum	3.5 days
2001	Rockland, ME	Fishermen's Forum	3.5 days
~2001	Portsmouth, NH	Northeast Consortium fisheries collaborative research conference	1 day
~2001	Rockland, ME	Atlantic States Marine Fisheries Commission meeting	1 day
2002	Rockland, ME	Fishermen's Forum	2 days
2003	Portland, ME	NEFMC hearing	4 hours
2003	Portland, ME	NEFMC scoping meeting	2 hours
2003	Rockland, ME	Fishermen's Forum	3.5 days
2003	Stonington, ME	Turning the Tide workshop	1 day
~2003	Damariscotta, ME	Maine DMR scoping meeting	1 hour
~2003	Machias, ME	Maine DMR regulatory hearing	3 hours
~2003	Wiscasset, ME	Maine DMR regulatory hearing	3 hours
2004	Rockland, ME	Fishermen's Forum	2 days
2004	Washington, DC	Congressional FCMA reauthorization hearing	2 hours
2004	Washington, DC	Congressional House Oceans Week	1 day
2004	Washington, DC	US and Pew Ocean Commissions briefing	2 hours
2004	Bristol, RI	Marine Law Symposium	2 days
2005	Providence, RI	NEFMC meeting	3 days
2005	Portland, ME	NEFMC meeting	2 days
2005	Portland, ME	NEFMC committee meeting	1 day
2005	Revere, MA	NEFMC committee meeting	1 day
2005	Rockland, ME	Fishermen's Forum	2 days
2005	Rockland, ME	Fleet Visioning workshop	3 hours
2005	North Shore, MA	Fleet Visioning workshop	1 day
2005	Washington, DC	Managing our Nation’s Fisheries conference	2 days
2006	Portland, ME	NEFMC meeting	1 day
2006	Anchorage, AK	Alaska Sea Grant Fishing Communities conference	1 day
2009	Duck, NC	Mid-Atlantic Fishery Management Council meeting	1 day
2009	Hatteras, NC	Hatteras Connection meeting	2 hours
2009	Columbia, NC	Environmental Defense workshop	2 hours
2010	Rockland, ME	Fishermen's Forum	3.5 days
2010	Stoning, ME	Community Fisheries Action Roundtable	4 days
2010	Portland, ME	NEFMC meeting	.5 day