

Chapter 12

Beyond Privatization: Rethinking Fisheries Stewardship and Conservation in the North Pacific

Rachel Donkersloot¹, Courtney Carothers²

¹Alaska Marine Conservation Council, Anchorage, AK, United States; ²University of Alaska Fairbanks, Anchorage, AK, United States

INTRODUCTION

The conservation community has increasingly embraced privatization as a means to promote environmental goals. This so-called neoliberal conservation situates property rights and free market exchange at the heart of environmental governance (Igoe and Brockington, 2007). In the case of fisheries, individual transferable quotas (ITQs) are imagined to be secure property rights that confer economic incentives for owners of fishery access rights (quota holders) to fish sustainably. Many international conservation organizations, such as the Environmental Defense Fund, are vocal proponents of ITQs, or catch shares, for conservation based on this logic:

Catch shares “right the ship.” With a secure share of the catch, there is no pressure or need to race for fish. And with a clear stake in the overall health and sustainability of the fishery, fishermen’s incentives change from maximizing volume to maximizing value. Fishermen no longer become fierce competitors but are now inspired to collaborate as environmental stewards of the resource their livelihood depends on. This type of cooperation is almost unheard of in non-catch share fisheries where competition—not communication—is the rule... Evidence shows that catch shares overcome the “tragedy of the commons” by providing a clear economic rationale for conserving resources.

EDF (2016)

The logic underpinning such a theoretical link—that secure private property rights make owners care better for the resource for the long term—is faulty

for several reasons (Bromley, 2015; Macinko and Bromley, 2004, 2002). First, although ITQs often function like private property rights, they are rarely legally defined as such, but usually as revocable access privileges (Shotton, 2001; Hannesson, 2006; Abbott et al., 2010). Second, even if ITQs are fully privatized and monetized, market incentives and economic pressures may make degradation of a fishery financially rational (Sumaila, 2010), as Acheson (2006) describes for privately owned forests in Maine. Third, as we discuss in the following, leasing of access rights means that in many fisheries, the “owners” of access rights are not active fishermen directly engaged in harvesting the resource.

Nevertheless *catch shares for conservation* has become a potent narrative perpetuated in academia (e.g., Costello et al., 2016, 2008) and popular media (e.g., Rowley, 2016; NPR, 2015; Economist, 2008). A series of researchers have challenged the methodology and conclusions drawn by a well-cited paper that links catch shares with the prevention of fisheries “collapse” (Costello et al., 2008). These studies note that biological tools such as setting an appropriate total allowable catch for fisheries limits overharvesting better than the implementation of catch shares, a primarily allocative tool designed to promote economic efficiencies (e.g., Acheson et al., 2015; Melnychuk et al., 2012; Essington et al., 2012; Essington, 2010; Branch, 2009; Chu, 2009; Ban et al., 2008). In this chapter, we challenge the claim that the privatization of a public resource leads to an enhanced conservation ethic and suggest a need for more holistic approaches to managing fisheries as complex socio-ecological systems. We highlight potential community-oriented alternatives as fishery conservation solutions that do not come at the expense of fishing communities, rural livelihoods, and future generations.

The story about catch shares “righting” the tragedy of the commons obscures not only the historical and contemporary successes in managing common pool resources (Ostrom, 1990), but also the ways in which catch shares as quasi-private property rights are creating the “tragic commons” (Chambers and Carothers, 2017) or the “tragedy of the commodity” (e.g., Longo et al., 2015; Carothers, 2010; McCay, 2004). It is clear that the commodification of fishery access rights is remaking fishery systems with largely negative impacts to small-scale fishermen, non-owners, young and new fishery entrants, and rural and indigenous communities (e.g., Carothers and Chambers, 2012; Olson, 2011; Knapp and Lowe, 2007; McCay, 2004). ITQ programs create a host of equity issues and contribute to the alienation of fishing rights from long-standing fishing communities and cultures (e.g., Donkersloot and Carothers, 2016; Carothers, 2015, 2010; Pinkerton and Davis, 2015; McCormack, 2012; Pinkerton and Edwards, 2009). As well, the positioning of catch shares as the prevailing answer to fishery conservation problems tends to overshadow the point that catch shares are primarily a tool to promote economic efficiencies and maximize aggregate fleet-wide profits, typically with little concern for distribution of that wealth. Sumaila (2010, p. 1) calls attention to this point noting that “if economic efficiency were the only concern of fisheries management, then ITQs would be a great tool for achieving management objectives...., but fisheries

management is not about economic efficiency alone. It is about conserving the resources, preserving the ecosystems that support the resources through time, and ensuring equity and social justice in the use of these resources.”

The purpose of this chapter is twofold. For one, we challenge the underlying assumptions driving fishery privatization processes, paying particular attention to the validity of the ownership-promotes-stewardship thesis. As part of this effort, we draw attention to the mixed conservation outcomes of catch share programs and consider whether the benefits associated with slowing down the “race for fish”—often attributed to the creation of alienable property rights—might be achieved in ways that do not require allocating access rights in perpetuity to the current generation of harvesters. Second, we argue that conservation solutions that create social inequities and alienate local resource users from the resource base are unsustainable and run counter to fisheries management goals of social and economic sustainability. We draw on contemporary case studies from the North Pacific to highlight complex environmental and equity concerns in fisheries managed under various forms of catch shares. We argue that the outflow of fishing rights from fishery-dependent communities, now a predictable outcome of ITQ management, is antithetical to the goals of resource governance and fishery conservation today, including fishing community stability and the sustained participation of fishing communities. We suggest that rather than fully alienable private property rights that serve to sever relationships between people, places, and resources, we must consider place-based fishing livelihoods and human–environment connections as fundamental to the sustainability of healthy social–ecological systems. Central here is the need for alternative constructions of stewardship to better inform fisheries management.

DEBUNKING THE INDIVIDUAL OWNERSHIP-PROMOTES-STEWARDSHIP THESIS

The ownership-promotes-stewardship thesis conjures up powerful imagery of a derelict commons driven to collapse by the inability of competitive, self-interested actors to limit use of a common resource. From these assumptions, the creation of property rights signals a promising shift in behavior. Empowered with newly acquired assets, resource users are incentivized as owners to act as better stewards of the resource for their long-term interest and economic gain (Arnason, 2012; Grafton et al., 2006). Environmental Defense Fund’s *Catch Share Design Manual* unpacks these underlying assumptions more completely noting that “by allocating participants a secure [share] of the catch, catch share programs give participants a long-term stake in the fishery and tie their current behavior to future outcomes. This security provides a stewardship incentive for fishermen that was previously missing or too uncertain to influence their behavior toward long-term conservation” (Bonzon et al., 2013, p. 2).

Catch share programs come in a diversity of forms and have been designed to address a number of management objectives including

increasing economic efficiencies, reducing overcapitalization, reducing bycatch, extending fishing seasons, reducing market gluts, and improving at-sea safety. Nevertheless, it is their potential to solve conservation problems that is frequently singled out. Catch shares are increasingly heralded as a necessary incentive needed to improve resource conservation. As de facto property rights assumed to inspire environmental stewardship, catch shares have been embraced by fishing nations around the world. There are an estimated 250 fisheries globally managed under some form of an ITQ system today (Chu, 2009). In the United States, the rise of the “privatize or perish” message peaked in 2009 when the National Oceanic and Atmospheric Administration (NOAA) explicitly promoted catch shares as a desired management tool and encouraged “the voluntary use of well-designed catch share programs in appropriate fisheries to help rebuild and sustain fisheries and support fishermen, communities and vibrant working waterfronts” (NOAA Fisheries Service, 2010, p. 1). Endorsement of catch shares as a cure-all contrasts sharply with a growing body of literature documenting the undesirable social costs of catch share programs and importantly, a lack of empirical evidence in support of ITQs as contributing to enhanced stewardship ethics (e.g., Pinkerton and Davis, 2015; Van Putten et al., 2014; Reedy and Maschner, 2014; Carothers and Chambers, 2012; Pinkerton and Edwards, 2009; Lowe and Carothers, 2008; Gilmour et al., 2012).

ITQs, Conservation, and Stewardship

Despite the fact that catch shares are primarily a tool to promote economic efficiencies (Pinkerton, 2013; Sumaila, 2010; McCay, 2004), proponents of privatizing fisheries access frequently assert that catch shares are linked to increased resource conservation and stewardship outcomes. The linkage between ITQs and resource conservation is not as straightforward as proponents contend. Acheson et al. (2015, p. 7) offer a succinct review of literature examining the effects of ITQs on fish stocks and conclude “the best evidence strongly suggests the effects are mixed.”

Chu (2009) points out that in a study of 20 stocks where biomass changes were analyzed, there was an improvement in 12 stocks after the advent of an ITQ program. The other eight (40%) continued to decline... [The] same lack of consistent results was reported by Branch (2009), who analyzed the effect of ITQs as reported in 227 peer reviewed papers... Thirty-five papers or 15% of the total reported on the biological effects of ITQs. The results were mixed, with 60% of these reporting a positive effect, while 23% reported a negative effect, and another 14% reported a mixed effect... Essington (2010) assessed the effect of implementing catch shares on certain indicators of conservation, including biomass, fishing effort, and discards. With the exception of a decline in discard rate, he is unable to see any significant change in these indicators following implementation of ITQs.

Acheson et al. (2015, p. 7)

Other researchers demonstrate the mixed success of ITQ management regimes to provide consistent conservation outcomes (e.g., [Melnychuk et al., 2012](#); [Thébaud et al., 2012](#); [Sumaila, 2010](#); [Gibbs, 2009](#)). In a comprehensive analysis of how catch shares affect fished populations in 84 catch share and 140 reference fisheries, [Essington et al. \(2012, p. 8\)](#) found that “many of the elements of the fishing systems—including the economic and social systems—that promoted overexploitation prior to catch shares largely persisted after catch shares were implemented.”

The link between privatized access and stewardship ethics and behaviors is also not straightforward. Some studies have documented how the incentives embedded in ITQs have actually led to unsustainable fishing practices (e.g., [Chambers and Carothers, 2017](#); [McCay, 2004](#); [Copes and Pálsson, 2000](#)), including higher discard rates. [Rieser et al. \(2013\)](#) examined how ownership incentives contribute to enhanced stewardship in catch share programs in place in Alaska and New Zealand trawl fisheries where quota holders worked with fishery managers to create bottom trawl closures. In the Alaska example, the outcome resulted in a closure of nearly 1 million km² of seafloor, effectively freezing the trawl footprint. However, as the authors note, only 10% of the closed area was considered fishable due to ocean depths (greater than 1000 m) and other factors, and some of the most important coral and sponge habitat areas identified remained unprotected in areas which remained open to trawling ([Rieser et al., 2013, p. 77](#)). In this way, the authors differentiate between the “creation of a perception of habitat stewardship” in these fisheries and the adoption of industry-supported measures for “protection of seafloor habitat that can be characterized as responsible stewardship” ([Rieser et al., 2013, p. 82](#)). Elsewhere, examining the theoretical relationship between the implementation of ITQs and changes in environmental stewardship of fishers, [Van Putten et al. \(2014, p. 5\)](#) note, “there is no evidence available to indicate that this environmental stewardship has changed as a consequence of fisheries management changes.”

Prevalent shifts in patterns of quota ownership and the leasing of access rights raise further questions about the conservation logic driving the shift toward fisheries privatization. Of the many undesirable social consequences of catch share programs documented around the world, quota leasing practices, marked by high lease fees and absentee ownership, are among the most disconcerting ([NPFMC, 2015, p. 50](#); [Pinkerton and Edwards, 2009](#)). Consolidation of fishing vessels and concentration of quota ownership and wealth are well documented and often intended outcomes of catch share programs designed to reduce overcapitalization ([Knapp and Lowe, 2007](#); [Knapp, 2006](#)). Such shifts in (absentee and in some cases corporate) ownership complicate the supposed connection between ownership rights and stewardship due to the leasing of access rights, which means that in many fisheries “owners” are not the same individuals harvesting the fish. ITQ systems are creating a new class of fishermen, likened to “sharecroppers” in feudal systems (see [van der Woo, 2013](#)), who must now rent the right to fish from quota holders who stay ashore and

collect fishery earnings as absentee owners (Van Putten et al. (2014.; Pinkerton and Edwards, 2009; Helgason and Palsson, 1997; Eythórsson, 1996). These types of arrangements are at odds with the underlying arguments driving the ownership-promotes-stewardship thesis. Given the complex relationships in fishery systems and the trends noted earlier, we resist the oversimplification that the privatization of a public resource uniformly leads to enhanced conservation; rather we point to the importance of understanding how other fishery management design features, such as setting appropriate total catch limits, monitoring, enforcement, improved communication, and others related to slowing down the race for fish, contribute to ensuring sustainable fishing practices. This will be discussed further in the following.

COMMUNITIES, CONSERVATION, AND CATCH SHARES: EXAMPLES FROM THE NORTH PACIFIC

The North Pacific is a region recognized as a global leader in managing sustainable fisheries and developing innovative and community-oriented management models. It is also a site of powerful examples of how catch shares are remaking fishery systems, and how they can—sometimes predictably, sometimes unexpectedly—create inequities and impact the sustainability of socio-ecological systems by turning the right to fish into a tradable commodity.

There are currently five catch share programs in place in the North Pacific, with another potential program under development. Only one of these programs was developed to specifically address conservation concerns. The Bering Sea non-pollock groundfish trawl fishery (often referred to as the “Amendment 80” fleet) was rationalized in 2008 to improve bycatch reduction and accountability among the fleet targeting Atka mackerel, Pacific ocean perch, and three flatfish species. Other programs including the Gulf of Alaska Rockfish Program (2010), Bering Sea Aleutian Island (BSAI) crab rationalization program (2005), American Fisheries Act pollock cooperatives program (1999), and halibut and sablefish IFQ program (1995) were created to address management concerns of overcapitalization, allocation disputes, US ownership requirements, safety and derby style fishing marked by short seasons, loss of product/quality and the “race for fish” (Fina, 2011, p. 165).

The Halibut IFQ Fishery

The halibut IFQ fishery is an insightful starting point to consider the complex and shifting dynamic between catch shares, conservation, and communities in the North Pacific.

The US North Pacific halibut fishery shifted to ITQ management along with the sablefish fishery in 1995. This fishery has long been used as an example of the economic efficiencies and improvements in safety that can

accompany ITQ management (e.g., [Matulich and Clark, 2003](#); [Hartley and Fina, 2001](#)). Short and chaotic fishing openings that produced a glut of product on the market transitioned into a 9-month fishing season following ITQ implementation, with increases in halibut value for a harvesting fleet that consolidated by over 50% ([NOAA Fisheries Service, 2016](#); [Herrmann and Criddle, 2006](#)). However, despite design parameters that attempted to maintain diversity in the fleet, such as owner-on-board provisions for the next generation of quota holders and restrictions on quota transfers between vessel class sizes, disproportionate social impacts were felt by crew members, skippers, small-scale fishermen, and rural, primarily indigenous communities post-ITQ implementation ([Carothers, 2013](#); [NPFMC, 2016](#)). For example, since the program was implemented there has been a 57% decrease in the number of residents in small, mostly indigenous Gulf of Alaska communities who hold halibut quota ([NOAA Fisheries Service, 2014](#)). Equity concerns were raised and the North Pacific Fishery Management Council responded by implementing a community purchase program in 2004 that enables small communities to collectively purchase halibut and sablefish quota. This program has yet to lead to any significant reallocation of halibut quota to affected communities ([Carothers, 2011](#); [NPFMC, 2016](#); [NPFMC, 2010b](#); [Langdon, 2008](#)). This is due in part to the very high cost of purchasing halibut fishing rights and lack of available quota shares for sale ([Carothers, 2011](#)).

In recent years, the halibut fishery has struggled with uncertainty over the health of the resource. Under ITQ management, the total allowable catch (TAC) over the past decade has decreased substantially due to declining stock abundance of harvestable halibut (i.e., exploitable biomass). This decline is linked to significant reductions in female spawning biomass and decreasing size at age ([Stewart et al., 2014](#)). The International Pacific Halibut Commission (IPHC), which manages Pacific halibut stocks in waters off Alaska, British Columbia, and the west coast of the United States, estimates a 66% decline in catch rates in the directed halibut fishery in Alaska from 2000 to 2013 ([Stewart et al., 2014](#)). In 2015, conservation concerns over the halibut resource culminated into crisis when the IPHC recommended another 60% reduction from 2014 harvest levels. As catch limits plummeted due to declining stock abundance of harvestable halibut, equity concerns emerged over what amounted to a dramatic reallocation of the halibut resource in the North Pacific as bycatch for Bering Sea groundfish fisheries.

Halibut Bycatch in the Bering Sea Groundfish Fisheries

Bering Sea groundfish fisheries, and their associated halibut bycatch, are managed by the North Pacific Fishery Management Council (NPFMC). Prior to 2015, on average, Bering Sea groundfish fisheries took around 5 million pounds of halibut a year as bycatch. Because the NPFMC manages halibut bycatch with a fixed hard cap that is not indexed to abundance levels, the IPHC must deduct the

previous year's halibut bycatch before setting annual catch limits in the directed halibut fishery throughout Alaska. Because bycatch limits do not shift with abundance levels, in recent years, as the halibut stock has declined, bycatch has become the primary source of halibut mortality in the Bering Sea. The impacts of halibut bycatch mortality are felt well beyond the Bering Sea, which serves as nursery grounds for stocks which embark on lifelong migrations as far south as Oregon, but the situation is particularly problematic for small Bering Sea communities dependent on halibut harvested around the Pribilof Islands and along the mainland coast of western Alaska in management Area 4CDE (see Fig. 12.1).

In 2015, the IPHC recommended a harvest limit of 370,000 pounds for Area 4CDE, amounting to a 71% cut from the 2014 limit of 1.29 million pounds (see Fig. 12.2). IPHC estimates showed that at the 2015 projected harvest level, bycatch would account for 93% of all halibut removals in the Bering Sea. Such a stark disparity in allocation of the resource would effectively eliminate the directed halibut fishery in this area. This, paired with the failure of the NPFMC to take action to reduce halibut bycatch at a December 2014 meeting, prompted all six of the Alaska members of the 11 (voting) member NPFMC to request the National Marine Fisheries Service Assistant Administrator for an emergency 33% reduction in Bering Sea halibut bycatch in 2015. The response to the emergency regulation request recommended the IPHC "provide adequate harvest opportunities" for Area 4CDE halibut fishermen in 2015 without a reduction in bycatch levels in groundfish fisheries. The recommendation was based on the "potentially serious socio-economic impacts of a low catch limit" for the remote fishery-dependent communities in the region while recognizing the "extensive new efforts being taken by the [groundfish] fleet to further minimize bycatch" in 2015.^{fn11} The Amendment 80 fleet in particular has made a concerted effort to address bycatch problems through innovative measures and experimentation, such as deck sorting initiatives and handling practices, technological advances, use of excluder devices, and improved communication among vessels, tools that are made more successful in the cooperative management system. In the end, the IPHC exceeded their own recommended catch rate for 2015 and maintained the 2014 harvest level of 1.29 million pounds for Area 4CDE. At the June 2015 meeting, the NPFMC recommended new halibut bycatch limits in the Bering Sea which would ultimately reduce bycatch in the Amendment 80 fleet by 17% relative to 2014 levels. Though important, this action falls short of the reduction needed to support the directed catch limit of 1.29 million pounds that the IPHC estimates to be equivalent to a reduction in the halibut bycatch limit of approximately 41% (IPHC, 2015). The North Pacific Fishery Management Council is currently working toward developing additional conservation tools in Bering Sea groundfish fisheries, including abundance-based halibut bycatch caps.

1. Letter from Eileen Sobek, NMFS Assistant Administrator for Fisheries, to Bruce Leaman, IPHC Executive Director, dated January 20, 2015.

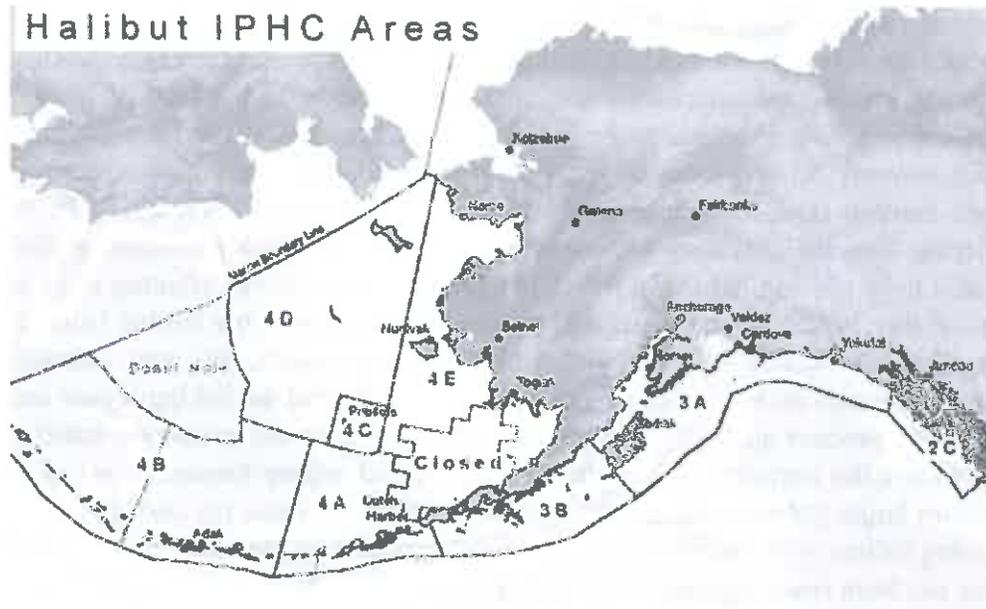


FIGURE 12.1 International Pacific Halibut Commission halibut management areas. *Reproduced from NOAA, 2015. Transfer Report, Changes Under Alaska’s Halibut IFQ Program, 1995 Through 2014. p. 3. Available at: <https://alaskafisheries.noaa.gov/sites/default/files/reports/halibut-transfer-frpt2015.pdf#page=17&zoom=auto,-73,620>.*

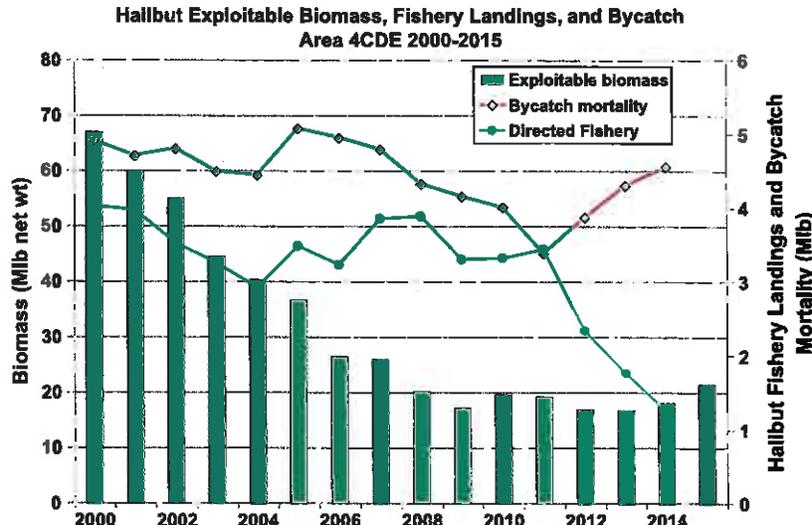


FIGURE 12.2 Trends in halibut exploitable biomass, bycatch mortality, and directed halibut fishery catch limits in IPHC regulatory area 4CDE, 2000–15. *Reproduced from IPHC, 2015. IPHC letter to NPFMC of May 26, 2015. June 2015 meeting, Agenda Item C2 BSAI PSC Limits. Available at: http://www.iphc.int/documents/bycatch/IPHC2NPFMC_PSClimitJune2015b.pdf.*

This reallocation of the halibut resource is a complex example occurring across two management bodies (IPHC and NPFMC) governing small-scale and industrial fisheries with varying degrees of political power, and managed under two different catch share programs. We draw on it here to illustrate the

siloed and cascading effects of catch shares as a management tool within and across these fisheries, including their limitations in responding to environmental change and related community sustainability concerns. In the Gulf of Alaska, the privatization of access to the halibut fishery has redistributed access rights and severely limited local access for rural and indigenous communities and new entrants (Donkersloot and Carothers, 2016; Carothers, 2011, 2013). In the Bering Sea, the shrinking halibut resource has been disproportionately allocated to larger and industrial fisheries operating offshore contributing to great instability, hardship, and social and economic inequities in the halibut fisheries (commercial and subsistence) and fishing communities. In this way, although an ITQ system in the halibut fishery has served to extend the fishing season and improve product quality, it has not been able to create the economic stability or ensure the overall health of the directed halibut fishery because it is nested within larger political and power structures which prioritize the needs of competing fishery systems. Even more concerning is the fact that, although the fleet has not been reaching historic bycatch levels and has been operating below the bycatch cap for some years, halibut bycatch in the Bering Sea groundfish fisheries rose steadily between 2011 and 2014 despite the presence of a form of catch shares as a management tool (IPHC, 2015). This increase occurred while the directed halibut fishery experienced rapid declines in catch limits. This example demonstrates how fishery management tools are embedded in complex political processes with complex political outcomes (Donkersloot, 2016). It also draws attention to the need for additional and alternative management tools in both reducing bycatch and ensuring fishing community participation and stability and suggests that quasi-private property rights alone are inadequate in achieving conservation goals and solving the complex problems facing fisheries and fishing communities today (Dietz et al., 2003).

MOVING PAST COMMODITIZED FISHING RIGHTS TOWARD OTHER DESIGN PRINCIPLES

In the North Pacific, various forms of catch share programs have been implemented as a solution to a range of economic and environmental concerns (Fina, 2011). These programs have achieved some management objectives including improving economic efficiencies, product quality and safety, but they have also resulted in a number of undesirable social consequences and inequities evidenced in place-based fishing communities and dynamics within and across North Pacific fisheries. In the context of fishery conservation, privatization has not consistently produced the desired conservation outcomes. Instead, the earlier examples point to the importance of specific provisions for achieving conservation gains including but not limited to, catch limits, abundance-based bycatch caps, monitoring and enforcement, information sharing, and improved fleet coordination. Some of these features, especially information sharing and cooperation among vessels, have been identified as benefits of catch share

programs because catch shares end the race for fish. Is it possible to reimagine fisheries management regimes in ways that draw upon these conservation tools without commodifying and privatizing the right to access fishery resources? Again, the North Pacific offers a compelling example.

A new management structure is currently under development for the Gulf of Alaska groundfish trawl fishery. The new program is driven by the need to provide the trawl fleet with the tools to better address mounting bycatch concerns. Catch shares have been identified as a preferred tool for bycatch management in the discussion to date but the Council process has been wrought with conflict and disagreement over whether catch shares are the right way forward for all stakeholders including vessel owners, crew, processors, and communities (Donkersloot, 2016). In October 2015, the Commissioner of the Alaska Department of Fish and Game, who represents the State of Alaska on the NPFMC, introduced an alternative program structure with the aim of enabling bycatch reductions while avoiding the creation of new economic assets that result from privatized and transferrable quota. The Council is also considering a novel allocation of quota to a community entity as a means to mitigate some of the potential impacts of the program on Gulf of Alaska fishing communities (Donkersloot, 2016). It is too early to tell which direction the Council will take in designing a new management structure. In the meantime, the Gulf of Alaska trawl fleet is operating under a voluntary cooperative structure to better communicate information and adapt to the recent implementation of bycatch caps, including first-ever caps on Chinook salmon bycatch and a 15% reduction in the halibut bycatch limit in Gulf of Alaska trawl fisheries.

Taken in sum, the successes and challenges in the North Pacific compel us to ask whether the allocation of quasi-private property rights is the best mechanism to manage our fisheries. What is happening in the Gulf of Alaska suggests that there are potential alternatives to addressing conservation concerns that allow for a more equitable allocation of fishery resources without transforming the right to fish into a tradable commodity with windfall gains to initial recipients (see also Eythórsson, 2016; Foley et al., 2013, 2015). Considering equity in fisheries, management becomes more imperative in light of the rise in corporate and processor-owned quota share that has been described as a new tragedy in fisheries created under rights-based management regimes (Donkersloot, 2016; Olson, 2011; Pauly, 2008; Dewees, 1989).

RETHINKING STEWARDSHIP—FROM COMMODITY TO COMMUNITY

Fishery managers in the North Pacific have become increasingly aware of the ways in which catch share programs negatively impact communities, crew, and new entrants (Carothers, 2011; Reedy and Maschner, 2014; Knapp, 2006; Knapp and Lowe, 2007; Lowe and Carothers, 2008), as well as the widespread difficulty of reversing the inequitable outcomes of ITQ regimes (Chambers and

Carothers, 2017; Copes and Pálsson, 2000). For example, the high cost of quota coupled with high leasing fees and absentee ownership in Bering Sea crab and North Pacific halibut and sablefish fisheries continues to impede upward mobility of crew members in these fisheries (Szymkowiak and Himes-Cornell, 2015; NPFMC, 2010a). North Pacific fishery managers have implemented a number of community-oriented provisions to mitigate these types of impacts including crew shares, community quotas, and consolidation caps, among others. These provisions aim to ensure that fishery conservation solutions do not come at the expense of fishing communities, rural livelihoods, and future generations. Some of these provisions have been more successful than others. For example, the Western Alaska Community Development Quota (CDQ) program, first implemented in 1992, is often considered the “crown jewel” in fisheries management models while the potential for the Community Quota Entity program in place in the Gulf of Alaska remains largely unrealized (Carothers, 2011). The CDQ program was created in 1992 as part of the rationalization of Bering Sea pollock fishery. At the time, the program allocated 7.5% of the pollock resource to Western Alaska communities, many of which are economically disadvantaged, geographically isolated, and largely Alaska Native. Today the CDQ program has grown to include a 10% allocation of all BSAI quotas for groundfish, halibut, and crab. The program embeds resource wealth from Bering Sea offshore fisheries in Western Alaska communities (see also Foley et al., 2013, 2015). CDQ entities use royalties from these fisheries to advance regional economic development through investments in local industry, part ownership of the offshore vessels, infrastructure, and education. In the context of halibut, the CDQ program also provides real fishing opportunity for CDQ residents who actively fish the CDQ allocation. In contrast, the Community Quota Entity (CQE) program did not allocate quota to communities, but allows eligible communities to purchase quota to lease to resident fishermen. The high cost of halibut quota coupled with sharp declines in the TAC means that many CQE communities cannot afford to take advantage of the program. For example, the price of halibut quota has increased from around \$10.00 per pound in 1995 to more than \$50.00 per pound in 2016.²

On a broader scale, the marginalization of place and community-based livelihoods in fisheries privatization processes has resulted in a more explicit articulation of social goals in US fisheries policy. National Standard 8 of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) pushes fisheries management policy beyond the narrow scope of environmental sustainability to recognize community sustainability as central to fisheries management. Specifically, it instructs policy makers to “take into account the importance of fishery resources to fishing communities in order to (A) provide for sustained participation of such communities, and (B) to the extent practicable, minimize adverse impacts on such communities.” The 2006 MSA

2. See NPFMC (2016, p. 100) and http://www.alaskabroker.com/listings/halquota.html#quota_threea.

reauthorization reaffirms the importance of place in fisheries management with the inclusion of language authorizing mechanisms to distribute fishing privileges to communities [see Sections 303A(c)(3)]. Community held fishing rights have been described as the “next step in the evolution of catch shares” (see [Donkersloot, 2016](#)) and “appear to have been driven by Congress’ interest in supporting small-scale and community-based operations” given the tendency for these to be disproportionately negatively impacted by limited access privilege programs ([Stoll and Holliday, 2014](#), p. 2). The opening up of the narrow corridors of catch share programs to include recognition of the importance of sustaining communities and community-based livelihoods in fisheries allocation regimes is a meaningful contribution to public policy. The authorization of allocations to community entities in particular is an implicit challenge to the argument that private property rights are the solution to fishery conservation problems. The move toward community held fishing rights helps to highlight the difference between the actual tool of assigning a portion of the total catch and the ideology of “privatize or perish” that insists on giving away fisheries resource wealth to the current generation of harvesters. Community allocations suggest that responsible stewardship is possible without quasi-private property rights.

CONCLUDING THOUGHTS

If we view marine conservation as stewarding sustainable human-marine connections, ITQs become antithetical to conservation because they function as a mechanism for the alienation of local fishing rights embedded in place. The widespread privatization of access rights to fish is creating a crisis of social and cultural sustainability in our world’s fisheries systems. This crisis is largely obscured by the hopeful rhetoric that continues to tout catch shares as the remedy for the problems facing our fisheries today.

Rather than a theoretical link between private property rights and stewardship, we emphasize the need to widen the conceptual framing of stewardship to recognize (1) the social dimensions of fishery systems and (2) the role of communities, values, and institutions (in promoting responsible fishing behavior) beyond the narrow confines of private property rights. Environmental stewardship can be defined as a set of values that individuals, communities, and cultures draw upon to form their relationships and interactions with the environment and its resources ([Van Putten et al., 2014](#), p. 3). The ownership-promotes-stewardship thesis tends to simplify these complex values and institutions, replacing this diversity with universalist assumptions that all fishermen act selfishly in their own self-interest and the private property rights are the means necessary to incentivize long-term self-interest. The work of [Mansfield \(2011\)](#) and other political ecologists helps to reframe fishery conservation problems—not as an outcome of lack of property rights—but rather as a product of a global political economy that has fostered the industrialization of fishing fleets, large

subsidization of fisheries development, and highly unequal systems of fisheries extraction from the global South for consumption in the global North. These industrializing processes are central to our crisis of ecological sustainability of fishery stocks (Donkersloot and Menzies, 2015; Carothers and Chambers, 2012; Mansfield, 2011). As we have seen here, a central dimension of these processes is the uneven power relations at play in fisheries development (Donkersloot, 2016; Donkersloot and Menzies, 2015; Jentoft, 2007). We cannot ignore the role of power in shaping fishery systems in the North Pacific, or the role that catch shares play in the consolidation of power.

As researchers, policy makers, and communities we must look beyond privatization to articulate alternative constructions of stewardship as place-based, multi-generational, and inclusive of attachments to place, among other things. Creating space to allow for alternative constructions of stewardship, which acknowledge people–place–resource connections, to meaningfully inform fisheries management decisions is a step toward empowering communities, independent fishing operations, and small-scale fishing operations to address fishery conservation problems in ways that do not threaten their sustainability. “Righting” the tragedy of fisheries today means approaching fisheries as integrated social–ecological systems, ensuring equity in the distribution of fishery access and benefits, and resituating communities and people–place–resource connections at the center of conservation solutions.

REFERENCES

- Abbott, J.K., Garber-Yonts, B., Wilen, J.E., 2010. Employment and remuneration effects of IFQs in the Bering Sea/Aleutian Islands crab fisheries. *Marine Resource Economics* 25 (4), 333–354.
- Acheson, J., Apollonio, S., Wilson, J., 2015. Individual transferable quotas and conservation: a critical assessment. *Ecology and Society* 20 (4) art. 7.
- Acheson, J., 2006. Institutional failure in resource management. *Annual Review of Anthropology* 35, 117–134.
- Arnason, R., 2012. Property rights in fisheries: how much can individual transferable quotas accomplish? *Review of Environmental Economics and Policy* 6 (2), 217–236.
- Ban, N., Blight, N., Foster, S., Morgan, S., Donnell, K., 2008. Pragmatism before prescription for managing global fisheries. *Frontiers in Ecology and Environment* 6 (10).
- Bonzon, K., McIlwain, K., Strauss, C.K., Van Leuvan, T., 2013. *Catch Share Design Manual, Volume 1: A Guide for Managers and Fishermen*, second ed. Environmental Defense Fund.
- Branch, T.A., 2009. How do individual transferable quotas affect marine ecosystems? *Fish and Fisheries* 10, 39–57.
- Bromley, D.W., 2015. Correcting the whimsies of U.S. fisheries policy. *Choices* 30 (4). Available at: <http://choicesmagazine.org/choices-magazine/submitted-articles/correcting-the-whimsies-of-us-fisheries-policy>.
- Carothers, C., Chambers, C., 2012. Fisheries privatization and the remaking of fishery systems. *Environment and Society: Advances in Research* 3, 39–59.
- Carothers, C., 2010. Tragedy of commodification: transitions in Alutiiq fishing communities in the Gulf of Alaska. *Maritime Studies (MAST)* 90 (2), 91–115.

- Carothers, C., 2011. Equity and access to fishing rights: exploring the community quota program in the Gulf of Alaska. *Human Organization* 70 (3), 713–723.
- Carothers, C., 2013. A survey of halibut IFQ holders: market participation, attitudes, and impacts. *Marine Policy* 38, 515–522. <http://dx.doi.org/10.1016/j.marpol.2012.08.007>.
- Carothers, C., 2015. Fisheries privatization, social transitions, and well-being in Kodiak, Alaska. *Marine Policy* 61, 313–322. <http://dx.doi.org/10.1016/j.marpol.2014.11.019>.
- Chambers, C., Carothers, C., 2017. Thirty years after privatization: a survey of Icelandic small-boat fishermen. *Marine Policy*. <http://dx.doi.org/10.1016/j.marpol.2016.02.026>. (in press).
- Chu, C., 2009. Thirty years later: the global growth of ITQs and their influence on stock status in marine fisheries. *Fish and Fisheries* 10, 217–230.
- Copes, Pálsson, 2000. Challenging ITQs: legal and political action in Iceland, Canada and Latin America. In: IIFET 2000 Proceedings, pp. 1–6.
- Costello, C., Gaines, S.D., Lynham, J., 2008. Can catch shares prevent fisheries collapse? *Science* 321 (5896), 1678–1681.
- Costello, C., Ovando, D., Clavelle, T., Strauss, C.K., Hilborn, R., Melnychuk, M.C., Branch, T.A., Gaines, S.D., Szuwalski, C.S., Cabral, R.B., Rader, D.N., Leland, A., 2016. Global fishery prospects under contrasting management regimes. *Proceedings of the National Academy of Sciences of the United States of America* 113 (18), 5125–5129.
- Deweese, C.M., 1989. Assessment of the implementation of individual transferable quotas in New Zealand's inshore fishery. *North American Journal of Fisheries Management* 9 (2), 131–139. [http://dx.doi.org/10.1577/1548-8675\(1989\)009%3C0131:AOTIOI%3E2.3.CO;2](http://dx.doi.org/10.1577/1548-8675(1989)009%3C0131:AOTIOI%3E2.3.CO;2).
- Dietz, T., Ostrom, E., Stern, P., 2003. The struggle to govern the commons. *Science* 302, 1907–1912.
- Donkersloot, R., Carothers, C., 2016. The graying of the Alaskan fishing fleet. *Environment: Science and Policy for Sustainable Development* 58 (3), 30–42.
- Donkersloot, R., Menzies, C., 2015. Place-based fishing livelihoods and the global ocean: the Irish pelagic fleet at home and abroad. *Maritime Studies* 14 (20). <http://dx.doi.org/10.1186/s40152-015-0038-5>.
- Donkersloot, R., 2016. Considering Community Allocations in the Emerging Gulf of Alaska Catch Share Program. *Marine Policy* 74, 300–308 (special issue).
- Economist, September 18, 2008. Fishing and Conservation: A Rising Tide. Available at: <http://www.economist.com/node/12253181>.
- Environmental Defense Fund (EDF), 2016. How Catch Shares Work: A Promising Solution. <https://www.edf.org/oceans/how-catch-shares-work-promising-solution>.
- Essington, T.E., Melnychuk, M.C., Branch, T.A., Heppell, S.S., Jensen, O.P., Link, J.S., Martell, S.J.D., Parma, A.M., Pope, J.G., Smith, A.D.M., 2012. Catch shares, fisheries, and ecological stewardship: a comparative analysis of resource responses to rights-based policy instrument. *Conservation Letters* 5, 186–195.
- Essington, T.E., 2010. Ecological indicators display reduced variation in North American catch share fisheries. *Proceedings of the National Academy of Sciences of the United States of America* 107 (7), 754–759.
- Eythórrsson, E., 1996. Theory and practice of ITQs in Iceland privatization of common fishing rights. *Marine Policy* 20 (3), 269–281.
- Eythórrsson, E., 2016. A milder version of ITQs? Post-ITQ provisions in Norway's fisheries. In: Cullenberg, P. (Ed.), *Fisheries Access for Alaska—Charting the Future: Workshop Proceedings*. Alaska Sea Grant, University of Alaska Fairbanks, AK-SG-16-02, Fairbanks, pp. 145–148. <http://dx.doi.org/10.4027/faacfwp>.
- Fina, M., 2011. Evolution of catch share management: lessons from catch share management in the North Pacific. *Fisheries* 36 (4), 164–177.

- Foley, P., Mather, C., Neis, B., 2013. Fisheries Allocation Policies and Regional Development: Successes from the Newfoundland and Labrador Shrimp Fishery. The Harris Centre, Memorial University.
- Foley, P., Mather, C., Neis, B., 2015. Governing enclosure for coastal communities: social embeddedness in a Canadian shrimp fishery. *Marine Policy* 61, 390–400.
- Gibbs, M.T., 2009. Individual transferable quotas and ecosystem based fisheries management: it's all in the T. *Fish and Fisheries* 10 (4), 470–474. <http://dx.doi.org/10.1111/j.1467-2979.2009.00343.x>.
- Gilmour, P.W., Day, R.W., Dwyer, P.D., 2012. Using private rights to manage natural resources: is stewardship linked to ownership? *Ecology and Society* 17 (3), 1. <http://dx.doi.org/10.5751/ES-04770-170301>.
- Grafton, R.Q., Arnason, R., Bjorndal, T., Campbell, D., Campbell, H.F., Clark, C.W., Connor, R., Dupont, D.P., Hannesson, R., Hilborn, R., Kirkley, J.E., Kompas, T., Lane, D.E., Munro, G.R., Pascoe, S., Squires, D., Steinshamn, S.I., Turriss, B.R., Weninger, Q., 2006. Incentive-based approaches to sustainable fisheries. *Canadian Journal of Fisheries and Aquatic Sciences* 63 (3), 699–710.
- Hannesson, R., 2006. *The Privatization of the Oceans*. MIT Press, Cambridge.
- Hartley, M., Fina, M., 2001. Changes in fleet capacity following the introduction of individual vessel quotas in the Alaskan Pacific halibut and sablefish fishery. In: Shotton, R. (Ed.), *Case Studies on the Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership*. FAO, Rome.
- Helgason, A., Pálsson, G., 1997. Contested commodities: the moral landscape of modernist regimes. *Journal of the Royal Anthropological Institute* 3, 451–471.
- Herrmann, M., Criddle, K., 2006. An econometric market model for the Pacific halibut fishery. *Marine Resource Economics* 21 (2), 129–158.
- Igoe, J., Brockington, D., 2007. Neoliberal conservation: a brief introduction. *Conservation and Society* 5 (4), 432–449.
- IPHC, 2015. IPHC letter to NPFMC of May 26, 2015. June 2015 meeting, Agenda Item C2 BSAI PSC Limits. Available at: http://www.iphc.int/documents/bycatch/IPHC2NPFMC_PSClimitJune2015b.pdf.
- Jentoft, S., 2007. In the power of power: understanding aspects of fisheries and coastal management. *Human Organization* 66 (4), 426–437.
- Knapp, G., Lowe, M., 2007. *Economic and Social Impacts of BSAI Crab Rationalization on the Communities of King Cove, Akutan and False Pass Report prepared for Aleutians East Borough, City of King Cove ISER Publication, University of Alaska, Anchorage*. Available at: http://www.iser.uaa.alaska.edu/people/knapp/personal/pubs/Knapp_&_Lowe_AEB_Crab_Rationalization_Final_Report_November_2007.pdf.
- Knapp, G., 2006. *Economic Impacts of BSAI Crab Rationalization on Kodiak Fishing Employment and Earnings and Kodiak Businesses. A Preliminary Analysis*. ISER Publication, University of Alaska, Anchorage. Available at: http://www.iser.uaa.alaska.edu/people/knapp/personal/Knapp_Kodiak_Crab_Rationalization_Preliminary_Report.pdf.
- Langdon, S.J., 2008. The community quota program in the Gulf of Alaska: a vehicle for Alaska native village sustainability? In: Lowe, M., Carothers, C. (Eds.), *Enclosing the Fisheries: People, Places, and Power: American Fisheries Society Symposium 68*. American Fisheries Society, Bethesda, MD, pp. 155–194.
- Longo, S.B., Clausen, R., Clark, B., 2015. *The Tragedy of the Commodity: Oceans, Fisheries and Aquaculture*. Rutgers University Press.
- Lowe, M., Carothers, C. (Eds.), 2008. *Enclosing the Fisheries: People, Places, and Power*. American Fisheries Society, Symposium 68. Bethesda, MD.

- Macinko, S., Bromley, D., 2002. *Who Owns America's Fisheries?* Island Press, Washington, DC.
- Macinko, S., Bromley, D., 2004. Property and fisheries for the twenty-first century: seeking coherence from legal and economic doctrine. *Vermont Law Review* 28 (3), 623–661.
- Mansfield, B., 2011. 'Modern' industrial fisheries and the crisis of overfishing. In: Peet, R., Robbins, P., Watts, M. (Eds.), *Global Political Ecology*. Routledge, New York, pp. 84–99.
- Matulich, S.C., Clark, M., 2003. North Pacific halibut and sablefish IFQ policy design: quantifying the impacts on processors. *Marine Resource Economics* 149–166.
- McCay, B.J., 2004. ITQs and community: an essay on environmental governance. *Review of Agricultural and Resource Economics* 33 (2), 162–170.
- McCormack, F., 2012. The reconstitution of property relations in New Zealand fisheries. *Anthropological Quarterly* 85 (1), 171–201.
- Melnychuk, M.C., Essington, T.E., Branch, T.A., Heppell, S.S., Jensen, O.P., Link, J.S., Smith, A.D., 2012. Can catch share fisheries better track management targets? *Fish and Fisheries* 13, 267–290.
- NOAA Fisheries Service, 2010. NOAA Catch Share Policy. Silver Spring, MD. Available at: http://www.nmfs.noaa.gov/sfa/management/catch_shares/about/documents/noaa_cs_policy.pdf.
- NOAA Fisheries Service, 2014. Report on Holdings of Individual Fishing Quota (IFQ) by Residents of Selected Gulf of Alaska Fishing Communities 1995–2014. https://alaskafisheries.noaa.gov/sites/default/files/reports/ifq_community_holdings_95-14.pdf.
- NOAA Fisheries Service, 2016. Changes in Halibut Quota Share Holdings between Issuance and Currently Issued. Juneau, Alaska <https://alaskafisheries.noaa.gov/sites/default/files/reports/16ifqcompare.pdf>.
- NPFMC, December 28, 2010a. Executive Summary: 5 year Review of the Crab Rationalization Program for Bering Sea Aleutian Island Crab Fisheries, pp. 1–24 Available at: http://www.npfmc.org/wp-content/PDFdocuments/catch_shares/Crab/5yearSummaryCrab911.pdf.
- NPFMC, 2010b. Review of the Community Quota Entity (CQE) Program under the Halibut/Sablefish IFQ Program. Final report. Available at: <http://www.npfmc.org/wp-content/PDFdocuments/halibut/CQEREport210.pdf>.
- NPFMC, April 2015. Workplan for the 10-year Review of the Bering Sea/Aleutian Island Crab Rationalization Program Report to the SSC.
- NPFMC, October 2016. Twenty Year Review of the Halibut/Sablefish Individual Fishing Quota Management Program. Agenda Item C6.
- NPR, November 4, 2015. The Less Deadly Catch. Planet Money: Episode 661 Available at: <http://www.npr.org/sections/money/2015/11/04/454698093/episode-661-the-less-deadly-catch>.
- Olson, J., 2011. Understanding and contextualizing social impacts from the privatization of fisheries: an overview. *Ocean and Coastal Management* 54 (5), 353–363.
- Ostrom, E., 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.
- Pauly, D., 2008. Agreeing with Daniel Bromley. *Maritime Studies* 6 (2), 27–28.
- Pinkerton, E., Davis, R., 2015. Neoliberalism and the politics of enclosure in North American small-scale fisheries. *Marine Policy* 61, 312–313.
- Pinkerton, E., Edwards, D., 2009. The elephant in the room: the hidden costs of leasing individual transferable fishing quotas. *Marine Policy* 33, 707–713.
- Pinkerton, E., 2013. Alternatives to ITQs inequity-efficiency-effectiveness trade-offs: how the lay-up system spread effort in the BC halibut fishery. *Marine Policy* 42, 5–13.
- Reedy, K., Maschner, H., 2014. Traditional foods and corporate controls: networks of household access to key marine species in southern Bering sea villages. *Polar Record* 50, 364–378.

- Rieser, A., Watling, L., Guinotte, J., 2013. Trawl fisheries, catch shares and the protection of benthic marine ecosystems: has ownership generated incentives for seafloor stewardship? *Marine Policy* 40, 75–83.
- Rowley, S., April 19, 2016. How Dwindling Fish Stocks Got a Reprieve. *New York Times*. Available at: http://opinionator.blogs.nytimes.com/2016/04/19/how-dwindling-fish-stocks-got-a-reprieve/?_r=0.
- Shotton, R. (Ed.), 2001. Case Studies on the Allocation of Transferable Quota Rights in Fisheries. FAO, Rome. Technical Paper No. 411.
- Stewart, I.J., Martell, S., Leaman, B.M., Webster, R.A., Sadorus, L.L., June 2014. Report to the North Pacific Fishery Management Council on the Status of Pacific Halibut in the Bering Sea and Aleutian Islands and the Impacts of Prohibited Species Catch.
- Stoll, J.S., Holliday, M.C., 2014. The Design and Use of Fishing Community and Regional Fishery Association Entities in Limited Access Privilege Programs. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-F/SPO-138. Available at: <http://spo.nmfs.noaa.gov/tm/>.
- Sumaila, U.R., 2010. A cautionary note on individual transferable quotas. *Ecology and Society* 15 (3), 36–43.
- Szymkowiak, M., Himes-Cornell, A., 2015. Towards individual-owned and owner-operated fleets in the Alaskan halibut and sablefish IFQ program. *Maritime Studies* 14 (1), 1–19.
- Thébaud, O., Innes, J., Ellis, N., 2012. From anecdotes to scientific evidence? A review of recent literature on catch share systems in marine fisheries. *Frontiers in Ecology and the Environment* 10 (8), 433–437. <http://dx.doi.org/10.1890/110238>.
- Van der Woo, L., January 8, 2013. Sharecroppers of the Sea. *Seattle Weekly News*. Available at: <http://www.seattleweekly.com/2013-01-09/news/sharecroppers-of-the-sea/>.
- Van Putten, I., Boschetti, F., Fulton, E.A., Smith, A.D.M., Thebaud, O., 2014. Individual transferable quota contribution to environmental stewardship: a theory in need of validation. *Ecology and Society* 19 (2), 35. <http://dx.doi.org/10.5751/ES-06466-190235>.