



## Review

# Understanding and contextualizing social impacts from the privatization of fisheries: An overview

Julia Olson\*

Northeast Fisheries Science Center, National Oceanic and Atmospheric Administration, 166 Water St., Woods Hole, MA 02543-1026, USA

## ARTICLE INFO

### Article history:

Available online 19 February 2011

## ABSTRACT

Fisheries management around the world has experimented with regulations to promote privatization, in order to reach such multifaceted goals as ending overfishing and reducing economic inefficiencies. This review surveys a wide range of empirical experiences in different contexts around the world to help provide a fuller picture of potential and sometimes disparate consequences from privatization in general and new ways of organizing around fishing that can follow in the wake of such measures. Looking at the many different participants in the fishing industry—from crew, small-boat owners, to households and communities—as well as the diverse sociocultural contexts in which fishing takes place, enables a better understanding of who and what is impacted, how they are impacted, why and with what further consequences, such that communities come to be seen less oppositional to economy, but rather constituted by multiple scalar processes and by economic relations comprising different motivations and behaviors.

Published by Elsevier Ltd.

## 1. Introduction: contextualizing fisheries

What are the impacts on the lives of fishermen and the contexts in which they work and live from management regulations that privatize fishery resources? How do such impacts vary within and across different communities throughout the world? And how do the different ways in which such measures manifest themselves in fishing communities affect the attainment of such goals as the long-term sustainability of fisheries and fishing communities? Concerned with potentially unsustainable fishing practices linked both to over-exploitation of resources and economic inefficiencies generated by overinvestment, fisheries managers around the world have commonly pointed to the “open-access” status of fish and experimented with regulations that promote privatization or rationalization of fishing rights, including such measures as limited access, quotas such as individual transferable quotas (ITQs), and permit leasing and stacking. Dramatic examples, such as the end to

the extreme “race-to-fish” derby in the Alaskan halibut-sablefish fishery after ITQs, point to the kinds of positive changes expected to result from privatization. The assumption, however, that behind this success is a universal propensity to maximize profits or otherwise self-interested behavior by individuals is belied by examples across space and time that show the particularities of economic practices.<sup>1</sup> Such practices can be grounded in culturally constructed values to maintain livelihoods in families and communities, for example, such that what matters is less the property institution per se than more broadly “the social and political arrangements and institutions that accompany privatization and that affect who gets access to what” (McCay, 1992, p. 201).

Yet for fisheries management in particular, this debate over privatization has often been characterized as one pitting economic efficiency versus culture and community, in the wake of apparent failures of top-down management. Market-based approaches are seen as promoted by those who consider owners the “legitimate

*Abbreviations:* CDQ, Community Development Quota (Alaska, United States); CQE, Community Quota Entity (Gulf of Alaska, United States); EEZ, Exclusive Economic Zone; GRT, Gross registered tons; IFQ, Individual fishing quota; ITQ, Individual transferable quota; NOAA, National Oceanic and Atmospheric Administration (United States); PEI, Prince Edward Island (Canada); QMS, Quota management system (Australia); SCOQ, Surf clam and ocean quahog fishery (Mid-Atlantic, United States); SETF, South East Trawl fishery (Australia); TAC, Total allowable catch; TURFs, Territorial use rights in fisheries.

\* Tel.: +1 508 495 2114; fax: +1 508 495 2054.

E-mail address: [julia.olson@noaa.gov](mailto:julia.olson@noaa.gov).

<sup>1</sup> A long tradition of work in the social sciences has sought to understand the different ways that people using common-pool resources have avoided a “tragedy of the commons” by, for example, successfully self-regulating access or appropriation of resources. Though space does not permit a full review, see the seminal works of McCay and Acheson (1987) and Ostrom (1990), fishery-specific examples by Pinkerton (1989), and a more recent overview by Agrawal (2003). More generally, a diverse sampling of work from different disciplines that has explored the variety of meanings that inhere in different economic practices includes Escobar (2005), Granovetter (1992), Leyshon (2005), Mackenzie et al. (2007), Mansfield (2004) and St. Martin (2006).

stakeholders in the fishery, in whose interest the fishery should be managed”, in contrast to community-based or co-management approaches, which “view the fishery as a cornerstone of the coastal economy, and of coastal life in general” (Copes and Charles, 2004, p. 171). While these opposing views to management are both critical of top-down, state-led resource management, more recently scholars have begun to explore the degree to which market and community-based approaches may in some cases share other motivating assumptions than their critique of state-led management. Mansfield (2004), for example, has argued that proponents within both approaches have often based their arguments on an incorrect view that sees “culture” rich in communities and absent in other domains, assuming in turn that secure property rights—whether individual or community-based—are necessary to rein in what would otherwise be these spaces of self-interested, “culture-free” economic rationality. Rather, she argues, the role of property is overstated when it is regarded as “deterministic” and when it ignores the “larger-scale processes” to which people’s behavior is articulated (Mansfield, 2001), including, for example, political-economic and sociocultural relations and contexts. Similarly, other authors have pointed to the diverse economies within which fishing operates, such that communities are not so much oppositional to economy, but constituted by multiple scalar processes and by economic relations comprising different motivations and behaviors (Olson, 2006, 2010; St. Martin, 2007).

A review and comparative analysis of the different empirical experiences of privatization of fishing resources thus provides a better sense of its wide-ranging and sometimes disparate consequences, helping point to the important role of context and the social relations through which privatization is constituted.<sup>2</sup> While many scholars have rightly stressed the many negative impacts from privatization apparent in particular cases—such as employment loss, decreased income, changing relations of production, concentration of capital and market power, and loss of cultural values—privatization does not always meet its stated and predicted purposes, such as reducing overcapacity (nor do its effects always stay within the dictates of provisions enacted to reduce negative impacts). More specifically, property institutions can be conceived in culturally specific ways for culturally specific goals, such as achieving particular notions of equity or opportunity (Olson, 2006). For example, although the recent development of sector legislation in the US has arguably been more closely aligned with the neoliberalization of fishing and concomitant goals like capacity reduction, such measures have also opened up a space for more creative responses to environmental or regulatory crisis for sectors that organize around their own goals, such as preserving fishing licenses for young fishermen in a community through permit banks and other new policy instruments.<sup>3</sup> Yet an important

uncertainty is less that people do try to rework such policies to fit their own circumstances, but rather if and when this is effectively discouraged by particular policy formulations given particular contexts, for some are surely “more supportive of community resilience than others” (Clay and Olson, 2008, p. 150). While neoliberal logics are by no means inevitable, neither are they unimportant (Castree, 2008a), for the inherent “creation of a privileged constituency” through privatization contains its own structuring dynamic through relations that are as much political as they are cultural, social, and economic (Hersoug et al., 2000). Thus while recent efforts have stressed the need for greater attention to regulatory design in general (Meridian Institute, 2010), empirical examples refocus such concern to include context; designs are not fully transferable, so to speak, but are constructed and experienced in particular places by particular people. Of course, it is difficult to tease apart the different threads of any particular case, and as Castree (2008b) has noted more generally about drawing overarching conclusions from work on neoliberalism, a fully comparative review can be complicated by differences in method and focus. Nonetheless, real-life examples surely demonstrate the need to understand the complexity of social relations involved in fishing, offering lessons learned and suggesting directions for future research, with impacts and reciprocal effects more apparent when fisheries, resources, and communities are seen together through the diverse and multi-scalar social relations that constitute them.

## 2. Putting impacts into context

### 2.1. Changes in fishery structure

Efforts to privatize fisheries have drawn on dominant, theoretical explorations of private property rights, which have predicted increasing economic efficiency and stewardship from an ownership stake in fisheries—positing, for example, increased flexibility and profitability, stabilized season length, and increased safety. In many cases, privatization measures effectively decrease the number of vessels participating in a fishery and increase consolidation among firms, changes which are often intended in order to increase efficiency and may be actively sought by multi-vessel owners who wish to reduce their operating costs. Such changes, however, are not always evenly distributed and may have further impacts beyond the firm itself, for when these gains occur, they accrue primarily to permit-holders and boat owners remaining in the fishery. Yet there are many others involved in fishing who are not only impacted differently by privatization, but may also have closer interactions with the resource base than the owner: for example, skipper-operators (who may or may not be the owner); crew members; important shore support, such as net repair, vessel maintenance, and accounting (and who in small-scale enterprises can be family members of owners or operators); transporters, dealers, wholesalers, and retailers; processors; as well as other social relations that help sustain fishing, such as community and family relations. There are also differences within such groups, based on capital investment, years in the fishery, position in the life cycle, commitment to fishing, and so on. Thus while decreasing fishing capacity and promoting long-term stewardship may be primary rationales behind privatization, they may be confounded depending on the context within which the fishery operates and by the strength of diverse participants with multiple goals and motivations.

In the ocean quahog and surf clam fishery of the Mid-Atlantic US (SCOQ), a “significant reduction” in vessel numbers came about due to the decisions of owners of multiple vessels to merge harvesting operations as well as from those who remained in the fishery by leasing out their quota rather than fishing their own vessel (Brandt,

<sup>2</sup> Ranging from collections based on ethnographic fieldwork in fishing communities affected by such changes (Lowe and Carothers, 2008), to those which consider the nature of property relations more broadly (Mansfield, 2007a), an extensive collection of critical research generated in the wake of the increasing turn to more market and/or property-based regulation has detailed the ways in which privatization of resources can affect the livelihoods and lives of resource-users. With notable exceptions (McCay 1995, 2004), this literature has primarily been case studies that reveal the diversity of contexts, policies, and consequences of privatization, rather than cross-comparative syntheses.

<sup>3</sup> NOAA’s draft catch share policy seeks to encourage “the voluntary use of well-designed catch share programs in appropriate fisheries” and defines a catch share “as a generic term used to describe fishery management programs that allocate a specific percentage of the total allowable fishery catch or a specific fishing area to individuals, cooperatives, communities, or other entities” [[http://www.nmfs.noaa.gov/sfa/domes\\_fish/catchshare/index.htm](http://www.nmfs.noaa.gov/sfa/domes_fish/catchshare/index.htm), accessed June 3, 2010]. For a specific look at several New England groups experimenting with community-based sectors and permit banks, see Holland (2007).

2005, p. 21). Concomitant with such consolidation was a decrease in employment, a commonly noted occurrence after the adoption of ITQs. Employment reductions have also been noted, for example, in the British Columbia halibut fishery, where numbers of fishermen decreased 32% from both reductions in the size of crew on remaining vessels and loss of employment from displaced vessels (Casey et al., 1995, p. 225); the Demersal North Sea Fisheries of the Netherlands, where employment fell 30% (from 2750 to 1920 crew members) between 1983 and 1997 (Davidse, 2001, p. 20); and the Alaskan Pacific halibut fishery, where an estimated number of crew decreased from 10,500 to 3,200 between 1994 and 1999 (Hartley and Fina, 2001, pp. 204–205). Employment numbers in the Mid-Atlantic surf clam fishery dropped by nearly 80% between 1990 and 1999 (from 155 to 34 employed crew members) as the industry consolidated (Brandt and Ding, 2008, p. 744), despite indications that labor was already rotating among boats (McCay et al., 1995, p. 101). The SCOQ was the first ITQ fishery in the US, and in addition to the primary objective of restoring the fishery stock, the new ITQ regulations also sought specifically to “promote economic efficiency” (Final Rule, 1977). Yet as McCay has more recently argued, these plans were formulated “with few restraints on ownership, transfer, and consolidation of quota shares” and “implemented in the context of an extremely over-capitalized fishery” (McCay, 2004, p. 165).

In New Zealand, however, while consolidation and concentration also followed in the wake of ITQs, capacity and overall employment levels in the fishing industry increased. The implementation in 1986 of the Quota Management System (QMS) system in New Zealand was purposely designed with high ownership limits on the order of 10–35% in order “to encourage deepwater fishery development and to maintain the pre-QMS history in which the largest 10 vertically integrated companies landed two-thirds of the fish” (Deweese, 2008, p. 50). By 1996, in the space of 10 years, continued concentration implied by the purchase of quota by existing firms resulted in “86% of total allowable commercial catch allocated as ITQ [being] allocated to the largest 12 companies (fishers) compared to 49% in 1986” (Stewart et al., 2006, p. 329). Yet unlike the SCOQ fishery, concentration and consolidation in the New Zealand case nonetheless coincided with greater full-time employment levels, increasing 9% in the catching sector and 44% in the processing sector between 1990 and 1995 (Batstone and Sharp, 1999, p. 183). Such results, particularly in processing, have been interpreted as evidence of positive impacts from privatization, where increasing employment is seen as “consistent with the rights-based model, viz. rights provide an incentive to add value to harvest” (ibid).

Yet mid-1970s New Zealand also saw explicit efforts by officials to develop what was a small-scale, inshore fishing economy into an export-based, offshore industry with policies that included loans for larger vessels, tax incentives for exports, and encouragement of foreign joint ventures for market expansion (Memon and Cullen, 1992, p. 157). Between 1987 and 1998, the domestic fishing capacity in New Zealand increased 43%, primarily through changes in the capacity of the offshore sector (Connor, 2001, p. 165). As Mansfield (2001, p. 393) has argued in the case of the Pacific groundfish fishery on the west coast of the U.S., changes wrought by political and spatial transformations coupled to explicit economic development policies complicate simple stories about the impact of property regimes:

By defining sovereignty over EEZs primarily in economic terms, extended jurisdiction has not only encouraged individual states to take active control over ocean territory, but has also become an additional incentive to use this territory for domestic economic development. Individual states now play a central role in determining how to use marine resources, even though this

role is not always recognized. In the case of the Pacific groundfish fishery, the new national territory and policies designed to control this territory actively transformed a small, nearshore fishery into a large and economically important industry dependent upon the resources of the 200-mile zone. Attention to the dynamics of state control over ocean space turns away from generalized accounts about the relationship between property regimes and socioenvironmental outcomes.

Moreover, overall increases in employment still leave unanswered questions about the initial impact of the QMS system. Most of the fishermen who exited after the implementation of the QMS system were small-scale fishers employing modest numbers of crew, many of whom continued to find employment in the fishing industry (Stewart et al., 2006, p. 334). What this does not take into account is that the management decisions had already eliminated “a potentially large number of small and part-time fishers initially, by not granting them permits” (ibid, 335); for example, a new definition of “commercial fisherman” instituted in 1983 may have eliminated 1500–1800 part-time fishermen from the QMS system (Connor, 2001, p. 152).<sup>4</sup> Such developments from inshore to offshore have corresponded with “measurable changes to some traditional smaller fishing communities [...] For example, many of the smaller ports around New Zealand have seen a decline, whilst larger ports such as Nelson have expanded” (Gibbs, 2008, p. 30). Thus changes in employment levels in New Zealand take place in a context structured not only by property rights per se but also by economic development policies that encourage growth of and participation by particular kinds of fishermen.

The implementation of ITQs in the fisheries of Iceland presents another experience of consolidation coupled to capacity increases. Iceland saw “radical changes in the total number of quota holders, a reduction from 535 to 391 (27%), from 1984 to 1994” (Pálsson, 1998, p. 283). The reduction in quota holders corresponds to increasing concentration in the fishery: the percentage of ITQs in Iceland owned by 70% of the smallest holders decreased during this period from 20% to 10%, leading to “a continual increase in the level of inequality and a growing concentration of ITQs at the top” (Pálsson and Helgason, 1995, p. 130). In the Icelandic case as well, however, employment numbers on vessels actually increased, though shore-side employment decreased. Between 1984 and 1992, the number of fishermen working onboard a fishing boat increased 23%, or 1300 people, from “growth of the labour-intensive small boat fleet” that was outside ITQ regulation and a “growing percentage of frozen fish products processed on board” factory trawlers, operated by companies selling their quota to other fishermen (Eythórsson, 1996, p. 217). Yet, at the same time, “the number of workers employed in the land based fishing industry had reduced by one third, from approximately 10,500 to 7000 employees” (ibid). Moreover, while the number of quota holders decreased, capacity—in terms of GRT and engine power—increased (Eythórsson, 2000, p. 487). The reasons in this case also have to do with the particular combination of an increase in larger vessels that could fish in international waters while they leased their quota, and the movement of small vessels into a non-quota inshore fishery (Eythórsson, 1996, p. 215). Attending to how effort displaced from the quota-regulated fishery increased capacity in other fisheries, but negatively impacted shore-side employees, provides a fuller accounting of social and ecological impacts. Such a focus on the

<sup>4</sup> It is also unclear whether the granting of native Maori rights to a portion of the fishery resource in 1992 has had an impact on employment levels in the fishing industry, given that ownership rights have been held in trust. See Memon and Cullen (1992) and Bourassa and Strong (2000) for descriptions of the circumstances surrounding Maori claims and treaty negotiations.

shore-side underscores the potential for additional negative impacts on fishing families who could not benefit from the increased employment on the water, or who counted on shore-side income to supplement earnings from fishing.

Consolidation is not an inevitable result of privatization, however, when financial factors discourage exit from a fishery, or when fishermen attach other values to continuing in the fishery. For example, in the Australian South East Trawl fishery, the advent of ITQs came during a time of high unemployment, as well as entry limitations in other fisheries, such that fishermen had few other employment possibilities, making “the opportunity cost of remaining in the industry” and “the opportunity cost of maintaining capital in the fishery” low (Pascoe, 1993, p. 399). This low “salvage value” for vessels and quotas, together with uncertain future fishing possibilities, thus convinced many fishermen to stay in the fishery and has kept the overall number of vessels relatively constant since ITQs began (Connor and Alden, 2001, pp. 391–392). Low opportunity costs imply, moreover, that “If vessels are scrapped, the efficiency gains will be very small, and the social costs of loss of employment and local economic activity in regional coastal towns would not have to be large to tip the balance in favour of the status quo” (ibid: 396). Yet when the existence of alternative fisheries is key, their importance can stem not only from where best to seek a return on investment, but also from cultural values motivating fishermen to keep fishing despite financial incentives to leave, which prominent notions in the literature such as job satisfaction, “a confluence of personal, situational and socio-cultural community values” (McCay, 1995, p. 7), help explain. Ethnographic work conducted in one community in Australia that participates in SET fisheries, for example, found that the home fleet was relatively stable because the locale “lends itself to a variety of fishing strategies and to many opportunities for switching between strategies. These characteristics have contributed to the survival of the fleet, to complex patterns of cooperation and competition within and between fisheries”, while limited entry and quota management “are understood by many fishers to penalize those who diversify in the interests of sustaining personal economic viability and a lifestyle to which they are committed” (Dwyer and Minnegal, 2006, p. 6).<sup>5</sup>

Such commitments and values vary not only from place to place but also within places as well, creating dynamic potentials for change. Fisheries management in Norway, for example, has been associated with other issues than fishing per se, such as promoting income equality and maintaining rural settlements and employment opportunities, especially in the North, such that state involvement is less about the failure of resource-users than about the multiple goals with which management has been entrusted. When Norway instituted a system of individual, non-transferable vessel quotas (IFQs) in 1990 (Holm and Rånes, 1996), many coastal fishermen viewed such quotas as fair and equitable because they guaranteed fishermen a similar income rather than because of any association with property rights as such (Olson, 1997). This speaks to the distinction that the Norwegian anthropologist Marianne Gullestad has made between the culturally different senses of equality-as-sameness and equality-as-opportunity, where

“equality in the USA means equal opportunity (i.e. to become different), *likhet* in Norway emphasizes similarity in the process of social life as well as similar results. In the Norwegian context, differences between people are easily perceived as unwanted hierarchy and as injustice” (Gullestad, 1992, p. 185). Yet while many fishermen saw quotas as equitable because of a comparative income equality among similar fishermen, as one fisherman without a boat himself or a family boat to inherit said, “the boat quota is only ‘equality’ for those who have capital in a boat already” (Olson, 1997, p. 127). Quotas also favored professionalized, full-time fishermen, and by focusing on the production side of fishing (rather than the many other aspects of fishing) excluded women, for example, despite their crucial role in many household enterprises (Munk-Madsen, 1998). The tie of welfare state benefits to official recognition of one’s labor convinced some women to press for official recognition and registration as full-time fishers, leading them “to argue over the space and place of fishing, changing the implicit rules: that fishing involved more than being at sea, while being at sea involved more than just men (Olson, 1997, p. 154).

But comparative income is not strictly a numeric accounting, for it too depends on a host of situational factors based in community, shared values, and identity as a coastal fisherman, for as another fisherman explained,

“For those who have new boats, then it’s very difficult to manage with such a small quota. But you can’t compare from boat to boat and get some kind of system which is fair. They go according to length now; my brother has a boat which is one meter longer than mine, so he has a bigger quota. His boat was expensive, but he had another boat which he sold and plus he doesn’t have a family to support. A lot of fishers are in heavy debt with expensive boats, and many have cheaper boats, but then you can’t distribute the quota after that either. What if someone has fished his whole life and paid for his boat—if the quota is made according to debt, then he’d get a lot less which isn’t fair either. Especially if he has worked hard his whole life, he deserves to continue fishing even more so” (Olson, 1997, pp. 136–137).

This way of figuring fairness is, as Anita Maurstad has argued, “much broader than in more capitalist-oriented enterprises” (2000, p. 42). This particular fisherman offered as a solution having both a quota attached to the boat, and a quota attached to fishermen regardless of their capital ownership, an idea that has been discussed in the Norwegian context as a means to encourage use of labor in the small-scale fleet rather than capital expansion (Brox, 1996). Despite the value attached to maintaining traditional and equitable access and livelihoods, however, the intervening years since the passage of boat quotas has seen the emergence in Norway of “a group of privileged rights holders” that has changed the dynamics of the management system, precisely because the “closing of a commons is not only an economic transaction, it is even more a transfer of political power” (Hersoug et al., 2000, p. 328). This shift away from “labour intensive, locally based and loosely coupled fishing operations” where “fishing enterprises are no longer regarded as producers of many products, like fish, labour and social benefits, but mainly as producers of added economic value” has resulted in “strong pressures to increase efficiency” such that Norwegian fishing vessels have seen a near tripling in “long-term liabilities” between 1995 and 2001 (Johnsen, 2005, p. 491).

## 2.2. Structuring dynamics

In such fisheries as described where industry structure is changing in the wake of privatization, firms with fewer capital reserves tend to be disadvantaged in developing markets for buying

<sup>5</sup> Leasing rather than selling can also be affected by national taxation policies: “In Tasmania, retiring fishers appear less inclined to sell their quota now than in the past, and tend to retain quota when they reduce their fishing activity. A significant reason for this behaviour is the avoidance of capital gains tax” (van Putten and Gardner, 2010). Similar tax considerations affect the degree to which retiring fishermen tend to lease rather than sell quota in the British Columbia halibut fishery, as well as difficulties that Aboriginal fishermen have in retaining or acquiring licenses because they cannot borrow funds against Indian reserve property (Butler, 2008).

or leasing quota, or when borrowing to invest in vessels or other capital. The inclusion of risk in the price of credit implies that those who have to borrow more in such endeavors “stand seriously exposed to continued stochasticity in annual allowable harvests. If quota buyers bought a number of shares and are now carrying debt-service obligations, they are seriously exposed if fish stocks fail to recover, or if they recover more slowly than initially imagined” (Bromley, 2005, p. 224). In addition to financial vulnerability, access to credit may also vary for “when ITQs are freely tradable, corporations and large investors in the fisheries sector may use their financial power to buy up large aggregations of quota, thereby concentrating a substantial share of fishery access rights in their hands. They may assign their quota holdings to larger vessels which they operate directly, or lease out quota (with or without boats) to independent fishers, or provide loans to fishers to buy boats and quota—in all cases usually on condition that the fish caught be delivered to their plants” (Copes and Charles, 2004, p. 176).

In Iceland, for example, many smaller operators received such small quotas that they had to lease more or sell what they had, while larger enterprises could in turn better build up such rights through “their ready access to capital through the Icelandic banking system, something that is less available to the smaller operators. The larger companies are generally vertically integrated businesses that own two or more vessels. Their approach to ‘business’ and ITQs is very different to that of the smaller operators” (Pálsson and Helgason, 1995, p. 134). Similar viability issues may have played a role in the Australian Southern Bluefin Tuna fishery, in which exiting vessels received considerably lower quota than those who remained, coupled with a geographic change in resource availability that affected some more than others, as well as the existence of alternative fisheries to which they could switch (Campbell et al., 2000). Surveys of those exiting ITQ fisheries in New Zealand pinpoint “increased compliance costs” as the strongest influence on leaving, where the predominantly small-scale fishermen exiting “expressed reluctance to exit and some frustration in their inability to expand their operations to enable an acceptable level of profitability” (Stewart and Walshe, 2008, p. 128). Small-scale fishers there found it difficult to borrow for additional quota because “banks were unwilling to accept quota as collateral and therefore would not lend against it” whereas “Large companies could of course borrow against other assets and moved to buy up quota from small scale operators” (Memon and Cullen, 1992, p. 161). McCay et al. (1995, p. 102) also found such dynamics tend “to build upon the pre-existing structure of dominance by a few firms. By 1995, nine firms, including two large processors, controlled 82% of the ITQ for surf clams and 10 firms controlled approximately half of the ITQ for ocean quahogs.” Further, they write that consolidation in the SCOQ fishery “required investment. Larger owners reported having to invest large sums to purchase or lease ITQs in order to maintain supply or market position. In their calculations, this investment was equivalent to capital investment and thus ‘capital stuffing’ in quotas may be happening here as in New Zealand” (ibid., p. 103).

Vessels that are in a better financial position are not only better able to afford higher lease costs, but can eventually bid up the cost of leasing quota even further (Pinkerton and Edwards, 2009, p. 709). In the case of the Tasmanian rock lobster fishery, fishermen with smaller operations who had not bought extra licenses increased the market demand for leased quota, leading to increased leasing costs (Bradshaw, 2004, p. 106). Moreover, “the long-term viability of fishers who depend on lease quota favours large-scale operations, which creates a barrier to entry into the fishery” (van Putten and Gardner, 2010). As Stewart et al. (2006, p. 331) write, “Historically major quota holders report higher rates of return than for minor quota holders, suggesting they would be prepared to pay

higher prices for quota [...which] could potentially make acquisition uneconomic for some minor quota holders [...] minor fishers are likely to be price takers.” A better financial position or access to multiple vessels may also provide advantages in hiring crew members, putting single-boat owners at a disadvantage where a fishery has a mix of such ownership strategies. Single-boat owners may also be dependent on larger interests for access to waterfront and other port infrastructure in some places, a dependence which could further weaken their position with increasing fleet consolidation as well as increasingly affect waterfront access for other users. Smaller operations may be disadvantaged in gaining information about potential quota sales or leasing arrangements; indications “that larger fishing businesses will have an initial advantage over smaller operators in knowledge about system rules, in obtaining information about quota availability, and in arranging transactions” seem to have been borne out in the early period of the Australian SETF, for example (Connor and Alden, 2001, p. 393). In general, interests with multiple vessels may be able to negotiate for lower prices for insurance and other business costs that can be purchased in bulk, further consolidating advantages of scale. Finally, in Iceland, “Facing a choice between quitting fishing for good or continuing fishing with leased quotas, in a situation of poor employment alternatives, fishermen owners of inshore vessels have been willing to pay astonishingly high leasing prices. With a large number of vessels with either too little or even no quota, the demand for quota far exceeds supply. It seems therefore, at least in a transitory period, that high quota prices may be generated by the very existence of excess catching capacity, a paradoxical situation in terms of the ITQ model” (Eythórsson, 1996, p. 218).

Even ITQ programs that have been designed with other social goals in mind can still be subject to market pressures for consolidation. For example, despite measures to protect the owner-operator fishery in Nova Scotia’s under-65’ dragger ITQ by limiting transferability and restricting ownership levels, the ITQ systems “created a very narrow community of vessel owners who became ITQ owners. Their interests became the weightiest, and there was no explicit representation from fish plant workers, community leaders, or other who might be affected by free transferability of quotas” (McCay, 2004, p. 166). Similarly, despite provisions to maintain owner-operated fishing vessels in the Alaskan halibut and sablefish IFQ, the number of vessels dropped by over half and the number of permit-holders by nearly one-fourth: “An unintended consequence of this provision was that cooperatives and communities, as well as businesses, are not allowed to hold quota share, making it harder for groups of fishers and communities to forestall the movement of quota share—and hence fishing opportunities—out of coastal fishery-dependent communities” (ibid., p. 167). This not only led to an impetus for community quotas in this fishery (Carothers et al., 2010), but more generally raises the question of representation and definition of community, a point to which I return in the final section.

### 2.3. *Changes in income and working conditions*

In addition to decreasing income, leasing prices that become a large cost to fishermen can also result in debt dependency and further changing structural relations of production. Together with pressures for consolidation, this can also reduce the bargaining power of many fishing participants at the same time that larger firms may increasingly have greater market power, which could lead to control of the prices of landed fish, of leased quotas, or of crew remuneration (NRC, 1999). In Iceland, for example, leasing prices for cod quotas during 1991–1995 were more than half of average cod landing prices; smaller firms without viable quota

became dependent on larger firms for leased quota (Eythórsson, 1996, pp. 216, 218). In some arrangements, the operating fishermen had to deliver their catch to the company's processing plant (Helgason and Pálsson, 1997, p. 457). Such new relations of production have generated controversy in Iceland because they violate cultural norms concerning fairness and equity: "boat owners without quota (the 'serfs') are granted access to the fishing stocks, the equivalent to the medieval estate, on the prerequisite that they hand over their catch to processing plants (the 'lords') in return for a fixed price. Fishers frequently argue that excessive quotas, those that are not used by quota holders, should not be leased for money but returned to a common pool and redistributed to other boat owners who have more use for them" (Pálsson, 1998, pp. 283–284).

Particular cultural norms, such as ideas about fairness and equity, can also interact with political-economic relations to create other forms of debt dependency. In the British Columbia halibut fishery, difficulties in violating norms of equity embodied in the share system—where crew were "co-venturers" along with owners—has arguably resulted in market inefficiencies:

Many quota owners prefer to lease their quota out through a processor as a broker because the processor is in a better position to get the highest price and because, as several fishermen stated, they do not want to be 'guilted by other fishermen' about the high lease price they are asking. Similarly, many lessee fishermen do not wish to deal directly with the quota owner because of their hostility toward the high lease prices [...] Processors are brokers of most of the leases because they can afford to pay more up front, both because of their access to capital and because of their power in allocating fishing opportunity through control of a large amount of quota [...asymmetric information] confers market power to quota owners and to a lesser extent to the processors who buy up and reallocate quota leases. Processors may not charge a fee for this transaction, but the guaranteed delivery of the fish to them gives them leverage over the price of the catch. This may be an even more important form of market power (Pinkerton and Edwards, 2009, p. 709).

As McCay (1995, p. 6) writes, whether markets function as expected also depends on the number of participants and transactions, as well as how quota management systems are devised, cautioning further that many "equity preservation measures lose their effectiveness and may even be abandoned as operators find innovative means to get around the restrictions. It is also possible to argue, as was done for the US surf clam and ocean quahog ITQ system, that excessive concentration of shares would be adequately handled by monitoring the allocation of shares and working with agencies whose job it is to protect against monopoly formation. However, that too may be weak protection" (ibid., p. 10).

The dynamics of income negotiation is another important nexus through which changes in social relations are expressed. "When captains and crew are rewarded for their work through shares of the catch, the sharing formula often changes under ITQs reflecting the shift in power, so that the owner retains a larger portion of the total. There may also be a movement toward wages instead of shares" (McCay, 1995, p. 9). Such a movement towards wages has been documented in, for example, the Tasmanian rock lobster fishery (Bradshaw, 2004, p. 108), as well as reports from Alaskan (Fina, 2005, p. 318) and Canadian rights-based fisheries (Donkersloot, 2006). These pressures are not confined to buying quota but also concern leasing (whether in an ITQ system or not), for it is the competition for quota, whether bought or leased, that creates this dynamic: even when a firm is technically more efficient than another, "weakness" in negotiating labor arrangement with

crew "can affect its bargaining power on quota markets. The implication is that the most cost-efficient operators on quota markets will likely be those who, not only are the most efficient in terms of fishing operations, but also who have best been able to reorganise their internal structure, particularly as regards contracts between vessel owners and crews" (Guyader and Thébaud, 2001, p. 110).

Such changes can also result in changes in income. When fishing with leased quota in Iceland, fishing income of smaller boat owners was also reduced from 40–50% (Helgason and Pálsson, 1997, p. 457) and "speculative leasing transactions (kvótabrask) were in some cases undertaken in order to reduce wages" (Eythórsson, 2000, p. 488). Crew shares and crew incomes were found to have decreased in the mid-Atlantic surf clam and ocean quahog (SCOQ), Nova Scotian (McCay et al., 1995, pp. 101–102), and Icelandic fisheries (Eythórsson, 1996, p. 218). In these cases, the negative impact on crew income stems in part from leasing costs being passed on to crew, for example by decreasing the lay given to crew, or by taking out the cost of quota from catch value before shares are calculated. In contrast to earlier studies of the surf clam fishery (McCay et al., 1995), Brandt and Ding (2008, p. 744) found that crew income eventually increased with better vessel profitability, compensating for reduced shares but increasing "the mean amount of time vessels spent at sea." Alaskan Pacific halibut and sablefish ITQ fisheries also saw estimated payments more than double for remaining crew, due to fewer crew members working more trips (Hartley and Fina, 2001, pp. 204–205). Working longer hours, however, can result in diminished quality of life, especially when fishermen are no longer able to participate as much in family or community life or control daily decisions, as was found in the Nova Scotia (Binkley, 1989; McCay et al., 1995, p. 102). Whether increased income from a fishing trip can compensate for changes in social relations and daily life is an empirical question, though work focusing on quality of life, or "well-being," would suggest otherwise (Smith and Clay, 2010).

In the case of the British Columbia halibut fishery, Pinkerton and Edwards (2009, p. 711)<sup>6</sup> attribute changes in crew share to a diminished ability to negotiate working conditions: "[Crew] are now an unorganized surplus labor force (because so many crew jobs have been eliminated) hired at whatever the market will bear. They formerly got 10–20% of the catch value before ITQs and now get 1–5%. Whereas the value of the halibut fishery has increased by 25% between 1990 and 2007, the proportion of that value retained by the crew share has dropped by 73%." Firms that hire kin or neighbors in many cases have been less likely to pass such costs on to crew, whereas larger firms have been more likely to (McCay et al., 1995, p. 101). If indeed "the most cost-efficient operators on quota markets" (Guyader and Thébaud, 2001, p. 110) are those who do reorganize their labor contracts, the implication then is that measures that are designed ostensibly to reduce capacity or increase economic efficiency may do more than encourage marginal operations to exit but may in fact change the very forms of fishing, favoring a more industrial rather than kin or community-based approach. As St. Martin (2007, p. 536) has argued, privatization does not necessarily determine a particular course or class process given diverse economic relations that can be found in different communities, as he notes for New England groundfish

<sup>6</sup> While Pinkerton and Edwards (2009) have been criticized recently for inadequately citing their data sources and attending to individual incentives (Turris, 2010), their rejoinder (Pinkerton and Edwards, 2010) explains the use of anonymous ethnographic data sources and the importance of structural context for understanding decision-making, among other points, while (Davidson, 2010) notes the important difference between looking at the economic value of a fishery versus the economic viability of fishermen themselves.

fisheries, yet privatization may remove the barriers to accumulation from share systems, which have heretofore tended to limit capital mobility and thus embed capital in communities.

#### 2.4. Changes in fishing practices

A number of studies have documented a lengthening of the fishing season with the advent of different rights-based management, and the positive connection of season length to vessel profitability; examples include the Scotia-Fundy mobile gear fishery (DuPont and Grafton, 2000, p. 212), British Columbia sablefish and halibut fisheries (Grafton, 1996, p. S136), South Atlantic US Wreckfish ITQ (Gauvin et al., 1994, p. 111), TURFs (territorial use rights in fisheries) management in Chile for the gastropod loco and the Bering Sea and Aleutian Islands pollock fishery cooperative (Branch et al., 2006, p. 1657). The connection of season length to vessel safety, however, is less clear. A recent study on vessel safety found that accident rates in ITQ fisheries do not decrease, at least among those in which fishermen lease quota or have contractual agreements with other companies: “the expected safety benefits of IQs (e.g., reduced incentives to rush for fish or operate in poor conditions) may be negated if pressures from quota holders supersede the independent decision-making of vessel owners. This may have safety implications for the fisheries of Atlantic Canada, where owner/operator and fleet separation policies are being undermined by so-called ‘trust agreements’ in which processors essentially pay for licenses and vessels on behalf of small-scale vessel owners and subsequently exercise some control over their fishing activities” (Windle et al., 2008, p. 707). Lack of control, especially over important decisions such as when to fish, can thus negatively impact both safety-at-sea and quality of life for fishermen, fishing households, and fishing communities.

Some analysts have argued that crew on boats with no stake in fishery, such as in a wage-based fishery or one with a corporate ownership structure, will also have little incentive to conserve or practice sustainable fishing (Phillips et al., 2002). The reasons have to do with who is actually fishing, and with the incentive structure in a fishery characterized by perceived inequity. “Many of the second generation of fishers under quota management are likely to lease rather than own an entitlement to the resource. It may be debatable whether ownership contributes to compliance, co-management and sustainable practices—and these may be possible without ownership—but it is undeniably the case in the Tasmanian commercial rock lobster fishery that fewer owners are on the water to exercise any supposed sustainability ethic” (Bradshaw, 2004, p. 108). Similarly, others (Macinko and Whitmore, 2009) argue it is the underlying hard TAC that enables catch shares to manage overall landings, not incentives stemming from ownership. Despite a positive correlation between ITQs and the avoidance of fishery collapse (Costello et al., 2008), Chu (2009, p. 217) argued that “[t]he implementation of ITQs does not translate into consistent changes in stock biomass” and Essington (2010, p. 756) argues that at best “there was little evidence for higher population levels, lower exploitation intensity, or increased landings. These findings imply that in North American fisheries, the primary effect of catch share programs with respect to the ecological responses examined here has been to make fisheries more predictable, whereby fleet behavior and population status were more consistent.”

Anita Maurstad (2000) has introduced the concept of “capacity in use” to express variations in “productive logic” among small-scale fishermen in Northern Norway in which “social and material control mechanisms” can result in actual harvests below what the vessels could actually catch. Such mechanisms can be related to a fishermen’s position in the life cycle or other exigencies: “Fishers with low debts—young ones with inherited capital and equipment

and older ones who had paid off their loans—tended to have a lower fishing intensity than their counterparts with higher debts. People with long experience in fishing often had low debts [...]. As newcomers, fishers worked hard to secure their debts, but as debts declined, they reduced their effort [...]. In addition to material needs such as debts, fishers take social needs like industriousness and honor into consideration when deciding about effort” (ibid., pp. 41–42). However, when limited access and quota-based regulations made technical capacity, rather than capacity in use, the critical measure for assessing the need for further regulation, these social incentives and characteristics changed: “The number of fishers has decreased and those remaining are now occupied with catching a certain quota of fish. Furthermore, they take on many different strategies to increase their quota. Now, catch size can be predicted by boat size, unlike in the past. Fishers’ capacity in use has increased, and their technical capacity is becoming a real measure of their activities. Paradoxically, regulations now seem to be necessary to prevent them from using their capacity fully” (ibid., p. 45). Likewise, with the advent of privatization in native Alaskan villages, “Lifestyle fishermen utilizing fishing as a way to maintain current wealth levels from one season to the next [...] began to be subordinated to business fishermen (professional, profit-seeking fishermen) in the limited entry period”, supplanting previous cultural norms that were not only more egalitarian but also stressed “not getting ahead of your relatives” (Carothers, 2008, p. 68). To the extent that privatization engenders or furthers such characteristics thus has implications—some contradictory—for sustainability in the long-term. More generally, communities “characterised by inequality, productivity-sapping competitiveness, disunity, and other attributes of social dysfunction lack the necessary entrenchment of values and institutional mechanisms essential to successfully implementing sustainable patterns of use in fisheries and of other environmental resources” (Phillips et al., 2002, p. 467).

#### 2.5. The changing context of fishing: households, communities, and diverse economies

While privatization of fishing resources can increase profits for those remaining in the fishery, negative impacts (such as unemployment or reduced income) can have longer-term implications for community stability. Some impacts can be especially pronounced in quota systems because of the “transitional gains trap,” in which first generation fishermen receive a windfall profit that future generations pay for (Copes, 1986, p. 287). This cost of quota can encourage ownership by investors and “outsiders,” as well as antagonism between capital and labor, such that it can become difficult to follow the traditional course where “fish-workers without capital [can] work their way up from deck-hand to skipper, to eventually acquiring access rights and becoming owner-operators” (Phillips et al., 2002, p. 465). Such impacts to community sustainability stem not only from monetary changes, but also from changes in livelihood and identity when new or established fishermen lose fishing opportunities, for “large capital investments can limit investments in other important areas such as vessel maintenance, the fishermen’s homes, and their children’s education—all impacting well-being. Changes that result in the loss of fishing opportunities, however, will have the greatest negative impacts, as alternative income projects are often problematic [...]. Social problems associated with job dissatisfaction, as well as other variables mentioned above, can impact aspects of community structure including community solidarity and levels of compliance with fishery regulations” (Pollnac et al., 2006, p. 5). In Nova Scotia, for example, “the egalitarian ethos of those communities is severely strained by the ability of a few processors and entrepreneurs to take

advantage of the ITQ system, which has exacerbated differences in wealth and status within the community [...which now reflect] one's position *vis-à-vis* government allocation and financial institutions [rather than the 'ideology of hard work']" (McCay et al., 1995, p. 105). Similarly, privatization has disproportionately affected small Native Alaskan communities in the halibut fishery, where quota is far more likely to be sold rather than purchased (Carothers et al., 2010), and has encouraged there the erosion of place-based ways of fishing and collective measures of success in favor of individualized competition (Carothers, 2008).

The likelihood of monopoly gains and concentration is precisely why many critics argue for the superiority of either auctions or community quotas, in that they can create possibilities for "coastal and fishing communities to collect and take ownership in the resource rent through co-management" (Trondsen, 2004, p. 381). Community-based measures also direct attention to human capital that can become "stranded" in place when other capital is mobile (Bromley, 2005, p. 222). Such mobility can lead to "geographical concentration" in larger ports, since "quota owners [tend] to concentrate the fleets they own, or support, close to their processing and holding facilities" (Copes and Charles, 2004, p. 176). Thus in Iceland, new community relations mark "an ideological shift within the industry, leaving behind the idea that fisheries and fish processing should be locally embedded in fisheries communities. Many fisheries companies have joined the Icelandic stock-market, and ownership is in many cases not linked to any particular community" (Eythórssón, 2000, p. 488). The impact of this falls particularly hard on remote communities that are dependent on fishing: "the vulnerability of fishing communities, especially small communities with poor employment alternatives, has become more visible as several fishing villages have lost most their quota as the owners have moved or sold out. A comparison of different size categories of fishing communities gives a clear impression that small communities with less than 500 inhabitants have on the average lost a much larger share of their quotas than the bigger communities" (*ibid.*, 489).

Geographic re-distribution further affects the security of coastal communities through cumulative impacts on shore-side businesses. With fewer boats, whether from relocation or consolidation, "boat repair, baiting, and other related activities are reduced, whereby total fishery-related employment is diminished to an even greater extent. Furthermore, a reduction in the economic multiplier effect from shrinking fishing income in the local economy means that in addition to fishery-related job losses, there may be considerable job losses elsewhere in affected communities. Thus, despite higher profits for the original group of vessel owners, the extent of job losses may swiftly produce an overall negative impact on smaller communities" (Copes and Charles, 2004, p. 176). For example, in the SCOQ fishery "the sell-out of the ITQ and harvesting and processing capital by a large multinational corporation resulted in the complete cessation of clamming and processing for one major coastal community of New Jersey for at least a year. In the Under-65' Nova case, the ability to purchase ITQ has contributed to a striking regional imbalance, which is also caused by differences in the health of the groundfish stocks in different regions" (McCay, 1995, p. 104). Writing later, McCay (2004, p. 166) notes that with a small number of large processors controlling quota share in this fishery, "the trading of quota share resulted in regional shifts in the landings of groundfish, whereby some ports emerged as major centers and others declined". These kinds of impacts can lead to "the loss of existing social capital which can be a critical force behind economic growth" and "a reduction in the value of the human and social capital involved in the industry" (Wingard, 2000, p. 50).

Privatization establishes a trajectory that can be difficult to reverse once implemented. Fisheries that begin with limitations on

transferability can quickly lobby to remove them given market pressures, as in Canada (McCay et al., 1995, p. 107), Iceland (Eythórssón, 2000, p. 491), and Tasmania (Bradshaw, 2004, p. 106). In Tasmania, for example, a proposal supported by both government and the Tasmanian Rock Lobster Fishermen's Association to support quotas to help new fishermen to enter the fishery was blocked by quota owners (Bradshaw, 2004). In this fishery, "the strength of vested interest that has become established as a result of past management policies, and the priority the legal and political systems give to promoting the financial interests associated with private property, means that government is severely constrained in how it manages the fishery [...] at the expense of the broader public interest that would be better served by a wider distribution of the resource wealth" (Phillips et al., 2002, p. 465). However, as mentioned earlier, many ITQ and other privatization regimes built in design principles whose stated intention was insuring the viability of more vulnerable sectors. These, as mentioned, are not always successful, which implies the critical importance of adopting a more adaptive management approach that can draw on a fuller community involvement.

As Wiber et al. (2004, p. 467) write about community participation in Canada's Scotia-Fundy region, such involvements changed the focus of research from only about "the consequences of a rights-based management regime," since "many of the partners have moved past this reactive stage and are looking instead at creatively resolving perceived problems with the ITQ system. We found that there are intense discussions throughout the inshore sector as to the best means of limiting the loss of community history that the transferable quota system has brought about. These discussions explicitly address the balance that fishers hope to see between enabling wise individual economic decisions and protecting wider community interests." Fusing economic and social concerns can lead to different strategies and hence different "community organizational structures," "appropriate management levels," and the kinds of support needed for the "heavy demands on local organizations" devolution can create (Wiber et al., 2004). Groups may differ in the extent to which a community is widely involved, and this can change the goals and visions of the fishery; native groups such as the PEI Mi'kmaq fisheries, for example, involved a wide swath of community members and were able to focus on "a goal of employment and not profit generation" given a vision of "providing benefits to the community as a whole" (Charles et al., 2007, p. 288). Thus broad community involvement in privatization may help improve community resilience by acknowledging the kinds of communities more likely to experience negative impacts from privatization (Carothers et al., 2010) and by helping to diversify the "livelihood base for fishers, households and communities," which in turn may have positive impacts on fish stocks and the overall fishery (Charles et al., 2007, p. 298).

As Becky Mansfield (2007b, p. 496) argues more broadly concerning the Western Alaska Community Development Quota (CDQ) program, the ideas about property embedded in the CDQ program can embody ideas of rationality and privatization as well as social justice, concluding that such an "analysis of property and its substantive content opens up space for diverse conceptions and practices *within* neoliberalism." While property rights have conventionally been conceived in terms of promoting economic rationality, multiple goals in fact may inhere in notions of property (Mansfield, 2004). Program design may impede such multiplicity, however, as in the example of Alaska's Community Quota Entity (CQE) program, in which communities may have difficulty buying quota at the market rate (Langdon, 2008). Communities, like groups of resource-users, differ, varying between and within. Some groups are arguably more homogeneous if imperfectly so, such as industry-based co-management in New Zealand (Yandle, 2008);

**Table 1**

A summation of impacts from privatization.

Location and Fishery	References	Impacts mentioned in literature
Alaskan Halibut and Sablefish IFQ	Carothers (2008), Carothers et al. (2010), Hartley and Fina (2001), McCay (2004)	Consolidation and concentration; reduction in crew employment; increase in crew income; changes to traditional and indigenous labor and community patterns
Australian South East Trawl fishery	Connor and Alden (2001), Dwyer and Minnegal (2006), Pascoe (1993)	Less consolidation than other ITQ fisheries, but still favoring larger-scale operations
Australian Southern Bluefin Tuna fishery	Campbell et al. (2000)	Consolidation favoring larger-scale operations; reduction in crew employment
British Columbia Halibut	Casey et al. (1995), Davidson (2010), Donkersloot (2006), Grafton (1996), Pinkerton and Edwards (2009, 2010), Turriss (2010)	Reduction in crew employment; debt dependence; violation of cultural norms; movement from shares to wages; reduction in crew income; better vessel profitability
Canadian ITQ fisheries	Binkley (1989), Charles et al. (2007), McCay (2004), McCay et al. (1995), Wiber et al. (2004)	Emergence of privileged groups; diminished quality of life; violation of cultural norms; impacts to community sustainability; new trends in co-management
Iceland ITQ fisheries	Eythórrsson (1996, 2000), Helgason and Pálsson (1997), Pálsson (1998), Pálsson and Helgason (1995)	Consolidation and concentration, favoring larger-scale operations; increase in crew employment; decrease in shore-side employment; increase in vessel capacity; high leasing costs; debt dependence; violation of cultural norms; income reduction; impacts to community sustainability
New Zealand QMS	Batstone and Sharp (1999), Bourassa and Strong (2000), Connor (2001), Dewees (2008), Gibbs (2008), Memon and Cullen (1992), Stewart et al. (2006), Stewart and Walshe (2008), Yandle (2008)	Consolidation and concentration, favoring larger-scale operations; increase in employment; changes to traditional and indigenous labor and community patterns
Norwegian Cod fisheries	Brox (1996), Hersoug et al. (2000), Holm and Rånes (1996), Johnsen (2005), Maurstad (2000), Munk-Madsen (1998), Olson (1997)	Entrenched access, including gender; emergence of privileged groups; increased capacity; change in social incentives and characteristics
Tasmanian Rock Lobster fishery	Bradshaw (2004), Phillips et al. (2002), van Putten and Gardner (2010)	Increased leasing costs, favoring larger-scale operations; movement from shares to wages; impacts to community sustainability
U.S. Ocean Quahog & Surf Clam	Brandt (2005), Brandt and Ding (2008), Final rule (1977), McCay (1995, 2004), McCay et al. (1995)	Consolidation and concentration, favoring larger-scale operations; reduction in crew employment; reduction in crew shares; mixed results for crew income; impacts to community sustainability

other fisheries hinge on full-scale community involvement to meet wider objectives, as noted above. Such experiences “illustrate both the promise and the difficulty of trying to design community resilience and values into a private property regime” (Patricia M. Clay, pers. comm.). Both this promise and the difficulty hinge on articulating the diversity of goals sought, enabling participatory decision-making processes, and recognizing the multiplicity of social relations that make up any given community, pointing to the many new directions for social research and involvement.

### 3. Conclusion

Economic signals such as quota prices, which are theoretically expected to reflect embodied resource rent, often mirror more complex sociocultural pressures and values in the case studies above. Fishermen do not always lease or sell when expected, and prices may reflect structural relations between more and less powerful segments of an industry or community more than they do an unbiased reflection of value. Communities are often diversely constituted by different kinds of fishermen with different behaviors, attitudes, and values, such that the transformations wrought in the wake of privatization depend as well on cultural processes and relations. Yet as the case studies above demonstrate (see Table 1), negative impacts from privatization often fall on less powerful segments of the fishing industry, namely the crew, or the small business owners without a fleet of vessels or vertically integrated business. Those who are better able to take advantage of such measures are then increasingly able to exert control in various markets, such as leasing quota, hiring crew, or even affecting prices that fishermen receive for their product. These kinds of changes, in turn, affect the structure of communities—through changing relations between people and shifts in dominant values—and affect the viability of fishing communities as some are disproportionately impacted by geographic shifts in fishing businesses, aspiring new

participants find entry increasingly difficult and smaller operations are increasing dominated by larger ones. Thus the question of whether to introduce or further privatization of fishery resources is ultimately not simply an issue of economic efficiency, but a question of what values to promote and what the future of the fishery and its fishing communities should look like, and who should decide.

### Acknowledgements

This literature review was originally conducted as part of the Social Impact Assessment for Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan. Thanks to the Scientific and Statistical Committee of the New England Fishery Management Council, as well as Deirdre Boelke, Trevor Branch, Harriet Didriksen, Dan Georgianna, Bonnie McCay, and Eric Thunberg for their insightful comments and constructive criticism. A special thanks to Patricia M. Clay who provided many extremely helpful suggestions for the paper as it developed, especially key linkages to community and adaptive management. I would also like to thank the fishermen and industry participants who contributed anonymous comments. The information in this paper does not reflect, represent, or form any part of the support of the policies of NOAA or the Department of Commerce, nor imply that NOAA or the Department of Commerce agree with the information contained herein.

### References

- Agrawal, A., 2003. Sustainable governance of common-pool resources: context, methods, politics. *Annual Review of Anthropology* 32, 243–262.
- Batstone, C.J., Sharp, B.M.H., 1999. New Zealand's quota management system: the first ten years. *Marine Policy* 23, 177–190.
- Binkley, M.E., 1989. Nova Scotian offshore groundfish fishermen: Effects of the enterprise allocation and the drive for quality. *Marine Policy* 13 (4), 274–284.

- Bourassa, S.C., Strong, A.L., 2000. Restitution of fishing rights to Maori: representation, social justice and community development. *Asia Pacific Viewpoint* 41 (2), 155–175.
- Bradshaw, M.A., 2004. A combination of state and market through ITQs in the Tasmanian commercial rock lobster fishery: the tail wagging the dog? *Fisheries Research* 67 (2), 99–109.
- Branch, T.A., Hilborn, R., Haynie, A.C., Fay, G., Flynn, L., Griffiths, J., Marshall, K.N., Randall, J.K., Scheuerell, J.M., Ward, E.J., Young, M., 2006. Fleet dynamics and fishermen behavior: lessons for fisheries managers. *Canadian Journal of Fisheries and Aquatic Sciences* 63, 1647–1668.
- Brandt, S., 2005. The equity debate: distributional impacts of individual transferable quotas. *Ocean and Coastal Management* 48 (1), 15–30.
- Brandt, S., Ding, N., 2008. Impact of property rights on labor contracts in commercial fisheries. *Ocean and Coastal Management* 51 (11), 740–748.
- Bromley, D.W., 2005. Purgings the frontier from our mind: crafting a new fisheries policy. *Reviews in Fish Biology and Fisheries* 15, 217–229.
- Brox, O., 1996. Recent attempts at regulating the harvesting of Norwegian Arctic cod. *Geographical Journal* 39 (2), 203–210.
- Butler, C.F., 2008. Paper fish: the transformation of the salmon fisheries of British Columbia. In: Lowe, M.E., Carothers, C. (Eds.), *Enclosing the Fisheries: People, Places, and Power*. Symposium 68. American Fisheries Society, Bethesda, MD, pp. 75–98.
- Campbell, D., Brown, D., Battaglene, T., 2000. Individual transferable catch quotas: Australian experience in the southern bluefin tuna fishery. *Marine Policy* 24 (2), 109–117.
- Carothers, C., 2008. 'Rationalized Out': Discourses and Realities of Fisheries Privatization in Kodiak, Alaska. In: Lowe, M.E., Carothers, C. (Eds.), *Enclosing the Fisheries: People, Places, and Power*. Symposium 68. American Fisheries Society, Bethesda, MD, pp. 55–74.
- Carothers, C., Lew, D.K., Sepez, J., 2010. Fishing rights and small communities: Alaska halibut IFQ transfer patterns. *Ocean and Coastal Management* 53 (9), 518–523.
- Casey, K.E., Dewees, C.M., Turriss, B.R., Wilen, J.E., 1995. The Effects of Individual Vessel Quotas in the British Columbia Halibut Fishery. *Marine Resource Economics* 10 (3), 211–230.
- Castree, N., 2008a. Neoliberalising nature: the logics of deregulation and reregulation. *Environment and Planning A* 40 (1), 131–152.
- Castree, N., 2008b. Neoliberalising nature: processes, effects, and evaluations. *Environment and Planning A* 40 (1), 153–173.
- Charles, A., Bull, A., Kearney, J., Milley, C., 2007. Community-based fisheries in the Canadian maritimes. In: McClanahan, T.R., Castilla, J.C. (Eds.), *Fisheries Management: Progress Towards Sustainability*. Blackwell, Oxford, pp. 274–305.
- Chu, C., 2009. Thirty years later: the global growth of ITQs and their influence on stock status in marine fisheries. *Fish and Fisheries* 10 (2), 217–230.
- Clay, P.M., Olson, J., 2008. Defining "fishing communities": vulnerability and the Magnuson–Stevens fishery conservation and management act. *Human Ecology Review* 15 (2), 143–160.
- Connor, R., 2001. Changes in fleet capacity and ownership of harvesting rights in New Zealand fisheries. In: Shotton, R. (Ed.), *Case Studies on The Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership*. FAO Fisheries Technical Paper No. 412. FAO, Rome, pp. 151–185.
- Connor, R., Alden, D., 2001. Indicators of the effectiveness of quota markets: the South East Trawl Fishery of Australia. *Marine Freshwater Research* 52 (4), 387–397.
- Copes, P., 1986. A critical review of the individual quota as a device in fisheries management. *Land Economics* 62 (3), 278–291.
- Copes, P., Charles, A., 2004. Socioeconomics of individual transferable quotas and community-based fishery management. *Agricultural and Resource Economics Review* 33 (2), 171–181.
- Costello, C., Gaines, S.D., Lynham, J., 2008. Can catch shares prevent fisheries collapse? *Science* 321 (5896), 1678–1681.
- Davidse, W.P., 2001. The effects of transferable property rights on the fleet capacity and ownership of harvesting rights in the Dutch Demersal North Sea Fisheries. In: Shotton, R. (Ed.), *Case Studies on The Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership*. FAO Fisheries Technical Paper No. 412. FAO, Rome, pp. 15–27.
- Davidson, A., 2010. The cost-benefit ledger of quota leasing. *Marine Policy* 34 (5), 1115–1116.
- Dewees, C.M., 2008. Attitudes, perceptions, and adaptations of New Zealand commercial fishermen during 20 years of individual transferable quotas. In: Lowe, M.E., Carothers, C. (Eds.), *Enclosing the Fisheries: People, Places, and Power*. Symposium 68. American Fisheries Society, Bethesda, MD, pp. 35–53.
- Donkersloot, R., 2006. Downloading the death knell? Negotiating capital, resource and reason in B.C. fisheries: a study of the social and economic effects of individual transferable quotas in fisheries management on the North Coast of British Columbia. Unpublished manuscript, University of British Columbia Ethnographic Field School. Available from: [http://faculty.arts.ubc.ca/menzies/documents/UBC\\_FieldSchool\\_2006\\_Donkersloot.pdf](http://faculty.arts.ubc.ca/menzies/documents/UBC_FieldSchool_2006_Donkersloot.pdf) (accessed August 31, 2010).
- DuPont, D.P., Grafton, R.Q., 2000. Multi-species individual transferable quotas: the Scotia-fundy mobile gear groundfishery. *Marine Resource Economics* 15 (3), 205–220.
- Dwyer, P.D., Minnegal, M., 2006. The good, the bad and the ugly: risk, uncertainty and decision-making by Victorian fishers. *Journal of Political Ecology* 13, 1–23.
- Escobar, A., 2005. Economics and the space of modernity: tales of market, production and labour. *Cultural Studies* 19 (2), 139–175.
- Essington, T.E., 2010. Ecological indicators display reduced variation in North American catch share fisheries. *Proceedings of the National Academy of Sciences* 107 (2), 754–759.
- Eythórrsson, E., 1996. Coastal communities and ITQ management: the case of Icelandic fisheries. *Sociologia Ruralis* 36 (2), 212–223.
- Eythórrsson, E., 2000. A decade of ITQ-management in Icelandic fisheries: consolidation without consensus. *Marine Policy* 24 (6), 483–492.
- Fina, M., 2005. Rationalization of the Bering Sea and Aleutian Islands crab fisheries. *Marine Policy* 29, 311–322.
- Final Rule, November 25, 1977. *Fishery Management Plan for Surf Clam and Ocean Quahog Fisheries*. 41 Federal Register 227, p. 6.
- Gauvin, J.R., Ward, J.M., Burgess, E.E., 1994. Description and evaluation of the wreckfish (*Polyprion americanus*) fishery under individual transferable quotas. *Marine Resource Economics* 9 (2), 99–118.
- Gibbs, M.T., 2008. The historical development of fisheries in New Zealand with respect to sustainable development principles. *The Electronic Journal of Sustainable Development* 1 (2), 23–33.
- Grafton, R.Q., 1996. Experiences with individual transferable quotas: an overview. *The Canadian Journal of Economics* 29 (Special Issue: Part 1), S135–S138.
- Granovetter, M., 1992. The nature of economic relations. In: Ortiz, S., Lees, S. (Eds.), *Understanding Economic Process*. University Press of America, Lanham, pp. 21–37.
- Gullestad, M., 1992. *The Art of Social Relations: Essays on Culture, Social Action and Everyday Life in Modern Norway*. Scandinavian University Press, Oslo.
- Guyader, O., Thébaud, O., 2001. Distributional issues in the operation of rights-based fisheries management systems. *Marine Policy* 25 (2), 103–112.
- 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 Fisheries Technical Paper No. 412. FAO, Rome, pp. 186–207.
- Helgason, A., Pálsson, G., 1997. Contested commodities: the moral landscape of modernist regimes. *The Journal of the Royal Anthropological Institute* 3 (3), 451–471.
- Hersoug, B., Holm, P., Rånes, S.A., 2000. The missing T. Path dependency within an individual vessel quota system—the case of Norwegian cod fisheries. *Marine Policy* 24 (4), 319–330.
- Holland, D.S., 2007. Community-based sectors for the New England groundfish fishery. Final Report Submitted to The Northeast Fisheries Science Center. National Marine Fisheries Service, Gulf of Maine Research Institute, Portland, ME.
- Holm, P., Rånes, S.A., 5–8 June 1996. The individual vessel quota system in the Norwegian arctic coastal cod fishery. Paper Presented at The International Association for the Study of Common Property, Berkeley, California.
- Johnsen, J.P., 2005. The evolution of the "harvest machinery": why capture capacity has continued to expand in Norwegian fisheries. *Marine Policy* 29, 481–493.
- Langdon, S.J., 2008. The community quota program in the Gulf of Alaska: a vehicle for Alaska native village sustainability? In: Lowe, M.E., Carothers, C. (Eds.), *Enclosing the Fisheries: People, Places, and Power*. Symposium 68. American Fisheries Society, Bethesda, MD, pp. 155–194.
- Leyshon, A., 2005. Introduction: diverse economies. *Antipode* 37 (5), 856–862.
- Lowe, M.E., Carothers, C. (Eds.), 2008. *Enclosing the Fisheries: People, Places, and Power*. Symposium 68. American Fisheries Society, Bethesda, MD.
- Macinko, S., Whitmore, W., 2009. A New England Dilemma: Thinking Sectors Through. Final Report to the Massachusetts Division of Marine Fisheries.
- MacKenzie, D., Muniesa, F., Siu, L., 2007. Chapter 1: Introduction. In: MacKenzie, D., Muniesa, F., Siu, L. (Eds.), *Do Economists Make Markets?* Princeton University Press, Princeton, pp. 1–19.
- Mansfield, B., 2001. Property regime or development policy? Explaining growth in the U.S. Pacific groundfish fishery. *The Professional Geographer* 53 (3), 384–397.
- Mansfield, B., 2004. Neoliberalism in the oceans: 'rationalization,' property rights, and the commons question. *Geoforum* 35, 313–326.
- Mansfield, B., 2007a. Privatization: property and the remaking of nature–society relations, introduction to the special issue. *Antipode* 39 (3), 393–405.
- Mansfield, B., 2007b. Property, markets, and dispossession: the Western Alaska community development quota as neoliberalism, social justice, both, and neither. *Antipode* 39 (3), 479–499.
- Maurstad, A., 2000. To fish or not to fish: small-scale fishing and changing regulations of the cod fishery in Northern Norway. *Human Organization* 59 (1), 37–47.
- McCay, B.J., 1995. Social and ecological implications of ITQs: an overview. *Ocean and Coastal Management* 28 (1–3), 3–22.
- McCay, B., 1992. Everyone's concern, whose responsibility? The problem of the commons. In: Ortiz, S., Lees, S. (Eds.), *Understanding Economic Process*. University Press of America, Lanham, pp. 189–210.
- McCay, B.J., 2004. ITQs and community: an essay on environmental governance. *Agricultural and Resource Economics Review* 33 (2), 162–170.
- McCay, B.J., Acheson, J.M. (Eds.), 1987. *The Question of the Commons: The Culture and Ecology of Communal Resources*. University of Arizona Press, Tucson.
- McCay, B.J., Creed, C.F., Finlayson, A.C., Apostle, R., Mikalsen, K., 1995. Individual transferable quotas (ITQs) in Canadian and US fisheries. *Ocean and Coastal Management* 28 (1–3), 85–115.
- Memon, P.A., Cullen, R., 1992. Fishery policies and their impact on the New Zealand Maori. *Marine Resource Economics* 7, 153–167.

- Meridian Institute, 2010. Catch Shares in New England: Key Questions and Lessons Learned from Existing Programs. MRAG Americas Inc. [http://www.savingseafood.org/images/documents/regulation/catch\\_share\\_in\\_new\\_england\\_final\\_feb\\_2010.pdf](http://www.savingseafood.org/images/documents/regulation/catch_share_in_new_england_final_feb_2010.pdf) (accessed February 23, 2010).
- Munk-Madsen, E., 1998. The Norwegian fishing quota system: another patriarchal construction? *Society & Natural Resources* 11 (3), 229–240.
- NRC, 1999. *Sharing The Fish: Toward A National Policy on Individual Fishing Quotas*. National Academy Press, Washington, DC.
- Olson, J., 1997. The cultural politics of fishing: negotiating community and common property in Northern Norway. Ph.D. dissertation, Dept. of Anthropology, Stanford University.
- Olson, J., 2006. Changing property, spatializing difference: the sea scallop fishery in New Bedford, Massachusetts. *Human Organization* 65 (3), 307–318.
- Olson, J., 2010. Seeding nature, ceding culture: redefining the boundaries of the marine commons through spatial management and GIS. *Geoforum* 41 (2), 293–303.
- Ostrom, E., 1990. *Governing The Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Pálsson, G., 1998. The virtual aquarium: commodity fiction and cod fishing. *Ecological Economics* 24, 275–288.
- Pálsson, G., Helgason, A., 1995. Figuring fish and measuring men: the individual transferable quota system in the icelandic cod fishery. *Ocean and Coastal Management* 28 (1–3), 117–146.
- Pascoe, S., 1993. ITQs in the Australian south east fishery. *Marine Resource Economics* 8 (4), 395–401.
- Phillips, G., Kriwoken, L., Hay, P., 2002. Private property and public interest in fisheries management: the Tasmanian rock lobster fishery. *Marine Policy* 26 (6), 459–469.
- Pinkerton, E. (Ed.), 1989. *Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development*. University of British Columbia Press, Vancouver.
- Pinkerton, E., Edwards, D.N., 2009. The elephant in the room: the hidden costs of leasing individual transferable fishing quotas. *Marine Policy* 33 (4), 707–713.
- Pinkerton, E., Edwards, D.N., 2010. Ignoring market failure in quota leasing? *Marine Policy* 34 (5), 1110–1114.
- van Putten, I., Gardner, C., 2010. Lease quota fishing in a changing rock lobster industry. *Marine Policy* 34 (5), 859–867.
- Pollnac, R.B., Abbott-Jamieson, S., Smith, C., Miller, M.L., Clay, P.M., Oles, B., 2006. Toward a model for fisheries social impact assessment. *Marine Fisheries Review* 68 (1–4), 1–18.
- St. Martin, K., 2006. The impact of “community” on fisheries management in the U.S. Northeast. *Geoforum* 37 (2), 169–184.
- St. Martin, K., 2007. The difference that class makes: neoliberalization and non-capitalism in the fishing industry of New England. *Antipode* 39 (3), 527–549.
- Smith, C.L., Clay, P.M., 2010. Measuring subjective and objective well-being: analyses from five marine commercial fisheries. *Human Organization* 69 (2), 158–168.
- Stewart, J., Walshe, K., Moodie, B., 2006. The demise of the small fisher? A profile of exitters from the New Zealand fishery. *Marine Policy* 30 (4), 328–340.
- Stewart, J., Walshe, K., 2008. Compliance costs and the small fisher: a study of exitters from the New Zealand fishery. *Marine Policy* 32 (1), 120–131.
- Trondsen, T., 2004. Toward market orientation: the role of auctioning individual seasonal quotas (ISQ). *Marine Policy* 28, 375–382.
- Turris, B.R., 2010. A rejoinder to E. Pinkerton et al., the elephant in the room: the hidden costs of leasing individual transferable fishing quotas. *Marine Policy* 34 (3), 431–436.
- Wiber, M., Berkes, F., Charles, A., Kearney, J., 2004. Participatory research supporting community-based fishery management. *Marine Policy* 28 (6), 459–468.
- Windle, M.J.S., Neis, B., Bornstein, S., Binkley, M., Navarro, P., 2008. Fishing occupational health and safety: a comparison of regulatory regimes and safety outcomes in six countries. *Marine Policy* 32 (4), 701–710.
- Wingard, J.D., 2000. Community transferable quotas: internalizing externalities and minimizing social impacts of fisheries management. *Human Organization* 59 (1), 48–57.
- Yandle, T., 2008. The promise and perils of building a co-management regime: an institutional assessment of New Zealand fisheries management between 1999 and 2005. *Marine Policy* 32 (1), 132–141.