

Dear Madam Chairwoman,

Thank you for the invitation to testify on community perspectives on Catch Shares. My name is David Goethel and I am owner operator of the 44 foot dragger the *Ellen Diane* of Hampton, New Hampshire. I am also a member of the New England Fishery Management Council but I am speaking today as a member of the New Hampshire Commercial Fishing Community and not on behalf of the Council.

The number one priority our communities would like to see established is our ability to continue to exist under a catch share program. As currently constructed, Amendment 16 to the Groundfish plan, leaves not one vessel in New Hampshire able to cover short term operating expenses with the quota they have received. In short, the effects of Amendment 16 on New Hampshire's fleet are predictable, catastrophic and unnecessary.

The reasons for this are many and varied and I can only highlight a few in the time allotted. First, NOAA Fisheries continues to define fisheries on a single species basis rather than using the definition of a fishery in the Magnuson- Stevens Fishery Conservation and Management Act (99-659,101-627(13) A) which states, "The term "fishery" means—

- A. one or more stocks of fish which can be treated as a unit for purposes of conservation and management which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; and
- B. any fishing for such stocks."

Thus in New England each fisherman has received an individual allotment of each of the twelve species, comprising nineteen stocks of the multispecies groundfish fishery. All of these fish swim together and cannot be caught, in the prescribed allotments. The practical implications of this are that catch shares will result in massive under harvesting of most species as people are forced to stop fishing when they have harvested the species for which they have the lowest allocation, even when that species may be a fully rebuilt stock such as haddock. Second, the council failed to fairly and equitably allocate the fish both between user groups, commercial and recreational, and within the commercial fishery. By choosing a straight catch history based system and a time period in which small boats were effectively shut out of the fishery by rolling and permanent closures, and differential counting of DAS in inshore areas, and thus unable to establish catch history the council effectively ceded control of the fishery to large vessels which could establish history, outside of these inshore areas. While I protested these actions vigorously at the council meetings NOAA fisheries through its Regional Administrator Ms. Kurkul, and acting head of NOAA Fisheries Dr. Balsinger sat silent and said nothing to remind the council of its responsibilities under National Standard 4 and 8 of Magnuson-Stevens. Finally, in response to my dissenting opinion, filed with the Secretary of

Commerce in June 2009, Mr. Schwaab, on behalf of NOAA, responded with a letter which arrived in my mailbox two hours after notice of the availability of the final rule for Amendment 16, on March 31, 2010 rendering further discussion of their response useless, except through the courts. If allowed to stand unchallenged this will render National Standard 4 meaningless also. Thus the small boat fishing communities of New Hampshire and other regions are left to seek fair and equitable treatment under the law through this committee and in lawsuits filed with the courts.

For those boats that survive the initial consolidation the long term costs of running sectors, once returned to the fishermen, will ultimately cripple them. NOAA is proposing to spend nearly 50 million dollars on implementation of catch shares in New England. The most recent ex-vessel value of the fishery is 60 million dollars for the fish proposed to be managed in Amendment 16. Thus, it is plainly apparent, that absent long term subsidization of monitoring costs, those costs render the entire fishery nonviable. Congress might also wish to consider that with the 150-200 new people being hired, combined with the existing staff at the regional office, there are now more bureaucrats at NOAA Fisheries than fishermen actively fishing. It is without a hint of irony that I suggest NOAA should consider assigning each fisherman his own personal bureaucrat who would do the catch monitoring, observing, enforcement, VMS submissions, log books and other myriad requirements of sectors. This would increase the viability of this program while dramatically lowering the cost to both tax payers and fishing communities.

As you can see by the aforementioned information and the lack of consolidation controls in Amendment 16 my main concern for fishing communities in New England is their ability to avoid consolidation long enough for Congress or the Courts to intervene.

As Dr. Julia Olson, of NOAA Fisheries Northeast Fishery Science Center states in her paper, which I have provided and urge the committee members to read, the effects of consolidation, *“range from employment loss, decreased income, decreased quality of life, changing relations of production, structural disadvantages to smaller vessels and firms, dependency and debt patronage, concentration of capital and market power, inequitable gains, regulatory stickiness, reduced stewardship, decreased community stability, loss of cultural values, and so on.”*

Dr. Olson concludes that same introductory paragraph with, *“Thus the question of capacity reduction 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.”*

Catch shares are primarily an economic tool to force consolidation. They do not, despite the millions of dollars spent on public relations campaigns by major Environmental NGO's, necessarily produce better biological results, than other systems of management. They do,

however, radically reshape fishing communities if adequate safeguards such as consolidation caps and allocation caps are not made to ensure the viability of small boat communities. NOAA Fisheries and the Regional Councils must be ordered to provide these caps before the implementation of catch share programs. Catch shares are set to begin on May 1, 2010 in New England with consolidation and the negative social consequences to follow soon thereafter. In fact the consolidation has already begun. If you wish to preserve a way of life that has existed in New Hampshire and New England for over 400 years, iron men in small ships putting little strain on the resource but supplying a relatively large number of jobs, it is time for NOAA Fisheries, Congress and the Courts to fish or cut bait.

*Social Impact Assessment Literature Review:
Leasing and Permit Stacking*

Leasing and permit stacking [defined in Section XX], though different in many respects, are both forms of fleet consolidation within a fishery. In terms of their social impacts, one can expect similarities to other forms of consolidation, such as ITQs, because many of the social impacts stem directly from the reduction in capacity or from the costs associated with leasing or buying quota, irrespective of whether such quotas are transferable. Further, because ITQs have been widely studied in many different contexts around the world, they help provide a full picture of potential consequences from consolidation. Since the scallop fishery is a limited access fishery, privatization of the resource—one of the criticisms of ITQs—has already occurred, yet any windfall gain can only be realized if a permitted vessel is sold and the owner leaves the fishery. That is to say, the lack of transferability has tended to slow down consolidation and accompanying social impacts, but this would be loosened with leasing and stacking. Moreover, measures like stacking could become “an effective intermediate step towards IQs” (Hastie 2000), thus their potential impacts become doubly significant. The primary social impacts that have been documented in empirical cases involving consolidation (explained in greater detail below) range from employment loss, decreased income, decreased quality of life, changing relations of production, structural disadvantages to smaller vessels and firms, dependency and debt patronage, concentration of capital and market power, inequitable gains, regulatory stickiness, reduced stewardship, decreased community stability, loss of cultural values, and so on. Leasing and stacking may provide a greater degree of flexibility for business operations, which would be a positive economic and social impact. Yet although economic theory tends to predict positive benefits in terms of efficiency and profitability, these gains—if and when they occur—accrue primarily to permit-holders and boat-owners remaining in the fishery. And while permit stacking and leasing may or may not lead to or further all the negative social consequences listed above, real-life examples demonstrate the complex social relations involved in consolidation, with negative impacts more apparent when the fishery and the community are seen in totality. Stacking of course can only be utilized by owners of multiple vessels, but even with leasing, smaller entities and others impacted, like crew, tend to be at a disadvantage. The following thus begins with a summary of the impacts to crew and businesses, but moves on to situate these impacts in their reciprocal effects on fishing households and communities.

Impacts to crew

NMFS does not specifically collect information on crew apart from crew size on trips and information on the vessel operators. Unfortunately, it is difficult to assess overall employment impacts from crew size alone, given that rotating crew among vessels may disguise already reduced employment levels; the collection of basic information on crew and variations in the lay system would enrich assessments of fishery-specific outcomes in particular places. Nonetheless, case studies on consolidation impacts provide a rich source of information about such issues. In most instances when consolidation measures are implemented, employment on vessels decreases as can the income received by crew. Employment numbers in the Mid-Atlantic surf clam fishery dropped by nearly 80 percent between 1990 and 1999 (from 155 to 34 employed crew members) as the industry consolidated in the wake of ITQs (Brandt and Ding 2008: 744). McCay et al. (1995: 101) also found decreases in this fishery, even though labor was already rotating among boats (similar to claims in the scallop fishery). Employment reductions have also been noted in

Australia's southern bluefin tuna fishery (Guyader and Thébaud 2001: 107) and the halibut fishery in British Columbia, where numbers of fishermen decreased 32% from both reductions in the size of crew on remaining vessels and loss of employment on displaced vessels (Casey et al. 1995: 225). In the Icelandic case however, employment numbers on vessels actually increased, while shore-side employment decreased. As Eythórsson (1996: 217) writes, between 1984 and 1992, the number of fishermen working onboard a fishing boat increased 23 percent, or 1,300 people. "The most obvious explanatory factors are the growth of the labour-intensive small boat fleet [outside ITQ regulation] and the growing percentage of frozen fish products processed on board [factory trawlers, operated by companies selling their quota to other fishermen]." Yet, he continues, "During the same period, the number of workers employed in the land based fishing industry had reduced by one third, from approximately 10,500 to 7,000 employees" (ibid.). In this case, effort displaced from the quota-regulated fishery into other fisheries increased capacity overall when fishing is seen ecosystem-wide, at the same time that it had overall negative employment impacts in fishing communities.

As Bonnie McCay writes, "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" (1995: 9). Such a movement towards wages has been documented in a number of fisheries, such as the Tasmanian rock lobster fishery (see Bradshaw 2004: 108). These pressures are not confined to buying quotas, such as in an ITQ system, but also concern leasing, as is being considered in Amendment 15, for it is the competition for quota, whether bought or leased, that creates this dynamic: "The smaller the crew rate, the higher the willingness to pay for quota [...] Even if firm 4 is the most efficient from a technical point of view, the weakness of its capital owner in bargaining with the 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: 110).

Crew shares and crew incomes were found to have decreased in the mid-Atlantic surf clam and ocean quahog, and Nova Scotian (McCay et al. 1995: 101-102), and Icelandic fisheries (Eythórsson 1996: 218). In these cases, the negative impact on crew income stems in part from leasing costs being passed onto 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. According to McCay et al. (1995: 101), firms that hired kin or neighbors were less likely to pass the costs on to crew, whereas larger firms were more likely to. The implication of this is that measures like stacking and leasing that are designed ostensibly to just reduce capacity or increase economic efficiency may in fact change the very forms of fishing, favoring a more industrial rather than kin or community-based approach fishing. When fishing with leased quota in Iceland, fishery income of smaller boat owners was also reduced from 40-50 percent (Helgason and Pálsson 1997: 457). Additionally, "speculative leasing transactions (kvótabrask) were in some cases undertaken in order to reduce wages" (Eythórsson 2000: 488). In the case of the British Columbia halibut fishery, Pinkerton and Edwards (2009: 711) also found considerable decreases: "[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%."

In contrast to earlier studies (e.g. McCay et al. 1995), Brandt and Ding (2008: 744) found that crew income eventually increased in the surf clam fishery. In this case, an increase in vessel profitability compensated for reduced shares, through “an increase in the mean amount of time vessels spent at sea.” 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, as was found in the Nova Scotia (McCay et al. 1995: 102). Whether increased income from a fishing trip can compensate for changes in social relations and daily life is an empirical question. On a related concern, a recent study on vessel safety has also found that accident rates in ITQ fisheries do not decrease, at least among those that do not limit ownership, as is often claimed:

Small operators are often limited to leasing quota from large corporations or non-fishers, or to working under contract for vertically integrated businesses. In such cases, 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: 707, reference omitted).

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.

Impacts to small boat-owners

In many cases, capacity reduction measures do decrease capacity through the number of vessels participating in a fishery and lead to consolidation among firms. In the ocean quahog and surf clam fishery of the Mid-Atlantic, a “significant reduction in the number of vessels” came about due to the decisions of owners of multiple vessels “to consolidate harvesting on fewer vessels” and because of “owners of ITQs who cease harvesting but participate in the fishery by leasing their ITQs” (Brandt 2005: 21). In New Zealand, “In 1996, 86% of total allowable commercial catch allocated as ITQ was allocated to the largest 12 companies (fishers) compared to 49% in 1986 [6]. Stewart and Callagher found that concentration in the industry has continued. The exit of fishers had not been matched by entry, showing that net exit occurred and implying that the released quota was being purchased by incumbent firms” (Stewart et al. 2006: 329). Similarly, Gibbs (2007: 113) writes of how ITQ management in New Zealand has led to “the rationalisation or aggregation of fishers and vessels into a small number of larger vertically integrated fishing companies [7]. This was partly a consequence of the development of capital-intensive deep-water fisheries over the same period; however, there has been a significant decline in the number of owner-operated vessels in the inshore fleets.” In Icelandic cod fisheries, “there have been radical changes in the total number of quota holders, a reduction from 535 to 391 (27%), from 1984 to 1994” (Pálsson and Helgason 1995, quoted in Pálsson 1998: 283). The reduction in quota holders corresponds to increasing concentration in the fishery: from 1984 to 1994, the percentage of ITQs in Iceland owned by 70% of the smallest holders decreased 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: 130).

In others cases however, capacity actually increases in a consolidation program because of the political-economic context in which it operates and because of the sociocultural values of fishermen who attach other than monetary values to continuing in the fishery. For example in the Icelandic case, while the number of quota-holders decreased, capacity—in terms of vessel power—actually increased: “Since the introduction of ITQs in 1984 to the end of 1997, the fleet has in these terms [of vessel size] expanded by almost 13%, or 14,100 GRT. Engine power, which also provides an indication of catching capacity, has increased correspondingly” (Eythórsson 2000: 487). The reasons in this case have to do with the particular combination of an increase in larger vessels that could move into international fishing waters while they leased their quota to smaller vessels, and the movement of small vessels into a non-quota inshore fishery reserved for small boats (Eythórsson 1996: 215). In Australia, on the other hand, a low “salvage value” for vessels and quotas convinced many fishermen to stay in the South East Trawl fishery “because the pay-offs of waiting for a small increase in quota price can remain positive even where average total costs are very high. Hence, in the SETF, the combination of uncertainty over stocks, and therefore the appropriateness of TAC levels, and lack of alternative fisheries to move to may tend to lock-in existing vessels for the duration of their serviceable lives [...] In fact, overall vessel numbers in the fishery have remained more or less static since the introduction of ITQs.” (Connor and Alden 2001: 391-392). Cultural values can also motivate fishermen to remain in a fishery despite consolidation measures or financial incentives to leave; as Bonnie McCay (1995: 7, footnote omitted) explains “‘Job satisfaction’, a confluence of personal, situational and socio-cultural community values, is among the factors that can affect appraisal of opportunity costs and the price of exit. Another of these factors can simply be that the value of the vessel is likely to be low [...] the fishing vessel is where capital is reinvested and, like the family farm, the hoped-for basis of future income. The big difference is, of course, that fishing vessels often have no alternative uses or values.”

In general though, it is the smaller firms which tend to be disadvantaged in markets for buying or leasing quota. This is of considerable importance for the scallop industry, given the preponderance of fleet-owned vessels, as shown in the table below. Because risk is included in

	No. of corps (estimated)	No. of boats	landed value 2008	% of limited access vessels	% of landed value (not net value) (2008)	Landed value/corp (not net value)	% landed value from Fulltime	% landed value from Fulltime small dredge
own 1 vessel	76	76	66,914,555	22.0	20.6	880,455	75.3	15.0
own 2-4 vessels	40	106	100,063,987	30.6	30.8	2,501,600	72.7	21.4
own 5 or more vessel	21	164	157,444,227	47.4	48.5	7,497,344	87.9	6.7

the price of credit, those who have to borrow more to pay for leased quota “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: 224). As Copes and Charles (2004: 176) write, “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.” In Iceland, for example, many smaller operators received such small quotas that they had to lease more or sell what they had. “A major factor in the apparent success of the larger companies in accumulating

fishing rights is 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: 134). McCay et al (1995:102) also found "that there is a strong trend 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." Likewise, they continued, that in Canada "such a trend is also apparent, despite measures intended to protect the small, independent owner-operated fishing venture" (ibid). 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: 103).

Single-boat owners may also be disadvantaged in hiring crew members, if fishermen desire year round employment that could be better accommodated by an owner with stacked permits. Single-boat owners may also be dependent on larger interests for access to waterfront and other port infrastructure, a dependence which could further weaken their position with increasing fleet consolidation as well as contribute further to impacts on a community's waterfront access for other users. Vessels that are in a better financial position are also better able to afford higher lease costs, which can eventually bid up the cost of leasing quota (Pinkerton and Edwards 2009: 709). 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. 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: 106). Stewart et al. (2006: 331) write similarly that "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 [...while leasing] places an additional direct cost which must be absorbed by the fisher, given the need to maintain competitive prices in the wholesale and retail markets they operate in. In reality, minor fishers are likely to be price takers." Finally, in Iceland, as Eythórsson (1996: 218) writes:

the favourable position of the offshore fleet, relative to inshore vessels, is not necessarily due to more efficient use of capital and labour in the harvesting operation; it also depends on the more favourable options open to the offshore fleet, including the opportunity to fish outside the EEZ. Besides, large companies are likely to be in a better position to follow a long term strategy and to have easier access to bank credits and support from municipal authorities than the more marginal fisherman-owners of inshore vessels. The high quota leasing prices can to some extent be explained by the unequal positions of the offshore and inshore vessels. 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.

Leasing prices that become a large cost to fishermen can result in a number of negative impacts in addition to decreased crew or owner income (discussed above), such as dependency and debt patronage, and changing structural relations of production. Together with pressures for consolidation, this can further reduce the bargaining power of many fishing participants at the same time that larger firms may increasingly have market power, which could lead to control of the prices of landed fish, of leased quotas, or of crew remuneration (NRC 1999). In Iceland, leasing prices for cod quotas during 1991-1995 were more than half of average cod landing prices (Eythórsson 1996: 216). Smaller firms that received too little quota to remain viable then become dependent on larger firms for leased quota (Eythórsson 1996: 218); in some of the arrangements between large companies and smaller owner-operators, the fishermen who catch the fish must then deliver it to the company's processing plant (Helgason and Pálsson 1997: 457). Such new relations of production have generated controversy in Iceland because they violate cultural norms concerning fairness and equity. In the words of many fishermen there, "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: 283-84). Yet with leasing, larger interests such as processors or vertically integrated firms—fairly common in the scallop fishery—could potentially exact profits from the fishery and potentially increase their market power and concentration in the fishery, without even physically maintaining a boat should measures allow fully market-based leasing.

Cultural norms can also interact with political economic relations to create other forms of debt patronage. In the British Columbia halibut fishery, Pinkerton and Edwards (2009: 709) note how the difficulties in violating norms of equity that were embodied in the share system, where crew were "co-venturers" along with owners, has 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 [...] The price of quota when it is leased out to fishermen by the processors is confidential; it varies with arrangements and the bargaining power of the lessee. The lessee usually agrees to deliver catch from other fisheries to the processor as part of the arrangement. There is, therefore, asymmetric information between buyers and sellers of quota leases [...] which 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. The resulting allocation of quota leases, and the stated and unstated terms under which they are allocated, are not the product of a freely operating market with open competition.

As McCay (1995: 6) writes, whether markets function as expected 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: 10, footnote omitted).

Impacts to fishing practices

Some analysts have argued that crew on boats with no stake in fishery will have no 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. Regarding the first, for example, Bradshaw (2004: 108) writes “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.” Indeed despite its recent popular attention, as Macinko and Whitman (2009) argue, it is effectively an underlying hard TAC that enables catch shares to manage overall landings, not incentives stemming from ownership.

Concerning the incentive structure itself and with a widening gap between labor and capital in the fishery, actual fishing practices may differ than are expected from capacity reduction measures. In a study designed specifically to contrast effort levels on leased quota trips, Brandt and Ding (2008: 746) found that given how costs are spread with a given lay system, “where the cost of leasing quota is shared between boat owner and crew, the crew will expend a lower effort level than on trips where the quota is owned outright by the boat owner. The consequence of this hidden action is observable as a higher harvest rate for trips using the boat owner’s own quota than for trips using leased quota, as confirmed by an analysis of the surf clam fishery.” 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: 467, references omitted).

Impacts to households and communities

While transferable quota systems have in many cases increased profits for those remaining in the fishery, this comes with costs to crew and smaller operations, as detailed above. These impacts have direct impacts on communities from unemployment or reduced income from fishing trips, but there are also longer-term implications for the stability of fishing communities, like difficulties for new or younger fishermen to enter the fishery. In some communities, this had led to the erosion of place-based ways of fishing and collective measures of success in favor of individualized competition (Carothers 2008). Fishing households with reduced income may face stresses that multiply at the community level, but they do not only stem from monetary changes but from the loss of fishing opportunities more generally, as Pollnac et al. (2006: 5) explain:

Regulations requiring 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 for this group [...] 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. In turn, levels of compliance can feed back and impact aspects of fishery management. Further, other aspects of community structure, such as occupational structure, can impact activity attributes. Community power structure, which might include powerful fisheries organizations, can directly influence management as well as the external forces that influence management. Finally, individual attributes, social problems, and community structure all have an effect on well-being.

Consolidation measures like ITQs, as well as stacking and leasing, are highly divisive among scallop fishermen and within communities precisely for such reasons (e.g. Olson 2006).

Some impacts are 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: 287), a situation that would also apply to a limited access fishery in which leasing is possible. As Philips et al. (2002: 465, references omitted) argue, a “dramatic increase” in quota prices in Tasmania has resulted in “increased ownership of quota units by non-fishing investors and increased ownership by non-Tasmanians. The high cost of quota units has now made it almost impossible for fish-workers without capital to work their way up from deck-hand to skipper, to eventually acquiring access rights and becoming owner-operators, the path followed by many in the past. The separation between capital and labour is becoming increasingly entrenched. Ownership of property in the form of quota units is increasingly providing power over dependent suppliers of contract labour.” The likelihood of monopoly gains and concentration, in fact, are precisely why many critics argue for the superiority of either auctions or community development 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: 381) and which can direct attention to human capital that can become “stranded” when mobile capital leaves a community (Bromley 2005: 222).

Such capitalization and concentration, write Copes and Charles (2004: 176), can lead to “geographical concentration” in larger ports:

This will occur for reasons of operational efficiency and control, with quota owners tending to concentrate the fleets they own, or support, close to their processing and holding facilities. Diversion of quotas to larger centers has a cumulative economic effect in the smaller communities. Since they have fewer active boats left, 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.

Thus in Iceland, Eythórsson (2000: 488) describes new community relations where “there is a trend towards 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. Investors without fisheries background are now well represented among the owners of quota holding companies.” The impact of this falls particularly hard on remote communities that are dependent on fishing: “During the nineties, 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).

McCay et al. (1995: 104) also write how geographic re-distribution can affect the security of coastal communities from loss of fishing income and from impacts on shore-side businesses: “the sell-out of the ITQ and harvesting and processing capital by a large multinational corporation [in the SCOQ fishery] 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.” Shore-side businesses would also be affected by a decrease in servicing vessels, if fleet owners did consolidate.

These impacts go beyond the economic, and affect the quality of life and the nature of community:

“There may also be serious non-economic losses for those who would rather have stayed in the familiar surroundings of their community if it had remained economically viable. Many of them would grieve the loss of accustomed social relations and a familiar and attractive physical environment. Finally, it should be noted that the reduction in the number of inhabited places along the coast would have adverse consequences for the country at large, for instance, in terms of tourism, by reducing serviced access to parts of the country that would be attractive to visit. The fundamental point here is that the economic costs to society of the concentration of fishing operations through ITQs are likely to be quite significant, and may be substantially larger than the gains enjoyed by the benefitting companies and vessel operators” (Copes and Charles 2004: 177)

These community-level difficulties can lead “to the loss of existing social capital which can be a critical force behind economic growth [... and with ‘a reduced demand for fishing-specific skills’ comes] a reduction in the value of the human and social capital involved in the industry” (Wingard 2000: 50). In Nova Scotia, “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: 105).

Capacity reduction measures—whether leasing, stacking, or transferable quotas—establish 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: 107), Iceland (Eythórsson 2000: 491), and Tasmania (Bradshaw

2004: 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: "There is a question mark, then, over the ability of the state, attenuated by the existence of private access rights that it created, to act responsibly in the longer-term interests of the fishery" (Bradshaw 2004: 108). Regarding the same fishery, Phillips et al. (2002: 465) write "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."

Conclusion

Economic signals such as quota prices for example, 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 more structural relations between more and less powerful segments of an industry or community than they do an unbiased reflection of value. Thus, as the case studies above demonstrate, consolidation measures like ITQs, but also more generally leasing and stacking, tend to have their negative impacts on those 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 measures like leasing or stacking 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. National Standard 8 requires that fishery management plans "take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities" (16 U.S.C. §1851(2)(8)). NS8 directs important attention to how measures like leasing and stacking may impact the sustained participation of fishing communities dominated by smaller operations and the cumulative effects of market changes reflecting more dominant interests, in which new participants find entry increasingly difficult and smaller operations are increasingly dominated by larger ones. As Connor and Alden (2001: 396) write of the experience of Australia, "given the effective use of output controls and the low opportunity costs of vessel capital, any expressed urgency regarding structural adjustment of the fleet must be regarded as unwarranted. 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." Thus the question of capacity reduction 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.

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