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Women and Children First: the Gendered and Generational Social-ecology of Smaller-scale Fisheries in Newfoundland and Labrador and Northern Norway

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ABSTRACT. The resilience of small-scale fisheries in developed and developing countries has been used to provide lessons to conventional managers regarding ways to transition toward a social-ecological approach to understanding and managing fisheries. We contribute to the understanding of the relationship between management and the resilience of small-scale fisheries in developed countries by looking at these dynamics in the wake of the shock of stock collapse and fisheries closures in two contexts: Newfoundland and Labrador, Canada, and northern Norway. We revisit and update previous research on the gendered effects of the collapse and closure of the Newfoundland and Labrador northern cod fishery and the closure of the Norwegian cod fishery in the early 1990s and present new research on young people in fisheries communities in both contexts. We argue that post-closure fishery policy and industry responses that focused on downsizing fisheries through professionalization, the introduction of quotas, and other changes ignored the gendered and intergenerational household basis of small-scale fisheries and its relationship to resilience. Data on ongoing gender inequities within these fisheries and on largely failed recruitment of youth to these fisheries suggest they are currently at a tipping-point that, if not addressed, could lead to their virtual disappearance in the near future.

Key Words: *gender; resilience; small-scale fisheries; social-ecological approach; youth*

INTRODUCTION

Small-scale fisheries play a large role in employment, food security, and livelihoods globally (Chuenpagdee 2011), and under certain circumstances, have the potential to enhance the resilience of fisheries-dependent regional economies and global marine fisheries. However, they are generally poorly understood and are often seen as a problem by fisheries managers (Pauly 2011). Small-scale fisheries are highly diverse and dynamic, and participants in them are grappling with major ecological, social, economic, and governance challenges that operate at multiple spatial, temporal, and organizational scales (Perry and Ommer 2003). Understanding the dynamics of the shifting social-ecological tapestries (Patel 2007) that constitute and constrain small-scale fisheries requires attending to the historical, ecological, and socioeconomic diversity within, as well as between, these fisheries and larger-scale fisheries in different contexts.

Small-scale fisheries have been seriously threatened by the effects of overfishing, changing management, and changing markets, but have proven strikingly resilient to many of these threats. Reasons for their resilience relative to small- and larger-scale capitalist enterprises include the household and community basis of many such fisheries (Sinclair 1985, Palmer and Sinclair 1997) and their often partial subsistence or livelihood basis (vs. profit). Other reasons include low capital costs, occupational pluralism, as well as sometimes, as with fisheries in India's caste system (Nayak and Berkes 2011), their social and geographical marginality within larger societies (McGoodwin 1990). To varying degrees across time,

space, and cultures, these bases for resilience have helped cushion small-scale fisheries from limited access to capital, low levels of control over seafood prices, and wider labor market changes. Inheritance patterns, which give some (largely male) household members access to fishing technology and homes (Neis 1993), have helped sustain small-scale fisheries across generations by keeping down debt loads. Local and largely informal management systems, limited access to capital, and limited access to fishing knowledge have helped constrain access to local fisheries, limiting competition for common-pool resources. Occupational pluralism (of fish harvesters and other household members), multi-species fisheries, and, in some contexts, access to social security have helped small-scale fishing households deal with ecological and management-related fluctuations in local access. Technological innovation, while potentially threatening to local stocks, could help to spread fishing effort to new social-ecological spaces, sustaining and potentially challenging small-scale fisheries because of their greater capital costs (Neis and Kean 2003).

There have been many challenges to small-scale fisheries over the decades, including those associated with fishery collapses and related closures. Here, we contribute to the understanding of social-ecological systems with small-scale fisheries in advanced capitalist countries in the contemporary era by examining the gendered and intergenerational dynamics associated with post-closure/collapse of fisheries in Newfoundland and Labrador and in northern Norway in the period between 1990 and 2013. These two regions share the

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distinction of being the most fishery-dependent regions in their respective countries, Canada and Norway, and of being the regions most affected by the fishery closures of the early 1990s. Both regions had substantial small-scale fisheries embedded in relatively isolated, rural communities that were heavily dependent on the collapsed regional groundfish stocks.

Despite the similarities in the small-scale fisheries of these two regions, the regions have experienced somewhat different social-ecological challenges and opportunities over the past 20 years. In both contexts, cod (*Gadus morhua*) stocks were overfished. However, in Newfoundland and Labrador, unlike in northern Norway, the fishery closure was delayed until virtually all cod of spawning age were removed from most fish populations and shifting effort had decimated some other species as well. This, combined with the fact that fish grow more slowly off Newfoundland and Labrador and reach maturity at an older age because of the colder water, has meant that the cod and other groundfish closures or semi-closures in Newfoundland and Labrador have been more prolonged than in northern Norway.

Despite somewhat different social-ecological systems, there have been important similarities in the post-collapse policy responses of the two regions. Among these similarities has been a strong tendency for policy makers to ignore the household, and thus, to ignore gender and intergenerational dynamics of small-scale fisheries. Gender- and intergenerationally-blind policies have not only played a role in limiting the employment options for women and young people within fisheries and in remote fishing communities, they have also, in the process, potentially limited the resilience of small-scale fisheries and the regions that depend on them, in part by eroding the household basis of fisheries.

CONCEPTUAL FRAMEWORK

Berkes (2003, 2011) discussed lessons for conventional management from small-scale fisheries. He explored what these fisheries can tell us about the misfit between conventional fisheries science and management and complex social-ecological systems as well as about resilience. He argued (Berkes 2003:16),

[r]esilience... refers to the ability of complex systems to absorb shocks, self-organize, learn and adapt. Sustainable livelihoods are those that are resilient to stresses, can cope with crises, and are capable of absorbing environmental and economic perturbations. Livelihoods in small-scale fisheries are often based on a diversity of species and stocks and on a diversity of other productive activities. This diversity confers resilience.

Their household basis, reliance on kinship networks, and intergenerational transfer of knowledge, access, and fisheries-

related property are key factors in the longer-term resilience of small-scale fisheries (Sinclair and Palmer 1997, Berkes 2003). As we have argued elsewhere (Neis et al. 2005), these networks and social relations are deeply gendered both within and between generations and can be quite complex, diverse, dynamic, and often exploitative. Furthermore, the household basis of such fisheries means that engagement by women and young people often plays a critical role in their resilience, suggesting that their ability to absorb major shocks such as stock collapses will be influenced by these relations. The contribution of women and young people is related to their direct influence on fisheries dynamics and on the relationship between fisheries and employment opportunities and access to wealth from outside of fisheries. Thus, gender and intergenerational relations have the potential either to sustain or to undermine the longer-term resilience of small-scale fisheries, particularly where such systems are open-access. Such open access may allow an influx of money and harvesters that can overwhelm existing resources and markets, while the existence of more attractive employment alternatives outside fisheries can direct the flow of investment and labor away from these fisheries. This will have both social and ecological effects; for instance, if the children of small-scale fishing households are not coming into fisheries, this might be a disincentive to steward the resource.

Conventional fisheries management tends to be gender- and intergenerationally-blind, i.e., it ignores both the contribution of these relationships to fisheries dynamics and the potential consequences of policies and household dynamics for women, youth, and gender relations, including those that affect equity and the resilience of small-scale fisheries (Bavington et al. 2004). This approach to policy-making can push women and youth out of fisheries or lock them into often exploitative relationships within fisheries and fishing communities (Biswas 2011). Gendered and intergenerational responses to such pressures will also influence a range of dynamics within households and communities: so-called pull factors. Interactions between these push and pull factors can change cultural expectations about work, family, income, and consumption (Johnsen and Vik 2013).

One useful way to get at these interactive processes is through use of the social generation approach to understanding intergenerational change (Wyn and Woodman 2007, Furlong et al. 2011). This approach focuses attention on how “young people negotiate their lives, locating the experience and meaning of both youth and adulthood within particular historical, social and political contexts” (Wyn and Woodman 2007:373). It also enables us to unpack the ways in which inequalities (e.g., gender, generation) in small-scale fisheries persist in the wake of fisheries collapses and subsequent closures. As Furlong et al. (2011:357) write, “While many outcomes in young people’s lives remain highly predictable, these outcomes do not emerge from an inevitable or abstract

social logic, but through institutional arrangements adjusting to social change, and through people actively doing work to maintain distinctions and advantages over others.” An analogous approach within feminist research avoids essentialist assumptions about the relationship between women and resilience, attends to diversity within and between genders (where data exist to allow this), and sees women and men negotiating their lives within particular contexts (e.g., Neis et al. 2005).

METHODS

Here, we update and re-examine findings from earlier publications on the gendered and generational effects of (1) the collapse and closure of the Newfoundland and Labrador northern cod and other fisheries in the early 1990s, and (2) the closure of the Norwegian cod fishery and introduction of a new quota system (Holm et al. 1998). We also (3) report on new research on the relationship of young people to fisheries. Previously, we argued that household and policy responses to fishery collapse in Newfoundland and Labrador were jeopardizing women’s and young people’s access to employment and, through this, their direct access to the wealth generated in small-scale fisheries (Neis and Williams 1996). We thought of this as a “women and children first” approach. Norwegian researchers expressed similar concerns, particularly about the impact on female fish-harvesters of the quota system introduced after the fishery closure (Munk-Madsen 1996, Gerrard 2008). Here, we revisit this argument with updated administrative data on gender and age in these fisheries to see if earlier patterns and concerns have persisted. We also draw on data from focus groups conducted with youth in western Newfoundland in 2010 and on media reports, observations, and field research in northern Norway.

RESULTS

Fisheries collapses and closures in Newfoundland and Labrador

Cod fisheries were the major source of employment in both the small- and large-scale fish harvesting and processing sectors in Newfoundland and Labrador during the period leading up to the closure of the northern cod and other groundfish fisheries in the early 1990s. The labor force for these fisheries came largely from local communities, many of which were dependent almost exclusively on the fishery and often on one processing company. During the 1980s, there was a relatively strong gender division of labor, with women concentrated in seafood processing, particularly in plants linked to the small-scale, inshore sector (Neis and Grzetic 2005). Small-scale harvesters and some seasonal plants that were dependent on the small-scale fishery were unionized, but women had lower incomes on average than their male counterparts in processing. The offshore trawler fishery was controlled by vertically integrated companies; trawler crews were exclusively male, and the offshore processing labor force

was unionized, worked year-round, was mixed gender, and earned relatively good income. Young people often worked seasonally in harvesting (young men) and processing (both young men and women) while still in school, and young men in particular often stayed on as crew later, with some eventually taking over family-owned enterprises. Many other young men and women used earnings from the industry to help them obtain further schooling or to find work elsewhere.

Leading up to the collapse, small-scale fishing households responded to declining landings of cod and other groundfish by buying more gear and, in some cases, larger and more mobile vessels to allow them to follow the fish (Johnsen et al. 2009). In the process, wealth flowed from the shore and onto the water. In some cases, as the quality of onshore employment options in processing declined because of reduced landings, and as it became necessary to concentrate the direct and indirect wealth from fishing within the household and within the existing generation (Grzetic 2004), women took up fishing.

The fishery closure was initially set for two years and then extended for another four years, with fluctuating short openings and subsequent closures. After the closure, most of the large, offshore groundfish trawlers were sold off, and the associated offshore plants were either closed, converted to shrimp or crab processing, or became seasonal operations processing groundfish from elsewhere (including Russian cod from the Barents Sea) and from remnant fisheries. Effects of the pre- and post-collapse changes varied within the smaller-scale fisheries because different regions and different fishing households had targeted different species and held different types of limited entry licenses that gave them access to varying amounts of fish and shellfish. This, and differences in debt loads, resulted in differential impacts on households and communities as well as between small and mid-sized boats (< 10.5 and 10.5–19.5 m vessels, respectively). Cultural practices and different household dynamics, the age and gender of children, and women’s alternative employment options also would have contributed to the patchiness of strategies and outcomes within and across sectors and regions.

None of the complexity we have described (including the gender and generational dynamics) was evident in the dominant discourse around the cause of the collapse and proposals for dealing with it. That discourse constructed the groundfish stock collapse as being the result of too many harvesters chasing too few fish, ignoring the fact that there were corporate, semi-corporate, and household-based fisheries involved, with different underlying dynamics, levels of engagement with overfishing, and options for dealing with a fishery closure. The construction of the closure as a short-term problem that would be remedied in two years ignored the ecological constraints created by the obliteration of spawning-aged fish. Plant workers and harvesters displaced by the

closures were treated as though they were atomized individuals, not members of often multi-income households. Policies also ignored the multi-generational consequences of the closure, although not only parents, but also many of their children, had lost access to future livelihoods from the fishery (Neis and Williams 1997).

One consequence of this policy blindness was that its focus on adjusting by moving people out of the fishery and on downsizing fishing and processing capacity did not have the anticipated short-term effect, particularly in the small-scale harvesting sector. In reality, the effect of the closure on housing values and on options for younger people was that many parents were grappling with an uncertain future, struggling to survive and to get their children into school and to a place where the children could find work outside the fishery. Rooted in their communities and with few options for alternative, equivalent, local livelihoods, many processing workers (primarily women) and small-scale harvesters continued to work in the fishery. This happened despite reduced incomes, and greater challenges (for processing workers) in accessing seasonal benefits from the changed Employment Insurance program (MacDonald et al. 2008) as well as greater employment volatility and vulnerability (MacDonald et al. 2006). Where local processing plants closed, some processing workers migrated seasonally or more permanently to work in other regions and provinces, a pattern that continues today in some areas (several new plant closures occurred in 2013).

Twenty years post-collapse of the Atlantic groundfish stocks, Newfoundland and Labrador fisheries landings are dominated by snow crab, shrimp, pelagics, and lobster. The large, vertically integrated companies that dominated the groundfish fisheries were substantially weakened by the collapse of the groundfish stocks because most of their quotas were in these fisheries and, to some degree, in the shrimp fishery. These companies did not directly control licenses or quota in the expanding post-collapse shrimp, lobster, and crab fisheries. They were largely excluded from harvesting cod post-collapse because (with the extension of the 200 nautical mile exclusive economic zone) small- and medium-sized vessels were given an allocation of fish that needed to be harvested before offshore quotas were re-established. Since then, total allowable catches for cod have remained low, and the capital costs for those small-scale fishing enterprises with access to crab and shrimp have gone up because of the greater distances to fishing grounds, costs of gear, and other requirements for these fisheries (Department of Fisheries and Aquaculture 2011). These and other costs related to monitoring and licensing have contributed to rising capital costs in the small-scale fishery.

There has been a shared commitment to downsizing the industry on the part of government, industry, and the fisheries union, with the joint goal of having a better match between fishing and processing capacity and resource supplies.

However, these stakeholders all have somewhat different strategies for achieving this goal. There is, for example, an ongoing struggle between companies and the union that represents harvesters over whether processing companies should be able to own and control fishing licenses and over the appropriate mechanism for rationalizing the fleet. Since the closure of the northern cod fishery in 1992, the big processing companies have strongly advocated the introduction of individual transferable quotas. These have been resisted by the fisheries union, which has supported other mechanisms for downsizing, including license buy-outs and a freeze on processing licenses. The intensity of this struggle has accelerated in recent years. We will return to this point below.

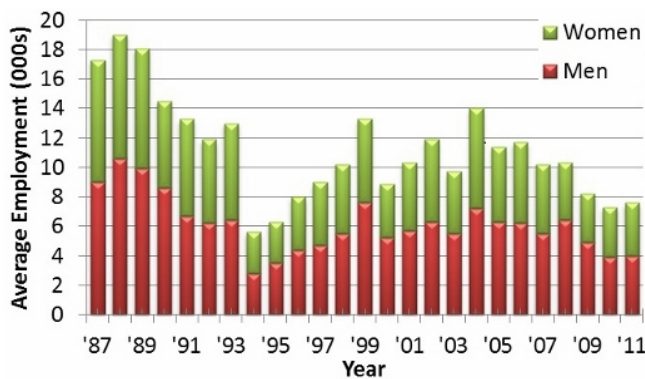
Gender and generation in the contemporary Newfoundland and Labrador fishery

The Newfoundland and Labrador fishery employed approximately 37,665 seasonal workers in 1989 and approximately 21,289 in 2011 (Higgins 2011, Department of Fisheries and Aquaculture 2012). In 1991, there were 14,000 full-time and 10,000 part-time registered harvesters, but many of the part-time harvesters were probably not active (Roy 1997), as only 12,000 qualified for unemployment insurance (Higgins 2008). Data from the Professional Fish Harvesters Certification Board's registration system, summarized by Grzetic (2004:21), indicated that in 2000, there were "14,502 harvesters with regular certification and an additional 1282 given temporary certification." At that time, 3116 (20%) were women, and 58% of women were at the apprentice or entry level in the professionalization system that was introduced after the collapse of the groundfish fisheries in the 1990s. By 2011, there were 10,597 registered harvesters in Newfoundland and Labrador (a decline of approximately 44% from 1990). Of these, 21.5% were women, 67% of whom were at the apprentice level, compared to 22% of men (Professional Fish Harvesters Certification Board Data 2012, *unpublished data*).

Seafood processing employment declined more than harvesting employment in Newfoundland and Labrador between 1990 and 2010. In 1988–1989, peak employment among plant workers hovered around 20,000 employees (although estimates go as high as 27,000; Statistics Canada 2012, *unpublished data*); these people were working in 231 largely seasonal processing plants in Newfoundland and Labrador. By 2011, peak employment had declined to about 8000 workers (Statistics Canada 2012, *unpublished data*) employed in 114 plants (Department of Fisheries and Aquaculture 2012). This amounts to a 60% decline in employment and a 50% reduction in the number of plants. Seven permanent plant closures (including closures of some plants that had not operated for some time) occurred in 2012 (CBC News Newfoundland and Labrador 2012a).

Since seafood processing was industrialized in the 1960s, it has been the major source of paid employment for women in the fishing industry in Newfoundland and Labrador. Women's share of average peak employment (top three months) in seafood processing (Fig. 1) has varied from a high of 51% in 1993 to a low of 38% in 2008. On average, they have tended to work shorter seasons than their male counterparts, resulting in lower incomes and greater dependence on Employment Insurance (Statistics Canada 2012, unpublished data). Overall, the percentage of the fishing and seafood processing labor force combined that comprised women declined from approximately 34% in the late 1980s to 23% in 2010–2011.

Fig. 1. Yearly peak averages (top three months) for employment in seafood product preparation and packaging in Newfoundland and Labrador by gender (Statistics Canada 2012, unpublished data).



Newfoundland and Labrador's fisheries labor force is also aging rapidly: only 7% of registered harvesters were ≤ 31 years old in 2011 compared to 13.6% in 2005 (< 30 years old), a reduction of almost one-half in 6 years. Of these younger harvesters, 19.6% were women in 2005 and 19.7% were women in 2011. Almost all of these female harvesters were in the apprenticeship category in both years, whereas 25% of registered male fish-harvesters ≤ 31 years old were level-two harvesters (the top level) in 2011 (Professional Fish Harvesters Certification Board 2012, unpublished data). Currently, entry into fishing and the ability to survive as a fish harvester is linked to ownership of licenses and, in some cases, quota; almost all licenses are held by so-called core license holders, which is a new category of harvester introduced after the collapse. In 2001, there were 5645 license holders in the Newfoundland and Labrador fisheries, of whom only 2.2% were women. The women held 1.6% of the licenses, most of which were for groundfish, lobster, pelagics, snow crab, and miscellaneous species. Only two women held shrimp licenses (Grzetic 2004). In 2010, there were 3755 core license holders in the Newfoundland and Labrador fishery, of whom 138 (only

3.7%) were women; of these women, only one was < 30 years old. This suggests that, as in the 1980s and 1990s, female fish-harvesters are still fishing primarily as crew members, with their access to fishing income linked to marital and kinship ties to men (Grzetic 2004). Their ability to take over enterprises in the future remains limited.

Today, Newfoundland and Labrador stocks are still far below historic levels, and there is a lot of disagreement about their current status. Global markets for groundfish have changed substantially in the intervening 20 years. Most remaining plants and vessels have been redesigned to focus on shellfish and pelagic fisheries. These structural changes in the industry, and concerns that cod eat shrimp and other shellfish, are contributing to increasingly public discussions about the negative potential of cod recovery. The historical preoccupation with surplus labor and unemployment in the fishery is starting to be replaced by concerns about labor shortages that are linked to an aging labor force and poor recruitment of young crew members and plant workers. Related to this, one Newfoundland and Labrador company was recently allowed to bring in temporary foreign workers to process crab and shrimp in summer 2012 (CBC News Newfoundland and Labrador 2012b); permission to do this requires demonstrating difficulty in filling jobs with Canadian workers. After the collapse, some displaced Newfoundland seafood processing workers traveled to work in plants in other parts of Atlantic Canada; temporary foreign workers and immigrant workers are now also employed in some of these plants.

Researchers (N. Power, M. Norman, and K. Dupre, unpublished manuscript) conducting recent focus groups with 91 young people between 12 and 24 years of age living on Newfoundland's west coast found that these youth had little experience either harvesting fish or working in fish processing plants. The small minority of focus group participants who reported fisheries-related work experience were mostly young men who had accessed fisheries work through family ties. Among those who seemed interested in pursuing future fisheries employment, the possibility of success was unlikely, given recent plant closures and the high costs associated with owning a fishing enterprise. In the context of such social challenges and ecological stock declines, fisheries work was considered, as one male participant put it, "a hard living". Although young participants recognized the continued symbolic and socioeconomic significance of fisheries for their communities, especially in relation to fisheries-related tourism, they did not see a place for themselves in what was largely perceived to be a dying industry. As one young woman (between 19 and 24 years old) said, "It's not something I think about at all because it's been gone since [19]92. I was five years old." The focus group discussions suggest that for youth, the once vibrant fishery happened long ago and the remaining scarce jobs are reserved for the older generations in their

communities. As another youth (male, 12–15 years old) put it, “It’s basically, like, older people, like in their 50s and 60s [that are fishing] ... not like the young ones in their 20s. They goes out to Alberta somewhere.”

Focus group participants reported a lack of encouragement from parents to pursue fisheries work (Power et al., *unpublished manuscript*). Among youth focus group participants between 12 and 15 years of age, 10 of 28 youth (two males and eight females) had one or both parents engaged in fish harvesting or processing locally or elsewhere. None of these youth reported being encouraged to pursue a fisheries-related job by their parent(s) who were engaged in fisheries work. It is worth noting, however, that only three of the participants with parents holding non-fisheries related jobs reported being encouraged by a parent to pursue their line of work, so this was not unique to fisheries. Among the participants between 16 and 18 years of age, only 4 of 35 participants (three males, one female) had one or both parents working as fish harvesters or plant workers, and none reported being encouraged by their parent(s) to pursue that job. This compares with 9 of 35 youth who had received encouragement to pursue their parents’ occupation from one or both parents working outside the fishing industry. In the 19–24 years of age group, 8 of 28 participants (three males, five females) came from families with one or both parents engaged in fish harvesting or processing. Of these, two young men reported being encouraged by their fathers to engage in fisheries-related work. In contrast, 7 of 28 youth between 19 and 24 years of age with parents working outside the fishery had been encouraged by them to pursue their occupation.

The Norwegian situation: living with the quota system

Before World War II, most seafood processing workers in northern Norway were men, but some women worked seasonally (Balsvik 1989). With the introduction of fillet production, women’s participation increased. In small fishing communities, the workforce at the local fish plant consisted primarily of young men too young to go fishing, older men who had given up fishing, young women, and married women without young children (Gerrard 1975, 1983). Until the 1980s, some women were also recruited from other parts of northern Norway and Finland to work in the plants. For young, unmarried women, fisheries work was generally transient, although not all moved on to other work because some married local men and established households (Gerrard 1986).

Norway confronted problems with overfishing of its cod stocks in the late 1980s. On April 18, 1989, the Fisheries Directorate announced that Norwegian harvesters had overfished the cod quota allocated to them under the Russian-Norwegian Fishery Agreement and, in the middle of the cod fishing season, closed the fishery north of 62° N, hitting hard the small-scale fisheries in Finnmark, the northernmost county

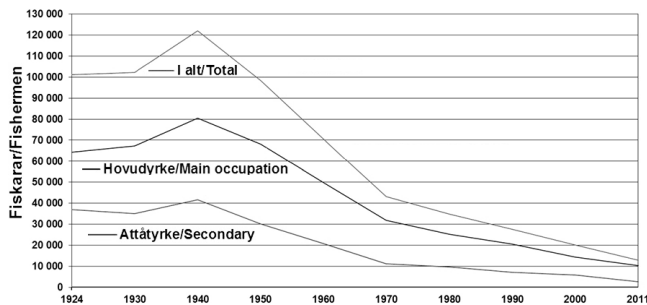
of Norway. Unlike what happened in Newfoundland and Labrador, the Norwegian cod moratorium was short-lived, lasting only until December 31, 1989. However, on January 1, 1990, the government introduced a new nontransferable boat quota system into the Norwegian cod (*Gadus morhua*) fishery north of 62° N. This quota regime was eventually extended to other species, including saithe (*Pollachius virens*) and haddock (*Melanogrammus aeglefinus*), the most common target species for small-scale harvesters of the region; some years later, it was extended to the kamchatka crab (*Paralitodes camtschaticus*) fishery.

The quotas initiated a new way of organizing fishing and fishing-related activities that has substantially changed the Norwegian small-scale fishery. During the first years after the system was introduced, individual boat quotas were quite small for most categories of boats, and so many harvesters (especially those with boats > 13–14 m in length) added extra boats to get access to more quota so that, as many of them said, they could pay their crew. The quota system initially favored harvesters who started fishing early in the winter season, with the result that the overall quota in the small-scale fishery was often reached before those in the northernmost areas of Norway began to fish. This led to the development of a special arrangement to ensure access to quota for the small-boat fishery in Nord-Troms and Finnmark, the regional focus of our analysis.

The size of the quotas increased as the cod stocks rebuilt during the 1990s. In 2004, the Minister of Fisheries changed the quota regime, permitting registered harvesters owning more than one boat to transfer quotas from other boats onto one boat for up to three years. In the fourth year, these quotas were supposed to be transferred back to the original boat or boats. At this time, it also became legal to lease quotas to other harvesters for up to three years. Under this revised regime, trade in quotas (which was already happening informally) was more or less legalized (NOU 2006:16). Since that time, and after considerable debate, the rules have changed and continue to change. Now, in addition to the quota that belongs to a boat, owners can buy additional quotas and keep them for a longer period, although there is still a limit on the number of quotas that can be concentrated on a single boat.

The quota system, introduced initially as part of the government’s response to the fisheries closure in northern Norway, has played a key role in reshaping the fishing industry, including its small-scale sector. In addition to privatizing access to the resource, it has contributed, along with other socio-cultural factors (Gerrard 2011, Johnsen and Vik 2013), to a substantial reduction in the number of harvesters (Fig. 2), particularly younger harvesters.

Fig. 2. Changes in numbers of fish harvesters in northern Norway from 1924 to 2011. Source: Fiskeridirektoratet (2012a:68–73).



In Norway as a whole, despite much less severe problems with overfishing compared to Newfoundland and Labrador, and thus ongoing access to groundfish, the number of registered harvesters declined by approximately 53.4% from 27,518 in 1990 to 12,810 in 2011 (Fiskeridirektoratet 2012a). This decline is approximately 10% greater than that for the small-scale fishery of Newfoundland and Labrador.

Norwegian research carried out prior to the introduction of the quota system, documented the existence of a relatively strong gender division of labor in those fisheries, with few female harvesters but many women working onshore in supporting harvesting work (so-called ground crew or “skippers of the shore crew”) and in processing. The closure and quota systems had early gendered effects on the harvesting and processing sectors in northern Norway (Gerrard 1975, 1995, 2008, Munk-Madsen 1996, 2000). Only approximately 2% of women were registered harvesters in Norway in 1990. Munk-Madsen’s (1996, 2000) research on female harvesters after the quota system was introduced found ongoing biases against female harvesters working among male harvesters, evidenced by the challenges they experienced with accessing their deceased husbands’ quotas. The proportion of female harvesters has not changed substantially since 1990 (2.67% in 2011). Overall, women have been largely excluded from direct access to fishing quotas. Indeed, the Sami parliament explicitly documented how the regulations and quota system has led to gendered inequalities (Stortingsmelding 2004, chapters 1, 2, and 7).

As in Newfoundland and Labrador, women’s involvement in processing employment has declined in northern Norway since the introduction of the quota system (Gerrard 2008, 2011). Many plants have become trans-shipment sites, employing a minimum number of workers whose job it is to prepare fish to be shipped elsewhere for processing. This and other changes have resulted in reduced employment

opportunities in seafood processing overall, particularly for women. For instance, in 1990 there were 2853 processing workers (1141 women) in Finnmark, one of the most fishery-dependent counties in Norway (Statistics Norway 1990). By 2001, only 2074 workers (813 women) were employed (Statistics Norway 2001). Since then, many plants in northern Norway have closed down, and employment in those that remain has declined substantially. A plant that would have employed 25–30 workers in the 1970s has only 5–10 workers today, except during peak seasons. Despite declining employment opportunities in processing, many plant workers now come from abroad, including the Baltic countries, to work in the plants (Gerrard 2008).

There are ongoing concerns in Norway about the effects of the quota system, particularly among small-scale harvesters who live close to the fishing grounds. When their boat quota is fished, they are not allowed to continue fishing, even when there are a lot of fish right outside their homeport. Many small-scale harvesters and a special Fishery Commission (NOU 2008) have proposed a policy change that would let those with boats < 15 m, who live in the northernmost areas of Norway, fish without a quota limit. Neither the Ministry of Fisheries and Coastal Affairs nor the largest harvesters’ union, Norges Fiskarlag, has accepted this proposal, however, even though the Russian-Norwegian Fishery Commission recommended a total allowable catch of one million tonnes of Barents Sea cod for 2013.

Recruitment of young people into Norwegian fisheries

As in Newfoundland and Labrador, the past two decades in Norway have seen a major decline in rates of recruitment of young people into the fishery. In 1990, 6900 harvesters were ≤ 29 years of age (25.1%). Female harvesters were particularly likely to be young at that time: 44% of the 666 registered female harvesters in 1990 were < 29 years of age. By 2011, only 14.5% of registered harvesters were < 29 years of age, including only 14.9% of the 342 registered female harvesters (242 full-time and 88 part-time harvesters; Fiskeridirektoratet 2012b).

There was some reversal in the declining recruitment of young harvesters into the fishery, particularly for men, starting in 2009. Field observations from a fishing village in Finnmark provide some insights into why this might have happened. In the summer of 2012, five young men < 29 years of age were working as harvesters; some were also working in the aquaculture plants. These young men were the sons of harvesters or former harvesters and had specialized in maritime studies in high school. Their decision to enter the fishery appears to have been linked to two factors: recent increases in the size, and thus value, of quotas and the fact that many of the larger boat owners have accumulated several quotas and thus need more crew. As in the past, youth recruitment into fishing still tends to be linked to family,

kinship, and friendship ties within fishing communities (Gerrard 1975). Unlike in the past, when young men would often be expected to buy their own nets and be responsible for repairing them, today, the boat owner generally operates a company and provides all the gear. This makes it easier for young people to start fishing because they do not need their own gear, but the cost of the vessels means that skippers only want trained crew, which explains why those entering the fishery would be coming out of the maritime studies training program.

In the mid-1990s, Norway established a summer youth fishery to enable young people between 12 and 25 years of age to find summer jobs in fishing. According to Julian Vangen, a consultant with the Norges Råfisklag (Norwegian Fishermen's Sales Organization), 21.5 and 28.9% of those participating in this summer youth fishery in 2011 and 2012, respectively, were young women, a much higher participation rate than among registered harvesters, of whom only 2.7% and 2.8% were women in the same years. This summer fishery program has been particularly popular in Finnmark, where close to one-half of the young harvesters are registered. Some municipal and county authorities in Finnmark have also financed youth fishery projects for those who do not have the opportunity to fish with their fathers or other relatives. The Minister of Fisheries and Coastal Affairs recently argued that the youth fishery arrangement is a positive contribution to recruitment to the fishing industry (Fiskeri og kystdepartementet 2012).

Compulsory school-based training (which used to be considered "a thief of fishing time") and the summer youth fishery are now the main sources of knowledge about fishing, fishing equipment, and navigation that young people can use to help them find a job on board a boat. Although these arrangements can give young people an opportunity to get experience and to earn some money, the real challenge arises when a young fish harvester wants to own a boat because it is very expensive to buy a boat and a quota. Norway does have a recruitment quota system for young harvesters < 30 years of age, but only 10 quotas are distributed annually, so only a few can benefit from this system (Fiskeridirektoratet 2011).

Younger women are generally not entering fishing. Instead, they tend to go to university or, if they work in the fishery, they are employed in fish marketing, administration, training, and research. Thus, fishing continues to be a male-dominated job (Gerrard 2008) in an industry where the number of harvesters continues to decline. Few of the women who have formal ownership of fishing vessels actually own quotas, with the remainder excluded from ownership of a share of the resources that were once available (directly or indirectly) to all.

DISCUSSION

In Newfoundland and Labrador (and other parts of eastern Canada), since the multiple cod and other groundfish stocks

collapsed, rebuilding has been extremely slow and prolonged. Fisheries have been reopened temporarily and then often closed again, and total allowable catches (as well as groundfish stock abundance estimates) remain far below historical levels. In northern Norway, by contrast, the closure of the cod fishery was brief, and the stocks have rebuilt, allowing the Norwegian Fishery Commission to recommend a 2013 total allowable catch from the Barents Sea cod stock of one million tonnes. Despite these important differences between the two study regions with respect to the ecological drivers for their fishery closures and their duration, the percentage decline in the number of registered harvesters in Norway over the past 20 years is 10% greater than that in Newfoundland and Labrador. This suggests that fishery policy and industry responses to fishery closures can be as important as ecology in shaping the resilience of small-scale fisheries.

In both regions, policies were put in place to protect owner-operators from both part-timers and corporate control over licenses and quotas. These policies helped preserve small-scale fisheries in the short term, but have constrained opportunities for improved gender balance, even (as in northern Norway) where the resource base is fully recovered. Along with other factors such as education, household decision-making, and alternative employment options outside of fisheries for some (Gerrard 2011, Johnsen and Vik 2013), the policies have helped to constrain the entry of young people into this sector in both locations, raising questions about the long-term future of small-scale fisheries.

There has been a substantial reduction in the number of small-scale fishing enterprises in the two regions, and women have only held their own in terms of percentage share of positions in fishing in both. Furthermore, as in the past, in both regions, women are largely excluded from direct ownership of licenses and quotas, although they may indirectly access the wealth from these through fishing or through membership in fishing households. Since the late 1980s, their percentage share of positions has been substantially higher in Newfoundland and Labrador than in northern Norway (roughly 20% compared to 2–3% of registered harvesters). This may point to the more limited options of women in rural Newfoundland and Labrador and to the greater precariousness of key portions of small-scale fisheries there, linked in part to the regional industry's greater seasonality and weaker markets.

Historical patterns for the entry of youth into fishing (via kinship ties and learning how to fish on board boats) have been disrupted in both contexts. This is reflected in the declining proportion of registered harvesters, particularly in Newfoundland and Labrador, who are < 30 years of age. Norway has some programs that are designed to encourage young people to enter fisheries, but no such programs exist in Newfoundland and Labrador. However, despite those programs in northern Norway, the future of small-scale fishing

is unclear. Given the high cost of enterprises and of quota and licenses, there are substantial challenges for those wishing to transition from crew member to skipper.

In the past, small-scale fish harvesting was characterized by the largely patrilineal transfer of ecological and experiential knowledge of local stocks and adjacent fishing grounds and of fishing knowledge acquired over generations. Contemporary professionalized fisheries, in contrast, often require knowledge and skills to navigate larger vessels fishing farther from shore, sometimes in zones where harvesters have had no prior fishing experience (Power 2008, Power and Baqee 2010); these are technical matters usually acquired through formal training. In this context, the intergenerational transfer of fishing knowledge is less valuable. Instead, harvesters are expected to get formal training and are encouraged to adopt an individualized, entrepreneurial approach to fishing that is capital intensive and includes investing in vessels, quota, and equipment, as well as professional training. Fishing farther from shore or away from home for longer periods, along with the change in knowledge requirements have meant fewer opportunities for traditional forms of intergenerational knowledge transfer. This, in turn, has implications for young people's options in fisheries and possibly also for the sustainability of their communities.

As matters stand today, poor recruitment of young people, high capital costs (not only for vessels and gear but also for quotas and licenses), and dwindling opportunities for employment and adequate incomes for women in fishing communities appear to be undermining the long-term resilience to ecological, market, and other fluctuations of small-scale fisheries in Newfoundland and Labrador and northern Norway. This is happening in part through the erosion of their household basis.

We do not have the data to permit a quantitative comparison of changes in the size of processing-work labor forces or to document the changing gender and generational composition of these labor forces in the two regions. In both regions, processing was the primary source of fisheries employment for women, but it has declined very significantly in recent years (an estimated 30 plants have been closed in Newfoundland and Labrador since 2010; Christine Knott, *personal communication*). In parts of rural Newfoundland and Labrador, many young people have left, while older women in particular have sometimes been trapped in their communities, trying to piece together volatile and precarious employment both in the fishery and outside it (MacDonald et al. 2006). Some have migrated seasonally (with or without their families) to work elsewhere, at potentially great cost to their livelihoods. In northern Norway, some women have taken professional and other kinds of training and found work elsewhere, including in services. In Finnmark, as in Newfoundland and Labrador, there has also been a tendency

for some fishing families from smaller fishing villages to move to towns and regional centers to access services and other employment. From there, the harvesters commute to the port where the boat is anchored (Gerrard 2011) or, if the service center is on the coast, to land catches in the urban area and store the boat there.

Despite ongoing relatively high rates of unemployment in rural areas, Newfoundland and Labrador processors are beginning to complain of labor shortages. In 2012, one company sought and received permission to bring Thai temporary foreign workers into Canada to work in their processing plant for the season (CBC News Newfoundland and Labrador 2012b). Norway's seafood processing workers often come from other countries, including Eastern Europe. Some former refugees who are now Norwegian residents have also worked in plants in recent years. This suggests that plant labor forces in these two regions are shifting toward more internationally sourced workers as has happened in Iceland and other parts of Atlantic Canada. The apparent contradiction, particularly in rural Newfoundland, between relatively high unemployment and claims of labor shortages being used to justify importing foreign workers is currently under investigation by Christine Knott at Memorial University of Newfoundland (*personal communication*).

One interpretation of our findings is that constraints on women's entry into fishing along with dwindling employment options for women in processing in both regions are undermining the resilience of small-scale fisheries and contributing to the failed recruitment of young people into fisheries. Recruitment of young people into fisheries has been weak in both regions, but particularly in Newfoundland and Labrador, with the result that labor forces are aging rapidly. However, this trend seems to have been somewhat reversed in northern Norway in recent years, particularly for young men. One reason for this may be the special youth quota; the growing demand for crew members that is linked to accumulation of quotas on fewer boats and to quota increases may also be involved. It is unlikely, however, that many of the young people currently entering the fishery will become owner-operators. A recent analysis of data on harvesters' reasons for exiting the Norwegian fishery suggests other things also need to change in fisheries, including health and safety and work schedules, if there is to be an improvement in recruitment (Johnsen and Vik 2013). In both regions, it is unclear if, or how, crew members will be able to afford to buy one of the increasingly costly enterprises in what has become a much more intensive fishery in which they need to buy not only the vessel but also quota/licenses. Opportunities could decline further if policies that have helped to protect small-scale fisheries, e.g., Atlantic Canada's fleet separation policy, are eliminated.

CONCLUSION

We have used insights from our historically informed social-ecological approach to fisheries to explore gendered and generational changes in the small-scale fisheries of Newfoundland and Labrador and northern Norway in the wake of fishery closures. In both regions, such fisheries have survived these collapses, supported in part by a policy response that created space for owner-operated enterprises within new licensing and quota systems. In Newfoundland and Labrador, where fisheries are highly seasonal, the Employment Insurance system also helped sustain small-scale enterprises (MacDonald et al. 2008) despite a policy approach dominated by downsizing rhetoric. In both contexts, there has been a substantial but different degree of decline in the number of enterprises in the wake of the collapses, with the more substantial relative decline occurring in Norway despite the recovery of the regional cod stocks. In Newfoundland and Labrador, some small-scale enterprises survived, in part because wives went fishing with their husbands, sometimes replacing male kin (Grzetic 2004). This strategy was less common in northern Norway. Some enterprises are turning into small-scale capitalist enterprises, buying up the quota and licenses of others (Palmer and Sinclair 1997) and often shifting their enterprises to larger centers. In both regions, these fisheries appear to be approaching a tipping point as the current generation ages: very few young people from the regions enter either fishing or processing. There is currently no meaningful government-supported recruitment program for young harvesters in Newfoundland and Labrador. Such programs have been attempted in Norway with some success, but it is likely that many people in these programs will not actually go on to own and operate enterprises. In the absence of substantial intergenerational recruitment to small-scale fisheries, it is possible that political pressure supporting their long-term existence will decline. That will contribute to the likelihood of policy changes that will increase the control of larger corporate fisheries over local resources and employment.

Munk-Madsen (1998) argues that women in small-scale fisheries are concerned with combining and integrating fishing with other activities to benefit their families, communities, and future generations. Her argument is similar to those of some other researchers who are less concerned with gender but who have maintained that small-scale fisheries are important to the future resilience of fisheries and coastal communities and that these fisheries can provide important lessons about the weaknesses of conventional management and the need for alternative approaches based on social-ecological systems thinking (Berkes 2003). Many have argued that small-scale fisheries can be associated with poverty and vulnerability (Palmer and Sinclair 1997), perhaps particularly for women and youth. Even when the incomes small-scale fisheries can provide are very good, as with the contemporary Norwegian small-scale fisheries, there are things about life on

vessels and in small communities that fit poorly with the needs and expectations associated with contemporary western society (Johnsen and Vik 2013). How much of this poor fit is the result of a policy framework that fails to use the community-embedded, small-scale fisheries instead of the individual harvester as its starting point, and that should have built into it concerns with gender and intergenerational equity and clear attention to interactions between fisheries and other sectors (such as tourism), is open to challenge. However, the evidence that we have presented here suggests that a different policy framework and approach could well have resulted in less vulnerability and greater resilience in small-scale fisheries and coastal communities than we have arrived at in these and other contexts. The opportunities that have been lost as a result of a gender- and generationally-blind approach to policy require serious consideration.

Responses to this article can be read online at:

<http://www.ecologyandsociety.org/issues/responses.php/6010>

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