

Property as a Social Relation: Rights of “Kindness” and the Social Organization of Lobster Fishing among Northeastern Nova Scotian Scottish Gaels

John Wagner and Anthony Davis

This paper describes the informal system of property rights that characterizes the commercially valuable lobster fishery pursued in St. George’s Bay, northeastern Nova Scotia, by the descendants of Scottish Gaels. In this setting, discrete family-defined but individually “owned” lobster fishing berths coexist cheek by jowl with a “common ground” fishery. The principles governing the berth system derive, in part, from a land-based system of usufruct rights termed “kindnesses” in 18th century Scotland. The historical, familial, and community attributes of the berth system are outlined, as are the characteristics of the coexistent common ground fishery. Lobster harvesters with berth rights and many without argue that the berth system, in and of itself, is an effective conservation mechanism. This contention is described and discussed in relation to historical evidence respecting local lobster landings and recruitment characteristics. The paper concludes by arguing, first of all, that regulatory authorities should pay far more attention to the role played by informal property rights systems in accomplishing the goals of conservation and good management. While fisheries of this type are typically described in the literature as common property systems, we argue that they are, in fact, *mixed* property systems—a fact not adequately accounted for by existing regulatory policy or common property theory.

Key words: property, social history, fisheries management, Nova Scotia

In the St. George’s Bay region of northeastern Nova Scotia, lobsters are the mainstay of the small-boat fishing economy. This is particularly true along the western side of the bay (see Figure 1) where, since 1985, lobster landings and values have steadily increased, recently reaching their highest levels in over a century. This increase in both landings and values has been a godsend for fish harvesters struggling to survive in the face of the recent, devastating collapse of groundfish populations and declarations by government of groundfish-

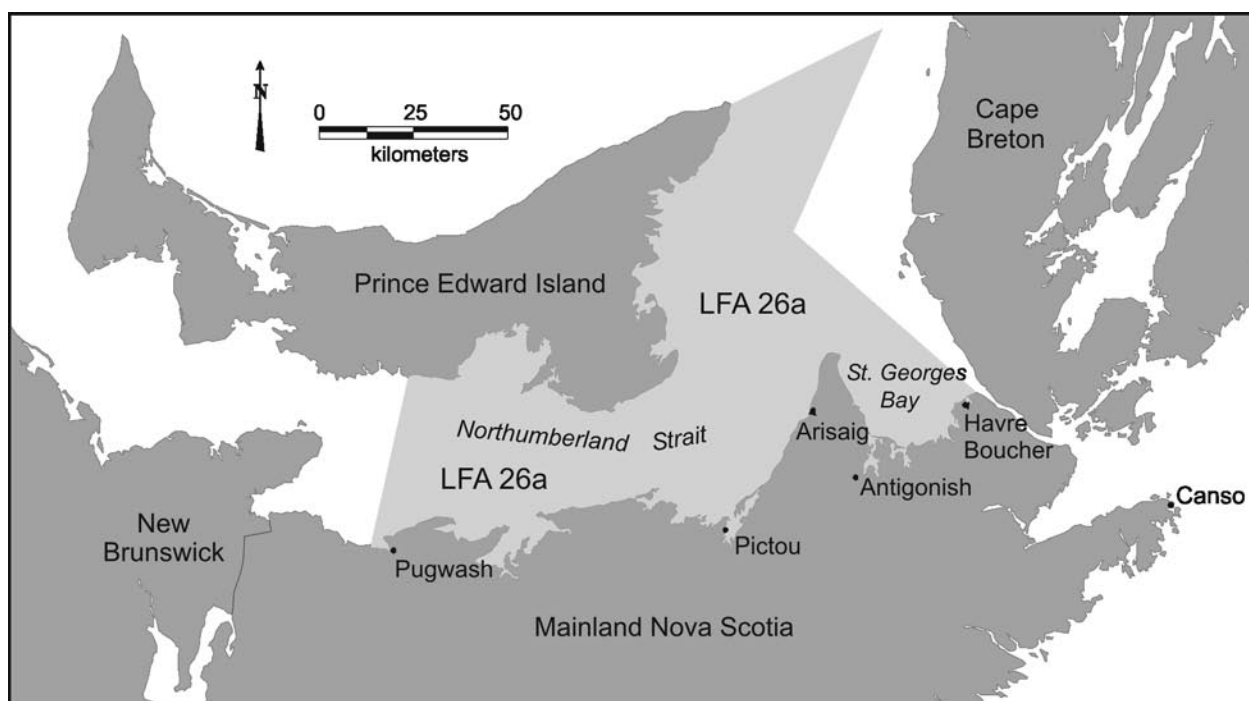
ing moratoria. (Groundfish are demersal fish species; such as cod, halibut, haddock, and pollock, that feed at or near the ocean floor.) During the 1990s, income from lobster fishing rose to just over 80 percent of all small-boat fishing income in this area (DFO 2000). Snow crab, herring, and tuna fisheries are next in economic importance, with modest contributions from black back (flounder), mackerel, and scallop fisheries.

The rise in lobster landings over the past decade and a half can be attributed partly to ecological factors—warmer than usual water temperatures, in particular, which result in faster growth and a more active breeding cycle for Atlantic lobster (*Homarus americanus*). Since several species of groundfish are also known to feed on juvenile lobster, at least opportunistically if not as a first preference (Davis et al. 2004), it is likely that the collapse of groundfish populations has also contributed to the increase in lobster populations. But local management practices themselves are also one of the key factors leading to the current robust state of the fishery in this corner of Nova Scotia.

The Canadian Department of Fisheries and Oceans (DFO) is the government agency formally responsible for regulating the lobster industry. Its current approach is to limit the number of fishing licenses within each of 41 numbered lobster fishing

John Wagner is assistant professor of anthropology at Okanagan University College, Kelowna and Penticton campuses, British Columbia. He is also coinvestigator for the Social Research for Sustainable Fisheries Project sited at St. Francis Xavier University, Antigonish, Nova Scotia. Anthony Davis is associate vice-president for research and a professor in the Department of Sociology and Anthropology, Mount St. Vincent University, Halifax, Nova Scotia. He is also director and principal investigator for the Social Research for Sustainable Fisheries Project at St. Francis Xavier University. Lead authorship rotates with every article produced through our collaboration. The research reported here has been supported by a grant from the Social Sciences and Humanities Research Council of Canada, Community-University Research Alliance Programme (#833-99-1012). Dr. Richard Apostle provided helpful comments on an earlier draft. Ms. Erica Gillis assisted in the production of maps. We would also like to thank the Human Organization reviewers for their helpful comments.

Figure 1. Study Area



Sources: Compusearch-MapInfo Group; Department of Fisheries and Oceans Canada, 2001.

areas (LFAs) within the Atlantic region; to limit the number of traps each licensed fish harvester can use; to restrict fishing to a particular season; and to disallow the capture of egg-bearing females, immature lobsters, and, in some fishing areas, lobsters that fall above or within a specified size threshold. This regulatory approach has developed gradually over a period of about 130 years. Though local fish harvesters have no real authority when it comes to setting regulations, many regulations either have been introduced or modified through harvester interventions (Davis and MacInnes 1996; DeWolf 1974).¹

Fish harvesters also regulate certain aspects of their own fishing behavior on the basis of local custom rather than federal regulations. This is certainly the case when it comes to access rights.² According to federal regulations, all harvesters licensed to fish within a given LFA are free to fish anywhere within that area. Those fishing out of St. George's Bay, which is located within LFA26a, are thus permitted to fish anywhere within the marine area extending from Havre Boucher near the southeast corner of St. George's Bay, west along the Nova Scotia coast to within a few miles of the New Brunswick border, and including the entire southeastern shoreline of Prince Edward Island (see Figure 1). In 2002, a total of 744 licensed lobster fish harvesters were operating in this area (DFO 2004). In reality, however, fish harvesters have developed their own informal methods for distributing themselves throughout these waters, methods that vary considerably from

place to place, but which result, at least in St. George's Bay and adjacent areas, in an orderly, well-managed set of access rules that, we argue here, are an essential component of the effective management regime now in place.

Those fishing out of the harbors on the west side of St. George's Bay employ an informal property rights system, known locally as a berth system, that is unique in this region and, possibly, in Nova Scotia as a whole. Berths are relatively small, family-controlled fishing areas created by extending the land boundaries of a family farm from the shoreline out to the edge of lobster habitat. The principles underlying this informal property rights system are very similar to those reported for areas in Scotland where many local fish harvesters trace their ancestry. In 18th century Highlands and Islands Scotland, the term "kindness" was used to refer to a usufruct right in land or resources that was, in the absence of formal title, obtained through use and occupation (Grant 1961). Thus, while the St. George's Bay berth system can be understood as simply one of several local strategies for allocating fishing habitat, it must also be understood as a system that embodies centuries-old cultural values and that plays a critical role in sustaining the family and community values that are definitive of the local fishing culture.

How and why did a berth system come into existence in the St. George's Bay region, and why has it survived? And how might a better understanding of this system inform

current and future approaches to management throughout the region—approaches that, ideally, value local knowledge and provide local fish harvesters with the opportunity to be full participants in decision-making processes? To answer these questions, we first describe the methodology employed in this study, one that was developed as a collaboration of university researchers and the staff and membership of a small-boat fish harvesters' association. The methodology was designed to facilitate a greater role for local knowledge and local harvesters within management processes and, therefore, speaks directly to the research questions posed above. After briefly describing our methodology, we then provide some historical description of the berth system, discussing both the cultural meaning and economic utility that inform that history. We then turn our attention to the contemporary lobster fishery and finally to the policy implications that flow from a recognition of the considerable importance played by locally managed property rights within the fishery as a whole.

Note on Research Design and Methodology

The material presented in this paper arose, in the first instance, out of the results of a collaborative research project carried out under the auspices of the Social Research for Sustainable Fisheries Project (SRSF) at St. Francis Xavier University, Antigonish, Nova Scotia. University researchers, in collaboration with the staff of two local inshore fish harvesters' associations and an aboriginal fish and wildlife society,³ are currently engaged in documenting local knowledge concerning fishing practices and fish habitat. This paper concentrates on information gathered in collaboration with the Gulf Nova Scotia Bonafide Fishermen's Association, an organization representing the small-boat fish harvesters who operate out of St. George's Bay and adjacent areas.

The core body of information presented here was gathered during interviews with local fish harvesters but is supplemented by archival research and a review of the historical literature that describes the region's early European settlement and subsistence patterns, as well as that in areas of Highlands and Islands Scotland from which the majority of early settlers came.

In the first phase of the research process, a series of telephone interviews were conducted with a stratified, random sample of 174 of the 304 lobster license holders in the region. The survey was designed to gather basic background information respecting participants' fishing activities, fishing capacity, community attachment, livelihood attachment, and social background. But the primary goal was to identify the persons considered by their peers to be particularly knowledgeable about the local fishing grounds. This was accomplished by asking the question, "Other than yourself, who would you say knows the most about the local fishing grounds?" The names of as many as five persons, both retired and actively fishing, were solicited in this manner from each interview participant. A rank ordered list of local knowledge experts for each fishing port was then constructed from the recommendations and these

persons were selected for inclusion in the in-depth, face-to-face interview phase of the research project.⁴ A total of 13 interviews were completed with peer-recommended "local experts" within the study area. Eight of these were individuals fishing out of Ballantyne's Cove and Cribbon's Point, the area where the lobster berth system is concentrated.

Historical and Cultural Roots of the Lobster Berth System

Large numbers of Scottish settlers began arriving in Northeastern Nova Scotia during the late 18th century as a result of the "Clearances" then underway. Tenant farmers were evicted and often forcibly relocated to other areas of Scotland, or to British colonies, by wealthy Scottish landowners as those landowners commercialized their operations. In effect, tenant farms were replaced by sheep throughout much of the Highlands as subsistence farms were converted to sheep pasture and landowners began selling vast quantities of wool to the British textile industry. Many tenant farmers were shifted first to coastal areas within Scotland and encouraged to develop sea-based livelihoods through participation in activities such as fishing and kelp harvesting. However, in the main, Scottish Highlanders remained a small-scale farming and livestock-rearing people, organized in tightly knit, kin-centered communities. Fishing did not have much commercial or social importance for these people, not even among those living on the islands or along coastlines, at least not until their farming livelihoods were denied them. However, many did harvest marine resources such as herring, shellfish, whitefish, flounder, and salmon for household and local consumption. These "crofter-fish harvesters" undoubtedly were skilled at and knowledgeable about fishing for such purposes (Grant 1961).

The Clearances were just beginning when the first boatloads of immigrants began arriving in the Gulf of St. Lawrence region. In 1772 the first boat of Highland immigrants landed on Prince Edward Island and in the very next year another boat, the *Hector*, delivered its cargo of people to the Pictou region of eastern Nova Scotia. The Scots arriving in Pictou gradually spread along the Gulf and Strait of Northumberland shores, clearing the forests and establishing homesteads, essentially subsistence farms, and communities not unlike those they had left behind in the Highlands. Some of these settlers were also English, Scots, and Irish members of regiments disbanded following the end of colonial conflicts. Most of the original grants made along the gulf shore to the west of Cape George were made to Highland Catholics while to the east, on the St. George's Bay side of Cape George, most grants were taken up by disbanded, Highland Presbyterian soldiers. One such grant, 2,000 acres in size, extended the full length of the shoreline from Cape George to Ballantyne's Cove. Subsequently this area was subdivided among the descendants of the original grantee, many of those subdivisions forming the basis for the berth system still in place today (see Figure 2).

Figure 2. The St. George's Bay Berth System

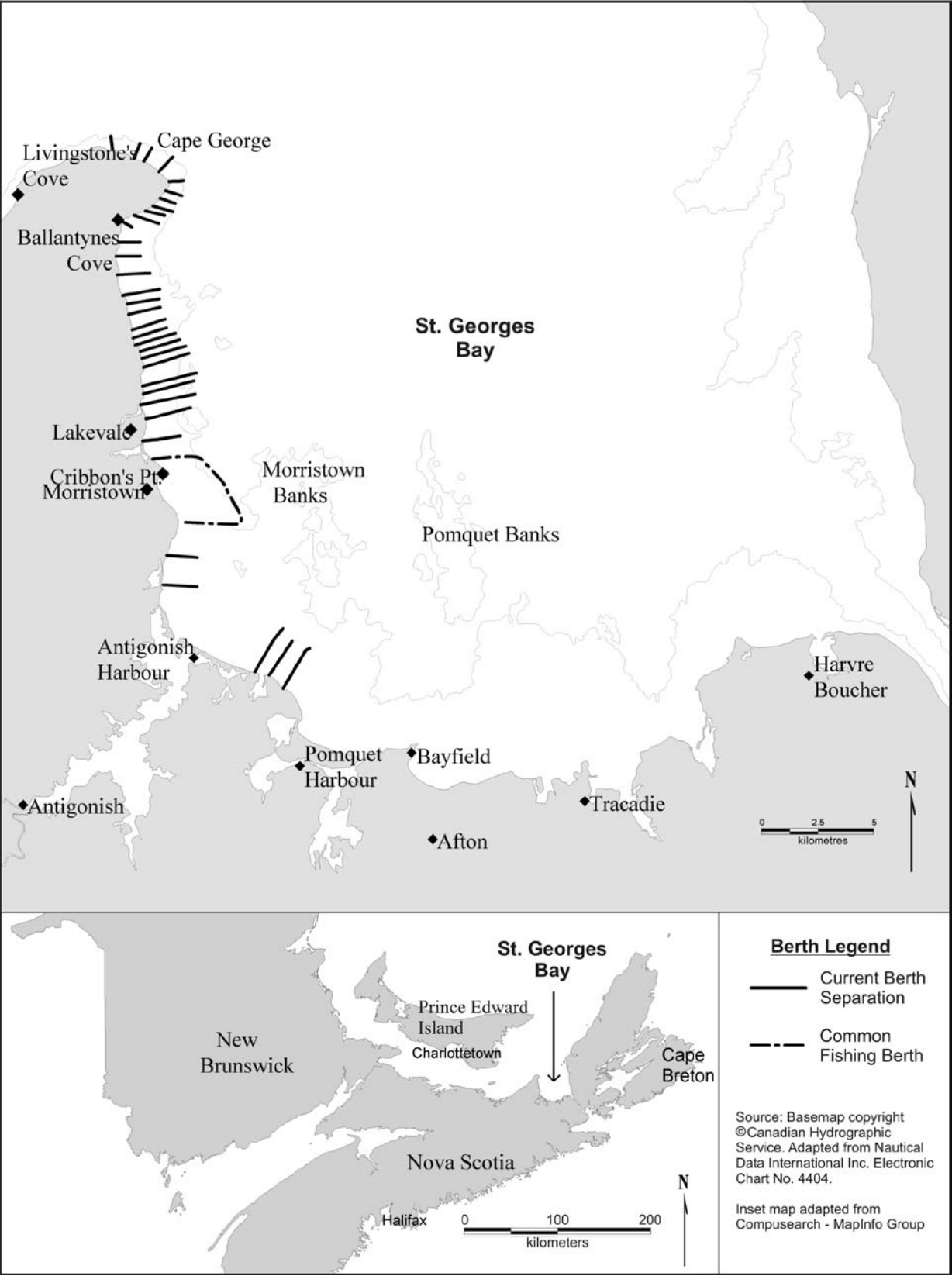


Table 1. Fishing Activity in Cape George and Morristown, 1861 and 1871

Household Characteristics	Cape George		Morristown	
	1861	1871	1861	1871
Total # of households	51	225	63	157
Total # of households fishing	9	125	7	38
Fishing households as a percent of total	17.7	55.6	11.1	24.2
Total number of boats	8	69	5	23
Total number of boat men	4	156	0	44
Total number of nets	17	6,038	0	2,487
Total quintals of fish	0	1158	0	133
Total barrels of pelagics	28	213	11	182

Religious affiliation was a key organizational and identity reference throughout this early period of settlement. But the Catholics soon came to intermingle with and dominate the Protestants, at least demographically, throughout the Cape George area, as immigration and settlement continued into the first decades of the 19th century (MacLean 1976). By the mid-19th century immigration had more or less ceased and the Cape George area was essentially settled.

The only economic information available for this time period at the household level was recorded for the census years 1861 and 1871. It describes a material life of remarkable similarity across households. Household after household is recorded as farming 200 acres or less, harvesting rarely more than 200 bushels of grain and 100 bushels of root crops, mainly potatoes. The vast majority kept domestic animals, including usually a couple of milk cows, a number of cattle, a small herd of sheep, and a few swine. A few also kept horses and oxen. Most households recorded production of butter, usually under 200 pounds, and cheese, ordinarily less than 100 pounds. Some minor production of wool and cloth are also noted. Overall, the levels of production indicate that farming and animal herding were essentially subsistence activities, but capable of generating small surpluses for sale or barter. Notably, a number of household heads reported hemp production. Among other things, this was done to generate twine fiber for making fish nets.

Except for the few engaged in specialized professions and trades, all but three Cape George and Morristown adult males, in both the 1861 and 1871 censuses, self-identified as farmers, irrespective of the fact that many derived their livelihoods from combining farming with other resource-extraction activities, notably fishing. Table 1 profiles basic attributes of the Cape George and Morristown fisheries as described by household heads in 1861 and 1871. Overall, the 1861 household information reveals a very modest level of fisheries participation, with most fishing occurring in Cape George and slightly less than one in five households reporting involvement. This changed dramatically in both communities by 1871. In this year, more than half of the households in

Cape George and almost one-fourth of those in Morristown reported some fisheries activity. Not only were more households participating in the fisheries; the character and scale of fisheries production also had transformed dramatically. This is evident across all of the attributes listed, but particularly telling was the apparently new engagement with dried salt-fish production. In 1861 not one person reported producing any quintals (1 quintal = 112 lbs.) of fish. Ten years later, 1,158 quintals of dried salt fish were reported by those fishing in and around Cape George, while those based in Morristown reported producing 133 quintals.

Fisheries had clearly become an important source of cash between 1861 and 1871. Indeed, it is very likely that, by 1871, fishing had become the primary source of cash income for many Cape George and Morristown households. This "new" local commitment to fishing was also evident in the dramatic increases in the numbers of boats, men, and nets being employed and barrels of pelagics being produced. This region's small-boat fishing livelihoods were taking shape here, as were household and community economic dependence upon fisheries resources, a quality that was corroborated by the fact that two fish buying operations had been established at Cape George during the 1860s (MacInnis Penny 1980).

The histories of Antigonish Scottish settlement, unfortunately, give very little attention to fishing. One source does note that in the early 19th century:

Fish was then very abundant. One end of the net was fastened on the shore, and stretched straight-out and fastened with a sugan or cable made out of hay, or straw, or gads. The net itself was made out of hemp grown on the farm for the purpose (MacLean 1976:117).

This description suggests that, in the beginning, fishing, like farming, was primarily a feature of the local subsistence economy, with catches being consumed within the household or within the community. The technology as described was rudimentary, although the growing of hemp for the explicit purposes of net making suggests the planning, knowledge, and work commitment essential to engagement in fishing. Of

course, participation in these sorts of fisheries was entirely consistent with experiences and practices of these peoples' antecedents, the Highlands and Islands crofter-fish harvesters (Grant 1961:255-259). In fact, some fishing gear may well have been brought directly to the area by Scottish settlers. One man currently fishing in the Ballantyne's Cove area reports that one of his maternal ancestors brought the first known shoreline fish trap to the area around 1815, a trap very similar to that used to catch salmon as recently as a few decades ago.

The description of fishing from the shore, with nets being run out into the water from a fixed point, offers some explanation for the curious difference between the numbers of households reporting participation in fishing in both 1861 and 1871 and the much smaller number of households claiming to own a fishing boat. In 1871 only 69 of the 125 Cape George households with some connection to fish production reported that they owned at least one fishing boat. A similar disconnect is evident in the Morristown information. This suggests that many were fishing directly from the shoreline with nets for pelagics such as salmon, herring, and mackerel, and baited lines for groundfish. The practice of fishing with nets and lines from shore, with the aid of a rowboat or double-ended skiff, appears to have continued well into the 19th century. Practices similar to this are described for late 18th century Highlands and Islands people by Grant (1961).

These early fishing practices appear to have laid the foundation for the later development of the lobster berth system. Much of the shore-based fishing likely took place in the waters directly off the homestead property. This makes sense for a number of reasons. Household-based family members and neighboring kin constituted the basic farming and fishing work groups. Fishing and "making" fish would most efficiently and effectively be carried on in waters and on shorelines immediately adjacent to the homestead properties. The initial survey maps demonstrate that land grants were determined so that many grantees would be assured of water frontage. Subsequent subdivisions of the initial grants, as in the case of the 2,000-acre grant described earlier, were also typically carried out so that each of the smaller lots would include some shoreline. Similar practices are intimated by Grant (1961:43-46, 53-55, 210-211, 259, and 264) with respect to the organization and pursuit of shoreline marine resource harvesting by Scottish Highland and Islands crofter-fish harvesters. Certainly the practices with which they were already familiar would provide them with initial reference points for organizing their New World fisheries.

Origins of the Commercial Lobster Fishery

When commercial lobster fishing began in the region during the 1880s, lobster fishing, following the practices developed for net and line fisheries, occurred in near-shore areas defined by the extension of family farm property lines. As one Ballantyne's Cove fisher explained: "everybody here

had a mixed farm and they fished besides. Most of them, they fished off the shore in dories . . . that's where the berth system came into effect" (Author's fieldnotes, February 27, 2002).

Lobsters were fished at that time using "set lines" which were run straight out from shore and anchored at each end with a *killick*, a homemade anchor fashioned of rocks, sticks, and rope. An individual might run a single 100-trap set line out from shore or a series of two or three 50-trap lines, at successive depths of water. Rowboats and even small sail boats were used to move from trap to trap along the line, collecting the contents of each in turn, then dumping the trap overboard again in the same location.

While rudimentary by today's standards, the dory and set line technology being used in 1880 represented a significant innovation in lobster fishing practices. Before commercialization, when lobsters were fished as a subsistence item, or for sale or barter in small local markets, they were typically fished by hand or with gaffs and spears. By the 1870s, however, large numbers of lobsters were being canned and a small but growing number were being shipped live to markets, mainly in New England.⁵ Even though most fish harvesters could manage no more than 100 traps using set line technology, landings in Nova Scotia as a whole reached an all time high of 40 million pounds by 1886 (DeWolf 1974:17). The market price of lobster tripled during the previous decade and the number of canneries in the province increased from 24 to 170. By the end of the 19th century several canneries were reported to be operating along the western shore of St. George's Bay.⁶

Property as a "Kindness"

The berth system has continued to the present day in the Cape George to Cribbon's Point area but exists as an informal rather than a legally recognized property rights system. Contemporary fish harvesters often describe them as the personal property of their users and state that they can be passed from father to son as part of an inherited homestead property. However, when registered wills from the early 19th century to the present are examined (114 in total), berths were never mentioned as inheritable property. Neither do any of the registered wills identify fishing equipment, boats, nets, or the like as inheritable property, presumably because it was not considered necessary to mention them.

Typically the Cape George-Morristown wills registered in the 19th and early 20th centuries contain specifications very much like those mentioned in the document filed in 1901 by a man known to us to have fished, though he identified himself to census-takers as a farmer (Province of Nova Scotia 1901:344). This man opened his will by specifying a son and the particulars that he was to inherit, these being:

a certain piece of land at the North Side of Cape George; a strip of my farm of 12 rods; [but] he shall not take wood or poles off the said piece of land except for the use of the place.

The second person named is a grandson who is designated to inherit:

the remainder of my farm and the remainder of my stock of cattle, sheep, horses and all my farming implements; also the privilege of taking wood and poles from land bequeathed to my son.

The third person mentioned is the wife. She is left:

the riding wagon and my black horses, riding harness, two cows and six sheep [as well as the right] to occupy my house and have charge thereof as long as she wishes to remain there [and] \$50.00 a year to be paid by [a person holding a financial obligation to the bequeathed] during her natural life.

So, while considerable attention is given to the disposition of farming, associated property and, in some instances, to detailed descriptions of the conditions of inheritance, not one mention is made, in any of the wills, of fishing-related matters and materials, let alone the transmission of fishing or lobster berths.⁷ Study of these documents reveals, quite surprisingly, that fisheries-related materials, including berths, were apparently not given sufficient personal and social meaning to warrant mention in any of the wills. The evident pattern is one that associates social identities, senses of place, people, and way of life with farming and herding, not fishing. This has been the case at least until very recently. These qualities, no doubt, embody and reflect key attributes of Highland and Islands Scot's culture and the value it associates with being on and of the land.

It is, in fact, the strong attachment of Highlands and Island Scots to the land, rather than to the sea, that allows us to understand the origin of the berth system. According to Grant (1961:7), "There was a widespread belief that the prolonged occupation of land gave a right to a 'kindness,' a right of permanent occupation (not possession) of it." This kindness embodied and reflected community recognition of and respect for what might be described as informal entitlements to land and resources earned through established occupation and use. Recognition of and respect for well-established practices of extracting marine resources from coastal areas that immediately abut settlers' property certainly fit within this culturally rooted notion of the right to a kindness. Further, in the Highlands and Islands it appears that the locally recognized right to a kindness, as an earned feature of occupancy and use, was transferable. That is, the right would be transferred, informally through its recognition by the community, from current holders to other users, be they direct kin-linked descendants or others. There is even some suggestion that these rights of kindness could be economically transacted; that is, included in the assessment of a property's economic value and purchased as an aspect of the property's sale (Grant 1961:8).

The concept of a "kindness," understood as an informal property right, serves to remind us that property in general is

best understood as a social relation, not merely the relation of an individual "owner" to a specific physical resource or "economic utility." Also, as Bromley (1992:4) has argued, property as a social relation includes a set of duties as well as rights. The St. George's Bay berth system then, understood as a set of social relations established by local fish harvesters on the water, also serves to sustain and reinforce a broader set of social relations that link fishing practices to community history and social identity. From a property rights perspective, this approach to resource allocation exemplifies what many researchers, notably Pauline Peters (1987, 1994), have referred to as an "embedded" commons. Such a system cannot be understood merely in terms of neoliberal (rational-actor) market economics or the new institutionalist economics championed by many common property theorists (Acheson 1994; Ostrom 1990, 1992; Ostrom et al. 2002). It must also be understood as a cultural system in which resource users are motivated to sustain a particular system of social relations and cultural meanings, as well as their economic livelihoods and the environmental conditions on which those livelihoods depend.

The Contemporary Lobster Fishery

During the 1990s, the lobster fishery accounted for over 80 percent of the total income of small-boat fish harvesters in this region of Nova Scotia (Wallace 2001). In 1998, the average gross income per boat from lobster sales within Lobster Fishing Area 26a was approximately \$60,000.⁸ Net income per boat averaged just under \$30,000 (DFO 2000). Landings figures for 1984 to 2002 for the two wharfs associated with the berth system, and for all remaining wharves in Antigonish County (Statistical District 13), are shown in Figure 3. Following record low catches during the 1970s, landings in District 13 (and LFA 26a as a whole) reached their approximate current levels by 1988. Landings at the two wharfs where the berth system is concentrated, however, have continued to show a steady increase since 1988, reaching historic highs in 2002. Notably, the increases throughout LFA 26a have occurred during a time when the total number of lobster licenses and total number of traps have decreased significantly, evidence that lobster populations have been rebounding after a period of over fishing (Wallace 2001:28-29).

Many berths are still fished by the descendants of original settler families, their entitlement having moved, unbroken in a few cases, down through as many as five generations. Berths encompass virtually the entire western shoreline of St. George's Bay, from Cape George to Antigonish Harbor, an area served mainly by two wharfs located at Cribbon's Point and Ballantyne's Cove (see Figure 2).

Each boat is captained by an owner-operator who, in most cases, hires one crew member during lobster season. Of the 47 owner-operators fishing out of Cribbon's Point and Ballantyne's Cove, 29 fish exclusively in individual berths, 3 brothers share a common berth, and the remainder share the

outside banks and an inside “common ground.”⁹ An additional four owner-operators fishing out of Antigonish Harbor share two berths but also fish the outside grounds.¹⁰

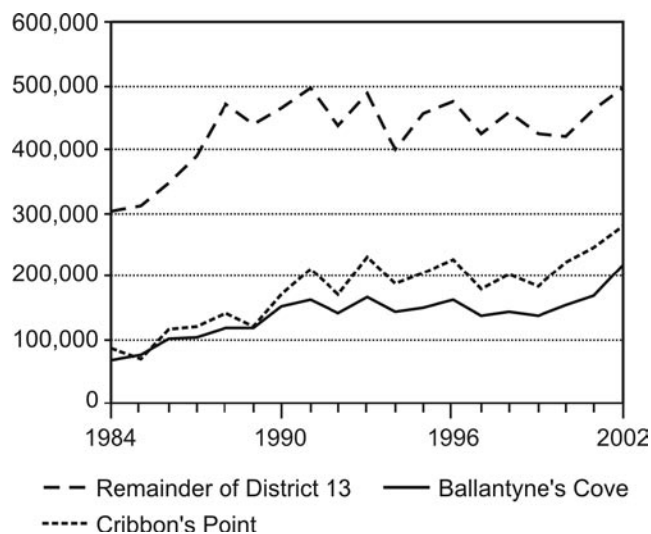
To some extent the same set of access principles applies within the entire local fishing area, whether inside or outside ground, individual or shared berths. In all cases, for instance, individuals must maintain their access rights through regular use. Otherwise others can and will move into their fishing areas. Also, whether fishing in berths or outside, fish harvesters, with very few exceptions, will “respect” the rights of other fish harvesters to continue undisturbed in their habitual use of a given location. The result is that, even when several fishers share a common area, they will each tend to place their traps in slightly different locations within that area. The typical pattern involves distributing up to 50 sets of traps, 6 to 8 traps in each set, throughout one’s fishing area. Placement depends on a number of factors, but most critical is the need to stay on “hard” or “broken” bottom (rocky bottom), rather than mud, since that is the habitat preferred by lobsters when they are active.

Though individual fish harvesters all tend to stick to their own preferred spots within a shared area, there will also be some shifting around as they each attempt to “feel” out the grounds and determine where the best fishing is during the various phases of each eight-week season. Since shared areas overlap one another, it is also possible, over time, for individual fishers to shift entirely out of one area and into another, as long as they don’t find themselves in direct conflict with other fishers. And, of course, as soon as one fish harvester begins altering his habits in this way, it creates more opportunity for others to do the same. Access rights to common grounds are thus much more fluid than for berths, but underlying principles are much the same and hearken back to the kindnesses of previous generations. Instead of kindnesses, fish harvesters today speak of “gentlemen’s agreements” and note the obligation they all have to “respect” the rights of others within the local fishing community.

The Berths

For the most part, today’s berth holders have acquired their rights in one of two ways; through inheritance or through purchase of the gear used by the previous berth holder. In many cases these principles now work in tandem; that is, a son will take over his father’s berth but will also purchase his father’s gear and, in some cases, his license. Since lobster licenses in this region now sell for as much as \$300,000, retiring fish harvesters are less likely than formerly to simply give a son their license. A fully equipped modern boat also sells for as much as \$150,000. As a consequence, both licenses and gear have become a kind of retirement fund for contemporary fish harvesters. When sold, however, licenses, gear, and berths go preferably to sons or other immediate family members, or failing that to other members of the local community, ideally to those with an established family history in fishing. We have no evidence to date of berths being transferred to outsiders as a consequence of the sale of a gear or license.

Figure 3. Lobster Landings, 1984-2002



Source: Fisheries and Oceans Canada, 2002.

Of the 18 berths for which we have obtained information regarding acquisition, 11 of those currently fishing the berths acquired them from their fathers through inheritance.¹¹ Five of them were acquired by purchase with one of these involving the consolidation of at least three smaller, purchased berths.¹² In the two remaining cases the berths were acquired by a son-in-law. Of the 11 berths out of these 18 for which we have information for the previous generation, 7 were acquired by inheritance and 4 were acquired by purchase. Once again, one of the acquired berths was a consolidation of three previously separate berths. Finally, one berth in the previous generation was acquired not through purchase, but simply by taking over an area vacated by a neighboring, retiring fish harvester. The opportunity for this individual to take over that berth may have been facilitated, however, by the fact that he had married into the community and lived on property close by the berth of his father-in-law. He appears to have taken over and consolidated his father-in-law’s berth and the neighbor’s berth, once they retired.

Today’s berths are thus varied in their histories and genealogical characteristics. One of the men currently fishing a berth at Ballantyne’s Cove area is a fifth-generation descendant of the first settler in the area. Now over 70 years of age, he continues to fish the same berth as his father and grandfather before him, his grandfather being the first in the family known to have fished lobster commercially. His grandfather began fishing lobster during the time when lobster canneries first began to operate in the St. George’s Bay region.

The pattern is quite different in the case of Ken,¹³ a second-generation fish harvester in his mid-fifties operating out of Cribbon’s Point. Ken fishes a berth that has been consolidated

from three smaller berths by his father, a pattern that has occurred in other instances as well. One of the smaller berths fronted on Ken's father's property. A second one fronted on property belonging to his brother. A third berth, in between the other two, fronted on a property belonging to an unrelated family and was obtained when the previous owner retired. The man had no children and no close relatives interested in fishing, so he sold his gear to Ken's father. According to Ken, the gear was worthless but his father bought it anyway to secure rights to the berth. Ken and his father fished the three berths together for several years and when his father retired Ken took over both his gear and license. He then "retired" his father's license, rather than sell it, to ensure that no one else would lay claim to any portion of the consolidated berth.¹⁴

The Inside Common Grounds

Along the inshore fishing grounds extending from Cape George to Antigonish Harbor, there are only two areas where lobsters are not fished in an individual berth. In one instance a group of three brothers have recently consolidated their three adjoining berths into one common berth. In another instance, a dozen men share what they describe as a "common ground," but it could equally well be described as a second "common berth." At the beginning of the lobster season, these individuals fish almost exclusively on the outside grounds, mainly on Pomquet and Morristown banks (see Figure 2), but then as water temperatures rise and lobsters become more abundant closer to shore, they all move a portion of their traps inside. At the beginning of the season they meet on the wharf to discuss the number of traps each will place on the common ground, in recent years agreeing to limit themselves to 80 or 100 traps. Exceptions are made for a couple of individuals who have traditionally concentrated a larger portion of their gear in this area. For the most part, each fisher sticks to his own area or areas within the common ground, but will typically share those areas with one or more other fish harvesters. Although a number of fish harvesters have moved into or out of this area during their fishing careers, it is widely acknowledged on the wharf today that this group and no others have the right to fish this area. As with the berth system, purchase of the gear of a current member carries with it the right to fish in the area.

This was not always a shared fishing area, however. A portion of the area fronts on the original homestead property of the family described above, where Ken and his father succeeded in consolidating three berths. This area was previously fished as a berth by Ken's uncle, just one generation ago. Although the history of the remaining common ground has not been fully documented, it would appear that other portions of it were also once taken up by small, individual berths where each fish harvester fished set lines with the use of a rowboat. As these "old-timers" retired, some sold their gear to other local fish harvesters, but others did not, allowing the boundaries of some of the smaller berths to collapse and setting the stage for a modest invasion of the area by other

harvesters. Over time, however, those fishing in the area were able to reach agreement that they would share it among themselves but not allow further entries, in effect creating a common-ground berth.

With very few exceptions, these are the only individuals allowed to fish on both the inside and outside grounds. It is otherwise a strict rule that those who fish berths are not permitted to fish outside. This rule is explained in terms of a sense of fair play. If an individual could fish all his traps on the outside grounds when lobsters are most abundant there, at the beginning of the season, then move his traps inside to an individual berth when lobsters are more abundant inside, he would gain an unfair advantage over the others.

This provides one example among many of how a sense of fair play has informed the evolution of informal property rights in this setting. One fish harvester, for instance, when explaining the process by which he lost his right to fish an inside area—a consequence of not exercising that right over a period of a few years—emphasized that he was not unduly upset about the loss since his total landings for the season are comparable to those who fish berths. As he succinctly put it: "But we [those fishing mainly outside] do just fully as good. That's the bottom line."

The inside area in which the above individual lost his fishing rights was also a common ground area for a period of time during the 1950s and 1960s. That common ground appears to have come into existence as the result of the same processes described previously, namely the collapse of small set-line berths that were abandoned rather than sold or passed on to family members. Two additional factors contributed to the collapse of the earlier set-line berth system. First, by the 1940s most fish harvesters were using motorized boats and were thus able to fish more traps in a larger area. When such individuals purchased a set-line gear they were naturally motivated to expand the fishing area if possible. This pressure increased still further by the 1950s and 1960s when boats with small, single-cylinder engines were being replaced by much faster, more expensive boats equipped with car engines, paper sounders, and mechanical haulers.

Second, by the 1960s, the farmer-fisher adaptation, and the mixed subsistence-cash economy in which it had evolved, had given way to fishing as a full-time occupation in a fully cash-based economy. This then provided still more motivation for lobster fish harvesters to enlarge their berths. Rather than the orderly process that occurred in the case of the large common ground described previously, in this case a prolonged period of conflict led to the area being reconstituted into a set of four larger berths. Two individuals who fished in the area when it was a common ground reported that another fisher, after moving into the area on the basis of a gear purchase, began to expand his fishing area each year. When he came into conflict with another fisher, he would haul that person's traps, remove their lobster, then throw back the traps after cutting them loose from their buoys. He persisted in these tactics for several years despite being resisted actively by the other harvesters and ostracized on the wharf and in the community.

But since government regulations do not recognize this local system of property rights, nothing short of physical violence would have been sufficient to stop this particular individual's aggressive behavior.

The Outside Grounds

Much the same set of principles applies to the outside banks as on the inshore fishing grounds. For the most part, each outside fish harvester habitually sets his traps within specific areas, usually sharing those areas with a set group. The group varies from location to location and for the most part fish harvesters stick to locations they have habitually fished. As with the inshore grounds, many began fishing specific locations only after purchasing the gear of a retiring fish harvester. A few fish harvesters are constantly experimenting, however, trying out new areas where they may have spotted a bit of hard bottom on their sounder. And, on occasion, individuals do move into areas traditionally fished by others—to test the waters. If those fishing in that area feel there is room for an additional boat, they may not actively protest and might leave it up to the new entrant to determine if he wants to continue fishing regularly in those waters. If one or more of those already fishing there actively opposes the new entrant, however, he is unlikely to persist. On occasion, such conflicts have escalated from verbal protests to the cutting of trap lines, but unlike the individual described above, virtually all fish harvesters work hard to avoid such conflicts. The advantages to be gained by moving some traps into an area already fished by others is not likely to be worth the loss of traps or the censure one will receive on the wharf from other fish harvesters.

For the most part, then, those looking for a few additional locations in which to set traps will go to areas where no one else is fishing. Since all boats are now equipped with sophisticated sonar equipment, it is possible to find the odd small shoal, usually a little further outside, where it is worth setting a string of traps. Some fish harvesters report having found such outside shoals when "steaming" from one of their outside lobster fishing areas to another. They will record the location on the basis of a LORAN (LONG RANGE Navigation)¹⁵ or GPS reading, then move a string of traps there a day or two later. Many fish harvesters also report having found small shoals of this type, prior to the groundfish moratoria, when dragging or longlining. Modern equipment has thus made it possible for fish harvesters to identify virtually all lobster habitat in the bay that is worth fishing. This introduces what is perhaps the main disadvantage faced by those fishing exclusively on the outside banks—the extra fuel and labor costs incurred by having to travel greater distances to set traps and retrieve lobsters.

On the basis of evidence gathered to date, it is clear that a very small number, perhaps 2 or 3 of the 28 individuals who fish individual berths, also fish outside grounds at the beginning of the season—a right based on traditional practices and the fact that a few berths are not productive enough to

justify placement of a full set of gear throughout the season. Also, as noted previously, all the fish harvesters who do not have individual berths have some access to an inside common berth. The actual range of difference in landings associated with these differing types of access rights appears to be quite small, however, suggesting that, over time, fish harvesters have worked out a system that is relatively equitable for everyone, whether or not they have a berth.

Ecology and Conservation

In addition to historic, cultural, and economic factors, ecological factors also appear to have played a role in the persistence of the St. George's Bay berth system. Lobster habitat along the shoreline from Cribbon's Point to Cape George is relatively uniform and sufficiently productive that it makes economic sense for harvesters to fish exclusively in fairly small, individual berths. The adjacent outside grounds provide flexibility and resiliency to the system, since those without individual berths, or with less productive berths, can fish some of their gear outside. Arguably, it would not be possible for a berth system to develop or survive in the absence of similar ecological characteristics.

On the other hand, while there is broken bottom in the area from Cape George to Arisaig at the western end of the berth system, it does not extend as far out from shore and there is no outside ground. Even so, there was a berth system in place in the Livingstone's Cove area one or two generations ago. One fish harvester from Livingstone's Cove reported that an older, individually fished set-line berth system existed in the area, but during his father's generation it devolved into a common-ground system similar to that operating on the outside grounds at Pomquet and Morristown Banks. His rationale was that, by sharing a larger area, local fish harvesters gave themselves the opportunity to go "where the lobsters were" at different times of the season, while retaining relatively equitable access to the fishery. Ecological conditions at Livingstone's Cove can thus be understood as a limiting factor when it comes to property rights arrangements. A berth system worked well enough in the context of a subsistence-based, fishing-farming adaptation but larger, common berths provide for more equitable access to lobster in today's fully commercialized fishery.

The berth system dwindles away at its other end, just south of Cribbon's Point, in an area where broken bottom gives way to sand and mud. Four harvesters operating out of Antigonish Harbor do fish in two shared berths in this area but because of the limited amount of broken bottom they must also fish the outside banks. As one moves further to the east to Bayfield and Havre Boucher, however, where once again there is a good deal of broken bottom, full-time berths once again become a viable option. But those fishing in the Bayfield-Havre Boucher area favor a common-ground approach to access rights, rather than a system of individual berths. In this case, then, ecological factors do not operate as a limiting factor and cultural and

historical factors appear to be far more salient. The cultural background of those fishing in the area south of Antigonish Harbor, while mixed, is dominated by Acadians. We do not have sufficient evidence to claim that a berth system would be inconsistent with the historic and cultural preferences of Acadians, but, on the basis of current evidence, it seems reasonable to hypothesize that cultural factors, not ecology or economics, are what distinguish the property rights systems in these two adjacent settings.

There is also some evidence to indicate that the berth system has advantages over the common ground approach when it comes to lobster conservation. This is certainly the opinion of most of those fishing out of Cribbon's Point and Ballantyne's Cove. When interviewed on the topic, both those fishing in individual berths and those fishing on the outside grounds stated that the berths acted as a breeding ground for the whole fishing area. The different distribution of fishing effort in berths and common areas, they argued, meant that many, if not all of the berths, were less fished out by the end of the season than the common areas. Once the eight-week fishing season is over, the argument goes, the lobsters gradually redistribute themselves and thereby replenish the more intensively fished areas.

Although there is not sufficient evidence to conclusively prove the effectiveness of berths as a conservation measure, current landings data do lend support to the fishers' argument. As noted previously, lobster populations in LFA 26a and District 13 generally reached historic highs during the late 1980s as a result of rising water temperatures and reduced predation by groundfish. But during the 1990s and into the current decade, landings in District 13 as a whole have remained stable. By contrast, landings at Cribbon's Point and Ballantyne's Cove, where the berth system is concentrated, have increased by 100 percent and 84 percent respectively since 1988 (see Figure 3).¹⁶

Similar arguments have been made previously by Acheson (1987, 1988) in regard to the biological impacts of "perimeter-defended" lobster fishing territories in Maine. A comparison of landings data collected from areas fished exclusively by individuals (perimeter-defended areas) with areas shared by either small, single harbor-based groups, or larger groups from two or more harbors, confirmed that landings, lobster size, and the number of egg-bearing females were all significantly higher in the perimeter-defended areas.

Present and Future Challenges for the Local Property Rights System

The St. George's Bay berth system embodies and sustains a system of social relations that is fundamental to local fishing communities and that can traced back several generations to its origins in Highlands and Islands Scotland. Its continuing existence, however, is also supported by ecological and economic factors related to the distribution pattern, level of productivity, and degree of uniformity of lobster habitat. The system has changed and evolved over time and will continue to

do so in response to a number of factors. Two series of events that are now underway, one having to do with recruitment practices in general and the other with the recent Mi'kmaq entry into the fishery, are likely to significantly reshape the St. George's Bay lobster fishery in the near future.

The vast majority of St. George's Bay fish harvesters are the sons and nephews of a previous generation of fish harvesters, a pattern that has been in existence since the beginning of the commercial fishery here well over a century ago. But the percentage of sons following their fathers into the fishery has plummeted in recent decades for a number of reasons (SRSF 2001, 2002). First, fishing has been an economically marginal, low-return occupation for most of the last century, and many of today's fish harvesters have encouraged their children to obtain a university or trade school education, rather than take up fishing. Also, since the 1970s when fishing incomes were particularly low, there has been a trend towards hiring wives, rather than sons, to crew during lobster season. This came about following the passage of legislation that for the first time allowed wives to qualify for unemployment insurance on the basis of 8 or 12 weeks of employment on their husband's boat. Finally, the dramatic escalation in the costs associated with entry into the small-boat fisheries have made it virtually impossible for most sons to follow in their father's footsteps. By the time of retirement, a typical fisher is still paying off the cost of a \$100,000-\$150,000 boat and will not have accumulated much equity beyond his house. The lobster license, now worth upwards of \$300,000, is relied on as a retirement fund and cannot simply be given away as an inheritance to a son. Sons, therefore, even if they were to buy a father's gear and license for a reduced, in-family price, would in many cases incur an insurmountable debt. While the lobster fishery has been fairly lucrative in recent years, it is the only dependable fishery in the area and in LFA 26a the lobster season only lasts for eight weeks. Other fisheries, such as herring and tuna, provide variable and usually quite limited returns, and only a few local small-boat fish harvesters have been able to gain access to the snow crab fishery, which has been the single most lucrative Gulf of St. Lawrence fishery over the past decade. Many fish harvesters, in fact, must continue to supplement their fishing income with off-season trade employment.

Where then will the next generation of fish harvesters come from? This question is not easy to answer given the set of changes now underway, but certainly there will be strong pressure on retiring fish harvesters to begin selling their licenses and gear to outsiders and to the corporations that have been able to take over similar fishing enterprises in other parts of the province.

The problem of recruitment and escalating license costs is also being affected by the entry of the Mi'kmaq, an aboriginal people, into commercial fishing. The Mi'kmaq were actively engaged, over a century ago, in the first phase of the commercial lobster fishery in Nova Scotia and have a long history of harvesting lobster for subsistence purposes. But as the commercial lobster fishery developed, the constraints of

the Indian Act¹⁷ combined with the systemic discrimination to which they were subjected, meant that Mi'kmaq fishers did not gain access to either the licenses or gear necessary for participation in a fully commercialized fishery. This changed in 1999 when the Supreme Court of Canada ruled, in the Marshall Decision, that the Mi'kmaq possessed a treaty right to fish commercially, for a "moderate livelihood."¹⁸

As a consequence of the Marshall ruling, the strategy pursued by DFO has been to convince aboriginal communities to fish within the federal regulatory scheme, by offering to provide them, at no cost, licenses, boats, and training programs. Many aboriginal communities have bought into the DFO program, at least for now. One consequence is that DFO has begun buying up all available lobster licenses to provide them to Mi'kmaq communities who fish them as a community enterprise. This has caused a further, dramatic escalation in the selling price of lobster licenses, while at the same time limiting the number of licenses available to younger non-aboriginal individuals interested in entering the fishery.

Conclusion

While DFO has lately begun to pay lip service to the importance of "local knowledge" for management processes and the need for "consultation" with fish harvesters and their associations, they continue to ignore one of the fundamental principles upon which the viability of small-boat fisheries throughout Atlantic Canada has always depended—the rights of local fish harvesters to jointly make decisions about what happens in local waters. By ignoring the importance of the many informal property rights systems that operate in the small-boat fisheries, most notably in the lobster fishery, they are also able to ignore the impact of their policies on the communities in which those people live—at least until such time as crisis overtakes them. Crisis after crisis has, in fact, been the legacy of DFO's centralized, bureaucratized approach to fisheries management. The most important policy argument arising from this study, then, is that local property rights systems should receive more authority and legitimization within DFO's regulatory scheme.

How this might be done should be a matter for careful negotiation between local fish harvesters, through their associations, and DFO. Local property rights systems vary tremendously throughout the Atlantic region, and from fishery to fishery, and there is no easy formula for integrating or accommodating them within the formal set of rights created by federal legislation. It is also abundantly clear that DFO staff currently have no mandate or incentive to negotiate away any portion of their own management authority. Until that changes, little would be gained and much could be lost by tampering with what, for over a century now, culturally and economically, has been an effective system.

The informal property rights system described here could be analyzed from a common property perspective, as Acheson (1987) has done for the Maine lobster fishery, and policy prescriptions could be developed on the basis of comparisons

with the design principles proposed by Ostrom (1990) as definitive of "successful" common property systems (Chisholm 2002). But the property rights system described here is not, strictly speaking, a commons. It is a mixed property system. On the one hand there is public ownership, through the national government, of the fisheries resource itself and the marine environment in which it is found. Outright private property exists in the form of boat and fishing gear and a somewhat more limited form of private property in the form of lobster licenses. Licenses constitute a limited form of private property in the sense that, while they can be bought and sold by individuals, they are ultimately the property of the government, dispensed as privileges and withdrawn at will. Berths themselves constitute a strongly individualized, if not a private, property right, but simultaneously operate as a form of both family and community property. Even the common berth and outside common grounds cannot be unequivocally classified as common property. They are managed locally as common property, but there is no state recognition of local fish harvesters' rights to manage the resource.

Describing the St. George's Bay case as a common property system would thus represent a significant distortion of fact. The recent invention of common property theory as a distinct field of study (Bromley 1992; McCay and Acheson 1987, Ostrom 1990), to the extent that it relies on the notion that property systems can exist in "pure" states, either as public, private, or common property systems, is itself problematic for the same reason. What seems most important in this instance and, in fact, in most resource management settings, is precisely the mixed nature of most property rights systems as they function on-the-water and on-the-ground. For policy makers, the real challenge, then, is to understand the intersection of local, regional, and national jurisdictions, in public, private, and common property domains, and to craft policy that balances and integrates these various domains.

A fundamentally destructive feature of Canada's current policy and management orientation is the emphasis placed by DFO on a more highly capitalized and economically "rationalized" fishing industry. The community values and sense of cultural identity that inform the informal property rights system in St. George's Bay are entirely ignored by this approach. As a result, policy makers fail to see the potential that exists for linking the goals of economic and ecological sustainability to the cultural sustainability of small-boat fishing communities. The centuries-old Scottish notion of rights of kindness in property, which continues today to inform the behavior of those fishing out of Cribbon's Point and Ballantyne's Cove, exemplifies the cultural face of small-boat fishing and how cultural, economic, and ecological factors can and should be integrated.

Notes

¹Fish harvesters in the Southern Gulf of St. Lawrence have initiated several policy changes intended to limit participation and fishing effort. One of these initiatives was the "bonafide" fisherman program. This initiative was proposed for the purpose of limiting access to fishing

licenses and quota to harvesters with established bonafide status—those dependent on full-time fishing for their livelihood and who have a local history of family participation. The bonafide fishermen designation was intended to eliminate most part-timers from the commercial fisheries, particularly from high-economic-value fisheries such as lobster (Davis and MacInnes 1996).

²A similar but distinct set of access rights has been described by Acheson (1987, 1988) for lobster fishers in Maine.

³The three community organizations involved in the Social Research for Sustainable Fisheries collaboration are the Guysborough County Inshore Fishermen's Association, the Gulf Nova Scotia Bonafide Fishermen's Association, and the Paq'tnekek Fish and Wildlife Society, a Mi'kmaq organization sited in the community of Afton.

⁴Complete descriptions of both Phase 1 and Phase 2 interview processes and the outcomes of Phase 1 interviews have been provided in previous publications and so will not be repeated here. For more detail see Davis and Wagner 2003 and SRSF 2001. This is the first paper in which we report on the outcomes of Phase 2 interviews.

⁵For several decades live "market" lobsters were shipped to New England only from the south shore of Nova Scotia and the Bay of Fundy area, while lobsters from more northerly regions, like St. George's Bay, went entirely to the canneries. This practice continued until transportation and storage systems were improved sufficiently that all regions of the province could ship to the live market.

⁶That lobster landings, in 1886, reached their highest levels ever, despite the rudimentary technology being used, is evidence of the extraordinary abundance of lobsters during that period. Their abundance is attested to by written reports (DeWolf 1974; Hollingsworth 1787; Perley 1852) and the oral traditions of St. George's Bay fishing families.

⁷The value of examining wills is found in the fact that these documents are perhaps among the most personal of records. Consequently they express, in their elemental subjectivity, essential features of cultural practices including: customs with respect to the definition of material goods considered important; the material qualities of life with which a person most closely identifies; the seemingly "natural" social priorities expressed in the disposition of significant material goods, and the character of social relations expressed in the order of dispositional decisions.

⁸All monetary figures are given in Canadian dollars. In 1998, Can\$1.00 equaled about US\$0.70.

⁹Twelve of those who fish mainly outside share one large common berth. One additional individual who fishes mainly outside is reported to have some access to his brother's berth at the end of the season. Two others, one from each harbor, fish exclusively on the outside banks.

¹⁰Two pairs of brothers fish out of Antigonish Harbor, each pair sharing a family berth. They concentrate their efforts on the outside banks at the beginning of the season but move traps inside as the season progresses.

¹¹It is quite likely that some of these inheritances also involved cash transactions. That is, a son might purchase a father's license or gear, or at least a portion of the gear, perhaps at a discounted price, when taking over the berth. In many cases, however, a son would already have his own gear and license when his father retired. In one such case the son purchased his father's gear and license simply to extinguish any possibility of other claims being made on the berth. As one goes back in time, however, the gear of a retiring fish harvesters had little cash value and the license none at all. In such cases gear that was valuable

was apparently kept in the family while the rest would be sold or simply discarded. We have insufficient evidence, however, to fully document the patterns of gear disposal under these circumstances, or the extent to which cash transactions, or cash considerations, influenced the transferal of berths.

¹²This consolidated berth is fished jointly today by three brothers. A fourth brother fishes an adjoining berth obtained by inheritance from their father.

¹³All names of fish harvesters appearing in this paper have been fictionalized to protect the confidentiality of interview participants.

¹⁴His father's license was retired in the sense that he chose to let it expire through nonuse. This was a reasonable choice at the time since licenses then had no significant cash value. He has since had reason to regret his action, since that license today would sell for as much as \$300,000.

¹⁵LORAN is a terrestrial radio-navigation system using ground-based transmitters. On-board equipment allows fishers to read their geographical coordinates for any given location. LORAN technology was a precursor of GPS technology, which uses satellite rather than ground-based transmitters.

¹⁶Lobster catches throughout the North Atlantic region as a whole have reached all time highs over the last decade. The pattern varies considerably from one fishing area to another, however. We, therefore, make no attempt here to evaluate trends within the berth system to overall North Atlantic trends. More definite arguments about the conservation benefits of berths will require further detailed and comparative biological research.

¹⁷In Canada the federal government is constitutionally empowered to administer and govern Indian peoples and Indian lands. This authority is exercised on the basis of a comprehensive body of federal legislation known as the "Indian Act." The Indian Act was originally enacted in 1876 and determines, for instance, the structure and level of authority of the institutions by which each "Indian Band," or Indian community, makes decisions about political and economic affairs.

¹⁸The court also determined that the Mi'kmaq treaty right to fish was not subject to government regulation, unless a government regulatory agency could "justify" a curtailment of that right on the basis of some overriding public good, such as the need for conservation (R. v. Marshall 1999).

References Cited

- Acheson, James M.
1987 Economic and Ecological Effects of Territoriality in the Maine Lobster Industry. In *The Question of the Commons*. Bonnie J. McCay and James M. Acheson, eds. Pp. 37-65. Tucson: University of Arizona Press.
1988 *The Lobster Gangs of Maine*. Hanover, N.H.: University Press of New England.
1994 Welcome to Nobel Country: A Review of Institutional Economics. In *Anthropology and Institutional Economics*. James M. Acheson, ed. Pp. 3-42. Lanham, Md.: University Press of America.
- Bromley, Daniel W.
1992 *The Commons, Property, and Common-Property Regimes*. In *Making the Commons Work: Theory, Practice, and Policy*. Daniel W. Bromley, ed. Pp. 3-16. San Francisco: ICS Press.

- Chisholm, Rob
2002 Drawing the Line: Informal Property Rights in a Nova Scotian Lobster Fishery. 2002 Co-Winning Essay, National Undergraduate Essay Contest in Agricultural, Environmental, and Development Economics, Ohio State University. URL:<<http://aede.osu.edu/resources/docs/pdf/chisholm.pdf>> (June 15, 2004).
- Davis, Anthony, J. Mark Hanson, Hadley Watts, and Holli MacPherson
2004 Local Ecological Knowledge and Marine Fisheries Research: The Case of St. Georges Bay Fish Harvesters' Ecological Knowledge of White Hake (*Urophycis tenuis*) Predation on Juvenile American Lobster (*Homarus americanus*). Canadian Journal of Fisheries and Aquatic Sciences. Forthcoming, Fall.
- Davis, Anthony, and Daniel MacInnes
1996 Representational Management or Management of Representation? The Place of Fishers in Atlantic Canadian Fisheries Management. In Fisheries Resource Utilization and Policy. Proceedings of the 1st World Congress of Fisheries, Theme 2. Pp. 317-333. New Delhi: Oxford.
- Davis, Anthony, and John Wagner
2003 Who Knows? On the Importance of Identifying "Experts" when Researching Local Ecological Knowledge. Human Ecology 31:463-489.
- Department of Fisheries and Oceans (DFO)
2000 Overview of the Gulf Region. Moncton, New Brunswick: Department of Fisheries and Oceans Canada.
2004 Commercial Lobster Fishery Profile. URL:<http://www.glf.dfo-mpo.gc.ca/pe-pe/es-se/lobs-homa/lobster-homard_2004-e.html#table_1> (June 15, 2004).
- DeWolf, Gordon A.
1974 The Lobster Fishery of the Maritime Provinces: Economic Effects of Regulations. Bulletin 187 of the Fisheries Research Board of Canada. Ottawa: Department of the Environment, Fisheries and Marine Service.
- Grant, Isabel F.
1961 Highland Folk Ways. London: Routledge & Kegan Paul.
- Hollingsworth, S.
1787 The Present State of Nova Scotia with a Brief Account of Canada and the British Islands on the Coast of North America. 2nd ed. Edinburgh: William Creech.
- MacInnis Penny, Wilena
1980 The First Century at Cape George. Honor's thesis, Department of Celtic Studies, St. Francis Xavier University.
- MacLean, Raymond A., ed.
1976 History of Antigonish. Antigonish, Nova Scotia: Casket Printing & Publishing.
- McCay, Bonnie J., and James M. Acheson, eds.
1987 The Question of the Commons: The Culture and Ecology of Communal Resources. Tucson: University of Arizona Press.
- Ostrom, Elinor
1990 Governing the Commons: The Evolution of Institutions for Collective Action. Cambridge: Cambridge University Press.
1992 The Rudiments of a Theory of the Origins, Survival, and Performance of Common-Property Institutions. In Making the Commons Work: Theory, Practice, and Policy. Daniel W. Bromley, ed. Pp. 293-318. San Francisco: ICS Press.
- Ostrom, Elinor, Thomas Dietz, Nives Dolsak, Paul C. Stern, Susan Stonich, and Elke U. Weber
2002 The Drama of the Commons. Washington, D.C.: National Academy Press.
- Perley, Moses Henry
1852 Report on the Sea and River Fisheries of New Brunswick. Fredericton, New Brunswick: J. Simpson.
- Peters, Pauline
1987 Embedded Systems and Rooted Models: The Grazing Lands of Botswana and The "Commons" Debate. In The Question of the Commons: The Culture and Ecology of Communal Resources, Bonnie J. McCay and James M. Acheson, eds. Pp. 171-194. Tucson: University of Arizona Press.
1994 Dividing the Commons: Politics, Policy, and Culture in Botswana. Charlottesville: University Press of Virginia.
- Province of Nova Scotia
1901 Registry of Deeds, Antigonish County, Book W, E344.
- R. v. Marshall
1999 Donald John Marshall, Jr., Appellant, versus Her Majesty the Queen. Supreme Court of Canada, File No. 26014. Supreme Court Reports (3):456. URL:<http://www.lexum.umontreal.ca/csc-scc/en/pub/1999/vol3/html/1999scr3_0456.html> (June 15, 2004).
- Social Research for Sustainable Fisheries (SRSF)
2001 Who'll Be Left Fishing? The Dilemma of Recruitment in Small Boat Fishing. SRSF Fact Sheet 3. Antigonish, Nova Scotia: Social Research for Sustainable Fisheries, St. Francis Xavier University. URL:<<http://www.stfx.ca/research/srsf/ResearchReports/FactSheets/FactSheet03.html>> (June 15, 2004).
2002 Fishing Families and the Changing Social Fabric of Small Boat Fishing. SRSF Fact Sheet 11. Antigonish, Nova Scotia: Social Research for Sustainable Fisheries, St. Francis Xavier University. URL:<<http://www.stfx.ca/research/srsf/ResearchReports/FactSheets/FactSheet11.html>> (June 15, 2004).
- Wallace, Kay
2001 Gulf Nova Scotia Small Boat Fisheries: A Socio-Economic and Historical Profile. Antigonish, Nova Scotia: Social Research for Sustainable Fisheries. URL:<<http://www.stfx.ca/research/srsf/GNSBFA/SmallBoat.html>> (June 15, 2004).