FENCING THE LAST FRONTIER: The Case for Property Rights in Canadian Aquaculture

ROBIN NEILL

How to Farm the Seas (Paper #2)
Brian Lee Crowley, Gerry Johnson
Series Editors

September 2003

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Born in 1931 in Thunder Bay, Ontario, Robin Neill holds a B.A. and an M.A. in Political Economy from the University of Toronto and a Ph.D. in Economics from Duke. His academic appointments include University of Saskatchewan, 1960–69; University of Prince Edward Island, 1970–72; Carleton University, 1972–95 (retired as Full Professor); University of Prince Edward Island and Carleton University, Adjunct Professor, 1995–present. He was special advisor to the Fisheries Council of Canada and the Department of Fisheries and Oceans, 1984–85. Dr. Neill is chairman of the AIMS Board of Research Advisors.

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Executive Summary

Aquaculture is set to become a vigorous and lucrative industry for Atlantic Canada as the wild fishery continues to decline and markets open up for high-grade farmed fish. Yet "fencing" this last frontier is hampered by a property rights system essentially developed for the hunter/gatherer nature of the wild fishery, rather than agriculture, which aquaculture more closely resembles.

The development of agricultural-style property rights for aquaculture faces two major hurdles. First, the advance of the agricultural frontier assumed that the land was empty and to be had for the taking, but aquaculture faces prior ownership and usage rights — on the part of aboriginals, for example — in coastal waters.

Second, unlike in agriculture, where ownership was transferred from the Crown to the individual farmer, in aquaculture the Crown continues to own the seabed, the water column, and the water surface. In effect, the fish belong to the fish farmer but the farm does not. The fish farmer's relationship to government is one of lessee to lessor, not owner to regulator. As lessee, the farmer has *obligations*, while government imposes its will through decisions made by the relevant minister and bureaucrats, with all the pressures to bend to special interests and political expediency such a relationship implies.

Why are individual property rights so important in aquaculture? In law, the right to property flows from two basic sources: use and liberty. The arguments for property rights based on *use* are:

- the economic one that property is organized most efficiently when the individual is able to own both the means of production and the product itself; and
- the moral one that the person who is responsible for contributing the capital, labour, expertise, and other inputs and who bears the risk of failure should also be the one who reaps the rewards of success.

Modern North American agriculture is the outstanding example of such a property rights structure: the farmer owns the resource and receives the return from its husbandry and increased productivity.

Property rights based on *liberty* flow from the assertion that the individual is not free unless able to possess and dispose of property. Thus, for example, Canada's aboriginals lost their land and, hence, their freedom as they were displaced by stronger and more productive European settlers.

In Canada, the spirit of the law has traditionally been defined by the sovereignty of Parliament and its associated discretionary power. Now, under the influence of the Charter of Rights and Freedoms,

the administrative state has begun to decline. The courts have begun to reassert their authority and, with reference to ancient treaties and the common law, are now redressing the wrong done to aboriginals. This trend could presage a new attitude toward property rights elsewhere, but so far it has hardly touched the entrepreneurial fish farmer.

There are, in fact, no federal or provincial statutes dedicated solely to aquaculture. Even as recently as February 2003, "aquaculture" had not been defined in case law. Accordingly, the fish farmer faces a situation in which there is no legal restraint on government and administrative discretion, no right to sue government in the courts, and no rights that government itself is duty bound to protect. Canadian aquaculture is, in effect controlled by a sluggish and inept bureaucracy that is blinkered by a concern for short-term economic development and endowed with discretionary power biased by the political strength of established interests.

Could Canada learn lessons from other countries? In the United States, our major trading partner, aquaculture shares most of the property rights problems of the Canadian industry. Though not generally applicable to aquaculture, many western US states use a property rights regime known as "appropriation", whereby rights are granted on a first-come, first-served basis on condition that the owner "beneficially employ" the resource. A modified version of this system might work well in Canada, though it would face strong opposition from those who have adapted themselves comfortably to the feudal bureaucracy of our system of administrative discretion.

In contrast, Chile has engaged in several interesting legal experiments to kickstart its salmon-farming industry, which is now one of the largest in the world. Also a free trade partner of Canada, Chile has created a legal foundation that grants licences and leases that bestow virtual private property rights in fish-farming sites. It has also developed a national aquaculture policy that encourages entrepreneurship, supports export efforts, and helps fish farmers navigate the bureaucracy. Despite its problems — controversy exists over environmental impacts on the country's southern fiords, for example — Chile's national policy is one that promotes aquaculture, not one that defends the wild fishery. In that sense, it is also a policy that Canada should emulate.

If aquaculture is to grow and employ more Atlantic Canadians, the industry needs a National Aquaculture Act that introduces secure property rights to the foreshore, the water column, and the seabed, and is backed by the courts. It does not need more government economic incompetence and inefficiency, or arbitrary decisionmaking by bureaucrats.

Introduction

The process by which the surface of the earth has been subjected to organized cultivation did not end with the closing of the frontier in the western United States in the late nineteenth century or with the opening of new agricultural land on Canada's prairies in the twentieth century. That process continues today in the rainforests of Africa and South America. Importantly for Canada, it also continues in our coastal waters, a process that Smith and Wilen (2002) call "fencing the last frontier".

Following the extension of exclusive jurisdiction to 200 miles offshore by all coastal nations in 1976, the international character of virtually all the world's marine fisheries came to an end. Henceforth, the fisheries became the "property" of the coastal states, to be developed for their exclusive economic purposes. Countries that traditionally had fished in distant waters from which they were now excluded turned to processing wild fish caught by fleets belonging to the owning states, and to aquaculture. Indeed, aquaculture expanded rapidly in both the excluded and the owning states in response not only to the establishment of the 200-mile exclusion zone but also to the exhaustion of wild fishery resources, as competitive overfishing with increasingly efficient equipment depleted stocks of the most marketable fish, opening a market niche for high-grade farmed fish.

In order to restrain competitive pressure on the wild fishery, Canada and other owning countries established embryonic property rights for the resource. Harvesting seasons were set, catch limits were put in place, and equipment was regulated. Yet the nature of property rights for the wild fishery differs greatly from that which developed for continental agriculture. Property rights in agriculture are based on ownership of the productive space: ownership of a portion of the earth was transferred (or *alienated*, to use the legal term) from the state (from the Crown, in the case of Canada) to harvesters who were then free to choose how they wished to husband the resource and improve its productivity. Farmers were, in effect, given control over the *means of production*, rather than a share in the product. In the wild fishery, in contrast, property rights are invested in the *ownership of the product*, not the productive space in which the resource could be husbanded and developed.

Unfortunately for the Canadian fish farmer, property rights in aquaculture have developed along lines analogous to those for the wild fishery. Indeed, no statutes exist that are related specifically to aquaculture; instead, aquaculture is subsumed under statutes relating to the wild fishery and coastal resources. The relationship of the fish farmer to government is one of lessee to lessor, not owner to regulator. Under Canadian law, the fish farmer has *obligations*, while government, as lessor, has *discretion*, embodied in the decisionmaking ability of the minister and ministerial bureaucrats, with all the pressures to accede to the wishes of special interests and political expediency inherent in such a relationship.

Fencing the Last Frontier

This paper argues that fish farming should be governed by a system of property rights analogous to that which has been so successful in North American agriculture. Like agriculture, aquaculture is *culture*, and should not be governed by rules suited to the hunter/gatherer nature of the wild fishery. Above all, however, property rights would provide the legal framework within which the economic enterprise of aquaculture could achieve *efficiency* — that is, the greatest output for society at the least cost. In the absence of a strongly entrenched, well-defined, rationally constructed set of individual property rights in aquaculture, the assertions of special interests can be given political force through misinformed public opinion or failures in government. The structure of the industry itself then becomes inefficient, inequitable, and dysfunctional in every respect.

Yet two principal blockages stand in the way of such a property rights arrangement for Canadian aquaculture. First, where the North American agricultural frontier advanced on the assumption that the land was empty, the Canadian aquacultural frontier advances on the assumption that there are prior riparian, navigational, and fishing rights in coastal waters.[1] Second, where the agricultural frontier advanced on the assumption that ownership was to be alienated from the Crown and invested in individual citizens,[2] the Canadian aquacultural frontier advances on the assumption that the seabed, the water column, and the surface of the water belong to an administrative apparatus built up in relation to the wild fishery and guided by the preconceptions of parliamentary sovereignty in a constitutional monarchy. Fish in the wild are an open-access resource. They are commonly owned — which, in Canada, means they are owned by government in right of the Crown. In aquaculture, the fish belong to a private citizen, but the fish farm — the productive space in which the resource can be developed — does not. In the wild fishery, husbandry is left to nature or to estimates by scientists and bureaucrats of the health of the resource. In fish farming, husbandry is the responsibility of the fish farmer.

Canadian governments have yet to contemplate even the possibility of alienating ownership rights to citizen fish farmers on the agricultural model, even though, as aquaculture matures, industry practice is moving toward that found in agriculture. Since the passage of the Canadian Charter of Rights and Freedoms, however, the Supreme Court of Canada has begun to erode parliamentary sovereignty and its concomitant emphasis on ministerial discretion, as Weinrib (2001) notes. This trend, combined with legislation in the form of a National Aquaculture Act to establish a rational structure of property rights along the lines of those in place for agriculture, would go a long way toward securing and enhancing the viability of aquaculture as an important economic activity, particularly in regions, such as Atlantic Canada, where the wild fishery appears to be in terminal decline.

1 These common law rights were made explicit in Magna Carta (1215) and have been upheld by the courts ever since.

2 The nature of this alienation took many forms. Land was auctioned, sold, transferred at low prices to squatters, granted on pre-emption — that is, granted to a settler who had taken "empty" land and improved it without waiting to receive legal title to it beforehand — and, finally, given to all comers who paid the minimal administration fees and met the development requirements of the Free Homestead System.

The paper is organized as follows. The next section provides a brief overview of the nature and development of the concept of "property rights" in English common law, with a particular emphasis on the principles of *utility* and *liberty* as the two ultimate sources of property. Following that discussion is a description of the current state of property rights in Canadian aquaculture. I then describe ways to transfer, or alienate, property rights in aquaculture from the public domain to private individuals through such measures as auctions, outright sale, and political fiat, but leading ultimately to a version of the Free Homestead System that served so well in the advance of the agricultural frontier. In the last two sections, I refer to the development of aquacultural property rights in the United States and Chile, which could provide some lessons for Canada, and I describe some recent attempts to introduce legislation on property rights in Canada. The paper ends with a brief summary and concluding remarks.

The Nature of Property Rights

The Definition of Property

Property is a thing owned by or belonging to a person. It is a possession held to the exclusion of any other person's will with respect to its disposition — in other words, it is held secure against any outside influence, even that of the state, for all time. Property can be disposed of or transferred to another person as its owner sees fit, subject only to constraints imposed by the source of the property right. The transfer may be in whole or in part, implying that the property is divisible with respect to its different rights, privileges, constraints, exposures, and duration. The elements of a divided property are limited properties, but all property is limited by the source from which it has arisen.

Ultimately, in the Hobbesian words of the Supreme Court of Canada (Canada 1998), property belongs to "who can hold a territory" — that is, property is based on brute force. In an autocratic state, where the government has a monopoly of force, property belongs to the government. It may be disposed of by the government's assigned agents, but only according to the government's will. In a feudal state, where all property is ultimately owned by the sovereign, its disposition by those authorized (or *enfeoffed*, to use the feudal term) by the sovereign to do so is governed by the sovereign's will, limited by custom and by whatever concessions the sovereign has made with respect to something like personal property. In a democratic republic, even though the government again has a monopoly of force, individuals hold property rights granted by the government that the government is obliged to enforce, even against itself. In a liberal democratic state, these rights are not a gift of the government but are deemed to be derived from another source.

A claim to property may be based on "first occupation". The term *occupation* is, however, ambiguous. If it means simply coming upon an object, then the claim can be backed only by a physical ability to hold the property in the face of competing claims: there is no purpose or rationale involved, and no ethical justification. If, however, *occupation* means putting the object to use, as one might employ a coastal location to farm fish, then *utility*, rather than first discovery in time, is the justification, and property's territorial limit is set by the amount that can be used.

Property Rights Based on Use

Three different rationales exist for property rights based on use. The most widely recognized is seventeenth-century English philosopher John Locke's *theory of labour embodied*, the premise of which is that one's labour is one's property. When embodied in an object — for example, a piece of cultivated land — the land participates in the quality of the labour and becomes the property of the labourer. This theory has difficulties, however, that arise from a lack of proof of the conclusion: first,

because there are instances when it is not true, as when parents cannot hold their children as property — that is, as slaves; and, second, because only the *product* of the labour, not the object laboured on, appears to be an extension of the presumably owned labour.

From this questioning of Locke's theory arose a second justification for property rights based on use — namely, that whoever adds to nature through the trouble of labour deserves a fitting share of the fruit of that labour. (The corollary would be that whoever damages nature through the turmoil of labour deserves a fitting forfeiture.) This assertion is, of course, merely a moral one, but it has had long and wide acceptance, and it provides the basis for the third justification for property rights based on use — namely, that a contribution to the well-being of society as a whole should be rewarded with possessions meted out in some fitting relation to the contribution.

The argument in favour of property rights is not simply that the product of private enterprise should be the property of private citizens, but that property rights should be organized so that the net benefits to society as a whole are as large as possible and that the agent responsible for these benefits should be motivated by a fitting reward. In the constellation of considerations with respect to this more general goal is the recognition that the most efficient organization of property includes an individual's right to own both the means of production and the product itself.

The strongest argument for unlimited private property rights with respect to the means of production rests on the idea that the person responsible for an enterprise — the one who contributes labour and expertise and who bears the risks of failure — should reap the benefits of success. That is, when the costs are counted and the returns are in, the difference between the two (the profit) should go to those who made the difference, who controlled the disposal of, or who owned the inputs in the production process. In the absence of such rewards, there is no motivation to undertake efficient activity, and, consequently, the greatest possible social net benefit (or utility) is institutionally impeded.

Property Rights Based on Liberty

The other basic source of property flows from the principle of *liberty* — indeed, modern democratic republics are founded on the claim to property rights based on liberty. Key to this principle is the unflinching moral assertion that the individual cannot be free unless propertied — that is, unless the person is able to possess and dispose of the objects necessary for civilized life. Without property, without secure possession of goods, the individual is not a person but a slave, a condition that, in a modern democratic state, is inconsistent, unfitting, and morally reprehensible.

Given the conditions in which modern economic enterprise is undertaken, however, the circumstances that give rise to property rights are more complicated than references to basic principles of utility and liberty. The presence of market failures, benefits and costs external to the calculations of those undertaking economic activity justifies some limitation and restructuring of private property. When exclusive property rights cannot be enforced — as in, say, the provision of navigation buoys — private property is technically impossible. Technologically determined, monopolistic market structures and the public nature of goods that are not used up when "consumed" — as in the case of

weather reports, for example — justify public ownership of the means of production on the grounds of utility. Such cases are, however, exceptional ones that prove the point. In the end, a property structure that generates the greatest good at the least cost is the desideratum in all economic activity, including aquaculture. One must also consider property sourced in liberty, but that is a matter of justice rather than economics.

Property Rights in Practice: The Case of North American Agriculture

The outstanding example of a successful property rights structure based on ownership of the means of production is modern North American agriculture.

Under the confused and dysfunctional parceling out of limited property that constituted the later stages of feudalism, the residual — the excess over the costs of immediate production and capital improvements — was the property of economically idle rentiers (typically, the landed aristocracy) or was diminished by the need to meet economically irrelevant claims. Under such feudal conditions, economic progress was slow. Indeed, it was to speed up progress that private property in agriculture was established, often following a political revolution that overthrew a feudal regime.

Since the end of feudalism, private property — whereby ownership of the means of production, justified by the principle of utility, has been in the hands of those who are responsible for the product — has been an institutional bulwark against serfdom, absentee ownership, speculative reserves, exploitative rents, and economic stagnation. The farmer owns the resource and receives the return from its being husbanded and made more productive. The result has been an awesome increase in agricultural output in both the United States and Canada.

Still, this is an oversimplification of the story, since, as I noted above, property rights are sourced not just in utility but also in liberty. In the North American case, aboriginals were displaced as the agricultural frontier advanced. The native peoples could neither hold the territory nor put it to use as productively as could Europeans, who took the land, thereby constraining the liberty of the original owners. In the face of an advancing, technologically superior frontier, the argument in favour of aboriginals' retaining their property rights on the basis of liberty was not sufficient to trump the argument from utility. The *disutility* (to use the economists' term) that the aboriginals suffered as their traditional way of life came to an end was certainly an external cost of the advance of the agricultural frontier, and should have been subtracted from the benefits to settlers and paid in compensation to aboriginals. Instead, aboriginals were gathered into reserves on relatively poor land, which was hardly a limitation on settlers' grants. The state could have done more to redress this wrong by limiting the amount of property that was alienated to settlers. In Canada, however, it did not. Rather, such redress as has occurred has been accomplished, not by the state in the form of Parliament but by the courts, buttressed by the Charter of Rights and Freedoms and reaching back to ancient treaties, to the English common law, and to fundamental sources of property.

The Changing Nature of Property Rights

The nature of property rights under the English common law has been changing subtly over time. US legal expert Roscoe Pound, writing in the early 1920s, noted that, since the late seventeenth century, the English-speaking world had oscillated between strict law, whereby the liberty of individuals was defended against the state, and purposive law, whereby individuals' rights could be overridden to accommodate new circumstances. In the United States, the defence of individual rights, among them the right to property, had been a good thing when that country was primarily an agrarian frontier. When the United States adjusted to industrialization and urbanization in the early twentieth century, however, individual liberties could no longer be the only consideration. Accordingly — and in Pound's view, fortunately — the spirit of the law had changed by the 1920s. The paralyzing effect of the courts' enforcing individual liberties against a government that sought the general welfare was overcome by the "development of administrative boards and commissions" with discretionary powers (Pound 1921, 75–76, 79, 202–203).

In Canada in the last half of the twentieth century, the spirit of the law changed again. The Canadian situation, of course, had distinguishing characteristics. At one time, Canada, like Britain but unlike the United States, did not have a formal written constitution. The Judicial Committee of the UK Privy Council, Canada's supreme court until the middle of the twentieth century, certainly played a role in frustrating governments' attempts to come to grips with the problems of industrialization. Still, it was parliamentary sovereignty, rather than the interpretation of the courts, that characterized the spirit of the law from the beginning. The declaration of parliamentary sovereignty that followed Britain's Glorious Revolution of 1688 was rejected in the new United States, and even in Britain it was partially thwarted by entrenched common law and by the attachment of bourgeois members of Parliament to their own property rights. In Canada, in contrast, parliamentary sovereignty and its associated discretionary power defined the spirit of the law. Accordingly, in this country, the early twentieth-century advance of administrative law and the enhancement of discretionary powers were more marked and its late twentieth-century retreat, in both the political and judicial arenas, more balky.

In Canada, as elsewhere, the recent retreat of the administrative state has come about as a backlash of excesses of discretion, in the face of which the courts have reasserted their authority. But Canada has also seen re-enforcing institutional changes — in particular, the establishment of the Supreme Court of Canada after the Second World War, buttressed by the enactment of the Charter of Rights and Freedoms in 1982. Following "a quiet revolution" in which the Supreme Court became more assertive (Evans et al. 1995, 359), the Charter formally declared individual and, indeed, group rights that were to be enforced against the sovereignty of Parliament (Weinrib 2001). This entailed neither a birth nor a rebirth of strict law as Pound defined it. It did, however, restrict the sovereignty of Parliament and give the courts a role in the formation of the law. As Evans et al. (1995) note:

> At issue here is the very meaning of legal procedure. Procedure is not primarily a way of confining government within the limits of rules. Instead, it is seen as a *structure of opportunities for participation and criticism* [emphasis in original], allowing affected persons to challenge and influence official policy. In this perspective, the function of legal criticism is less to reduce the

> role of government than to use and develop the resources governmental policy offers for promoting individual and group interests in public welfare…. [L]egal process can help to assure positive regard for affected interests in administrative policy-making. Such use of the law involves in part an enlargement of the meaning of "fairness" in administrative proceedings.... As Charles Reich argues, "Only by making such benefits into rights can the welfare state achieve its goal of providing a secure and minimum basis for individual well-being and dignity"…. Legal argument can transform public purposes into authoritative principles, by which administrators can be criticized and held to affirmative duties. (1112–1113.)

For our purposes, then, the question is: has this new oscillation in the spirit of the law affected the structure of property rights in aquaculture? Have the uncertainties of politicization under ministerial discretion been reduced? Having returned to early nineteenth-century frontier conditions in Canada's coastal regions, has this return to law as a defence against the Procrustean aggression of the state converted public property into private property in aquaculture? The answer is: not yet, although some recent decisions of the Supreme Court suggest that one day it might.

First Nations' treaty, fishing, and territorial rights have received considerable support from the Supreme Court in its new role (Bell 1998; Slattery 2000), which could presage a new attitude by the Court with respect to property rights elsewhere. This support, however, has been based on the principle of liberty, rather than that of utility, and at first sight it would seem that the rights of the aquaculturist are more likely to be supported by the latter. What is in question is not simply the protection of private property, but the basis and structure of property in a particular economic environment. An entrepreneurial fish farmer who implements the results of new science in a growing industry is in a different position from that of an aboriginal who asserts rights associated with a traditional culture and centuries-old treaties. The protection of First Nations' rights is taking place in relation to a dead frontier — it is a matter of readjustment after the frontier has moved on. The aquaculturist, in contrast, operates in a new industry on a very live frontier, and property rights in this area need to be defined on the principle of utility.

Current Property Rights in Canadian Aquaculture

What property rights, then, exist today with respect to Canadian aquaculture? This question has two aspects: the treatment of aquaculture under the law, and the nature of the relationship between the fish farmer and government.

Aquaculture and the Law

In looking at the statutes and case judgments by the courts, one is immediately struck by the complete absence of any statute in either federal or provincial law that is dedicated solely to aquaculture.

In 1982, the surge in aquaculture enterprise associated with declining wild fish stocks and the establishment of a national 200-mile exclusive offshore fishing zone prompted a comprehensive stocktaking of Canadian property rights in aquaculture (Wildsmith 1982). A large part of that stocktaking consisted of a tally of the powers of and restraints on government action outlined in the *Constitution Act, 1867* and in the interpretation of that act by the courts. The review revealed that the jurisdictional problems associated with Confederation applied in aquaculture as elsewhere. Property and civil rights were under provincial jurisdiction, while property in the offshore areas and in navigable waters, as well as jurisdiction over the offshore fishery, fell within the responsibility of the federal government. As of 1982, the courts had not definitively settled whether aquaculture was to be treated as fishing or agriculture — indeed, as of February 2003, "aquaculture" still had not been defined in case law. Accordingly, the stocktaking concluded, aquaculture would have to remain a matter of joint federal-provincial jurisdiction and its development would depend on co-operation between the two levels of government.

The 1982 tally found that the aquaculturist's common law property rights included the usual property right to domestic — that is, penned — animals, except in the rare cases where the courts had defined fish as a wild animal, but no such rights existed to the sea bed, the water column, or the offshore water surface. Full property rights to the foreshore — the land between low and high tide — seemed to be a possibility, and in one or two cases the courts had recognized prescriptive rights when investments had been made in the absence of a lease or grant from the Crown. Inland, common law riparian rights were protected to the middle of the body of water or watercourse, except when, as in Nova Scotia, the province had declared such rights to be inalienably vested in the Crown in perpetuity. On the ocean littoral, rights down to high tide belonged to the owner of the land adjacent to the water, meaning that the aquaculturist did not have the littoral rights of unimpeded access unless he also owned the upland. Similarly, the common law right to fish and navigate on the surface was pro-

tected by the courts. In short, aquaculture, recently arrived on the scene, had no recognition in common law except where it conformed to existing activities.

Except for a 1928 agreement between Prince Edward Island and the federal government concerning the farming of live oysters and other mollusks, all aquaculture-related legislation in Canada dates from the late 1980s. All these laws were the products of memorandums of agreement between the federal and provincial governments, and were intended to ensure the orderly development of aquaculture through "one-stop" licensing and leasing of aquaculture ventures.[3] In these statutes, a *licence* is a document that allows a person to practice aquaculture. A *lease* (sometimes called a *permit*) is a right to exclusive use of a property or site for a period of time. But what structure of property rights, if any, is entailed in these instruments?

All of these statutes are similar in that they provide for the continuance of all laws established before the acts based on the memorandums of agreement. They entrench the coastal rights of upland owners to unobstructed access to adjacent waters, and they ensure passage to previous users by entrenching the strictures of the federal *Navigable Waters Act*. Except in the case of Prince Edward Island, all the statutes place the process of licensing and leasing under provincial administration, but this is largely paperpassing, not decisionmaking. The federal government, through the Department of Fisheries and Oceans (DFO), retains control over the transport and export of fish and the protection of fish health (including certification of disease-free aquaculture), and has responsibility for the research and development of culturable species. DFO also determines whether applications for aquaculture licences and leases will be accepted or rejected. In fact, the federal government has not even alienated property rights in aquaculture to the provinces, let alone to individual citizens.

The precise administrative arrangements stemming from the federal/provincial agreements vary in detail from province to province. In New Brunswick, for example, the Department of Fisheries and Aquaculture issues leases in consultation with DFO. In Newfoundland and Labrador, it is the Department of the Environment, in its concern with the erection of shoreline facilities, that issues the permit to occupy Crown lands. In Nova Scotia, an Aquaculture Administrator in the Department of Fisheries, Aquaculture, and Inland Fisheries, in co-operation with DFO, reviews applications for licences and leases and arranges for public hearings in the local communities concerned. In every case, licences and leases are limited in size and duration and in terms of the kinds of activities that can be undertaken. In Nova Scotia, for example, sites for mussels are usually 25 hectares in size, while those for oysters are 7 hectares. Leases in Prince Edward Island are issued for 2 to 4 hectares of bottom for harvesting oysters of a prescribed size and for a prescribed season. In British Columbia, licences are issued for a twelve-month period and are renewable. By a court decision, all the lands in British Columbia between the islands and the mainland are provincial and can be leased by the province. In every province, there are "incentives", subsidies, and various kinds of assistance

3 Peter Underwood, of the Nova Scotia Department of Agriculture and Fisheries, told a Canadian Aquaculture Law and Policy Workshop in Halifax, February 2003, that, in practice, Nova Scotia is still struggling to get a one-window system of leasing and licensing.

intended to foster development of the industry. Finally, although these administrative agreements establish some property rights for harvesters, they do so almost accidentally and randomly.

In summary, even the casual observer would be forced to conclude that, whether deliberately or inadvertently, lawmakers have failed to take into account either the question of property rights or the structure of those rights.

The Aquaculturist and Government

The second striking aspect of the current status of property rights in Canadian aquaculture is the nature of the relationship between the fish farmer and government, a relationship that defines the "spirit of the law" governing the industry. In fact, the institutionalization of aquaculture in this country falls clearly into a government-dominated administration model. Licences and leases are granted, renewed, altered, and terminated at the discretion of either a politically appointed official or, more frequently, the political head — that is, the minister — of the licensing and leasing department.

Nova Scotia's *Fisheries and Coastal Resources Act, 1996* is typical. The act repeatedly uses the phrase "the Minister *may*"; rarely does it say "the Minister *shall*", but, in contrast, it often says "the lessee *shall*" (emphasis added). No doubt, both political considerations and common sense direct the minister normally to act with circumspection in the disposition of licences and leases. Still, the situation is clear: the government acts as overlord of the resource. No secure property rights are accorded the agent on the ground.

If the aquaculturist had any property rights, it would be evident in the working of the law governing his enterprise. The law would state that the minister *shall* act in a certain way. That is, the law would be a restraint on government and administrative discretion. Should the bureaucracy act contrary to the law, the citizen would have the right to sue in the courts. The citizen would have rights against government — rights that government itself would be duty bound to protect. Under the exact opposite of the property rights regime that now prevails in Canada, the aquaculturist would have unlimited ownership of the amount of the resource he could beneficially employ. The exploitation of the resource would be in the hands of the agent undertaking both the risk and the effort and having the strongest interest in the long-run viability of the enterprise.

The establishment of property rights in Canadian aquaculture faces major obstacles in the form of government's inability to come to grips with the efficient organization of economic enterprise, its failure to enforce the common law rights of citizens, its tendency to favour special interests, its blinkered concern with short-run economic development, and its bias toward administrative solutions (Brubaker 1995). Yet the importance of establishing property rights in the industry cannot be overstated.

Introducing Property Rights in Canadian Aquaculture

When property rights and privileges are clear, secure, divisible, and transferable, they can be efficiently reassigned by market processes, as Trelease (1974) shows, and the prices paid for them will tend to reflect their true market value. Efficiency — that is, the principle of utility — is then most likely to be served. Instead, Canadian aquaculture is controlled by a sluggish and inept bureaucracy, endowed with discretionary power but biased by the political strength of established interests vested in obsolescence (Neill and Rogers 2002). Such a structure is unlikely to produce good outcomes in an industry that is new and characterized by rapid technological and economic change.

It should be emphasized, however, that what Canadian aquaculture requires is not just property rights, but *economically efficient property rights* that would then be supported in the courts on the grounds of both liberty and utility.

There are several ways in which to introduce property rights in Canadian aquaculture — that is, to transfer, or alienate, property rights from the public (government in right of the Crown) to private individuals. One way is through auctions; other ways include outright sale, political fiat, and taxation. I discuss each of these methods below.

From Public to Private Property by Water Auction

If utility as a source for property rights is to be weighed against other considerations, its value must be measured. One way to determine the value of (and for the state to capture the economic rents from) an otherwise open-access resource is to auction it off to the highest bidder.

Auctions are already used to alienate partial property rights in important resource-based industries in Canada (Crowley and O'Connor 1993), but none of those industries has the characteristics of frontier agriculture or, indeed, of frontier aquaculture, and none of the auctions used is designed to test the value of a structure of property rights. It is true that, at one point, auctions were used to alienate land on the North American agricultural frontier, but they were abandoned as the frontier advanced and experience accumulated.

Auctions usually are intended to determine the value of a commodity whose cost is either unknown or sunk and irrelevant. One can argue that such a money measure of utility is inadequate, in that it

takes too little into account. Yet all other measures of utility are necessarily subjective, depending on the moral judgment of some special interest.

The money measure, though ultimately also a value judgment, is the nearest approximation we have to an objective, generally acceptable measure. Prices, in the end, measure the relative value of one thing to another as that judgment is passed in the innumerable independent transactions of a modern market economy. In the case of aquaculture, the thing to be valued is not a commodity per se, but a structure of property rights (whether full, limited, or a mixture of both) to, say, a coastal site for salmon farming or to the surface, floor, and water column of a tidal bore. What is needed is an estimate of the relative efficiency of different structures of property rights in the use of some gift of nature. Three ways to determine such an estimate are of particular importance:

- Assignment by established political processes, which could run from assignment to a limited few in payment of political debts to assignment to all comers on condition of future profitable use consistent with the liberty of others and the utility of the community as a whole.
- Assignment by an administrative estimate of the apparent monetary and political costs and benefits, which could run from an outright grant to a sale or lease based on the outcome of an objective, scientific cost-benefit analysis.
- Assignment in an open, competitive auction entailing separate offers for combinations of limited or unlimited rights.

Two considerations drive the argument with respect to the use of auctions. First, what is to be determined is the value of alternative structures of property rights. This is not just a matter of finding who would value a resource more and would be willing to pay more, but which structure of rights would elicit the highest bid consistent with the long-run development of the resource. In an institutionally established industry, under competitive conditions, this valuation would not be in question, but aquaculture is in the process of technological and institutional formation. The current structure of property rights is itself an alternative that needs to be assessed.

Second, auctions are intended to elicit the estimated value placed on the thing auctioned. Auctions of any particular set of full or limited property rights would elicit higher bids from those whose activities are best served by that set. If, for example, the property rights of a mussel site entailed maximum exposures for mussel farmers and maximum liberties for pleasure craft, a relatively low bid from a local boating association would exceed the bids of mussel farmers. A different set of property rights might elicit not only a larger bid from mussel farmers than from boat owners, but one that would exceed the highest bid by boat owners under the first set of property rights.

It would not be a simple matter, then, to design an auction that would elicit the highest monetary value possible and so enable the argument from utility to designate as socially optimal a particular set of property rights. Much would depend on the type of auction to be used and the formulation of the elements in the set of property rights to be auctioned. Indeed, the task would be so difficult that some other form of valuation would be preferable. That there has never been an auction of the sort required may be taken as evidence that auctions are not the best way to proceed.

From Public to Private Property by Outright Sale

In the history of land alienation for agriculture in both the United States and Canada, auctions gave way to sales at a fixed price and, finally, in the Free Homestead System, to grants on fulfillment of sufficient economic development. Such a system does not estimate the value in advance, but establishes a structure of property rights that motivates achieving the highest value in the end. This would seem to be the best way to alienate public property for aquacultural enterprise. Administrative estimation of the value of property rights, with a view to alienation by sale, does have the advantage that, in the hands of a wise administration, it would be at least intentionally objective. The problem, however, is how to estimate the market value of a property with no direct reference to the market for the product of that property. No doubt, something like an objective valuation would be possible in the most favourable case — that is, when there already exist similar sites, property structures, and output markets to provide a basis for the inevitable guess. A difficulty would arise in that, as gifts of nature, no two sites would be the same. Still, it is theoretically possible to determine value for sale by a wise administration.

Unfortunately, the track record of Canadian administrative guesses, even when backed by what is deemed "hard science", is less than encouraging (Brubaker 1995). The animus of politics in a pork-barreling democracy and the complex motivational environment of a large bureaucracy inevitably get in the way. The likelihood that a minimalist bureaucracy backed by objective science would produce an efficient and equitable result is about the same as that of the proverbial monkey randomly typing a Shakespearean sonnet. In Canada, aquaculture experiences the complete distance between the ideal of the statesman and wise administrator on the one hand, and the reality of the boondoggling politician and bumbling bureaucrat on the other (Trelease 1974).

From Public to Private Property by Political Fiat

We come, then, to alienation of public to private property by an unabashed political process — that is, a process subject to current public opinion, as opposed to something approaching the more cautious and reasonable process of constitutional choice.

Unabashed political processes can always produce an estimate to be embodied in site or licence fees or, indeed, in an outright sale price; but these are not likely to be "objective" in any meaningful sense, especially in a country constituted as is Canada. In the first place, even in the ideal, the result would be dependent on votes, rather than on monetary value: a total value of $5000 to those inconvenienced by aquaculture, expressed in 5000 votes, would outweigh $5 million in total value expressed in the 50 votes of those who are developing the industry. Certainly, there are circumstances in which liberty trumps utility in a decision on the appropriate structure of property rights, but a case such as that just described would not be one of them. In the second place, political decisionmaking in Canada is not ideal. When a mélange of multiple governments, conflicting special interests, boondoggling, pettifogging, and patronage is added to the mix, the chances of a result anywhere close to the true, objective valuation of a set of property rights is beyond imagining. It

would seem that a successful attempt to find an efficient and equitable expression of the utility of a particular structure of property rights in aquaculture (so that governments might sell, licence, or lease the resources in order to recoup the costs of servicing the industry and providing legislation, police, and courts) is unlikely through such a naïve approach.

From Public to Private Property by the Free Homestead System

There is, however, another approach that would allow governments to receive their efficient and equitable share of the product of the industry. Governments can extract income from enterprise through taxation, whether a corporate profits tax, personal income taxes, or property taxes. The more prosperous the industry, the greater would be the return to governments. From this point of view as well, the most efficient structure of property rights in aquaculture would be one that enabled the greatest economic development — that is, an arrangement similar to the Free Homestead System used on the agricultural frontier.

Empirical evidence points to the superiority of a prior grant of minimally limited, court-protected property rights to all comers on the basis of the fulfillment of conditions related to private and social economic development. Much of the great increase in the global production of marine sources of food over the past 20 years is associated with the growth of aquaculture — growth that has largely taken place in countries with the strongest and best-defined citizens' property rights granted in close similarity to those of the Free Homestead System. As Anderson (2002) notes:

> In regulated, open-access fisheries, operators attempt to take control by adopting technology which facilitates winning the "chase for the fish" and efforts to influence the working of the governing institutions…. The result is manifest in overcapitalization, rent dissipation, overfishing, poor quality, market gluts and shortage, poor market development, wasteful stakeholder/government negotiations and rent seeking behaviour. As property rights are created, strengthened, and assigned to individuals, groups, cooperatives or communities, the effort to gain control takes on a different character. Efforts to reduce cost, increase efficiency, and to produce for the market intensify. Additionally, a longer-term perspective begins to appear. What should we then observe in fisheries where this is the case? All else constant, we should observe changes in gear/fishing methods and timing of harvest, increased yield, new market development, increased quality, changes in industry structure, investment in productivity enhancing technology, and a tendency toward integration. (140–142 *et passim*.)[4]

This is not to suggest that the Free Homestead System should be imported wholesale into the coastal regions of Canada. In its historical form, that system of granting full property rights in land assumed

4 This is a matter of self-regulation, as it is technically possible for fish farmers to practice something like crop rotation in agriculture by relocating pens to restore the health of pen sites, provided the sites are large enough. William Howarth, Professor of Environmental Law, University of Kent at Canterbury, told the Canadian Aquaculture Law and Policy Workshop in Halifax, February, 2003, that self-regulation has worked in Scotland, where the industry has categorized areas by the density of operations in order to discourage congestion and prevent environmental damage.

that the land was "empty" — that no damage or disutility was incurred at the moment of the grant, that there would be no collateral damage from development, and that there would be no external costs. None of these conditions would be met in contemporary Canadian aquaculture. Introducing a Free Homestead System would not mean opening all of Canada's coastline to anyone who could afford to set up in fish farming. Some external disutilities and the liberties of incumbents would have to be taken into account, and some limitation of ownership of the means of production would be in order. Some sites would have to be off limits to aquaculture if they have alternative uses that outweigh aquaculture in utility or liberty, or if they are unsuitable for aquaculture. Moreover, the industry itself would have to be protected from hopeless attempts at development. But such claims to a limitation of rights based on utility for the whole of society should be embodied in the claimants in such a way as to make them enforceable in the courts, where basic rules of equity would be invoked, rather than leaving them to the hazards of media-fed passions in a political process that is often dysfunctional.[5]

5 The implication here is that conflict resolution ought to be taken out of politics as much as possible and left to the courts, where, one hopes, a principled approach is more likely than in the cacophony of special interest voices heard in town hall meetings and focus group sessions.

Lessons for Canada from Other Countries

Are there examples of efficient property rights regimes in other countries from which Canada might draw lessons?

The US Example

The most obvious place to look first is the United States, Canada's closest neighbour and most important trading partner. There, concern for property rights has centred especially on the economic efficiency of their structure (Maloney, Ausness, and Morris 1972). In particular, interest has focused on two alternative systems: the "appropriation" system used on the agricultural frontier in the western states, and the common law system of riparian rights that prevails in the eastern states. The appropriation system entails unlimited property rights on a first-come, first-served basis, subject only to the condition that the owner has to "beneficially employ" the resource owned; critics claim that this system tends to freeze the original pattern of use. The common law system of the eastern states, in contrast, entails rights that could be challenged by other potential users, which, its critics argue, leads to uncertainty and exposure.

In response to suggestions that the best of both systems could be captured (and the worst eliminated) by turning the whole matter over to administrative control, as Canada has done, proponents of the western system assert that, in giving unlimited property to citizens, appropriation permits the subdivision and alternate use of property through market forces. They further argue that the western system preserves the idea that enterprise and effort should be rewarded by a right to any residual gain, thereby fostering the most efficient use of the resource. An administrative solution, supporters of the western system allege, is efficient only in an ideal world and has not been so in historical fact (Trelease 1974). They further argue that, in administrative systems, problems of political failure through the actions of special interests, the exigencies of party politics, failures of knowledge in central-planning bureaucracies, and the inapt motivation of bureaucrats have all worked against both efficiency and justice.

In practice, fish farming in warm water ponds on established agricultural farms has been successful in the United States because it is treated as just another crop, having the same property rights as exist in other aspects of agriculture. The rest of the US aquaculture industry, however, suffers from most of the bureaucratic and political debilities that plague the industry in Canada. In general, the problem of property rights has not been resolved in the United States any more efficiently than it has been north of the border (Tiddens 1990, 137 *et passim*).

The appropriation system of the western US states, in a modified form, would be good for Canada. Unlike the western US agricultural frontier, Canada's coastal waters could not be treated as "empty lands" because, on both coasts, rights based on liberty and long use would have to be taken into account. Even modified, of course, there would be opposition to the system. Inherent in Canada's French and British political traditions is a culture of ministerial discretion — the spirit of the law in Canada was defined by the declaration of parliamentary sovereignty, with its entailment of discretionary ministerial power. Governments and their agencies finance and assist the development of aquaculture in an environment in which virtually all regulations are matters of administrative discretion. Having adapted themselves to this vestige of feudal monarchy and learned to negotiate its pitfalls successfully, those who exploit this country's natural resources would be loath to change it.

The Chilean Example

In contrast to the United States, Chile (also a free trade partner of Canada) offers an example of property rights in aquaculture that should be of considerable interest to Canadian reformers.

Until some 20 years ago, copper was Chile's primary export product, responsible for about 80 percent of its export earnings. Today, that figure has halved, and Chilean salmon, wine, fruit, vegetables, and wood are making their presence felt worldwide. Salmon farming currently accounts for 5.5 percent of Chile's total exports, and provides direct and indirect employment for around 45,000 people. Indeed, the industry is driving economic development in the south of the country. Chile is now one of the largest salmon producers in the world, having increased its export capacity in the fish *eightfold* from US$122 million in 1990 to US$969 million in 2001 (Jensen 2003, 29).

Two principal elements are responsible for the remarkable success of aquaculture in Chile: first, a legal foundation that grants licences and leases that bestow virtual private property in sites for fish farming and, second, a national aquaculture policy.

Chile has enacted legislation (its *Ley General de Pesca y Acuicultura*) under which a person may obtain a licence to perform aquaculture activities for an indefinite amount of time in areas falling within the jurisdiction of the General Directory of Waters. The property rights of the aquaculturist are transferable, subject to approval by the issuing authority, and in general are judicable in the courts. Similarly, leases are administrative acts through which the Chilean defence ministry grants an individual the right to use (including by undertaking aquacultural activities) certain national resources for an indefinite amount of time. Again, these rights are transferable and in general judicable in the courts. The object of both the licence and the lease is to cultivate listed species of aquatic life under no other limitations than those stated explicitly in the law. Moreover, the holder of a lease or licence may ask to have it modified to include one or more species other than those for which it was initially granted.

This legislation is powerful because it specifies what the administration, rather than the farmer, *shall* do, but its effects have also depended on the second element in the success of Chilean aquaculture:

a national aquaculture policy. The policy encourages those willing to take up aquaculture, supports the export of farmed products, and facilitates applications for sites, even from non-Chileans. Perhaps most important, under the policy, large areas of shore water have been reserved for aquaculture. Indeed, Chile has come as close as a country can to applying the principles of the Free Homestead System to the aquacultural frontier; the consequence has been its great success, particularly in salmon farming.

Chile's national aquaculture policy is not without its problems. For example, the number of applications for licences and sites far outruns the administration's capacity to process. There are also unsubstantiated reports that the fiords in southern Chile are being polluted and abandoned, rather than husbanded — although Alex Brown of the Chilean agriculture department, speaking at the Canadian Aquaculture Law and Policy in Halifax in February 2003, insisted that strong environmental regulations are in place and being enforced.[6] Nevertheless, these deficiencies have not outweighed the benefits of Chile's national aquaculture policy. In the limit, it is a policy that promotes aquaculture, not one that defends the wild fishery.

6 In North America, the Free Homestead System was itself marred by mistakes of overexpansion on the agricultural frontier, for which western Canadians, at least, paid a high price.

Recent Legislative Reform Attempts in Canada

In his stocktaking of Canadian aquacultural property rights, Wildsmith (1982) concluded that legislation would be necessary to establish the exclusive rights essential for a successful aquaculture industry. However, Wildsmith's proposed changes fell short of granting full property rights. Instead, he suggested leasing the water column and the foreshore and subaquatic lands, and setting aside areas in which common law riparian, fishing, and navigation rights would be nullified by legislation.

Such a proposal, however, entailed a contradiction. Because aquaculture was new, it had no protection in common law; accordingly, legislation would be necessary to bring the law into line. Legislation, however, would entail the suppression of existing law and, indeed, of legal protection against discretionary action on the part of the state. In effect, the structure of property rights in aquaculture was founded on the shifting sands of the murky interaction between parliamentary sovereignty and the rule of law (MacLaughlan 1986). Parliamentary sovereignty could be a useful instrument in establishing an efficient and equitable structure of property rights, providing it could free itself from the conservative bias of established interests. The courts could be useful if they then defended that set of rights, rather than the pre-exisiting economically and technologically obsolescent set of rights. To be viable, the emerging industry would need either the legislature or the judiciary to be progressive, because the meaning and impact of the law depends in part on Parliament and in part on the courts. To thrive, the industry would need both to be progressive.

In 1985, Wildsmith followed up his 1982 stocktaking by proposing a National Aquaculture Act (Wildsmith 1985), under which aquaculture would be treated as something distinct from fishing and removed from the administration of federal and provincial fisheries departments. Wildsmith offered the following rationale for the proposed legislation:

> If there is to be no separate aquaculture statute, it will mean that aquaculture provisions must, in the future as in the past, be incorporated into the Fisheries Act and regulations enacted under its authorization. This is equivalent to saying aquaculture is a subset of the broader field of "fisheries" and therefore is a kindred activity. To take this position is analogous to saying that agriculture legislation should be part of a wildlife or lands and forests statute because both deal with plants and animals. Since no one in a modern context would equate agriculture with gathering and hunting wild plants and animals, it is inappropriate to perpetuate the misconception that the domestic culturing of aquatic plants and animals is closely allied to the capturing of wild organisms. (1985, 34.)

Notwithstanding Wildsmith's proposal, what emerged was a legislated confusion of aquaculture with the wild fishery. The aquaculturist was given something like one-stop shopping by the sharing

of administrative procedures between the federal and the provincial governments. Control remained scattered, however, throughout the various federal and provincial agents that had exercised authority over fishing in both jurisdictions before 1982. Legislation was enacted to allow the licensing of aquaculture and the leasing of sites for its practice, but it was so shot through with the discretionary power of the Crown that Wildsmith himself identified that as the element in the structure of putative property rights in aquaculture most in need of rectifying (Wildsmith 1995).

British Columbia's Ombudsman also found that the extensive role of ministerial discretion without, in the case of that province, statutory foundation created a lack of fairness and a debilitating degree of uncertainty in the industry (British Columbia 1988). Indeed, in contrast to the relatively advanced property rights structure for aquaculture that exists in Chile, the situation in British Columbia, which is typical of Canada, compares most unfavourably. A development report on British Columbia's aquaculture industry (British Columbia 1991, 51–59) notes that legislation in that province fails to provide for reserved aquaculture zones, for judicial recourse with respect to administrative decisions (except to determine if administrative rules had been followed), for property rights against interference with aquaculture operations, for a right of transfer of the aquaculture operation as a going concern, even in the case of a takeover by creditors; or for property rights in escaped stock.

Conclusion

Aquaculture in Canada is a relatively new and potentially vigorous and lucrative industry, but its growth and success are being severely hampered by the lack of private property rights. I have argued in favour of "fencing" this last frontier — that is, providing aquaculture with a system of property rights analogous to that in place for agriculture, which would establish the legal framework within which aquaculture can achieve the greatest economic efficiency. Instead, the industry is effectively "owned" by government in right of the Crown and controlled by an often inept, vestigially feudal bureaucracy acting in accordance with the discretion of the minister responsible. But government cannot be expected to run the aquaculture industry efficiently. When all regulations and much of the industry's financial support are at its discretion, government's lack of competence determines the economic outcome.

Without such secure, individual property rights — that is, clear conditions under which the minister must act — the Canadian aquaculturist lives with a financially debilitating level of risk. With clearly laid out conditions of tenure, the aquaculturist would have a much greater incentive to husband the resource and preserve the environment. With clear rights based on the principles of utility and liberty, many uncertainties now inherent in economic transactions would be eliminated, and surreptitious political pressure and the spinning of reasons for ministerial decisions would be minimized.

A rational structure of aquaculture property rights cannot be put in place without a National Aquaculture Act that provides for the alienation of the Crown's rights to the foreshore, the water column, and the seabed analogous to the way in which land has been alienated for agriculture. Such a national policy would have to include built-in restraints to prevent overexpansion, as well as compensation for the collateral loss of riparian, navigation, and fishing rights as established by common law in the courts. One can hope, however, that the political retreat of the administrative state and the new stance of the Supreme Court of Canada in limiting ministerial discretion and providing an opening for public input into policy would remove most of the insecurity of tenure in Canadian aquaculture. In the end, however, the courts are at their best protecting, not forming, individual rights. What is needed first is a national policy: a properly tailored version of the Free Homestead System that served so well in the advance of the geographical frontier.

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