

ideas matter

Autumn 2006



Who Should Own the Sea?

AIMS sets the fisheries agenda

Putting coastal communities in charge of their own destiny

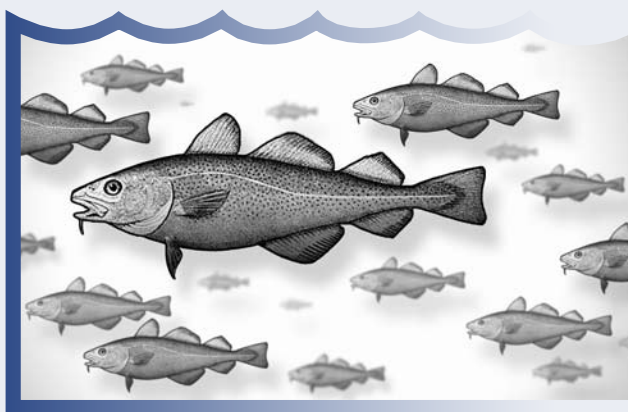
Why property rights are key to the fishery's future

Laura Jones
Fisheries researcher and author

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EDITOR Jan Matthews
LAYOUT Stewart Bauld

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Why the Fishery Matters to AIMS

When AIMS published *Taking Ownership: Property rights and fishery management on the Atlantic Coast* 10 years ago, we asked whether it mattered who owns the fish off the east coast of North America. The answer then was an emphatic "yes," and that answer remains just as emphatic today.

If fish are a valuable, useful and desirable resource, does the form of ownership of the fish help to explain why the industry is a net drain on the economy of Canada, taking hundreds of millions of dollars a year more out of the economy than it contributes? In answering this question, many resource economists have been struck by how important are the issues of ownership, the type of rights to the resource enjoyed by the property owners, and the incentives implicit within such arrangements.

At present, fish stocks are a common property resource; they are owned by no one, but the Constitution grants jurisdiction over them to the Government of Canada. The government regulator, the department of fisheries and oceans, grants access to the various fisheries through a regulatory system based on licensing. A licence to fish is not a property right to, say, a share of the fish caught, but rather a kind of permit allowing its possessor to join the harvesting effort within regulatory limits that dictate when, where, and with what equipment one may fish.

The result appears to be precisely what natural resource economists would predict. Government realises little economic benefit when the resource is used efficiently, but has been rewarded by voters in fishing communities for granting unsustainable levels of access.

There is vigorous intellectual and practical debate surrounding public policy in fishery management in Canada and abroad, and over the 10 years since its early foray into fisheries and aquaculture, AIMS has published close to 20 papers, books and commentaries on the topic, held three major conferences that have brought together national and international experts, and generated a dozen newspaper articles. This edition of *Ideas Matter* highlights that work. ■

Fencing the Fishery

A primer on ending the race for fish

As fishing technology improved, the ability of fishermen to deplete fish stocks to the brink of extinction increased. As stocks declined, fishermen increased their effort, investing in larger and more efficient boats and in more sophisticated gear. As a result, stocks tended to go into an ever-accelerating death spiral.

To check this “tragedy of the commons,” governments and international fishing regulators limited entry, restricted both the size and type of gear that could be used, and drastically curtailed the periods during which fishing was permitted. Yet, despite their best efforts, fish stocks continued to decline. Fishermen found ways to frustrate the regulators, often by expensive investment in larger boats and better gear. Productivity plummeted.

In the past few decades, however, governments and fishermen themselves have turned to a new method of regulating their fisheries: individual quota systems and other rights-based fishery management systems that allocate the global quota of fish to be caught among individual fishermen, who then choose the most efficient means to harvest their share.

Allowing fishermen to fish at their most economic level has reduced wasteful overinvestment in boats and gear, and permitted fishermen to schedule their fishing when the market and weather conditions promised the greatest returns. To increase efficiency still further, some fisheries allow quotas to be traded and sold to the highest bidder, thus concentrating more quota in the hands



of the most efficient fishermen. In the long run, although fishermen have declined in number, those still active are creating greater wealth with less effort. Productivity has increased greatly.

These property-rights-managed fisheries have spread across the world, from Australia to Alaska. Even in areas without full-blown rights-based fisheries management systems, individual quotas have become the norm.

There are a number of ways to implement rights-based fisheries. The most common is the individual transferable quotas (ITQ) system, in which the global quota is subdivided among the participants. But there are other ways to achieve the same end. For example, under nongovernmental arrangements within the industries, fishermen and processors decide among themselves how to allocate the individual quotas. Other systems are based on actual ownership of geographical sectors of rivers and oceans for fisheries purposes.

A number of problems exist with ITQ systems, however, such as how to avoid

catching quota fish and illegal fish in the same net, or how to resist the temptation to “high grade” — to keep only the larger and presumably more valuable fish. Many issues also need to be resolved in establishing an ITQ fishery. Should the fish be auctioned off to the highest bidder? How do new entrants get into the fishery? Is it fair to allow current fishermen to reap a windfall profit when the fishery becomes “owned” by them?

Such obstacles usually can be overcome, but less-than-ideal transitional means typically are used, so that current quota holders often do reap a significant windfall on the implementation of rights-based systems.

The degree to which rights-based fisheries management systems have been implemented varies around the world. Some areas have a full-blown ITQ system in place while others simply have quota systems. What is remarkable, however, is how few fisheries are purely competitive anymore. In future, rights-based systems may be the only way fisheries are managed.

Most of the world’s fisheries are now fenced, and fencing the rest is likely just a matter of time. ■



Excerpted from Fencing the Fishery: A primer on ending the race for fish (Canadian Edition), by Donald R. Leal (left). Adapted for Canadian readers by Peter Fenwick and Laura Jones, September 2005. The complete book is available online at www.aims.ca.

Have ITQs Helped?

Laura Jones examines conservation, economic viability, and safety and working conditions

In my book *Managing Fish: Ten case studies from Canada's Pacific Coast*, I looked at fisheries in British Columbia. There are 10 fisheries in BC where property rights are now being used to manage fishing activity. I wanted to ask whether this improved fisheries management. I looked at conservation. I wanted to find indicators that would allow me to assess whether there was an improvement or deterioration after the change in management. Economic viability is another indicator. What happens to revenues? What happens to costs? What happens to the willingness and ability of fishermen to pay for their own management? The third indicator was safety and working conditions. Fishing is one of the most dangerous occupations in Canada. When you talk to fishermen, safety is something they often bring up as an important improvement.

The Department of Fisheries and Oceans (DFO) decided to introduce on a trial basis in 1991 a two-year individual quota system pilot project. They divvied up the shares and came up with a formula that distributed the quotas according to catch history (70%) and the length of your boat (30%). They allocated the shares and they ran it as a property rights-based fishery for those two years and continued after that.

So what happened? For the 12 years before, the catches were consistently over what DFO said was the allowable catch. In 1990 actual catches exceeded the total allowable catch (TAC) by 22%, that is to say exceeded what DFO wanted to see fishermen catch in that six-day "effort control" season in 1990. Since the introduction of quotas, catches have been below the allowable catch with the exception of two years, 1993 and 1999. And in those years, the TAC was exceeded, but it was exceeded by around 1%. So we're really talking about catches being very close to the allowable catches. Those overages are covered by their formulas, so it's really not a problem.

With the introduction of individual quotas, the fishermen agreed to hire an independent third-party monitor. This is important because in property rights-based fisheries, one of the issues is the need for more monitoring. An effort-control fishery is easier to monitor. It is easy to say, "Go. Fish. Stop," and to see whether there are any boats left on the fishing grounds. But under an ITQ system, you have to have somebody monitoring how much fish is being landed. So the fishermen hired independent third-party monitors and agreed to pay for them. That way DFO's costs did not go up. According to the DFO managers I've talked to, the new ITQ system has all but eliminated the problem with the lost gear on the ground because the fishing pace is much slower.

When we talk about economic viability, you can see this because the length of the season is important for selling fish fresh. How did the season increase? It went from six days to 214 days. So now you can get fresh halibut most of the year. It has basically eliminated the supply glut and it has increased the landed price in that fishery dramatically. We know that because we can compare prices in BC to those in Alaska, where they were



Laura Jones accepting a gift from AIMS President Brian Lee Crowley after her presentation.

still under an effort-control system.

Operating costs also decreased by, a DFO study suggests, about \$440,000 a year. In a fishery of 435 licence holders a lot of that was decreased labour costs. You didn't have to hire as many crew to be competitive in the race. Some of that was in savings on lost gear and savings on fuel and that kind of thing, so they were fishing more efficiently in that system.

But one of the most dramatic things that happened after this introduction was what happened to licence fees and the amount that fishermen were contributing to their own management. Before the change, fishermen were paying a \$10 licence fee. It was barely enough to even cover the cost of printing it. Now they're paying a \$250 licence fee plus a fee per ton, which varies from year to year. On top of that, they're covering all of their third-party monitoring. The amount that they're paying for management has increased something like 17,000% after the change.

As for safety and working conditions, a fisherman described the way the fishery ran before the change in management. He said, "Crew would work for four days straight with no sleep, hyped up on drugs, caffeine being the least of their worries. They were zombies walking around in the middle of the night with hooks flying around." He says that now it's completely different. ■

Laura Jones is a fisheries author and contributor to several AIMS publications.

Before the Federal Finance Committee

In 2003, Don McIver, then AIMS' Director of Research, made a forceful case to the House of Commons Finance Committee about the failure of federal policy to address serious issues in Atlantic Canada. One of the key issues was the fishery. This is an excerpt from that presentation.

The future of the fishery as a sustainable and profitable business can only be realized by removing politics from decision making at all levels. Ownership of the resource must, as a matter of urgency, be transferred to those who live from that resource. Then it will be possible to create the institutions for a self-managed fishery, eliminating the current adversarial relationship between the Department of Fisheries and Oceans and the coastal communities that live from the fishery. Introduction of good-quality property rights creates the conditions under which seasonality can be greatly reduced, while improving conservation efforts.

On the processing side, the reform of social programs and the consequent shifting of many seasonal workers into other opportunities will allow management to be done on the basis of sustainable opportunities. This will mean the closure of excess processing capacity, to include centralization in a limited number of facilities with much higher levels of capital investment, requiring higher skill levels from workers and year-round operation.

The regulatory barriers to the growth and development of the aquaculture industry need to be removed, including, again, the lack of high-quality property rights without which needed investment will not be made. Again the point needs to be made that the fishing industry is merely an egregious example of heavy-handed government intervention undermining genuine economic opportunity in the name of employment maximization.

Why "Trust Agreements" Are Creating Such a Stir

As is always the case, human ingenuity finds a way to get around the obstacles governments and others throw in the path of doing the right thing. Inshore fishermen have realized that they have a valuable asset in their fishing licence. Now, you might think that this isn't so, because the Department of Fisheries and Oceans only allows licences to be transferred from one officially recognized fisherman to another, and then only with the approval of DFO. Theoretically, no money (other than the DFO fee) changes hands. Right.

DFO is perfectly aware that as much as \$850,000 has been paid to holders of lobster licences in rich fishing grounds to get them to surrender those licences to DFO in favour of the "purchaser." Less valuable licences fetch correspondingly lower prices.

But if that's the true value of a licence (or as close as we'll get in the absence of a real market where anyone can freely buy and sell licences), how do new fishermen come up with that kind of money? It's great for fishermen who are retiring — they've now got the same kind of handy retirement fund that farmers have (they don't get the same tax breaks, but then farmers cannot claim EI). But how does the rising generation find the cash?

In any other area, the new generation would borrow against the future earning power of the asset. The bank or some other lender holds a mortgage on the property and gives the new entrant the cash up-front to buy it.

But what happens when you don't really "own" your licence, which is the arcane world inhabited by fishermen? Why, you take advantage of contract law, and make a contract with the person financing your

move into fishing, promising them that you will, in effect, surrender the licence in their favour if you are unable to make your payments. This is the origin of the so-called "trust agreements" that are causing such a stir in the inshore fishery these days.

The people who love the bad old system, in which fishermen earn their living at the pleasure of the minister of DFO, find these agreements to be a terrible threat. They don't want fishing to be carried out, like any other business, by those who are best and most efficient at it.

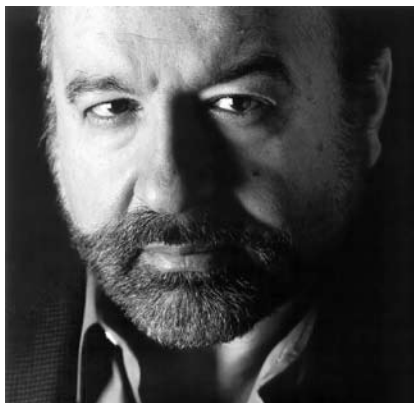
They want to maximize the number of people living from fishing, even where many of them cannot hope to earn a decent living from their efforts, and must rely on annual bouts of EI and other forms of government support.

The trust agreements, which the courts have recognized as valid contracts, finally give real power to fishermen who want to be rewarded for their fishing and managerial prowess rather than the political lobbying power of coastal communities.

They show the way to a modern and efficient industry that creates value for coastal communities by maximizing the value the fishery can create. And because trust agreements now allow fishermen themselves to realize the real value of the licences that they hold, finally the politics and the economics of the fishery are converging in a way that holds out the real prospect of unprecedented prosperity on our coasts. ■

Excerpted from an op-ed by Brian Lee Crowley first published on April 6, 2005, in the Halifax Chronicle-Herald and Moncton Times & Transcript.

Third-rate Property Rights mean Third-world Conditions in Coastal Communities



Hernando de Soto

In 2004, Hernando de Soto won the Cato Institute's highly prestigious second biennial Milton Friedman Prize for Advancing Liberty. Named after Nobel laureate Milton Friedman, the prize is awarded every other year to an individual who has made a significant contribution to advancing human freedom. A cash award of \$500,000 accompanies the prize.

Peruvian economist Hernando de Soto estimates that the poor in the Third World own real estate and other capital assets with a value of US\$9.3 trillion, but it's "dead capital:" capital that has no existence in the legal world of deeds and property rights. It's a perfect analog to the fishery

I have been quite deeply influenced by the recent book *The Mystery of Capital* by a very important thinker on Third World development issues, the Peruvian Hernando de Soto. De Soto, whom *The Economist* says heads the second most important think tank in the world, wants to understand why capitalism has worked in the West to produce huge wealth and growth and employment, while in the developing world and the countries making the transition from Communism the benefits of capitalism have proven so elusive. This is what he says: "Walk down most roads in the Middle East, the former Soviet Union, or Latin America, and you will see many things: houses used for shelter, parcels of land being tilled, sowed and harvested, merchandise being bought and sold. Assets in developing and transition countries primarily serve these immediate physical purposes.

"In the West, however, the same assets also lead a parallel life as capital assets outside the physical world. They can be used to put in motion more production by securing the interests of other parties as collateral for a mortgage, for example, or by assuring the supply of other forms of credit, etc. Why can't buildings and land elsewhere in the world also lead this parallel life? Why can't these enormous resources produce value beyond their natural state?"

De Soto estimates that the poor in the Third World own real estate with a value of US\$9.3 trillion, but it's "dead capital:" capi-

tal that has no existence in the legal world of deeds and property rights, the abstract representation of assets that makes them "real" agents of economic activity and not mere physical objects.

De Soto's reply is that dead capital exists because we have forgotten that for a physical asset to generate capital – using your house to borrow money, for example – requires a very complex process. That process is not available to people in coastal communities with respect to their chief asset: the productive capacity of the sea, because, on the whole, they do not own it. They may only use it on the sufferance of the government, which distributes it capriciously and largely on the basis of political power. That doesn't mean that people haven't evolved property-like claims to the resource – anybody who has tried to suggest any change to the existing forms of access to the resource knows just how proprietary the existing users of the resource are.

But the point is that they do not own the asset in the formal sense, and therefore cannot make use of the complex web of property-rights relations that allow other property owners to leverage their assets into surplus value and extra productive capacity. Coastal communities sit on huge amounts of dead capital. ■

Excerpted from talks by Brian Lee Crowley to the Fisheries Council of Canada and New Brunswick Seafood Processors Association.

Too many plants, boats and people

Rationalization of the Newfoundland fishery is the key to its future

By E. Derek Butler

For more than a decade we have heard the cry, "The fishery is in crisis!" With each new call comes a new report, a new commission, a new conference. In May 2006, Newfoundland and Labrador Premier Danny Williams added a new answer to the call, a one-day Fisheries Summit. Among those in attendance was E. Derek Butler, the executive director of the Association of Seafood Producers. His presentation drew heavily on AIMS research, as well as the expertise and experience of seafood producers around Newfoundland and Labrador.

The Association of Seafood Producers (ASP) is Newfoundland and Labrador's principal processors' organization representing some two-thirds of processing capacity in the province. Since our inauguration in late 2003 we have been working to effect structural change in the industry. We are not alone in making reports and recommendations. Since ASP was founded, we have had the Jones Report, the Dunne Commission Report, and the most recent, the Cashin Report. These reports and the many that preceded them represent valiant attempts to "solve" the problems in the fishery.

These reports have all talked about rationalizing the industry: matching processing and harvesting capacity to resources, improving quality and landing pattern, creating more work for plants throughout the year, not just in June or July. And yet these



reports have respectively failed in "solving" the industry's problems. The best evidence of that is we are here again, to ask more questions and seek more answers. We have been asked to respond to three questions.

1. What are the basic issues, challenges and opportunities in the harvesting-processing-marketing sectors of the industry?

We must be considered and permitted to operate as businesses, not branches of government, social programming or employment schemes. On the release of the Dunne Commission Report the provincial government said the primary objectives of the fishery would include:

- Provide the conditions for a stable and competitive processing sector to exist with minimal public support;
- Promote cooperation to optimize total returns from processing available resources.

We said all that, but we neither believed nor embraced it. Instead, we have done things as of old, and we are getting the same result. That should not surprise us. We have doubled the

value of the fishery from the groundfish days, and instead of increasing incomes and seasons, we have shortened seasons, we have cut incomes, because we have added capacity over and over again, and we are still doing it.

We require support for a marketing initiative. The tourism and fishing industries in Newfoundland and Labrador are now in the same neighbourhood in terms of economic contribution to the province. We need a government marketing initiative that supports the fishery just as it supports tourism. We need research into Asia and the former Soviet Union.

We need better promotion of seafood. But a caution — it will not do to promote seafood in a dysfunctional business that cannot guarantee supply to customers. It will not matter to put millions into seafood promotion when the fishery is shut, or when we are forced to conduct fall fisheries for crab that the market prefers not to have, or when producers are expected to fight on the wharves to secure supply, yet cooperate in the marketplace to move product. We cannot fix one area of the fishery and expect the rest of the business to get fixed or made sustainable by that. So in light of that...

2. What are the best options for the government to consider in order to help the industry address the challenges and the opportunities?

Tackle the overcapacity. A processor said to me yesterday, and I quote: “The challenge is to bring capacity in line with resource... government needs to say that capacity reduction is essential and it must practice what it preaches. No more calls for proposals to reactivate this or that. And restructuring cannot be done piecemeal.”

Government’s primary role is to serve as a catalyst to let the fishery modernize. Government must adopt as its primary focus putting the fishery on a sound economic footing, by letting it operate as a business, by letting it rationalize as a public policy. That will entail either active or benign support for rationalization. It is inconceivable that we are sitting here talking about a crisis in the fishery when once again it will be at an historic high in terms of landed value.

The reason we are having a crisis is because we are expecting the fishery to carry 37 crab plants, and a dozen or more shrimp plants, and tens of dozens of groundfish and pelagics plants. We must break the cycle of false hope by adopting a rationalization program and putting in place funding to help those affected. At some point, government and the people in affected communities must be protected from the delusion that 10 weeks’ work is enough.

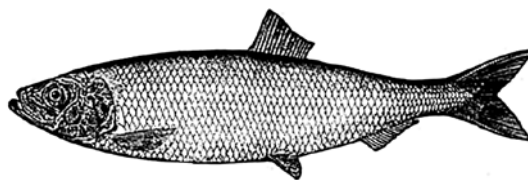
3. Taking into consideration the availability of fish resource and market conditions, what should the Newfoundland fishing industry look like in the future in terms of structure, operating conditions, employment, incomes and so on?

The fishery should be reduced in terms of processing capacity and harvesting capacity. Employment should be increased for those

remaining in the fishery. Incomes should be up for those remaining in the fishery. Wealth creation is not the same as job creation. The new fishery will be rationalized, efficient, modern, diverse, operate for longer seasons, and provide a high-quality seafood product.

The marketing difficulties are for the most part a result of the compressed season brought about by overcapacity. There is wealth in the shrimp resource.

We can’t keep doing things the way we’ve always done them and expect a different result. We must change how we perceive the fishery and what we expect from the fishery. If not, the best hope we all have is to be a consultant to the fishery in crisis in another five, 10, or 15 years, writing a report on how we can stabilize things, make the fishery work, or get it open. The fishery can be more dynamic and self-sustaining. To achieve that, we must make some difficult decisions. ■



That leads me to 10 Principles for a Modern and Sustainable Fishery

1. Immediately impose a licence freeze until the resource thresholds in Dunne are met;
2. Bring capacity in line with resource: rationalize harvesting and processing via
 - a. Free market OR
 - b. Public policy instruments;
3. Implement early retirement only in consultation and agreement of all stakeholders;
4. Support a marketing initiative;
5. Abandon employment maximization as an objective in the fishery. It’s unfair and impractical for Tim Hortons, it’s ill-advised in government, and it’s wrong for the fishery;
6. Abandon the common-property resource approach for the fishery (it is a myth anyway) and replace it with an ITQ fishery. Fishers make the investment just as farmers do: give them their fish;
7. Abandon false hopes and promises. We need to be realistic. That includes taking on the myths of “rural Newfoundland IS Newfoundland,” or “the fishery IS Newfoundland;”
8. Commit to making the difficult decisions;
9. Commit to the science, and sound management by DFO. The latter means tackle soft shell, fall fisheries and resource quotas with the right decisions;
10. Government to be our ally. That sounds simple, but that is not where we are.

E. Derek Butler is Executive Director of the Association of Seafood Producers in Newfoundland and Labrador. This article is based on his presentation to the Fisheries Summit in St. John’s in May 2006.

Changing the Water on the Beans

Why the Newfoundland fishery is finally modernizing

How times have changed. A few years ago Fishery Products International, Newfoundland's largest fish company, was pilloried for proposing a modernization scheme for its south coast plants that would have eliminated hundreds of jobs. Led by the governing Liberals, all parties in the House of Assembly ganged up on the company, forcing it to make commitments to the affected communities. It was a humbling lesson for the new management team of FPI that had taken over the previous year.

In late 2004, FPI announced the closure of Harbour Breton, one of its south coast chain of groundfish plants. More than 400 direct jobs will be lost in a community that has only a stuttering aquaculture industry to fall back on. The now-opposition Liberals again took up the cudgels for Harbour Breton, hammering the now-governing Tories daily with a barrage of demands in the House of Assembly.

But this time the opposition was mostly sound and fury. The governing Tories refused to invoke the provisions of the legislation that would force FPI to keep the antiquated plant running. To do so would trigger a clause forcing the government to cover FPI's losses at Harbour Breton. For Fisheries Minister Trevor Taylor, this would be the abandonment of the Tory fisheries policy that refuses to subsidize the fishing industry.

This is a sea change in Newfoundland fisheries policy.

To support this new policy the fisheries minister referred to the trends that have occurred in the fishing industry in the past few years. One is the entry of China into fish processing. Using extremely low wages in modern, highly productive plants, the Chinese have been able to bid up the international price of frozen cod by 50%. At the same time the weakening US dollar has cut the selling price of Canadian-produced cod by a quarter. As Taylor says, "This changes the water on the beans."

FPI had kept its Harbour Breton plant open by buying frozen cod from Russia and Norway, processing it in Newfoundland, and selling it in the US. When both the supply costs rose and the selling price dropped, FPI was in the unenviable position of selling cod from Harbour Breton for less than they paid for the raw material.

For the fisheries minister, the world had changed so drastically that even a fully interventionist government willing to take risks with the taxpayers' money would not force FPI to continue losing money hand over fist.

The opposition Liberals would have none of that. For them the matter was simple. FPI was chartered under the laws



of Newfoundland, was formed by the actions of two levels of government, and was governed by an act that stated that "the company cannot make decisions that create undue disruption to the historical pattern of harvesting and processing in the province." FPI officials pointed out that buying foreign frozen fish to process in Newfoundland was hardly an "historical pattern of harvesting and processing."

For years the fish processing industry has suffered from too many plants and too many workers. At one point more than 200 fishing plants were licensed by the provincial government, most built with taxpayers' money. A succession of fisheries ministers have promised to rationalize the industry, but have repeatedly backed down in the face of workers about to lose their jobs.

On December 9, Taylor reiterated his commitment to a more rational industry: "...if we are going to have a strong processing sector and a strong seafood industry in this province, then we need to have strong processing operations that run for a longer period of time. The alternative, Mr. Speaker, is to accept what the previous administration did for the last 12 to 15 years, to allow the processing workers in this province, Mr. Speaker, to try and live on less than \$10,000 a year in earned income..."

So far Trevor Taylor appears to be sticking to his guns, and is following his policy of not providing loans or direct financial support to the industry, while the number of plants and workers declines. His December 9 speech in the House of Assembly is the most definitive statement of what has been wrong with the fisheries policies of the past, and if Taylor stays the course the fishing industry may eventually evolve into the modern industry it can be. ■

Excerpted from a March 24, 2005, AIMS commentary by AIMS Fellow Peter Fenwick.

Foreshore, Law and Politics

AIMS at the New Zealand Parliament

“Foreshore, Law and Politics” brought leading experts from around the globe to the New Zealand Parliament for an international conference on coastal, fishery and aboriginal issues. AIMS President Brian Lee Crowley was the keynote speaker at the event. He used the opportunity to release one of AIMS’ papers on aquaculture, *Fencing the Last Frontier*, and deliver a talk entitled “Who should own the sea and why it matters.”



AIMS President
Brian Lee Crowley
speaking at the New
Zealand parliament

“Where individual quota systems have been adopted in their most unadulterated forms, notably here in New Zealand and in Iceland, it is hardly an exaggeration to say that the fisheries have been revolutionized, and much improved in terms of both resource management and economic performance.”

- Brian Lee Crowley



Photo Courtesy of James Popple

Parliament Buildings and Grounds showing the old Parliament building in the foreground with the Beehive and Bowen House to the left. The Executive Wing of the Parliamentary complex is commonly referred to as the “Beehive” due to its external shape.

The Importance of Property Ownership is in the Details

The introduction of a property rights-based system would make both public and private owners of property do a number of highly constructive things that would be in the public interest.

- Property owners would have to consider the consequences of their actions on others, and they would have to compensate others for any harm done to them. In a common-property resource regime, the commons often becomes a literal and figurative dumping ground and the worst policeman of the resource is often the government that owns it.

- Property owners would have to allow others the enjoyment of their property.
- Property owners would have an incentive to realize maximum value from their property and therefore would seek ways to align their interests with those of others who might benefit from complementary uses of the property.

- Property owners would be able to shift resources from one use to another with a minimum of political struggle. Bird lovers would be free to buy land from a real estate developer to create a bird sanctuary, if the amount they were willing to bid for the land exceeded the value attached to it by those who wished to build and live in houses upon it. When property is in public hands, organized-interest groups can pressure government to use other people's money to accomplish their objectives. When owners have to pay the full cost of their decisions, however, they become more sensitive to consequences of those decisions for other people, and cooperation becomes the preferred approach. Pushing such conflicts into the political arena is almost always a recipe for conflict, anger and frustration.

A regime that permitted property to pass from public into private hands would have the tremendous benefit of making transparent to everyone the costs of one use of ocean resources versus another. Just as the Audubon Society, when confronted with the real costs and benefits of its decisions, chose to allow the coexistence of wildlife sanctuary and resource development, so people around the world will soon come to see that the old ways of managing the sea are costly, inefficient, ineffective, and cause massive social conflict. If taxpayers were able to capture the benefit, through asset sales, of some of these public resources in the sea, the result would be a wave of economic development, rural and coastal prosperity, and growing consensus on how to allow the oceans to develop.

This process may be a slow one, beginning with lower-quality property rights, as was the case with many fisheries. But experience has shown that, when people get a taste of the benefits property rights — sound, defensible, tradable, valuable property rights — confer, they wish to enlarge and develop those rights, because doing so creates value for the owners and society at large. And it is from the extra value that property rights make possible that the new wealth would come to compensate those whose unfettered access to ocean resources would be reduced.

The future is already visible on the horizon today; in 20 years, the logic of it will be irrefutable

For these and many other reasons, any proposed solution to New Zealand's questions of control and ownership of the foreshore and seabed that involves further entrenching Crown or common access or public domain ownership and regulatory control will be but a brief stop on a long road — a road we have so often successfully followed before to the establishment of private ownership and stewardship of society's most valuable natural resources under a regime of common law and normal regulatory protections. The future is already visible on the horizon today; in 20 years, the logic of it will be irrefutable. Why not hasten the day of its arrival, and continue New Zealand's leadership position in thinking through how best to manage the value of the seas? ■

Excerpted from Who Should Own the Sea and Why it Matters, a paper presented by Brian Lee Crowley to the New Zealand Parliament and later published in AIMS' commentary series. Published in October of 2003.

Redesigning the Fishery

The industry must be allowed to become year-round, sustainable, and profitable



Perhaps the greatest distortion of Atlantic Canada's economy has taken place in the fishery. Political commentators and regional policymakers often argue about the necessity and fairness of supporting the region's "traditional" way of life in the fishery. In fact, the fishing industry in Atlantic Canada today is a political artifice, constructed with billions of dollars of public money, and has little to do with the region's traditional fishery. By the early 1990s, about two and a half people were working in the fishery for every one in 1961.

The Fishery as a Gateway to Social Welfare

In many communities throughout Atlantic Canada, the fishery is regarded as the employer of last resort — a means to "stamp

up" as many members of the community for EI benefits as possible and provide them income for the year in a crude kind of workfare program. Indeed, even before the northern cod stocks collapsed, EI benefits provided a larger share of income in fishing communities depending on the cod fishery than did fishing itself. Large numbers of people became trapped in a cycle of seasonal work and EI benefits that kept them locked in low-value economic activities and impeded reforms to the structure of both the fishing industry and social welfare programs.

The industry as a whole must be allowed to move to a year-round, sustainable, profitable footing even when that strategy requires some job losses. Much of Fishery Products International's recent financial problems can be traced to global competition from such countries as China. The use of the fishery as

a make-work program has made it difficult for those fish companies still in business to compete against countries that use more modern and efficient harvesting and processing techniques.

Resource Ownership and the "Tragedy of the Commons"

In addition to problems caused by federal and provincial interventions in the management of the fishery, there is the underlying problem of the ownership structure of the resource itself.

Under the current regime, fish stocks are a common property resource, owned by the Crown and managed by the federal government. It is a well-established economic principle of a common property regime, however, that self-interest causes people to act in ways that are destructive of the resource. Furthermore, no amount of moral exhortation or heavy-handed bureaucratic management is ever more than modestly successful in changing this "Tragedy of the Commons." Incentives matter, however.

If people's behaviour in the fishery is to change, a way must be found to encourage their self-interest to coincide with the need for sustainable management of fish stocks. The alternative is future ecological and economic disasters along the lines of the collapse of the northern cod stocks.

On land, ranchers own their cattle and farmers own the productive capacity of their land. Ranchers and farmers who run down the long-term value of their assets through poor management pay a direct, personal cost. In other words, ownership of these assets introduces a direct and tangible account-

Aquaculture could easily 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

ability into the quality of stewardship of the resource. Fishermen, on the other hand, by and large do not own the fish until they have landed their catch in the boat. Instead of owning the resource, fishermen have a licence from the federal Department of Fisheries and Oceans to put their nets, lines, or traps in the water at the times and places the department’s bureaucrats authorize. Fish that any one fisherman does not catch during the short season do not simply remain in the water to reproduce, but are sought by other fishermen. Thus, all fishermen have an incentive to catch as many fish as possible as quickly as possible, and to cheat on rules designed to hold down harvesting capacity so that access to fish stocks can be distributed on the basis of political pressure.

The federal government reaps few of the benefits that sound resource management would produce. Instead, it runs the fishery to maximize short-term employment — which then acts as a gateway to social benefits — and to maintain coastal populations in a state of political dependency. In this, Ottawa is aided and abetted by provincial governments that regulate fish processing with the same short-term employment objectives in mind. Productivity and profitability pay the price.

The politicization of fish management has resulted in a huge influx of people into the fishery over the past 30 years. Yet, the industry will become sustainable only if ownership and management of the resource is given to the people who live from it. And only then will people now in the industry be able to decide whether to fish, rent out their quotas, or sell them outright and do

something else with their capital.

Much of the fish caught on the East Coast fails to fall under some form of property right. Moreover, those property rights that do exist are usually of poor quality and subject to high risk of political interference. This means that, on the whole, the chief asset of many coastal communities cannot be leveraged to create new economic opportunity or recombined effectively with other assets to create higher value added. This “dead capital” stunts economic life and opportunities in coastal communities.

One approach to overcoming the problems of ownership and control in the fishery would be to make fish quotas fully transferable and tradable. Where such a strategy has been implemented, the fishery has been rendered sustainable and the quality and use of the resource have increased. Under such a system of property rights, fishermen, rather than frantically racing to wrench indiscriminately as much stock from the ocean in the shortest time, tend to adopt better management strategies that handle catches more respectfully and reduce the number of unwanted species of fish caught, thus ensuring maximum value from each fish.

Aquaculture: The Farming of the Future

Aquaculture provides another example of the difficulty of shifting economic activity to higher value added in traditional natural resource industries burdened by overregulation and behaviour patterns reinforced by social welfare programs.

World aquaculture production has

increased 17-fold in the past 50 years, and the industry now supplies one-fifth of all the protein consumed from the sea. In the not-too-distant future, farmed fish, shellfish and algae will overtake the wild fishery in value. The industry currently generates about \$1 billion a year in economic activity in Canada. In 2003, it generated \$239 million in gross domestic product in Atlantic Canada, and provided jobs for roughly 3,400 people in coastal communities. Such figures show aquaculture’s many advantages: it is based in coastal communities where jobs are scarce, it is not seasonal, it uses — and therefore encourages — high technology, and it meets a growing worldwide market demand.

Ironically, Canadian aquaculture technology and expertise is in demand around the world, but legal and bureaucratic hurdles make the industry’s local growth slow compared to that of the global industry, representing huge lost opportunities for workers, investors and taxpayers in Atlantic Canada. On the legal side, the absence of high-quality property rights in the water column, foreshore and seabed hampers the industry’s development. On the bureaucratic side, numerous federal and provincial departments must each give their separate approval for an aquaculture operation to go ahead, the process for allowing fish farmers to use the water is capricious and arbitrary, and leases are often too short or too small for efficient operations.

The Absence of Property Rights in Aquaculture

Aquaculture could easily 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 agricultural frontier advanced under the assumption that the land was empty and to be had for the taking — although we now realize that this assumption was wrong, since aboriginal

peoples lived on the land and had rights of which Europeans took little account. Today, however aquaculture faces prior ownership and usage rights — on the part of aboriginals, recreational users, and capture fishermen, 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 fish

Canadian fish farmers have been arrested for “illegal fishing” even though they were harvesting animals that existed chiefly because of the culturing efforts of their owners. The police refuse to lay theft charges against people who rustle aquaculturists’ fish stocks because property rights are so muddy that it is unclear that the aquaculturists own what is stolen. Given the precariousness of their ownership of animals and farm, aquaculturists face huge problems in getting adequate financing and insurance, so that substantial

ture, not one that defends the wild fishery or an outmoded common-property approach to managing coastal resources.

If Canadian aquaculture is to grow, become profitable, employ more people, and feed more of the world’s population, the industry needs secure property rights to the foreshore, the water column, and the seabed — rights embodied ideally in a National Aquaculture Act and backed by the courts. It does not need more government economic incompetence and inefficiency or arbitrary decision making by bureaucrats.

Canadian aquaculture is overseen by a veritable “who’s who” of federal government agencies and departments dealing with customs, veterinary drugs, navigation, fisheries, research, industry, and so on, each with a specific mandate and usually a narrow focus. What is needed, as AIMS authors have argued, is a single-source regulator — or at least a single agency that has paramount authority

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.

Individual property rights are important in aquaculture for the same reasons they are important in all other settings — such as radio frequency auctions and tradable pollution permits — where new legal instruments have been developed to extend the logic of property rights to new circumstances. Yet, there are 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 or on administrative discretion, no right to sue government in the courts, and no rights that government itself is duty bound to protect.

productive capacity in the oceans is being squandered. 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.

International experience with property rights in aquaculture has important lessons for Canada. Chile, for example, has conducted several interesting legal experiments to kick-start its salmon-farming industry, which is now one of the largest in the world. That country has created a legal foundation that grants licences and leases bestowing 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 fjords, for example — Chile’s national policy is one that promotes aquacul-

An Over-Abundance of Regulation in Aquaculture

Canadian aquaculture is overseen by a veritable “who’s who” of federal government agencies and departments dealing with customs, veterinary drugs, navigation, fisheries, research, industry, and so on, each with a specific mandate and usually a narrow focus. What is needed, as AIMS authors have argued, is a single-source regulator — or at least a single agency that has paramount authority. Moreover, that authority most emphatically should not be the Department of Fisheries and Oceans, whose institutional structure is too wedded to an anti-industrial wild fishery culture, but a more industry-oriented agency, such as Agriculture or Industry.

Recommendations

- Transfer ownership and control in the fishery immediately to those who live from the resource. Make fish quotas fully transferable and tradable.
- Pass a National Aquaculture Act that creates strong property rights in the ocean resources required for the aquaculture industry to expand and thrive.
- Transfer jurisdiction over aquaculture from the Department of Fisheries and Oceans to an industry-oriented department such as Agriculture or Industry. ■

Peter Fenwick is the AIMS Fellow for Newfoundland Affairs. Excerpted from Fenwick’s A New Year’s Make-Over for Federal Policy in Atlantic Canada: Redesigning the Fishery.

Aquaculture

The Blue Revolution



A Chronology of Collaboration: AIMS and the CAI

September 2000

AIMS and CAI host a PEI conference entitled *How to Farm the Seas*.

February 2001

AIMS and CAI host a BC conference entitled *How to Farm the Seas II*.

June 2002

AIMS President Brian Lee Crowley and head of CAI Gerry Johnson serve as series editors on *Canadian Aquaculture: Drowning in regulation*, conference paper No. 1. By Robin Neill and Brian Rogers.

September 2003

Series editors Crowley and Johnson release conference paper No. 2, entitled *Fencing the Last Frontier: The case for property rights in the Canadian aquaculture*. By Robin Neill.

June 2004

AIMS and CAI publish conference paper No. 3, *Framing the Fish Farmers: The impact of activists on media and public opinion about the aquaculture industry*. By Jeff Chatterton.

April 2006

AIMS and CAI publish conference paper No. 4, *It is FARMING, Not Fishing: Why bureaucrats and environmentalists miss the point of Canadian aquaculture*. By Robin Neill.



A Collaborative Effort

Fully one-fifth to one-quarter of the world's fish production now comes from aquaculture; the industry must continue rapid and sustainable increases in production to meet the demand for fish and shellfish in the next century. Countries such as Chile, Norway and Scotland have been at the forefront of these developments, creating large, successful and profitable industries in a very short time.

Ironically, while Canada has been a major source of scientific and technical expertise for the aquaculture industry worldwide, growth of aquaculture within Canada itself has been disappointing, especially given the underutilized potential of Canada's east and west coasts. Central to this failure of Canada to capitalize on aquaculture's opportunities has been the failure of government policy and regulation to understand and respond to the diverse needs of the fish-farming industry.

Such a void in public policy demanded a closer examination of this potentially profitable industry. The Atlantic Institute for Market Studies searched for just the right partner to undertake that detailed study. At the University of Prince Edward Island (UPEI), it found the Canadian Aquaculture Institute (CAI), which has been a leader in providing continuing education for the aquaculture industry and animal health professionals, particularly in the areas of fish health, production, technologies, and management.

The project leaders were Brian Lee Crowley and Gerry Johnson. Crowley is the founding president of AIMS and was the editor of *Taking Ownership: Property Rights and Fishery Management on the Atlantic Coast*, a volume on fishery management published in 1997. He also co-chaired, with Memorial University of Newfoundland President Art May, a major conference on property rights and fishery management held in St. John's in the same year. Gerry Johnson is a Veterinary Pathologist in the Faculty of Veterinary Medicine at UPEI, specializing in fish disease.



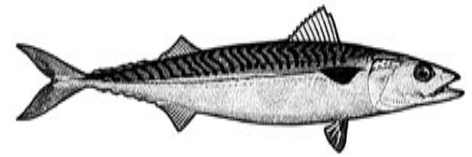
Brian Lee Crowley



Gerry Johnson

The project included two conferences: one on Prince Edward Island and the other in British Columbia. In addition, there were eight papers published by leading experts on the scientific, ecological, economic, regulatory, legal and public policy aspects of the aquaculture industry in Canada. The conference proceedings and the expert papers are available online on the AIMS website at www.aims.ca. ■

Blue Revolution



Although aquaculture is booming globally, in Canada the sector remains stunted

A revolution is underway off the world's coasts. In that revolution, the old "capture fishery" — hardy men in boats battling the elements and each other for an unpredictable share of the wild fish swimming by — is waning. In its place is emerging the technology and the expertise to farm the seas in a stable, predictable way. Not agriculture, the cultivation of the land, but aquaculture, the cultivation of the waters.

Overexploitation of the wild fishery, environmental degradation, poor property rights in wild fish, and a host of other factors have caused the collapse of whole stocks and the exhaustion of previously rich fishing grounds. The production of the wild fishery has levelled off, and is even declining at a time when the world's population continues to grow.

Aquaculture's production, on the other hand, has increased 17-fold in the past 50 years (as Peter Fenwick noted in his story starting on page 12 of the main section). The industry supplies a fifth of all the protein consumed from the sea. In the not-too-distant future, farmed fish, shellfish and algae will overtake the wild fishery, producing a vast array of domesticated fish species. Some are compar-

ing this Blue Revolution to the Green Revolution that boosted world food production in the past 30 years. Seven scientists at the American Association for the Advancement of Science argued recently that aquaculture is vital to world food security.

In many ways, this is an ideal industry for Atlantic Canada. It's based in coastal communities where jobs are scarce, it's not seasonal, it's high tech, it meets a growing market demand worldwide. And, indeed, the industry has established itself, to the tune of more than \$150 million annually in New Brunswick, for example. Ironically, our technology and expertise is in demand around the world, but the industry's local growth is slow compared to that of the global industry, representing huge lost opportunities for workers, investors and taxpayers in the region.

This slowness to capitalize on what should be a natural strength is due largely to outdated views of aquaculture and tendentious campaigns by the David Suzukis of the world. Yet the critics of aquaculture who care what the science says are seeing that peaceful coexistence is both necessary and positive. No one is more sensitive to water quality than the aquaculturist whose livelihood depends on his fish thriving there, making the industry a natural ally of those who want cleaner water. Escapes of cultured fish are a disaster to the business that owns them, resulting in significant investment to prevent escapes and a continuously improving industry record. Use of antibiotics is declining rapidly because of improved management of fish stocks.

The technology that the industry has developed is even being put in the service of restocking depleted wild salmon rivers in Atlantic Canada, according to the Atlantic Salmon Federation.

Steady incremental progress in cleaning up the industry's early problems will continue, because it makes good environmental and business sense to do so. But the main challenge that aquaculturists now face arises from governments. Dozens of federal and provincial departments must give separate approvals for an aquaculture operation to go ahead. Some of this is legitimate and necessary, to protect all legitimate uses of the ocean — recreation, sport fishing, navigation, and tourism as well as aquaculture. Much of it is unnecessary and damaging to the industry and coastal communities.

Just as seriously, the process for granting aquaculturists use of the water is capricious and arbitrary. Leases are often too short or too small for efficient operations, and this absence of high-quality property rights in the water hampers the development of aquaculture, just as the presence of private property on the prairie hastened the development of a rich agricultural society.

But then, if agriculture didn't already exist today, it's an open question whether we would be able to invent it. The same forces blocking aquaculture would oppose it for many of the same reasons. And humanity would be much poorer in both wealth and numbers as a result. ■

Excerpted from a column by Brian Lee Crowley that appeared in The Chronicle-Herald on Feb. 28, 2001.

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Bureaucrats and environmentalists are missing the point

The growth of aquaculture in Canada has not been as strong as one might expect, given the enormous length of this country's coastline and the world-class expertise in fish farming that exists here. The industry remains severely hampered by institutional obstacles, perhaps the most important of which is an antique system of property rights that makes no distinction between wild fish that are gathered in the open ocean and those that are farmed.

The second obstacle is the nature of government in Canada. The minister in charge of the department that oversees aquaculture is highly motivated by politi-

cal concerns and is vulnerable to pressure from special interest groups that do not necessarily have the interests of the aquaculture industry at heart.

The third serious obstacle is that aquaculture has expanded in an era when environmental activists, fearful of the possible exhaustion of the planet's resources through overuse, have acquired considerable influence on politicians as well as prominence in the media, with attendant effects on an otherwise uninformed public opinion.

The solution involves three strategies. First, establish the same private property rights in aquaculture that exist in agriculture. Second, separate government over-

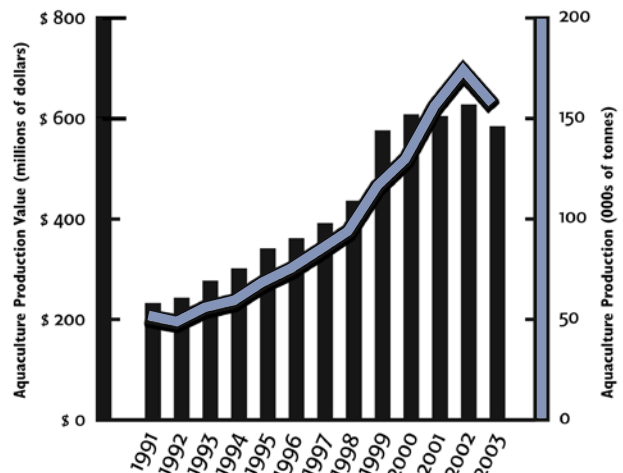
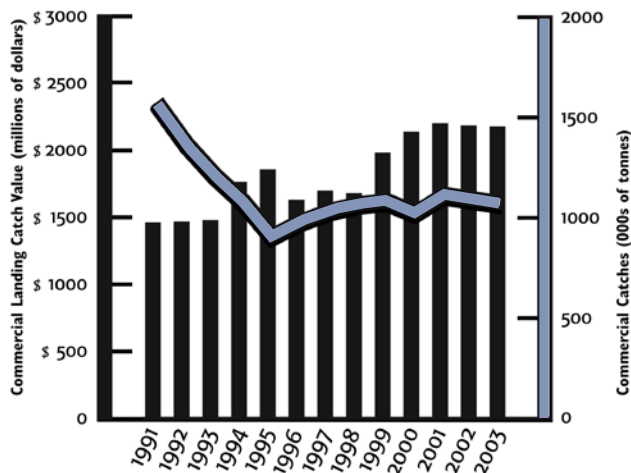
sight of aquaculture from that of the wild fisheries. Third, replace politicized decision making with objective cost-benefit analysis in disputes concerning aquaculture. An institutionalized, economics-based process, independent of any competing special interest, should objectively analyze and inform both the bureaucracy and the courts about the development effects of their decisions with respect to fish farming. ■

Excerpted from It is FARMING, Not Fishing, by Robin Neill. Published by AIMS in April 2006.



Aquaculture's Rising Fortunes

The traditional fishery may be on the wane, but aquaculture is not



Framing the Fish Farmers

The impact of activists on media and public opinion about the aquaculture industry

The rapid growth of aquaculture has brought with it increased focus on the industry, by both the media and environmental activists. Part of the problem is that, unlike farmers, aquaculturists are essentially unable to limit the effects of their operations to their own property. As a result, environmental activists, through their skilled use of the media, have assailed fish farmers about the supposed evils of their industry. Stories in the mainstream media detail the loss of native fish species or the invasion of non-native species, when such evidence is either easily explainable or anecdotal at best. Other headlines discuss the use of “harmful” colorants, when scientific opinion on artificial colorants is hardly decisive. A study proving that farmed salmon have six times as many pollutants in their system as wild salmon receives widespread media coverage. Greenpeace activists storm fish-production facilities lamenting the arrival of “Frankenfish,” even though genetically modified fish have yet to arrive on the marketplace.

The mainstream media are, in and of themselves, a neutral party, and would leave aquaculture alone provided environmental impacts are minimal and there are no adverse reactions to human health or marine life. Unfortunately, rather than simply report the news on the basis of facts, journalists are often handcuffed by the bounds of deadlines, and are forced to report storied narratives about the potential effects of scientific developments. Time constraints also mean that journalists tend to rely on environmental advocacy groups for information about aquaculture and its impact.

As with any industry, aquaculture must operate under appropriate regulations and with regard to due diligence. Yet, as is often the case when science and opinion collide, the result is too much passion and too little

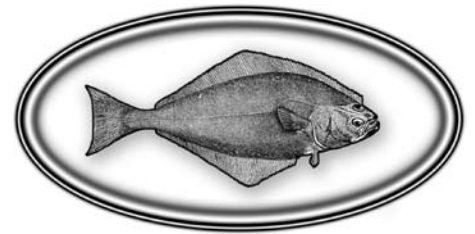
reason. Although many of its critics are properly concerned and well meaning, the battle against aquaculture has turned into an unwarranted campaign of vilification. Activists garner media attention through a wide array of publicity stunts. They then use that publicity and subsequent name recognition to obtain money for the cause.

Politicians and key decision makers are, in many ways, innocent bystanders to this spectacle. However, the activists promise to make life miserable for any politician who disagrees with their opinions. Faced with what they see as no real choice, politicians are quick to pass legislation and burdensome regulations overseeing the aquaculture industry.

**The industry's
enemies will
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become
exemplary
environmental
citizens**

The industry, facing outspoken opposition, has attempted to address the concerns of advocacy groups that genuinely want to work to ensure that aquaculturists operate in environmentally sensitive ways. Other groups, however, merely wish to destroy the industry. Against such groups, the industry must learn to defend itself.

An important part of any defence is to



develop a science-based communications strategy consisting of: training in risk communication — that is, knowing when and how to respond to critics as problems arise; making industry representatives available to the media on a timely basis; being aware of the nature of the industry's adversaries; and thinking creatively, not only about how to present the industry favourably but also about how to “counterpunch” against the often spurious agendas of its adversaries.

It is important to understand that the industry's enemies will continue to attack no matter what aquaculturists do to become exemplary environmental citizens. But by understanding the motives of the attackers and preparing a defence in advance and in depth, the industry can gain control of the situation. When activist groups no longer control the message, it becomes increasingly difficult for them to attack the industry; when the industry no longer has an apparent need to be saddled with an excessive regulatory burden, the politicians and bureaucrats will find it difficult to justify adding to that burden. To achieve long-term business growth in Canada, the aquaculture industry must become not a target for its adversaries, but the source of answers and solutions to legitimate concerns. ■

Excerpted from Framing the Fish Farmers: The impact of activists on media and public opinion about the aquaculture industry, by Jeff Chatterton. Published by AIMS and the Canadian Aquaculture Institute in June 2004.

Safe Salmon

The
ChronicleHerald

Times & Transcript

Misinformation may be hazardous to your health

In the supermarket on Monday to buy some farmed Atlantic salmon, I came up empty-handed. Was demand outstripping the supply of one of the healthiest things you can eat?

Alas, no. I was told by a smug and self-righteous store manager that they were not going to carry it anymore. After all, he intoned, we have to show concern for our customers' health.

But a store truly concerned with our health would not merely carry farmed salmon; it would praise its health merits to the skies.

Charles Santerre, a professor of food and nutrition at Purdue University, said on ABC News a few days ago, "The nutritional benefits of salmon are pretty amazing. I strongly believe that all the data we have today suggests that everyone should be eating more farmed

salmon." Salmon is rich in omega-3 fatty acids, which help prevent heart attacks. They are also important for fetal brain development. Preliminary evidence even suggests Omega-3 fatty acids reduce the risk of premature births and help a child's cognitive abilities.

The Canadian Food Inspection Agency has repeatedly said farmed salmon is safe. Health Canada has been promoting fish as a healthy form of protein. The US Food and Drug Administration agrees, and says salmon is an excellent source of those Omega-3 fatty acids, vitamins and proteins. Britain's Food Standards Agency says there is good evidence that eating oily fish such as salmon reduces the risk of death from heart attacks.

And farmed salmon, which has all the same health benefits as wild salmon, is about a third of the price and available year round, while wild salmon is available for only a fraction of the year. Farmed salmon therefore makes major health benefits accessible to far more people than wild salmon.

So what's up with my sanctimonious supermarket manager? Like many people, he saw media reports about an article in *Science* magazine measuring the trace amounts of man-made chemicals (such as PCBs) in salmon. And unfortunately, again like many people, he came away with the impression that farmed salmon is bad for you.

But that's not at all what the evidence says. What the report says is that there are trace amounts of PCBs in both farmed and wild salmon, and that the amounts in farmed salmon are slightly higher than in their wild cousins. That was already widely known, including by health authorities.

What the *Science* article left out was that the amount of PCBs in farmed salmon has been declining for years, largely thanks to continuing industry efforts to improve the quality of their product.

In other words, this study documented a good news story about farmed salmon.

Farmed salmon are safe. The levels of PCBs in both kinds of salmon are well within the safe limits determined by health authorities around the world. Keep in mind, we are talking unimaginably tiny amounts.

The *Science* research found five parts per billion in wild salmon versus 30 parts per billion in the farmed stuff. That's a meaningless difference, says Michael Gallo of the Cancer Institute at the Robert Wood Johnson Medical School. Put in perspective, it's like the difference between a pinpoint-sized and a pin-head-sized drop in an Olympic-sized pool. Gallo helped develop the US Environmental Protection Agency's model for assessing cancer risk. He says both amounts are too tiny to pose any significant health risk. For practical health purposes, they are indistinguishable.

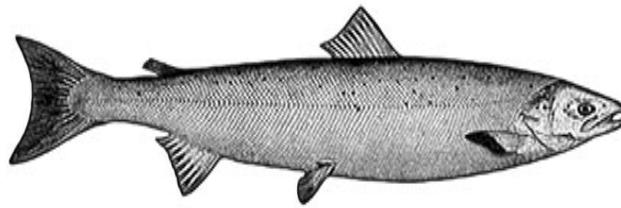
Milk, eggs and meats routinely contain the same or higher trace amounts of PCBs, yet all are quite safe to eat. So why single out farmed salmon? It may have something to do with who helped finance the study in the first place: the Pew Charitable Trust. Pew has donated many millions of dollars over the last decade to activist environmental groups dedicated to opposing aquaculture and is rated by Washington's Capital Research Center as being on the "radical left." And, perhaps unsurprisingly, one of the study's recommendations says you should shun farmed salmon, limiting yourself to only a few servings per year.

This alarmism has garnered major media attention despite the best efforts of expert after expert to show that the major benefits of eating farmed salmon hugely outweigh any hypothetical health risk.

What has happened here? The food supply isn't contaminated by PCBs; the science supply has been contaminated by politics. And putting science in the service of ideology truly is injurious to our health.

Fish farming has been the target of a concerted campaign of misinformation and innuendo for years. We cannot stop scientists from saying silly things not justified by their research, but we can demand of ourselves, our media and, yes, even our supermarket managers, a tougher standard of proof before subscribing to the moral panic *du jour*. ■

This column by Brian Lee Crowley originally appeared in The Chronicle-Herald in Halifax and Times & Transcript in Moncton on January 14, 2004.



Fencing the Last Frontier

Aquaculture faces the same main challenge as the wild fishery: property rights

Although aquaculture is poised to become a vigorous industry for Atlantic Canada, the sector is hampered by a property-rights system that has been developed for the wild fishery, rather than agriculture, which aquaculture more closely resembles.

As Peter Fenwick pointed out earlier (see his story on page 12 of the main section), there are two major hurdles to developing property rights for aquaculture. First, the land is not empty and to be had for the taking, as was the case with agriculture. Aquaculture faces prior ownership and usage rights — on the part of aboriginals, for example — in coastal waters.

Second, unlike in agriculture, where ownership of Crown land was transferred to the farmer, in aquaculture the Crown continues to own the seabed, the water column, and the water surface. The fish belong to the fish farmer but the farm does not. The fish 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 that such a relationship implies.

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

The industry needs a National Aquaculture Act that introduces secure property rights and is backed by the courts

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 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 pertaining 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. (See the story on page 12 for more on this.)

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.

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 decision making by bureaucrats. ■

Excerpted from Fencing the Last Frontier: The case for property rights in Canadian aquaculture, by Robin Neill. Published September 2003.



How to Farm the Seas

The science, economics and politics of aquaculture

In 2000, AIMS brought together leading national and international experts to clarify both the strengths and weaknesses of aquaculture, and to lay down the basis for a sensible public policy framework to govern the industry. How to Farm the Seas, a three-day event held in PEI, was a joint initiative of AIMS and the Canadian Aquaculture Institute.

While the world aquaculture industry is growing rapidly in response to rising demand for quality seafood, its progress in Canada is dogged by environmental controversy, regulatory and jurisdictional confusion, and concerns over food safety. In How to Farm the Seas, we brought together a team of leading national and international experts to clarify both the strengths and weaknesses of aquaculture, and to lay down the basis for a sensible public policy framework to govern the industry.

The following is Yves Bastien's, then Canada's commissioner of aquaculture, account of the highlights from the event.

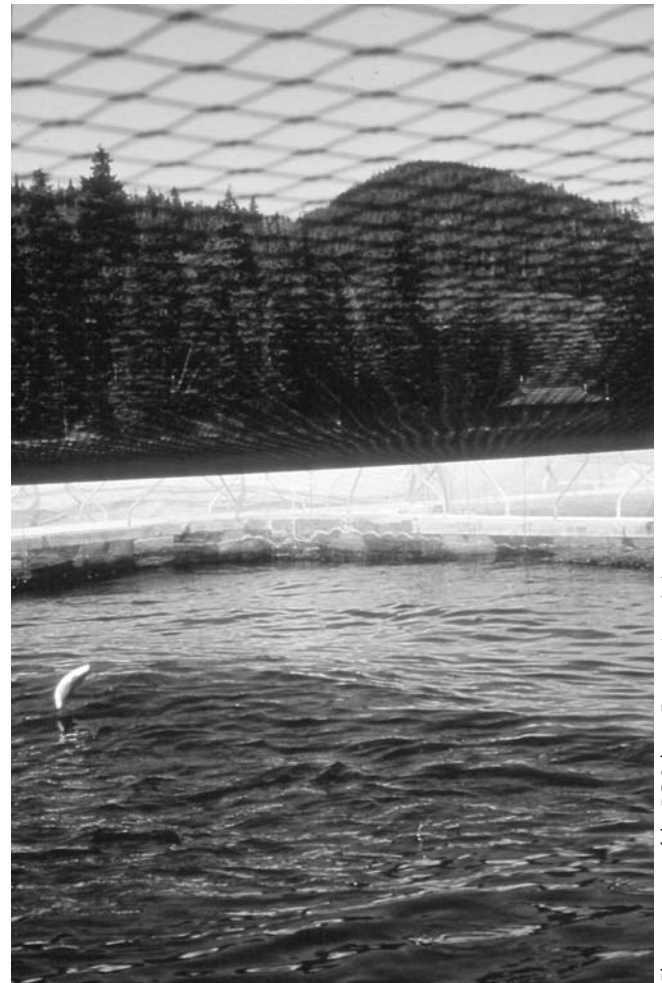


Photo courtesy of the BC Salmon Farmers Association

Key message No. 1: Science is essential

The first key message is that science is an essential component of sound decision making and must be better financed and coordinated. Science can be subjective and is regularly abused in the communication process. For that reason, science is not the end of the process but only one element of the decision-making process.

“Sustainability” and the “precautionary approach” are essentially buzzwords that will have as many definitions as the number of people sitting around a table. Debating such notions may increase misunderstanding, each party interpreting the notions differently. What becomes really important is what a community or a society defines as an acceptable or unacceptable level of environmental impact from a specific human activity. When well defined, this acceptable level can then be transformed into policies, guidelines, codes of practice, regulations, or legislation, and should be modified as information accumulates or conditions change.

But to do that properly and to provide confidence to the community that the level of acceptance is appropriate and will provide security for future generations requires good science, a great deal of information exchange and communication, and an obligation by everyone to work together.

What is really needed is risk assessment, risk management and risk communication. Regarding risk communication, confidence is a two-way process. Legitimacy and acceptance will bring more exchange of information. The example of Norway speaks for itself. The opposition in the late '80s and early '90s has evolved so that now people are working together. The legitimacy of aquaculture is not a question in Norway.

Key message No. 2: Canada's share of the aquaculture market is declining

As an exporter of seafood products, Canada is losing ground. At the inter-

national level, some countries are already experiencing a stabilization of their growth while we are still at the beginning of our potential growth curve. We also heard that investments by major companies could move elsewhere if conditions for business are not attractive in Canada.

At the same time, there was a consensus that Canada has the potential to be a world leader in aquaculture because of biophysical potential, expertise and know-how, and an existing strong industrial basis.

Key message No. 3: aquaculture needs strong producer organizations

There is a need for strong national, provincial and regional producer organizations. These organizations should develop protocols and codes of practice; communicate risks and industrial achievements; and adequately represent industry's interests.

Tor Horsberg commented that the environmentalists' focus on aquaculture has forced the industry to move fast on environmental concerns and to put in place measures that will contribute to making aquaculture a model of sustainable development. Aquaculture is already out-performing other sectors in terms of environmental performance.

There is also consensus that more work is needed to fully address issues like escapees, waste management/carrying capacity, and fish health and use of therapeutants/pesticides.

It is really a question of rolling up our sleeves and moving forward in collaboration with constructive partners. The key is working together to find solutions instead of debating extreme positions through the media. Extreme positions from either side are not defensible. I also noted that, overall, environmental performance of the aquaculture sector is viewed by many specialists as enviable and in many aspects better than other sectors.

Key message No. 4: User conflicts for aquatic space is a serious issue

This was clearly brought out by a number of speakers. My view is that there is an urgent need to establish a conflict resolution mechanism that will function both at the community level and at provincial or national levels. At one time I was convinced

that aquaculture zoning was the only way to resolve user conflicts and to provide legitimacy to the aquaculture sector. I now believe that a combination of both initiatives would be the best strategy, the conflict resolution mechanism being the number one priority.

Public policy

I heard many times that public policy for aquaculture was missing. This is both wrong and right. The Federal Aquaculture Development Strategy (FADS) exists and was reaffirmed recently as the Federal Aquaculture Policy when the federal government announced a program of \$75 million for aquaculture. The real problems are: lack of financial resources to implement FADS; lead federal agency is not staffed to implement FADS; lead agency does not have an aquaculture policy (FADS within DFO) and operational policies; need for a cultural shift within DFO.

But all of these require human resources that are willing to assume the challenges of rebuilding the DFO expertise and capacity in aquaculture. A cultural shift will not happen unless aquaculture expertise re-colonizes the department. Some employment opportunities will be created by the \$75-million program. It is important that aquaculture experts consider taking over those challenges to initiate changes from inside the organization.

Hope for the future

I would suggest that we now have a few fog lights in the toolbox. DFO is finally getting back on the job regarding aquaculture. In the last year-and-a-half, much progress has been made. Current and upcoming initiatives include the Office of the Commissioner for Aquaculture Development (OCAD), a communications strategy in the form of a series of fact sheets, and OCAD as a facilitator to help identify solutions and compromises for various conflicting situations with the department. Important DFO initiatives include an Office of Sustainable Aquaculture and a \$75-million investment. These are important steps forward and reflect a change.

We have all the ingredients to make aquaculture a huge success story, both in terms of environmental protection and

Conference Rings Alarm Bells

The conference of producers, scientists and policy-makers was told that while phenomenal growth exists in Canada, opportunities and investment are going elsewhere because of the impediments facing domestic expansion. "The question here is private-property resource versus public-property resource," said Brian Rogers, a leading consultant in the aquaculture and food sectors. "Aquaculture is accepted and promoted in Norway and Chile, but we're still debating whether this is an industry."

The two-day conference rang alarm bells over stalled development in the industry that already contributes about 21% of the value of all fishery products sold by Canada. But producers say the industry could grow tenfold in the next decade if government regulations stopped restricting the amount of sea-based leases handed out by the Department of Fisheries and Oceans.

Excerpted from an Oct. 3, 2000, article in The Guardian (Charlottetown) by Steve Sharratt.

economic development. It requires industry to be mature and act responsibly. That also means not waiting or counting on the government to do what is needed. It requires better organization through strong national, provincial and regional associations that will represent the interests of the aquaculture industry and present your priorities. It requires better communication with the public, other users, governments, and the like. And it requires governments to: confirm the legitimacy of aquaculture in policies and legislation; improve access to

sites; clearly define the rules under which aquaculture will operate and streamline all processes necessary to get an authorization, a license, a lease, or the right to use adequate pesticides and therapeutants; provide the support services that will insure aquaculture achieves its full potential in Canada; and move away from jurisdictional conflicts in order to give administrative responsibility to the level of government better suited to do the job.

In other words, work together to achieve this vision of a sustainable and profitable in-

dustry that will create economic activity that is very much needed in rural and coastal communities.

I would like to finish with the same conclusion that came out of a recent similar event, the June 1999 Round Table on Aquaculture that led to the \$75-million federal investment in aquaculture. The unanimous conclusion then was — Let's just do it! ■

Yves Bastien is the former Commissioner for Aquaculture Development, Fisheries and Oceans Canada

Politics, the Press, and Scientific Research: Some Problematic Features

Ancient Rome has several times been invoked at this conference, in particular, the gladiatorial arena has served as a vivid trope for our circumstance. If we consider, in comparison to other aspects of the process, the contribution of the political in determining aquaculture's fate, I invite you to remember that the single greatest instrument of death ever seen in the Coliseum was — the thumb. The emperor's up or down, as with the politician's approval or disapproval, was the final master of outcomes. Unlike Caligula, however, modern policy makers cannot see directly what's going on down there in the blood-soaked dust. Further, the action proceeds in a language that they do not command. So they depend upon various mediators, rather than gladiators, for edification. Ideally, such mediators will be scientific advisors.

More expediently, however, our modern policy emperor, just as did his predecessors, listens for the clamour of the crowd; that is, rather than navigating by the research results, he steers to the sound of applause, or the shouts of horror. After all, which is more important in the great scheme of things: that a particular policy rest upon a scientific

mistake, or that a great benefactor, a man of consequence, should fall from public grace? I'm sure we agree that the answer is obvious. Under this scenario, the emperor's most trusted mediators become even more powerful, only now they are rarely scientists, but rather the media themselves, who not only report but can manufacture that most precious commodity, public opinion. Their thumbs, I believe, are notoriously twitchy.

More policies are set or deflected by headlines and putative poll results than by scientific publications. Indeed, the gladiatorial arenas of history are littered with the carcasses of brilliant scientific and technical developments possessed of shining promise. Even though they might have benefited a desperate world they were condemned, not because they failed the test of facts but rather that of cultural fashion.

Talk to Dow Chemical, which was sufficiently right on the safety of silicone implants that it only cost them \$7 billion to lose, not only comprehensively but ignominiously, and not only in the court of public opinion but in a continued cloud of liability, even though exoneration after exoneration appeared

in the peer-reviewed literature.

Do not mistake my posture for a counsel of despair; rather, I am trying to forewarn you concerning the nature of the task your initiative will face. Put not all your fish eggs in the basket of sound science if you wish to survive. Science still matters in modern governance, as does establishing the balance of risks and benefits, of jobs created and human suffering alleviated, of national competitiveness enhanced. But none of these (nor indeed all taken together) should ever be thought of as dispositive. There are sharks in these waters, and they do not play by the rules of the white-coated laboratory set.

The scientific and economic arguments are never irrelevant to policy outcomes, but neither are they sufficient. For both science and economics, just as do the fish of our discussion, swim in a wider cultural and political sea upon which they ultimately depend. And not a few of them find themselves in cages not of their own making.

David Murray was Director of Research, Statistical Assessment Service, Washington, DC, at the time of this How to Farm the Seas I presentation.

Moving the Focus to the West Coast

(Still) drowning in regulation

In How to Farm the Seas II, AIMS and CAI built on the tremendous success of the first conference, held on the east coast in September of 2000. Again the two organizations assembled a team of leading national and international experts to clarify both the strengths and weaknesses of aquaculture, and to lay down the basis for a sensible public policy to govern the industry. This time, though, the focus was the Pacific Coast. What follows is a summary of discussions.

Canadian aquaculture is mired in a dysfunctional regulatory system. That is the main conclusion of the two aquaculture conferences co-organized by the Atlantic Institute for Market Studies and the Canadian Aquaculture Institute in 2000 and 2001 and sponsored by the Donner Canadian Foundation.

When regulation is working well, economic activity is regulated to achieve the greatest possible net social economic benefit without undue interference with the freedom of buyers and sellers in the marketplace. When the regulatory environment fails in its economic and political purposes, it is dysfunctional. And to the extent that it does not benefit the national economy,

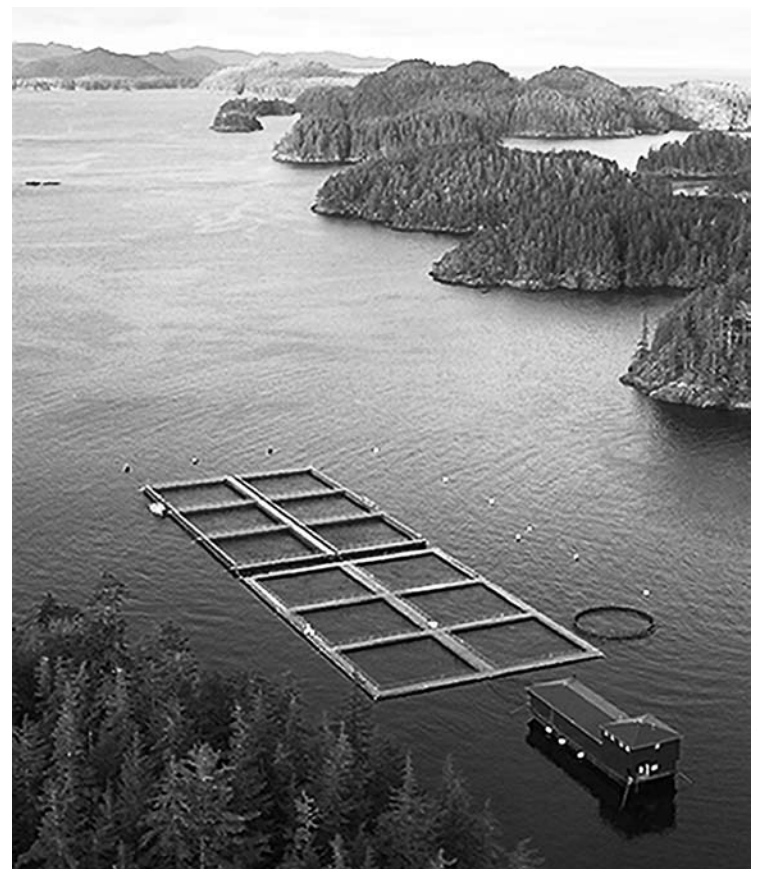


Photo courtesy of the BC Salmon Farmers Association

but reflects rather an unresolved political struggle between contending special interests, the industry and the economy suffer economic losses.

Aquaculture in Canada is subject to a complex of institutions, guidelines, and injunctions that forms the regulatory environment. The resulting hurdles to aquaculture businesses span transnational organizations, conventions, and accords; federal government agencies and legislation; provincial agencies and legislation; and a number of miscellaneous organizations and associations. In short, there is an absence of an overall rational model for the assessment of net social economic benefits in aquaculture. The current regulatory environment is dysfunctional.

Among presenters at the two conferences were the Federal Commissioner for Aquaculture Development and the Deputy Minister of the Department of Fisheries and Oceans (DFO). Between them they made a number of salient points:

1. There are unexplained administrative blocks preventing industry access to new sites for expansion and to new sources of wild fish for feed and for breeding purposes.
2. Policy (in the *Fisheries Act*) with respect to escape of penned fish, and with respect to water pollution caused by unconsumed feed and fecal residue, is not clear, and enforcement is not well organized.
3. The policy of the lead regulatory agency, the DFO, with respect to fish habitat has not been developed with aquaculture clearly in mind and, quite apart from that, is simply not clear.
4. The Navigable Waters Protection Act — which deals with site approval, length of leases, site layout, navigation channels, and site marking — was not developed with aquaculture clearly in focus and,



quite apart from that, is simply not clear.

5. There are conflicts and contradictions among the federal and provincial regulations dealing with aquaculture.

Because aquaculture is a relatively new industry, some time lag in development of new regulations is to be expected. A basic problem, perhaps the basic problem faced by aquaculture, however, is that regulators are having difficulty freeing themselves from thinking in terms of the property rights structure of aquaculture's predecessor, the wild fishery. The wild fishery is based on a common property resource. Aquaculture, by contrast, is based on private property with respect to the resource (the fish, shellfish, and other farmed products) and should be organized and regulated accordingly. Currently, the private property rights necessary for efficient market development are not in place, and negative externalities, untoward costs and regulations hobble the industry.

Throughout both conferences it was clear that vested interests in traditional fisheries, both within DFO and without, hold considerable sway over the regulatory environment — to the detriment of the aquaculture industry. It was also clear that many organizations see aquaculture not as a viable, complementary industry but as an irritant and potential threat to the established, but declining, traditional fisheries. Little of the anti-aquaculture rhetoric seems to be rooted in scientific or economic reality.

Reports from BC, PEI, and New Brunswick confirmed that serious regulatory dysfunction exists nationwide in site allocation and tenure of aquaculture licences, and in access to stock. Furthermore, administrative inefficiency is pervasive.

If any conclusion can be drawn from the conference

presentations, it must be that fundamental institutional change is required in the regulatory environment of Canadian aquaculture. We can look partly to other jurisdictions — such as the United States, Australia, and Norway — where aquaculture is considered an industry to be developed, not controlled, and where aquaculture-specific legislature exists. In its 2001 *Legislative and Regulatory Review of Aquaculture in Canada*, the Office of the Aquaculture Commissioner concluded that aquaculture is simply not included in the existing relevant legislation at both the federal and provincial levels.

The problems of the wild fishery all stem from its base in a common property resource. The solution to those problems is to establish well-defined private property rights. Agriculture had its own “tragedy of the commons,” which was overcome by the establishment of private property in the form of individual ownership of farms. Aquaculture makes this solution possible in the fisheries. The challenge ahead lies in applying this deceptively simple prescription to a complex industry in a highly politicized environment. Yet, apply it we must if aquaculture is to reach anything like its potential to generate prosperity in coastal communities and produce a major increment in world food supplies. ■

Excerpted from Canadian Aquaculture: Drowning in Regulation, by Robin Neill and Brian Rogers. Paper number one in the series, How to Farm the Seas, edited by Brian Lee Crowley and Gerry Johnson. Published by AIMS in June of 2002.

2000 Conference Coverage

“The Atlantic Institute for Market Studies and the Canadian Aquaculture Institute have launched a joint project to improve both public policy and public understanding with respect to aquaculture on the east coast and nationally.” – *The Guardian* (Charlottetown), June 20, 2000.

“...it was clear throughout the session here Friday that aquaculturists, who grow everything from salmon to shellfish, feel like a poor cousin to their land-based relatives. Numerous times the discussion focused on the inequity between the soil farmer and the water farmer when it came to the infrastructure of support and policy provided by the government.” – *The Guardian* (Charlottetown), Sept. 30, 2000

“The two-day conference rang alarm bells over stalled development in the industry which already contributes about 21 per cent of the value of all fishery products sold by Canada. But producers say the industry could grow tenfold in the next decade if government regulations stopped restricting the amount of sea-based leases handed out by the Department of Fisheries and Oceans.” – *The Guardian* (Charlottetown), Oct. 3, 2000.

Rising Tide?

AIMS' conference on rights-based fishing on the Atlantic coast

In November of 1996, AIMS held a conference in St. John's, Newfoundland, called Rising Tide? Rights-based fishing on the Atlantic coast. Like many Atlantic Canadians, we were concerned about the future of the fishery in the region, a fishery that was and still is going through crises. We asked Dr. Art May, then President of Memorial University of Newfoundland and former Deputy Minister of the Department of Fisheries and Oceans, to join us in our reflections about alternatives to common property. He agreed to co-host the conference.



“I have long held the opinion that rights-based fisheries are a better alternative to common property management regimes and pressed the concept very hard in the early 1980s, when as assistant deputy minister, Atlantic fisheries, I managed to get it in place for the Atlantic trawler fleet. At that time, and until very recently, I held the opinion that it couldn't work for the small boat fisheries on the northeast coast of Newfoundland. More recently I've come to the conclusion that I have been underestimating the capacity of that fishery, and those people, to embrace the kind of fundamental change that rights-based fishing would bring.” – Dr. A.W. May

How New Zealand Reformed

Development of New Zealand's fisheries over the period 1963-'83 occurred within an institutional structure that encouraged unsustainable growth. The role of government during the period was significant because it supplied both development incentives and regulations. Transitional arrangements are necessary to deal with the biological and economic legacy of their period.

The New Zealand reform was greatly aided by a national political structure keenly set on a path of comprehensive economic reform. Reform was based on sound principles. It is not possible to socially engineer an optimal structure of rights. Existing entitlements had to be transformed. The rights of Maori, as guaranteed under the Treaty of Waitangi, had

to be recognized and accommodated. The system itself will continue to evolve. Changes have been made to the definition of rights, the total allowable commercial catch (TACC) adjustment mechanism, and the agency's structure.

The quota management system easily outperforms its predecessor. Its economic muscle derives from decentralized decision making and the sinews provided by the quota management system. Transferable quota rights unleash incentives that have produced an impressive record of economic growth within the constraints of sustainable harvest. It has also created incentives for the evolution of cooperative TACC-setting mechanisms. These mechanisms should enhance the stability of the quota management system.



Rising Tide?

The economic record of New Zealand's fishing industry, structured around tradeable rights operating within a total allowable catch, with no government subsidy, is impressive. In contrast to the economic state of the fishery before 1986, indications are that industry is profitable. In 1991/92, major quota holders achieved a return of 11.5% (after interest and tax) on assets, which includes quota holdings; non-major quota holders posted a 7.7% return. The value of exports from New Zealand's fishing industry is well over \$1 billion. Finfish exports have increased from \$324 million in 1985 to \$760 million in 1994. Over the 1986-'94 period, fresh exports have increased from \$64 million to \$102 million, frozen exports from \$367 million to \$565 million, and processed product exports from \$5.4 million to \$92.8 million.

The number of vessels in the fishing fleet has increased from 2,331 in 1986 to 2,768

Quota ownership has enabled processors to better manage the supply of fish through holding a portfolio of quota rights

in 1994. Although the distribution of this growth has varied over time, the increase appears to be distributed toward larger vessels. The structure of quota ownership changed shortly after the quota management system was introduced. Some owners sold their new entitlements and left the industry. Others sold their quota to processors in exchange for a fish supply contract.

Quota ownership has enabled processors to better manage the supply of fish through

holding a portfolio of quota rights. Over the 1987-'94 period, the tonnage of quota held by the top three quota owners increased from 29% to 44%. This increase in concentration is largely attributable to structural changes in the processing sector. Total employment in the industry increased from 7,900 in 1986 to 9,838 in 1994, an increase of approximately 25%. Since 1990, most of the employment growth has occurred in the processing sector.

Evidence of the success of New Zealand's quota management system, related to regulated access, is compelling. It remains for other countries to discover how best to manage their fisheries. ■

Basil M.H. Sharp is associate professor at the University of Auckland Business School. Excerpted from a presentation at the Rising Tide? conference.

Quotas, Responsibility and Fishing

Fisherman Jean-Guy d'Entremont's perspective on how they work together



I am owner-operator of Inshore Fisheries Ltd., a small-sized fish harvesting and processing company in West Pubnico, southwest Nova Scotia. In 1990, the ITQ system was set up with DFO paying for dockside monitoring, and the quota was divided based on historical landings data. Inshore Fisheries Ltd. was apprehensive about changing to a system that left our boats with half the fish to catch than the previous years.

Yet, once into the system, we realized the benefits of being able to plan our fishing year

to market conditions and availability. Our choice of mesh sizes since ITQs has always been from five to 25 mm larger than regulation and has been square mesh. Our vessels have developed grate systems to fish flounder species, while allowing monkfish to escape unharmed. At the time, monkfish were on 10% bycatch limits.

Our sector had some unallocated quota that it used as payment to conduct a scientific survey, a survey that provides industry and DFO with an additional annual index of

abundance (pre-recruit and adult) and distribution of cod, haddock, winter flounder, and redfish in Northwest Atlantic Fisheries Organization division 4x (the southern Scotia shelf). We became more comfortable with science, realizing the co-existence of science and management.

The ITQ system promotes industry to demand accurate and timely dockside monitoring data along with a severe sanctions policy. The dockside monitoring is now paid entirely by industry. This summer, our fleet agreed to pay \$225 to provide one at-sea observer day per vessel, distributed at random, in order to participate in the Georges Bank fishery.

Since the implementation of the ITQ system, our company has turned its efforts on quality enhancement, developing workable selectivity devices, and strategic planning to give us the best returns. The highline fisherman in our company isn't the one who catches the

most fish, but the one who brings home the best bottom line while operating within DFO guidelines of his conditions of license.

We are utilizing five vessels instead of four pre-ITQs. There has been no change whatsoever at the plant; no new buildings. We still hire the same number of employees, but what has changed is that we process more redfish and flatfish, and our boats diversified to silver hake, monkfish and shrimp. ■

Excerpted from a Rising Tide? conference presentation by Jean Guy d'Entremont.

Rising Tide?



Examples of ITQs at Work

- **BC Halibut** Since 1991, individual vessel quotas, a variation of ITQs, have been in effect in the British Columbia halibut fishery. These quotas have allowed managers to extend the fishing season from six to 245 days. As a result, 94% of the total seasonal catch was sold as fresh halibut over the first three years of the quota program, compared with only 42% in the previous three-year period. The ability to sell mostly fresh halibut enabled fishers in BC to receive higher prices for their catch than their nearby competitors in Alaska, where halibut fishermen operated without ITQs.

- **Alaskan Halibut** The price advantage enjoyed by British Columbia halibut fishers was one reason for the adoption of IFQs (individual fishing quotas) in the Alaska halibut fishery in 1995. Under IFQs, the length of the fishing season increased from an average of two to three days per year (between 1980 and 1994) to an average of 245 days per year. Most of the halibut is sold fresh, resulting in higher prices on average for fishermen.

- **New Zealand Snapper** Benefits from the 1986 adoption of ITQs in New Zealand's groundfish fishery have been striking.

Thanks to ITQs, New Zealand fishers were able to respond to an expanding market for high-quality whole snapper in Japan (snapper is a major component of the groundfish species complex). With ITQs, New Zealand fishers had the time to target large snappers and improve product quality. By catering to the high end of the Japanese market for fish, fishermen were able to triple their revenues in the New Zealand groundfish fishery under ITQs.

- **Australian Tuna** Fishers in Australia's southern bluefin tuna fishery reaped benefits from ITQs because the longer season and slower pace of fishing enabled them to prospect for larger, more valuable tuna. With secure rights to specific quantities of tuna, fishers switched from fishing near shore and catching mostly small tuna to fishing farther offshore for larger tuna. Before ITQs, only 13% of the tuna caught by Australian fishers fell into the larger size class of tuna; after ITQs, more than 35% of the tuna fell into this class. Fishing for larger tuna was a direct response to more lucrative prices paid by the Japanese in the sashimi tuna market. Revenues in the tuna fishery more than doubled.

Excerpted from a presentation by Donald Leal at Rising Tide?

Allocating the Catch

Opportunities for fisheries reform

In the late 1970s, some of us writing in academic journals and others in the fishing community began to consider “stinting” the fisheries, or dividing up the total allowable catch among the licensed fishers. The idea was that if every fisher held a right to take a specified quantity of fish, and the sum of these quantities was the sustainable harvest, they would no longer have to engage in a competitive race for their shares of the catch. Moreover, if their quotas were transferable, they could buy and sell them to adjust the scale of their operations for maximum efficiency, thereby rationalizing the fleet. This individual quota approach was recommended for most of the fisheries on the west coast in the 1982 report of my Royal Commission on Canada’s Pacific Fisheries [Peter Pearse served as Commissioner on the Royal Commission on the Pacific Fisheries], and a year later the Kirby Task Force proposed enterprise allocations for Atlantic fisheries.

Within a remarkably short time, quota licenses — variously known as IQs, ITQs, IVQs, enterprise allocations and catch quotas — were introduced in several countries, including Canada (though their acceptance on the Pacific Coast has been slow).

Individual quotas imply another fundamental change in fishing rights. They add another dimension to the property interest of their holders by defining quantitatively their shares in the total harvest. This helps in overcoming both the conservation problem and the economic problem described earlier. It eliminates the wasteful, zero-sum game of competition among fishers, and thereby eliminates also the tendency toward overexpansion of fishing fleets and dissipation of economic returns to fishing. And it can (in certain conditions at least) simplify the problem of protecting the stocks from overfishing. In addition, rights to a specified catch provide their holders with greater security and enforceability against other fishermen and outsiders.

We now have a good deal of experience with individual quotas around the world, so we can add empirical observation to the predictions of theorists about the improvements they can bring about. The evidence, in general, is impressive. Where individual quota systems

The benefits of individual quotas flow from re-alignment of the economic incentives of individual fishers

have been adopted in their most unadulterated forms, notably in New Zealand and Iceland, it is hardly an exaggeration to say that the fisheries have been revolutionized, and much improved in terms of both resource management and economic performance.

The benefits of individual quotas flow from re-alignment of the economic incentives of individual fishers, from an effort to maximize their individual catches at the expense of others, to increasing the value of their defined shares. The result is a continuing effort on the part of each quota holder to generate the greatest net return from his share of the pie, by increasing the value of his landings, reducing his costs, and protecting and preferably enhancing the size of the total pie. These incentives are more consistent with those in other industries and which we depend on in a market economy to ensure that producers are efficient and behave in the public interest. ■



Excerpted from an AIMS paper by Peter Pearse entitled Allocating the Catch Among Fishermen: A perspective on opportunities for fisheries reform. Based on a presentation at Rising Tide?

Taking Ownership

Property rights and fishery management on the Atlantic Coast

Taking Ownership: Property Rights and Fishery Management on the Atlantic Coast, published in 1996, was AIMS' first look at the Atlantic fishery. The book, which included contributions from some of the world's foremost fisheries experts, examined Canada's current fisheries regime – based chiefly on common property, and government regulations and enforcement – and the emerging alternative, based on the establishment of property rights in the fisheries, usually through individual transferable quotas. A summary follows. The complete book is available online at www.aims.ca or through the AIMS office.

A licence to fish is not a property right to, say, a share of the fish caught, but rather a kind of permit allowing its possessor to join the harvesting effort within regulatory limits that dictate when, where, and with what equipment one may fish.

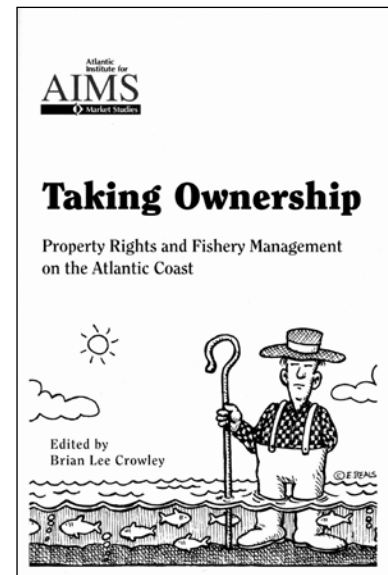
The result appears to be precisely what natural resource economists would predict. Government realizes little economic benefit when the resource is used efficiently, but has been rewarded by voters in fishing communities for granting unsustainable levels of access. In addition, the regulatory approach, which tries to control the harvesting effort of too many fishermen, does so by decreeing ever more intrusive limits on both gear and onboard storage capacity and ever shorter seasons. These efforts are to a large extent futile, since the ingenuity and inventiveness of the fishermen means that regulatory restrictions frequently lag behind the latest techniques for circumventing the rules. The fisherman's licence gives him no right to a share of the catch, but only a right to put his line or net or trap in the water, so each fisherman invests disproportionate capital in his catching and storage capacity, to increase his chances of getting an adequate share of an uncertain harvest. Each fishing season becomes an ever more harrowing high-tech race to catch an unpredictable share of a dwindling resource.

Contrast this with “rights-based fishing” so well described in Anthony Scott's piece in *Taking Ownership*. Fishermen own a share of the stocks, or more precisely, a share of the Total Allowable Catch (TAC), which is a

scientifically based estimate of the amount of fishing effort a stock can sustain. Such a property right is usually called an Individual Transferable Quota (ITQ). Now a fisherman has no need to race, because his share of the harvestable stock is guaranteed. The ITQ acquires a value in the marketplace, and becomes, like a farmer's land, his chief capital asset. Harvesters have an interest in co-operating to build the stocks, because each will benefit from increased catches in the future, not least because the present market value of each ITQ will rise with the potential future value of the stocks.

R. Quentin Grafton, another contributor to *Taking Ownership*, describes how the first hesitant steps towards rights-based fishing in Atlantic Canada appear to have produced improved economic results, and contributor Ragnar Arnason describes for us in practical terms the experience of other countries that have gone much further down this road than either Canada or the United States. Property rights also offer more robust legal tools to protect fish stocks from damage by pollution, as Elizabeth Brubaker documents.

Donald Leal examines models of community (as opposed to individual or corporate) ownership from around the world. Under rights-based fishing, enforcement becomes an even greater preoccupation than under a regulated common property system, because for the system to work, each rights owner must feel secure that no one is cheating at his expense. Enforcement, in both domestic and international waters, is therefore a major theme dealt with by Gordon Munro and William Apold and Stanton Guy.



The reader of *Taking Ownership* will readily notice that there is not unanimity among the authors on various aspects of the design and workings of a rights-based regime. Anthony Scott, for example, is much more skeptical than, say, Apold and Guy or Arnason that dumping of low-value fish at sea is a major defect of quota ownership. A more substantial disagreement can be seen between Donald Leal's piece on community-owned fisheries and the views of several of the other contributors. Leal's view — that culture and community can, given the right circumstances, induce fishermen to cooperate — is met with skepticism by those who see these ties as an inadequate basis on which to build successful fisheries.

These disagreements are a healthy sign of the vigorous intellectual and practical debate that continues to surround public policy in fishery management in Canada and abroad. What is nonetheless encouraging is the extent to which such a broad range of experienced and knowledgeable observers of fishery experience from around the globe have come to agree that rights-based fishing, while not a perfect solution, represents a significant improvement on the status quo. ■



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