Introduction:

From the beginning of human habitation in North America the wild Atlantic salmon has been a significant element of the social and cultural identity of Aboriginal people and the non-Aboriginal people that followed. Salmon were harvested in rivers and estuaries providing an important annual supplement to the food supply, which was recognized by Aboriginal people in ceremonial practices, and celebrated by everyone.

The Atlantic salmon represents many things to many people. It is certain that over and above its food and commercial value, that the wild salmon enhances our quality of life in many ways. It has been described as the supreme symbol of a healthy ecosystem. Importantly, in Canada, it represents the underpinning of an important recreational fishery that continues to provide environmentally sustainable jobs and income for thousands of individuals, businesses and rural communities. There is no question that the wild Atlantic salmon has helped define the culture and identity of the people that share its river valleys.

For hundreds of years the wild Atlantic salmon sustained a significant commercial fishery that was second only in value to the cod. In the nineteenth and twentieth centuries as salmon populations began to decline precipitously, however, a perception emerged within some circles of the salmon conservation movement that the commercial salmon fishery was the only significant factor affecting the survival of the species. This emerged even though it was well known that dams, pollution, habitat alteration or

1 Felt, Lawrence, correspondence to ASF, 1994
destruction, and poaching stood alongside the commercial fishery as causes of the decline. This perception, and the efforts to deal with the commercial fishery issue, came to take precedence over much needed work on the several other adverse impacts also threatening the future viability of the resource, in both the marine and freshwater environments.

From early times in colonial North America the Atlantic various salmon populations experienced losses from curtailed access to spawning and nursery habitat due to dams and impoundments or habitat damage from industrial practices. Many eastern North American rivers, especially in the New England states, were dammed at various mill sites, or impoundments were created for agricultural purposes. Forestry operations and the clearing of land resulted in sedimentation, elevated water temperature and other damage to habitat. In the twentieth century pollution, expanded road building, urbanization, and other poor land use practices created additional profound impacts on juvenile production, which is critical to the viability of the resource.

In the marine environment some causes of the decline were, and remain, less certain, although they definitely result from a combination of natural and anthropogenic factors. Some of these factors include: predation by marine mammals, birds and fish; capture as by-catch in fisheries targeted at other species; lack of food, or loss of forage species to harvest; exposure to diseases or parasites from aquaculture; poor oceanographic conditions from global warming; changes in marine migration routes; and other causes yet to be identified. Clearly, with reduced overall numbers of salmon, individual salmon stocks, and the species as a whole become more susceptible to extirpation.

It is certainly true that the commercial fishery is not the only problem affecting survival of the wild Atlantic salmon. It is, however, an obvious and significant one that can be addressed by concrete and measurable performance by governments and individuals. Now that we have largely eliminated the commercial salmon fishery in North America the question becomes: Is there sufficient time left to address the other issues and prevent the extinction of the species?

This paper will outline a brief history of the commercial Atlantic salmon fishery in North America, steps taken to close it; and the results of those actions. It will also outline the additional action necessary, if we are to succeed in conserving the wild Atlantic salmon.
Historical Context

The harvest of wild Atlantic salmon for food in North America is as old as the history of mankind on this continent. With the arrival of Aboriginal people over ten thousand years ago, people began to capture wild salmon through several means: primarily through traps and spears, as a means of supplementing other wild animals harvested for food, social and ceremonial purposes.

The coming of European settlers brought with it new ways to harvest the salmon, mainly through nets, weirs, and new forms of traps set in rivers and into the estuaries. Eventually, as fishing techniques became more advanced nets moved further offshore in larger vessels, into the bays. By the mid-twentieth century salmon fishing had evolved into a major commercial enterprise with fish caught in rural and remote parts of Atlantic Canada and Northeastern United States, dried or salted and sold in towns and cities across North America. The salmon fishery stood second only to cod in terms of its commercial value.

At various times over several generations, however, alarms began to sound over the impact of the commercial salmon harvest, and to some extent, to other problems on the overall populations of salmon in North American rivers as commercial fishermen and recreational anglers alike noted the continuing decline in numbers of fish returning to the rivers each year.

In his several books in which he outlines the early period in North America, Anthony Netboy cited the problems represented by industrialization, dams, pollution and loss of habitat in addition to commercial fishing as causes of the loss of salmon in both Canada and the United States. In light of his and many of his predecessors’ clearly stated concerns, we should consider it unfortunate that action was not taken to address the impacts of forestry, agriculture, dams, pollution, sedimentation, poaching and predation with the same degree of effort given to the commercial salmon fishery.

History of North American Closures

It was not until the late nineteenth century, however, that regulation of the commercial fishing of salmon began to be implemented by governments in Canada and the United States. By that time, the catch and the corresponding effort of the commercial salmon fishery had already begun to decline. In Canada, as early as the 1840s, records indicate that shipments of salmon from each of the present day provinces declined sharply. Moreover, not only was the catch declining, but the average weight of commercially caught salmon were also decreasing.

In the United States, principally in Maine, by the mid-1840s the catch had been reduced by nearly fifty percent. The previously “unlimited resource” was beginning to come under some very clear limitations. According to Baum, com-

2 Dunfield p. 120
3 Dunfield p. 124
4 Baum, Ed, Atlantic Salmon Unlimited, Hermon, M. E. 1997 p. 58
mercial Atlantic salmon landings steadily declined in concert with the diminishing resource, although throughout history most of the catch continued to occur on the Penobscot River. There were few “good” years reported during the early 1900s, however, the fishery was finally closed in 1948 after a reported catch of only 40 salmon in the Penobscot River.5

In Canada, by the late 1860s it became evident to government authorities that overexploitation of the salmon was a major cause in the decline in Atlantic salmon populations. Several reports commissioned by governments shortly after Confederation in 1867, pointed to the need to adopt effective regulation of the salmon fishery. Canada’s first fishery act, therefore introduced prohibitions on the catch of kelt, smolt and small salmon, taking of salmon roe, and fishing during spawning season. The regulations also specified salmon net size, net location and use of fishways as commercial fishing devices.6

It was not until 1966, however, that a series of new measures involving closure of various commercial fisheries, license retirements and transfer restrictions, bans on driftnets, reduced seasons and other measures progressively became implemented. This resulted largely from the concerns of many people such as Wilfred Carter, Netboy and Richard Buck, with others, who urged that the commercial salmon fishery be closed for good.

In March 1992, the Governments of Canada and Newfoundland finally took the historic and courageous step finally imposing a five-year moratorium and license buyout offer for the commercial salmon fishery on the island of Newfoundland. This came after decades of lobbying by the Atlantic Salmon Federation and its two founding organization; the Canadian-based Atlantic Salmon Association and the United States-based International Atlantic Salmon Foundation. It is noteworthy that the advent of salmon aquaculture in providing a source of salmon for the market and jobs played a major role in enabling this decision.

By the end of 1992 ninety-six percent of commercial salmon fishing license holders on Newfoundland had accepted the buyout offer. Shortly thereafter, in 1993, the offer was extended to Labrador fishermen, with sixty percent uptake. These efforts continued to 1998 with the when the closure of the commercial salmon fishery in Canada was finally achieved. The total cost to Canadian taxpayers was approximately $72 million, mostly in the latter part of the period and due to buyout of commercial salmon licenses. (See Appendix A)

This victory did not occur easily because of the enormous political and social clout of the commercial salmon fishery. Commercial salmon fishing represented a big part of the culture, lifestyle and income for fishermen in many parts of Atlantic Canada. Closure of this part of the fishery was pitted against the recreational fishery, which was frequently portrayed as a pursuit of

---

5 Baum p. 58  
6 Dunfield p. 151-152
wealthy foreigners.

The results of these closures provided temporary improvement in salmon runs in most rivers. It did not, however, result in the sustained increases in salmon abundance that most observers had expected. Closure of the commercial exploitation of salmon was necessary, but did it occur in time to allow action on the other issues contributing to the possible collapse of the species? Was it a clear case of: Too late...Too little?

New Challenges:

The closure of the domestic American commercial fishery in 1948 and the Canadian commercial fishery by the end of the 1990s are major achievements. But by no means did they eliminate the threat of commercial fishing for North American Atlantic salmon. Today, some significant challenges in eliminating the commercial harvest of wild salmon in Canadian and in international waters remain. These fisheries need to be addressed to assist in the restoration of salmon populations back to abundance in North American rivers.

Labrador Resident Food Fishery

The resident food fishery for salmon in Labrador is recognized today as a legal fishery largely because of the difficulty faced by Canada’s Department of Fisheries and Oceans in effectively regulating closure of the Labrador commercial salmon fishery after 1998. With the Labrador moratorium several individuals, including many Métis residents, and others, began to fish salmon off the headlands of Labrador. This effectively reintroduced, on a somewhat smaller scale, the commercial salmon fishery that had intercepted salmon bound for other North American rivers that had just been closed.

ASF and its affiliate, the Salmonid Council of Newfoundland and Labrador (SCNL) protested this fishery leading DFO to launch an effort to stop the illegal fishery. The enforcement actions, however, were not successful largely due to the numbers of individuals involved and the difficulty in catching them with limited enforcement resources along a very long and geographically difficult coastline.

In 2001, DFO, therefore, entered into a self-regulatory agreement for Labrador that permitted the establishment of a resident food fishery. The reported aggregate results for the resident food fishery and communal native fisheries of the Innu and Inuit of Labrador for 2001 stand at 4730 small salmon and 2334 large salmon weighing a total of 18.7 tonnes.

The Atlantic Salmon Federation is concerned at the magnitude of this fishery, although it does not dispute the rights or needs of individual Aboriginal people to a subsistence food fishery. ASF has proposed tighter regulation of this fishery by DFO to ensure that only Aboriginal people recognized under Canada’s Indian Act are able to participate and that the fishery be restricted to rivers and estuaries to avoid capture of salmon headed for other North American rivers. At this writing, the issue remains unresolved.

St. Pierre and Miquelon Salmon Fisheries

In 2001 the commercial mixed-stock salmon fishery off the French islands of St. Pierre and Miquelon reported a harvest of 2.155 tonnes. This was a minor decrease from the reported catch of the preceding three-year period but higher than the fifteen-year mean catch at 2 tonnes. Up to 52 individuals were licensed for this fishery for 2001, an increase of 20 percent over the previous year.

The continuance of a commercial salmon
fishery in St. Pierre and Miquelon is a major problem for salmon headed for the rivers of southern Newfoundland and for other rivers in Atlantic Canada, Québec and Maine. St. Pierre holds a 200-mile limit that cuts across salmon migration routes to these areas and most certainly intercepts fish native to those areas. It should be noted that no salmon are native to St. Pierre or to Miquelon.

To-date, France, in respect of St. Pierre and Miquelon, has been un-cooperative in finding solutions to limit this fishery in accordance with NASCO policy or out of respect for Canada or the United States. This issue is gaining prominence in concern expressed by ASF and SCNL and the governments in Canada and the United States. It is anticipated that additional pressure and diplomacy will have to be applied to effect a solution to this fishery. The issue has been discussed several times during the proceedings of the North American Commission of NASCO without results. Canada and the United States and NASCO representatives have attempted to gain concessions from France, including agreement to a cooperative biological sampling program, without success.

**West Greenland Fishery**

The fishery for wild Atlantic salmon off the west coast of Greenland is a relatively recent phenomenon compared to the commercial fisheries in the North American and European waters. It was not until the late 1950s that the potential of a salmon fishery was identified when it became understood that the smolt migrating to sea from rivers on both sides of the Atlantic mixed in the feeding grounds off Greenland. The proportion of fish from North American and from European rivers is typically in the range 60/40 percent respectively.

This discovery brought with it a large multinational fleet and the harvest quickly rose from the 40 tonne level of 1958 to a peak of 1585 tonnes by 1973. The Greenland fishery quickly became the largest commercial salmon fishery of all, far outstripping the commercial fisheries in European countries and the Faroe Islands, three-fold or more. The sheer scale of this fishery led many salmon conservationists to lobby governments for limitations on the Greenland fishery but it was not until the early 1980s that quotas on the inshore and offshore salmon fisheries were agreed to and began to result in reduced catches.

7 International Council for the Exploration of the Sea (ICES) 2002 Working Group Report for NASCO, Table 5.1.1.1.
8 ICES Working Group Report, Table 5.1.1.1.
mackerel nets, groundfish gill nets, herring nets, and multi-species traps that take an additional 250,000 annually.” Anthony Netboy noted that the decline of Canadian salmon runs was perceptibly accelerated as in the British Isles, by the upsurge in the Greenland fishery.10

An important outcome of the lobby efforts was the eventual formation of the North Atlantic Salmon Conservation Organization (NASCO) in 1984. A most influential person in this effort was Richard Buck who promoted the control on the Greenland fishery. The tremendous efforts and years of lobbying the United States and Canadian governments by Buck, Carter and many others finally resulted in NASCO’s formation and, along with it, the possibility of internationally sanctioned controls on the commercial salmon fishery and other problems affecting the salmon.

Clearly, however, the prevailing notion was that the West Greenland fishery represented a major problem that had to be solved following the multiple measures invoked by Canada up to 1992 to address many of the above-noted problems. In the 11-year period between 1982 and 1992, the reported landings of European and North American salmon averaged over 200,000 salmon annually with several years in the 300,000 range or higher.

Accordingly, ASF and the North Atlantic Salmon Fund (NASF), with funding provided by the United States National Fish and Wildlife Foundation, developed a two-year conservation agreement with the KNAPK (Organization of Fishermen and Hunters in Greenland). In return for compensation amounting to $400,000 USD each year KNAPK members agreed to suspend fishing for salmon except for subsistence purposes. This agreement was not renewed for 1995 largely due to its expense while efforts to address the other issues were struggling with limited resources.

From 1995 to 2000, inclusive, the West Greenland fishery was severely restricted as a result of a quota agreed to by NASCO based on pre-fishery abundance advice from ICES. (International Council for the Exploration of the Sea). In that six-year period, the reported catch ranged from a high of 21,400 North American salmon in 1995 to a low of 3100 North American salmon in 1998.

In 2001, however, the information available to NASCO from ICES, using the same formula, indicated a much greater abundance of salmon available for harvest by Greenland fishermen. The prospect of a return to a harvest exceeding 60,000 salmon resulted in concerns for the impact on conservation and restoration efforts, particularly in the United States. As a result, a management agreement was developed and ratified by NASCO parties that resulted in an adaptive management system with in-season quota adjustments and based on catch per unit effort (CPUE) measured during the season. The harvest level was to be determined by a progressive quota adjusted during three separate harvest periods according to CPUE. The maximum allowable catch under this agreement was 200 tonnes.

The results of the 2001 fishery were a reported catch of 42.5 tonnes consisting of 34.5 tonnes commercial catch and 8 tonnes subsistence fishery. An additional 10 tonnes were estimated as the unreported catch. These figures were surprisingly low to some but appeared to corroborate the low abundance anticipated by ICES and being experienced in North American and European rivers.

For 2002 a somewhat different scenario emerged, with ICES recommending a zero quota for the Greenland commercial fishery based on pre-fishery abundance estimates and a seventy-
five percent confidence level of attaining conservation requirements over the 167 tonne quota that would result based on the previous fifty percent confidence level. This resulted in a new round of negotiations at NASCO that created a new adaptive management system, similar to the 2001 agreement, but with two distinct fisheries periods and allowing a maximum commercial harvest of 55 tonnes in addition to the subsistence fishery. The results of this year’s Greenland fishery will unfold in the August-September period and the results will become known shortly thereafter.

As noted earlier, in 1993 and 1994, ASF and its partner conservation organizations entered into a conservation agreement with KNAPK to end the commercial salmon fishery in Greenland. NASF and ASF are again exploring development of a similar agreement for 2002 and future years.

NASF and ASF believe the Greenland commercial salmon fishery to be a resolvable problem facing conservation of North American wild Atlantic salmon populations. This closure will be of benefit to southern European stocks, although they will remain threatened until the major commercial salmon fisheries in the Faroe Islands and in Irish waters are also closed. These closures are a necessary step and an immediate “do-able” that salmon conservationists hope will buy time to find a resolution of the environmental issues also affecting the well-being of wild Atlantic salmon.

NASF and ASF’s intention is that a long-term conservation agreement with the KNAPK must be durable and bring clear benefits to the fishermen who give up their rights to fish, today and for the future. One very effective way of achieving this goal would be to provide support to development of alternative fisheries that may be more lucrative and provide greater long-term benefits to those involved.

Conclusion:

The wild Atlantic salmon is tightly interwoven into the culture, outlook and economy of those who live within its North American range. For over 300 years the people of New England, the Maritime Provinces, Quebec, Newfoundland and Labrador pursued a commercial fishery for Atlantic salmon that was important to the development of coastal communities.

As a result of a combination of factors salmon populations began to decline precipitously after the mid-nineteenth century. At that time, one of the greatest single factors at the root of the decline was over-exploitation of the resource by the commercial salmon fishery. It was not the only factor, but it certainly compounded reduced reproductive capacity from habitat loss, pollution and many other factors that have contributed to the regression in salmon populations since that period.

Unfortunately, it was only in the relatively recent mid-twentieth century that action to limit and eventually close the commercial fishery was taken. This became a single-focused activity that experience indicates has presented its results too late to provide the much needed respite to enable a genuine recovery. Closure of commercial salmon fisheries do provide increased returns to some rivers in the short-term, but the North American experience also indicates that any rebound has not been sustained.

This is not to say that a return to abundant populations of wild Atlantic salmon to our rivers is an impossible task. Rather, it underscores the necessity of maintaining determined action on multiple fronts addressing several issues simultaneously to promote the desired, and sustained, returns.

This underscores the importance in current times of a partnership among those interested in conservation of wild Atlantic salmon: non-government organizations; governments; universities;
and, individuals. Time is of the essence. The resource continues to decline. We must “get on the same page”, get the priorities identified and tackle them with our respective strengths. No one sector has the monopoly on the ideas and the solutions. But through partnership and concerted, hard work we can return the wild Atlantic salmon to abundance.

If we do not follow this course of action the goal will continue to elude us.

References:

Baum, Ed, Maine Atlantic Salmon: A National Treasure, Atlantic Salmon Unlimited, Hermon, M E. 1997

Bruce, H., Atlantic Salmon Journal, Summer, Atlantic Salmon Federation, 1992 Vol. 41, Number 2, p.16

Buck, Richard, Silver Swimmer, Lyons & Burford, New York 1993

Carter, Wilfred, IASF Newsletter, International Atlantic Salmon Foundation, 1985

Dunfield, R.W., The Atlantic Salmon in the History of North America, Minister of Supply and Services Canada, 1985


Jensen, Frank, Synopsis of the abundance of Atlantic salmon (Salmo salar L.) Since the last Ice Age, Millenium Report, Museum of Natural History, Aarhus DK, 1991

Netboy, Anthony,

The Atlantic Salmon . A Vanishing Species, 1968

The Salmon . Their Fight for Survival, Houghton Mifflin Company, Boston 1973

Salmon . The World’s Most Harassed Fish, André Deutsch Ltd., London 1980

Contact

Stephen Chase,
Vice President, Government Affairs
Atlantic Salmon Federation
P. O. Box 5200
St. Andrews, NB E5B 3S8