

CHAPTER 28

Endangered species listing process and status of Atlantic salmon in the US

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Introduction

The Maine Atlantic Salmon Commission has been in existence since 1947. It was not formed in response to the endangered species listing process. It is a state agency, with mostly state funding but with 50% federal funding for research. The Atlantic Salmon Commission has existed for 56 years under three or four different names but always with the same mission: to protect, restore and maintain Atlantic salmon stocks. However, we have been notably unsuccessful, like everybody else.

To begin with, I am going to give a brief introduction on the biology, history and range of Atlantic salmon. Originally, pre-contact, Atlantic salmon were found all the way down to Long Island Sound perhaps as far as the Hudson River. Previous presentations (Chapters 5 and 6, Hindar and Whoriskey) have identified the Atlantic salmon range in the North Atlantic and on the eastern side of the Atlantic and as far west as Greenland. I will address the status and the endangered species process for Atlantic salmon in New England.

US Range of Atlantic Salmon

Figure 28.1 shows the historic range of Atlantic salmon in the US and the four rivers, the Penobscot, Merrimack, Connecticut and Housatonic Rivers, which were the major rivers for Atlantic salmon in New England. The salmon are now extinct in the Housatonic, the Connecticut and the Merrimack Rivers except for remnant populations dependant entirely upon stocking.

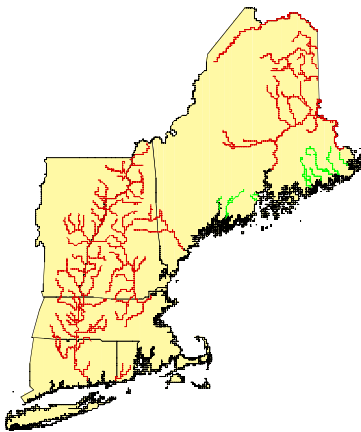


Figure 28.1. US range of Atlantic salmon.

Wild runs have all but disappeared from New England waters. We have had on the east coast a much longer history of trying to destroy our fisheries than on the west coast and we have been notably successful. We have dammed rivers since the 1600s, have had industrial and domestic pollution, and commercial, illegal and recreational harvests that were totally unsustainable. Commercial harvest of Atlantic salmon has been outlawed for several decades. One of the first tasks I undertook when taking over the directorship of the Atlantic Salmon Commission in 1999 was to close the recreational fishery. At that time, it was a catch and release fishery but we had so few fish that we could not even sustain this low impact fishery.

Currently in Maine, there are fifteen rivers which have Atlantic salmon – more or less. Eight of those rivers were listed in the endangered species distinctive population segment (DPS); I will address the genetics used to establish this DPS below. Clearly, Atlantic salmon genetics do not change at the United State’s border with the Province of New Brunswick. The distinctive type of salmon that is found along the coast of Maine is also found about halfway across the south coast of New Brunswick including the St. John River. A tributary to the St. John, the Aroostook River, enters northern Maine where we still have a very few fish that are trucked over the Magaguadavic dam.

Maine river systems

Rivers in Maine do not compare to rivers on the west coast of North America - they are small streams or tributaries by west coast standards. Atlantic salmon are found in the Dennys River, and the East Machias, Machias, Pleasant, Narraguagus, the Duck Trap, Cove Brook and the Sheepscoot Rivers. These rivers, shown in Figure 28.2, have been listed by the Endangered Species Act as being part of the DPS. Atlantic salmon are also found in the Kennebec, Androscoggin, Saco, and Penobscot Rivers but the endangered species listing process has yet to decide what to do about these populations and they have not yet been included in the DPS.

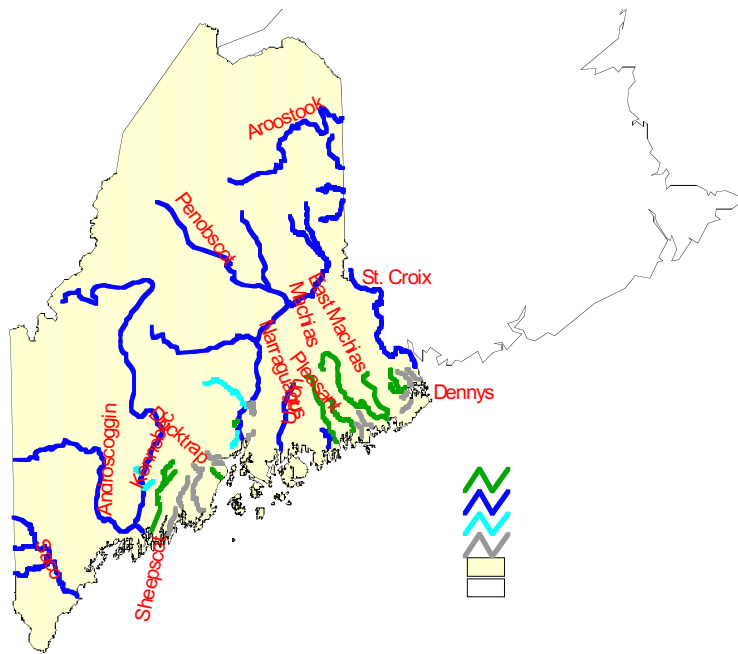


Figure 28.2. Maine Atlantic salmon rivers.

Penobscot River Returns

Figure 28.3 shows the numbers of salmon returning to the Veazie trap, a fish trap located at the head of the tide in Bangor on the Penobscot River. Although the Penobscot River in Maine is not listed in the DPS, this is our longest data set and it clearly shows what has been happening throughout all rivers in Maine. This salmon population is almost entirely dependent upon stocking from a hatchery that is operated by the US Fish and Wildlife Service in cooperation with the State of Maine Atlantic Salmon Commission. Whether or not the hatchery is a good or a bad thing, it is the only thing we have. Without the hatchery, the Penobscot River would not have any Atlantic salmon. The pre-European contact population estimate for Penobscot River Atlantic salmon is about 100,000 fish, which is small by the

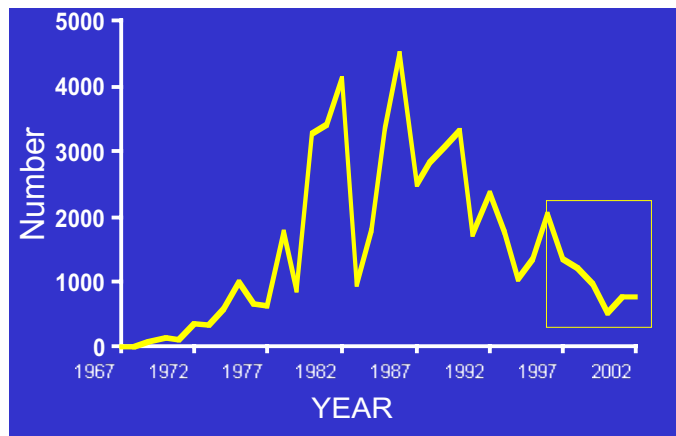


Figure 28.3. Penobscot River returns to the Veazie trap, 1967-2002.

| | Penobscot | Union | Narraguagus | Pleasant | Dennys | St. Croix | Androscoggin | Saco | Aroostook | Total |
|------|-----------|-------|-------------|----------|--------|-----------|--------------|------|-----------|-------|
| 1996 | 2045 | 69 | 64 | | 10 | 132 | 39 | 54 | 65 | 2478 |
| 1997 | 1355 | 8 | 37 | 1 | 0 | 28 | 1 | 28 | 10 | 1468 |
| 1998 | 1210 | 13 | 22 | | 1 | 41 | 4 | 28 | 30 | 1349 |
| 1999 | 968 | 9 | 32 | | | 13 | 5 | 66 | 25 | 1118 |
| 2000 | 535 | 2 | 23 | 3 | 2 | 19 | 3 | 49 | 17 | 653 |
| 2001 | 786 | 0 | 33 | 11 | 17 | 25 | 5 | 69 | 28 | 974 |
| 2002 | 779 | 5 | 8 | 0 | 2 | 20 | 2 | 47 | 7 | 870 |

Figure 28.4. Returns of adult Atlantic salmon to Maine rivers equipped with counting facilities, 1996-2002.

standards that have been discussed for Pacific salmon. However, our habitat is different as is our productivity and the species.

Figure 28.4 shows returns of adult Atlantic salmon to Maine Rivers equipped with counting facilities. The total on the right hand column indicates current year returns with the returns for 2002 on the bottom line. The Penobscot River return for the 2003 calendar year through June 9th is 123 fish, well below recent historic levels. There are still (as of June 2003) no salmon returns on the Narraguagus River, Pleasant River, and Dennys River. In the Duck Trap River in Cove Brook, we estimated the numbers in 1991, through redd counts and electro-fishing surveys for parr and young of the year. There were no redds, no parr and no young of the year. Last year the Pleasant River had no returning adults and only 11 in 2001. The Dennys River shows 2 fish last year but it was actually zero because both of those fish were aquaculture escapees.

Possible reasons for salmon decline in freshwater and marine environments

A total of sixty-three smoking guns related to freshwater and marine environments were identified by Atlantic salmon experts who analyzed the subject in Halifax, Nova Scotia in 2000. Those occurring in freshwater include: water withdrawal for irrigation (Maine has a significant amount of wild blueberry land that

is irrigated with direct withdrawals from some of these very small salmon rivers); riparian zone habitat degradation due to agriculture and forestry operations; and, impassable dams and problems with acid rain. The latter factor is not quite as bad as it is in Nova Scotia but the problem is escalating. Poaching is also a big problem.

In the marine environment, causes include the salmon aquaculture industry, which is a relatively new and, until recently, growing occupation. The border between Maine and New Brunswick includes a shared marine environment called Cobscook Bay where there are many salmon pens in the waters of both New Brunswick and Maine. The same companies own many of the pens and Norwegian interests own many of these companies. The Province of New Brunswick and the State of Maine each have their own set of rules for developing policies to deal with aquaculture, and the corporate owners in Norway try to ignore them or work around them.

Salmon aquaculture

We all know some of the issues associated with aquaculture, including escapees and disease. We do not have an issue with sea lice on wild fish salmon associated with aquaculture in Maine as they do in Norway and other European areas. Our estuaries are broader and wild fish coming through are not

constrained to travel in close proximity to the pens. We do not know exactly where they travel but they do not seem to be accumulating sea lice. Infectious salmon anemia (ISA) is a relatively new disease striking very hard at the aquaculture industry. It was not surprising to us that the industry in Maine denied having the disease whereas the fish in New Brunswick were dying in pens that could be seen across the same body of water. Two years later, coincidentally, when the State of Maine approved an indemnification plan, the aquaculture industry in Maine admitted to the disease and pens were depopulated in an attempt to stem the spread of ISA.

Salmon production in the aquaculture industry in Maine has increased exponentially since the early 1990s but in the last two years there has been a drop in production that is not attributed to a decline in production but because of the ISA disease that required the industry to de-populate their pens and start over again. All salmon pens were removed from the water in Cobscook Bay, taken to shore, hosed down, disinfected and left in the sun for three months before being put back in the water. Whether or not three months was long enough has yet to be determined but ISA has again been documented in Cobscook Bay in 2003.

The aquaculture industry has been under attack from a number of sides and the NGOs have sued the industry for “illegal discharge of pollutants”. This is logical if one thinks of fish feed and fish waste, but in the suit, escaped aquaculture fish were identified as a pollutant and the court has agreed with this designation. When the industry de-populated their salmon pens, there was an increase in the number of aquaculture escapees that appeared in the two Maine rivers closest to where the pens were located. These are two rivers with zero, or near zero, wild fish, which meant that the only fish populating the rivers were aquaculture escapees. We know that these escapees are a hybrid between North American females and European males, which is another issue being addressed in the lawsuits against the industry.

Predation by seals

The harbor seal is an endemic animal in Maine and its numbers have increased enormously since the Marine Mammal Act took effect – they are certainly having an effect on salmon. Reports of salmon taken in traps show evidence of seal bites being common and seals concentrate in estuaries during salmon migration periods. Relatively new to Maine waters is a tremendous increase in the populations of the great gray seal and there are breeding populations that were not previously resident there. The aquaculture industry is concerned because they have to deal with these seals intruding into the pens and causing direct mortality or creating holes that lead to fish escapes. We are not sure what the issue is with seals in the wild because there are no data to support that the number of seals is affecting the number of salmon. However, if a large number of seals are eating some Atlantic salmon, and there are fewer than 1,000 salmon, then that can have a significant impact on salmon recovery efforts. Our fish also migrate northward along the east coast of Canada on their way to Greenland and back and go through an area that has large numbers of harp seals. The harp seals were mentioned earlier with regard to the fur harvest being eliminated and the number of harp seals correspondingly increasing (Chapter 3, Hutchings).

Predation by birds

Avian predators, such as the double crested cormorant, have established tremendous nesting populations in proximity to estuaries on Atlantic salmon rivers. We do know they eat smolts but we do not think, based on several scientific studies, that they are eating enough smolts to make a difference. However, these same fish migrate up the east coast of Canada where, in proximity to the Gulf of St. Lawrence, there is a burgeoning population of gannets, a very large fish eating bird. Suggestions have been coming out of Newfoundland that the gannets are causing significant impacts on marine fishes. We do not know if they are eating Atlantic salmon because it has not been documented, but it is one of the 63 smoking guns mentioned earlier.

The other issue is that the freshwater distribution of the Atlantic salmon in the United States is at the very southern tip of its range. Scientists know that animals at the edge of their range tend to fluctuate in abundance. We may be going through a period that is part of a natural cycle of decline that we do not want to admit to.

Factors impacting recovery

The factor playing into the complex issues of Atlantic salmon recovery efforts is one addressed by Malcolm Windsor (Chapter 24). In the early 1980s and 1990s, Greenland harvested a tremendous number of Atlantic salmon for internal consumption and export to the European market. Once they discovered where the fish were congregating they were very susceptible to floating gillnets, with Greenland fishermen netting as much as 2,500 tonnes in some years. This corresponded to the declines in spawning fish that were being experienced in North America. Recent agreements with NASCO have closed down this commercial fishery entirely but Greenlanders are still allowed a sustenance fishery of 8 to 9 tonnes. This is still a lot of salmon when talking about remnant populations.

About 67.5% of the salmon taken in the Greenland fishery are North American fish and the balance come from Europe. Greenland only has one very small salmon river and it does not produce enough salmon to feed very many people. Greenlanders consider that the fish that grow and flourish in their waters are their fish and that we, in North America, only have fry and parr that are produced by their adult fish. The current agreement with Greenland is for a one-year moratorium on commercial fishing of Atlantic salmon. Last year (2002) there was an agreement between the Atlantic Salmon Federation and other NGOs to close the fishery for one year and prior to that there was a three-year closure on the fishery and a closure of the fishery in the Faeroe Islands. However, the Faeroe Islands fishery is mostly for European fish and their catch of North American fish is minimal. The closure of this fishery can be in part attributed to the NASCO negotiations, but economics is also a factor. When people in Europe and North America go to the market to buy Atlantic salmon and there is an inexpensive aquaculture fish, with perfect color and shape and in possession of all of its fins, lying beside a more expensive wild Atlantic salmon that has been caught in a gillnet that does not look as desirable as the fish lying next to it, the consumer will buy the less expensive aquaculture fish. Figure 28.5 shows the historical catch of Atlantic salmon in the West Greenland salmon fishery and the trend of a declining fishery in the past ten years or more.

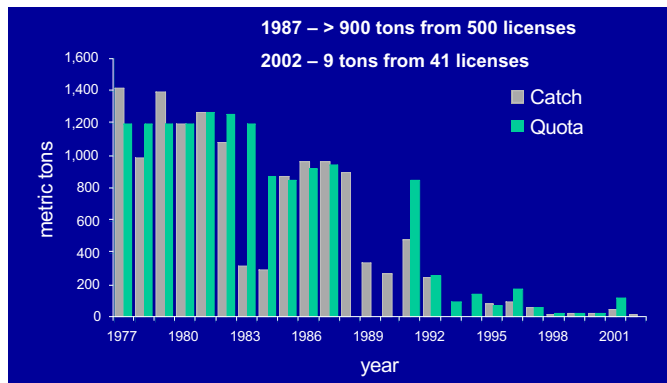


Figure 28.5. Historical catch and quota of Atlantic salmon in the west Greenland fishery from 1977-2001.

Dam removals

The State of Maine has had a number of dam removals in recent years. Those listed in Figure 28.6 have taken place on Atlantic salmon rivers and include the Guilford Dam which is scheduled to be removed in 2003. Some of these have been easy to do while some are decrepit and the owners wanted them removed and the community valued the free flowing aquatic ecosystems more than the structure of the old dam.

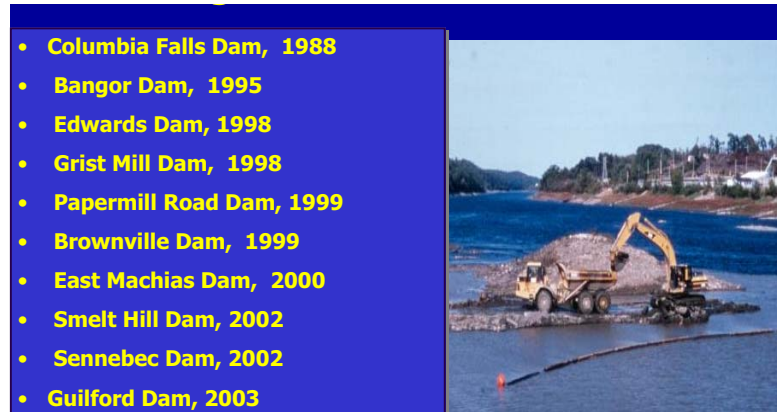


Figure 28.6 Significant dam removals in the state of Maine.

Others have been more difficult such as Edwards Dam in Augusta, Maine, at the head of tide on the Kennebec River (photograph on right in Figure 28.6). The photograph was taken by the dam owner and it was still generating electricity at that time although it was a very marginal dam that generated only a small amount of power. An agreement was struck whereby the dam was taken by the State and removed, opening up fifteen miles of river that had been dammed for almost 200 years. Someone asked me how long it takes to recover from 200 years of inundation behind a dam - my response was approximately until the first major rainstorm. It was very startling for those of us who have had the opportunity to visit the upstream sites on the Kennebec River to see perfectly clean gravel where there had been 20 feet of standing water for almost 200 years. With the removal of the dam, there are now spawning Atlantic salmon, significant populations of river herring, growing populations of striped bass, and relatively large numbers of Atlantic sturgeon for 15 miles up-river from this site.

This dam removal may have been carried out under the guise of Atlantic salmon habitat restoration but there are also a multitude of public benefits which have resulted from this. For example, right now, on this river, there are at least two companies offering guided fishing trips for small mouth bass. It is a one-day canoe trip from the next road upstream down to where the dam had been located and many family groups now canoe this beautiful area for recreational purposes. Although it is in a heavily developed area, by Maine standards, no houses can be seen from the water; instead, there are bald eagles, deer, and moose. As a bonus people can also catch fish from a beautifully clean river. In recent history, Maine salmon rivers have never been so healthy and, right now, none of the Atlantic salmon rivers, other than the Penobscot River is dammed. None of the Atlantic salmon rivers is suffering from industrial pollution and none has domestic pollution problems. There is a small amount of agricultural activity on one of the watersheds but the water quality has not been as good as it is now. Problems with acidity persist on many of our watersheds but, overall, water quality in Maine rivers is excellent.

Atlantic salmon: Endangered Species Act

I have explained Maine's history with Atlantic salmon and now am going to discuss politics and process. In 1965 there was a Status Review carried out as a collaborative effort between the US Fish and Wildlife Service and the National Marine Fisheries Service. The data they collected suggested listing seven Maine rivers as *threatened*, meaning in danger of becoming *endangered*. The Governor of the State of Maine and his cabinet yielded to pressure from various industries and special interest groups, who viewed the listing of these fish as *threatened* as an attack on the State of Maine. These interest groups felt strongly that Maine industry, Maine people and Maine economic interests would be harmed by such a listing.

1997 State of Maine Atlantic Salmon Conservation Plan

The Governor appealed to the federal services, and proposed that the State would create its own Maine Atlantic Salmon Conservation Plan for the seven rivers that were being considered for listing as *threatened*, with the provision that the federal services' listing be held in abeyance for at least five years. The State appointed committees in 1997, and created the Atlantic Salmon Conservation Plan for seven Maine rivers, which was duly accepted by the federal agencies who agreed to a five-year moratorium on the *threatened* listing. Trout Unlimited and the Atlantic Salmon Federation looked at the State's plan and determined that it was inadequate and sued both agencies of the federal government for not listing the Atlantic salmon as first proposed.

Subsequently, another status review was conducted and the data indicated significant salmon population declines since 1995 and, in fact, recommended that eight rivers be listed as *endangered* as opposed to the previous *threatened* proposal. The Governor accused the federal government of breach of promise and then sued the federal services for using unsound science for listing the fish. The NGOs agreed to put their lawsuit on the shelf until the State's lawsuit against the services was settled.

The two federal services, in the meantime, proceeded to list these eight rivers as *endangered* in the year 2000 which, in turn, generated a number of activities within the Endangered Species Act. (As an aside, I am not an expert in the Endangered Species Act but am conveying to you my personal experience with how it has worked in Maine.) A time-frame of 18 months was established for creating a recovery plan which was to be preceded by a draft recovery plan that would be reviewed in the public forum with public input, debate, discussion and discourse. Ultimately, a formal recovery plan would be drafted and used as the standard guide to the recovery of the Atlantic salmon in these eight rivers in Maine. The draft recovery plan was due in May of 2002 and, one year later, we have yet to see a public draft of this document. It is now 13 months overdue but I am told that it will be available next month; I have heard these promises many times. (Note: this manuscript was reviewed in September 2003 and the draft recovery plan is still not available.)

At the same time that the listing occurred, the Maine delegation to the U.S. Senate leveraged \$50,000 out of the federal government and gave it to the National Academy of Science to conduct a review of the listing process and the science that was used to justify the listing. The National Academy of Science put together a panel of experts and there were two-parts to their charge:

- The first part was to decide whether or not they supported the federal definitions, based on the genetics, as to whether or not these eight rivers were, in fact, a distinctive population segment and whether or not they qualified for protection. That part of the review was finalized and published in December of 2002.
- The second part was to have been a list of recommendations on how to proceed towards recovery and this was identical to what the Recovery Plan was supposed to do. The Recovery Plan is still not available and neither is the National Academy of Science review, although it was due December 2002.

The National Academy of Science has taken the stance of waiting until it sees what the recovery team recommends and the recovery team, in turn, is waiting for the recommendations of the National Academy of Science. Nobody seems anxious to write a report until the other does and so, right now, we do not have either report.

Another part of the Endangered Species Act listing process is supposed to be the designation of critical habitat and nobody is talking about that.

Dueling Geneticists

During the suing process, the US Fish and Wildlife Services and the National Marine Fisheries Service worked with a highly regarded federal geneticist in the Leetown, West Virginia, laboratories who claimed that these rivers were all different and that they warranted listing based on this difference. In contrast, the State contracted with another renowned geneticist who, using exactly the same data and exactly the same tissues to run through all of his machinations, emphatically stated that these fish are all the same and that they do not warrant designation as distinctive population segments. There has been 50 years of stocking Atlantic salmon from one river to the next and back again – some came from Canada and some came from within the State of Maine. Arguments that insisted that the fish are not different used that stocking history as the basis for showing that there has been too much genetic mixing to show distinction in any one, or any eight, rivers. The people who insist that the fish are different considered that all these stockings over all of those years did not affect the population because they did not interbreed with the fish that were programmed to succeed in those rivers. Both the National Academy of Sciences and the district court have agreed with the federal geneticist and supported the conclusion that the fish are different from other populations and warrant listing.

Main Atlantic Salmon Recovery Plan Team

The Recovery Plan is being drafted by a collaboration of three agencies. NOAA and the US Fish and Wildlife Services are required by law to draft the plan because they are the organizations responsible for the listings. They agreed to work with the State of Maine Atlantic Salmon Commission in a collaborative way in order to create the plan. This has not been a seamless relationship. The US Fish and Wildlife Service assigned a person to the task who is a specialist in avian recovery plans and who does not know a salmon from a smelt. The National Marine Fisheries Service assigned the task to one of their staff people who had recently moved from Hawaii to New England. He was a neophyte concerning Atlantic salmon biology and politics. The person from the Maine Atlantic Salmon Commission assigned to the task was an urban planner, and although he was under the close scrutiny of myself and several other experts in Atlantic salmon, he had no biological background. Some of the problems came from those relationships and some from the way in which these different agencies worked. The US Fish and Wildlife Service, Region Five, could not make decisions on a regional basis and all of their decisions had to be approved in Washington DC, whereas the National Marine Fisheries Service could make decisions on a regional level. The Maine Atlantic Salmon Commission, because it is under the direct line authority of the Governor and because, at that point, the lawsuit was still pending, could say nothing that had not been approved by the Governor's lawyers. It has been stated in other papers that the productivity of any committee tends to be inversely related to its size; this was a large committee and we are still a long way from establishing a Recovery Plan for Maine Atlantic salmon.

Conclusions

In conclusion, the following statements describe the status of wild Atlantic salmon in Maine and the effects of the ESA process:

- Wild Atlantic salmon are in sharp decline in the United States due to a number of poorly understood factors
- The ESA listing is not complete after 8 years of activity
- The ESA has facilitated additional federal funding for salmon research and management
- The ESA process has not had catastrophic social or economic side effects
- The listing of Atlantic salmon as an *endangered* species will not, on its own, ensure the survival of the species.

This process has raised public awareness for issues of Atlantic salmon and aquatic ecosystems in the State of Maine and it has mobilized watershed councils and public groups in a very positive way. It has worked to leverage more money to be put into research and management issues and it has acted as a fulcrum to leverage habitat protection issues, although several participants attending this workshop have argued both ways on that issue. I argue highly in favor of habitat protection, both watershed protection and restoration, which I find preferable to doing nothing. We do not have a lot of State or Federal lands in Maine. Private timber companies, such as International Paper and Georgia Pacific, hold much of the private lands and they are consolidating their interests and selling these lands. We have been fortunate enough to be in a position to purchase some of the lands along Atlantic salmon rivers because of the Atlantic salmon Endangered Species process which has helped generate needed funds. Protecting the habitat will protect more than Atlantic salmon including all of the other fish species that I mentioned earlier. The riparian zones we have purchased include 1,000 feet on each side of the river for the whole length of the watershed. These purchases include a significant amount of acreage that will be beneficial for many different values including fish and especially Atlantic salmon.

