

Atlantic Salmon/Beaver Dam Controversy

Can a Flawed Report Harm Beavers in Canada and Scotland?

“Today is the official re-introduction of beavers at Knapdale [Scotland],” Paul Ramsay announced during a May 28th phone call. Eleven beavers were finally released to the wild that day after a six-year campaign to restore the keystone species to Scotland.

Soon after Ramsay’s celebratory call, BWW learned that a Scottish angling group was still fighting the beaver release trial, using a new report that was commissioned by a fishermen’s group in Canada.

A controversial new report that blames beaver dams for the decline of Atlantic salmon in the eastern Canadian province of Prince Edward Island (P.E.I) is making ripples across the Atlantic. In Scotland, the Salmon and Trout Association has used “A Conservation Strategy for Atlantic Salmon in Prince Edward Island” by Daryl Guignion to lobby against the re-introduction of wild beavers.

Yet fisheries biologists say Guignion’s drastic recommendations — that trappers remove beavers entirely from ten river systems on Prince Edward Island (P.E.I) and maintain “beaver-free” zones in many others — lack scientific credibility.

Fisheries biologists say that Guignion’s drastic beaver recommendations lack scientific credibility.

If Guignion’s beaver management strategy is being considered on P.E.I, as a few sources report, this may be due to his popularity as an island environmentalist, and a retired professor with 40 years at the University of Prince Edward Island, rather than the merit of those recommendations. Fisheries



Photo courtesy of Paul Ramsay.

Salmon cross beaver dams via small breaches, such as the overflow to the left. Another shot of this dam on an angling group’s press release did not show the overflow and the caption read, “No way through for the salmon...”

biologist Michael Pollock of the U.S. National Oceanic and Atmospheric Administration (NOAA) said, “No disrespect to the author, but I found it [the report] to be mostly anecdotal and speculative, with little science to back up the statements that were made in regard to the impact of beaver on Atlantic salmon populations. Further, I believe there is scientific evidence that suggests beaver ponds are beneficial to juvenile Atlantic salmon. Overall, I did not find the report credible enough to warrant a review....”

Fisheries biologist Jake Jacobson, who is Watershed Steward for Snohomish County, WA, said, “The Guignion report statements do not seem to be science based . . . Beaver have not been shown to negatively influence salmon stock abundance in any science report I’ve seen.”

Funding for this report (\$44,500) came from the Atlantic Salmon

Conservation Foundation (a nonprofit that was given control of a multi-million dollar endowment by the Canadian government in 2007), and the P.E.I. Council of the Atlantic Salmon Federation commissioned it. Guignion did only eight months of fieldwork for the report, and calls his effort a “challenge to amalgamate much of knowledge pieced together by oral history, treasured colleagues, priceless documents and community leaders and cover hundreds of kilometers...”

Although the report includes five tables with results of surveys of redds (salmon nests) and juvenile salmon on P.E.I. rivers, it contains no data about any effects of beaver dams upon Atlantic salmon migration. Guignion claims, “...beaver dams frequently block [fish] movement upstream (3.2.3),” with a reference to substantiate this from an earlier section

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Salmon/Dam, *Continued from p. 4* of his paper. That section contains personal observations, such as witnessing dead salmon entangled in beaver dams — although salmon dying from any cause upstream may well wind up at a dam.

To shore up his claim that blockage of the salmon's migration by beaver dams is a major factor in the decline of P.E.I.'s salmon, Guignion quotes from Lindsay Foster's report on a 2005 pilot project in one county — although this was not a peer-reviewed study either. Biologist Duncan Halley of the Norwegian Institute for Nature Research, a leading international center for aquatic research, said, "If the Guignion report has any merit, it should be published in a reputable peer-reviewed scientific journal. Otherwise it is an opinion."

BWW asked Guignion whether any of his report's references, besides the Foster project, indicate that beaver dams impact salmon, but he had no answer. When asked why he didn't publish his paper in a peer-reviewed journal, he replied, "The material was there and I was asked to do it by the ASF [Atlantic Salmon Federation]."

King of fish

The Atlantic salmon has been called the "king of fish" and many organizations are concerned about its shrinking populations. Because these salmon often spend two years at sea, they are vulnerable to commercial fishing and ocean pollution. According to a 2007 report from the North Atlantic Salmon Conservation Organization (NASCO), the salmon's marine

mortality may have doubled since the 1970s. In June of 2009 NASCO reported that of 18 concerned countries only Ireland "fully subscribes to best practices in fisheries management."

Many other factors have contributed to this salmon's decline during the part of its life spent in freshwater. These include sedimentation—farm runoff loaded with silt can suffocate salmon eggs, pollution—P.E.I. has had several pesticide related fish kills, involving thousands of fish, over-extraction of

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water from streams, and over-fishing. Guignion recommends "a province-wide no kill, barbless hook, catch and release policy for salmon at least for the next five years" along with several other suggestions that appear helpful.

Good leapers

Atlantic salmon are good leapers, according to Richard Cunjak, a leader of the Canadian Rivers Institute at the University of New Brunswick. He explained that the fish's scientific name, *Salmo salar*, attests to this ability because "salar" means 'the leaper.'

"Although a beaver dam can be an obstacle for salmon," Dr. Cunjak said, "dams are not a complete obstacle in most situations. Usually beaver dams are broken by high water in the spring

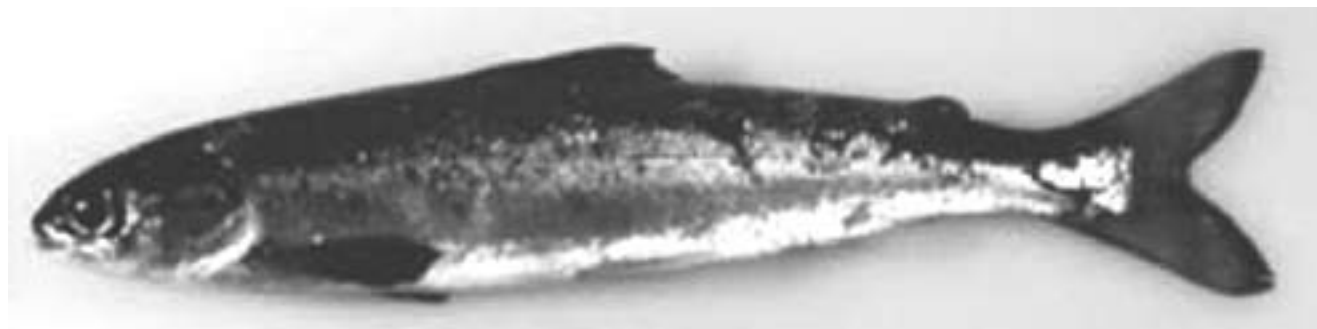
and are no problem for the smolt [young salmon migrating to the sea]. In the fall there can be more problems with dams, but most salmon are able to surmount them if there's a bit of a breach in the dam, or they go around the ends." [The photo on page 4 shows water flowing over a breach, which salmon might use to cross the dam.] "They scoot through breaches or use side channels. They may be delayed for a few days or a week, but it's very rare to have complete blockage of an entire system for the span of the season."

Dr. Cunjak co-authored a 2006 paper that indicated young Atlantic salmon grow faster in beaver ponds, as also occurs with other salmon in the West. He mentioned that fish downstream of the beaver pond grew slower, "but that's good, because you want variability in systems."

Ecosystems with more variability and biodiversity tend to be more stable and healthy. A keystone species, such as the beaver, maintains habitat for many other species.

Prince Edward Island has the densest human population of any Canadian province, and the potent combination of rapid development with intensive potato farming upon the island's highly erodible soils has affected many of its waterways. It's not unusual for streams in P.E.I.'s large potato belt to turn a muddy red color following strong rainfalls, and many are clogged with silt. Could such clogging just below dams interfere with the salmon's crossing dams? "It can be tough to make a big leap

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An Atlantic salmon parr, the name given to the young fish while living in a freshwater stream.

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from a shallow depth,” Cunjak replied, but he said the salmon will usually spawn below a dam when certain areas upstream are unavailable.

What is “normal”?

Guignion quotes a P.E.I. resident who recalled a stream crew removing over 100 beaver dams from a river branch in the 1980s “to restore somewhat normal flow patterns.” Do people on P.E.I., as in parts of the U.S., have a distorted view of what is “normal” for streams, because beavers were absent for decades and only a small percent of that species’ original population survives today?

Bruce Smith, fisheries biologist at the Salmon and Challis National Forests in Idaho, commented on the this report, “he begins by saying, ‘It is believed...’ and everything in his report flows from that basic assumption. I don’t know the area, but suspect that is hasn’t been in a natural state since the 1600s at least, when Europeans began mining American furbearers, beaver in particular, after depleting their own.”

Beavers are native to P.E.I.

Beavers are native to P.E.I., according to Randy Dibblee, wildlife biologist with the provincial environmental agency. The native tribe of MicMacs may have contributed to the species extirpation by responding to European traders’ high demand for beaver pelts during the 1600s and 1700s. Since then, beavers were re-introduced on the island, and wiped out a few more times, with the last re-introduction occurring on the eastern portion of the island during the 1970s.

Dibblee commented on the Guignion report, “It overemphasizes the beaver problem with anadromous fish” [those that spend part of their life in freshwater and part at sea], and does not credit the beavers with any benefits. They do provide nursery areas for both trout and salmon.”

When discussing beaver dams, Guignion stated, “Water often spills over the dam in several locations and each of these ‘braids’ can carve a new

channel until the braid reaches the old stream bed.... Downstream from the beaver dam, sediment accumulates from the new channels cut by the braids...”

Because beaver dams normally hold back silt, with downstream reaches being relatively clear, BWW asked Dibblee’s opinion about whether the channels downstream of dams are causing sedimentation, as the above excerpt implies, or if the silt deposits could be already present due to runoff. He strongly agreed with the latter. Dibblee added, “The beaver problem on P.E.I. is miniscule compared with the soil erosion problem due to land mismanagement.”

Potatoes rule

“Sediment infilling streams,” the second of Guignion’s “two major limiting factors” for salmon, may be causing much of what the author blames on beavers. Only five months before completing his report, Guignion told CBC news, “the biggest threats to salmon on P.E.I. are sediment and runoff coming from farmers’ fields and highways, and rivers blocked by bridges and culverts that prevent salmon from moving upstream.”

This 2009 report also states, “All streams on Prince Edward Island are affected, to some degree, by sediment.. Ironically, before giving his recommendations that would destroy countless acres of beaver wetlands on the island province, Guignion lists past efforts to improve the island’s environmental quality, including, “A wetland policy protects those essential areas.” The tough wetlands policy that the province adopted in 2003, includes a goal of “no net loss,” and the beaver wetlands are included in their wetlands inventory. The beaver page of the P.E.I. environmental agency states, “Perhaps the greatest value that beavers provide is their ability to create wetlands and pond habitats...”

“Large woody debris”

“Large woody debris is essential in streams,” according to Guignion’s report, “and should only be removed

after consultation....” Yet beaver dams function like “large woody debris” by slowing the flow of streams, and holding back silt. As the website of the Oregon Dept. of Fish and Wildlife explains,” Beaver dams helps to re-establish the historic sponge effect of nearby wetlands, thus improving downstream water quality by removing sediments.”

Several feet of silt are often stored behind older beaver dams. The massive removal of dams could backfire and exacerbate the salmon’s decline on P.E.I. by eliminating good habitat for young fish upstream of dams while increasing both turbidity and sedimentation downstream.

Although Guignion calls beaver dam blockage and sedimentation the “two primary limiting factors” for Atlantic salmon on P.E.I., he lists a total of 21 recommendations to improve the province’s shrinking salmon stock. Only the first four involve removing beavers and their dams, and others may be more valid, such as replacing and repairing hundreds of damaged road culverts and 600 man-made dams that allow only limited passage of salmon, or are impenetrable. It would be a shame if this report’s egregious beaver strategy causes the valid recommendations to be overlooked

It is not unusual for the beaver to become a scapegoat for man-made problems. It would be a disaster, however, if this report’s beaver recommendations are implemented on P.E.I., or taken seriously elsewhere.

As Dr. Pollock, and other biologists, say, Guignion’s statements about the impact of beaver dams on P.E.I.’s Atlantic salmon populations lack scientific credibility, and it would be surprising if the recommendations from this flawed report are used for beaver management decisions.

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The P.E.I. Atlantic salmon report is at: <http://atlanticsalmonfederation.org/pei/2009peireport.html>