

North American Commission

NAC(04)9

***Report to the NAC on Cooperative Work between the US and Canada
on Acid Rain***

(tabled by the US and Canada)

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At the 2000 NAC meeting, Canada tabled a report (Habitat Status Report on the Effects of Acid Rain on Atlantic Salmon of the Southern Upland of Nova Scotia) arising from a workshop in Dartmouth in March 2000. This report generated discussion at the NAC during subsequent years, with commitments that Canada and the US work together on this issue.

At the 2002 NAC meeting, the US and Canada agreed to endeavor to meet inter-sessionally to consider the causes, effects, and mitigation options of acid rain vis-à-vis Atlantic salmon. At the 2003 NAC meeting, both Canada and the US reported on progress regarding acid rain, with the US noting its interest in conducting a pilot liming project. The NAC Chair urged the US and Canada to work cooperatively on this issue and report back in 2004.

In March 2003, the US and several NGOs hosted a workshop in Orono, Maine on the status and trends of water chemistry in Maine Atlantic salmon watersheds. There were several participants from Canada. The outcome of the workshop was the reaffirmation that pH-related factors may indeed be inhibiting the survival and restoration of salmon in Maine. Atlantic salmon and water quality scientists and managers participating in the forum recommended that the implementation of a pilot liming project should be investigated to determine its potential benefit to Atlantic salmon restoration in Maine.

In April 2004, DFO and ASF hosted a joint US – Canada workshop in St. Andrews, New Brunswick on the impacts of acid rain and on mitigation measures vis-à-vis Atlantic salmon. The proceedings from this workshop are expected to be available by the end of July on the website of the Canadian Stock Assessment Secretariat. Participants agreed to key elements arising from the workshop (Annex 1).

The workshop participants (approximately 40 individuals from Canadian, US, and Norwegian governments and NGOs) concluded that liming of watersheds and watercourses is an acidification mitigation technique that provides benefits to salmon and other species (terrestrial and aquatic), as well as for forestry and agriculture. The participants also concluded that continued cooperation and information sharing between the US and Canada was necessary, particularly as pilot liming projects move forward in Maine and Nova Scotia.

Recommendations:

The US and Canada should continue (and expand, where appropriate) their investigation and use of acid rain mitigation techniques to benefit Atlantic salmon. The US and Canada should continue to work cooperatively on this issue and share information on the effects of acid rain, and on efforts to mitigate acidification. The US and Canada shall report back to the NAC on their progress, including the status of the pilot projects, in 2005.

Several Parties outside the NAC have extensive experience in mitigating the effects of acid rain. The information sharing should be expanded beyond the NAC, and an opportunity to discuss acid rain and mitigation measures more broadly among the NASCO Parties should be explored, possibly as an agenda item for the Council.

**Canada-United States
Acid Rain Workshop**

**Chamcook, NB
19-20 April 2004**

Summary of Key Elements

What we have learned/affirmed about the Acid Rain Issue:

- Acid rain, resulting from emission of pollutants from industrial areas of North America, is a serious problem known to cause sub-lethal impacts, premature mortality and in some cases, extirpation of wild Atlantic salmon populations. Areas most impacted are the Southern Upland of Nova Scotia (Canada) and eastern Maine (USA).
- Acid rain induces changes to water chemistry, which results in the loss of ions across the salmon's gill epithelium and, ultimately, death due to the failure of the circulatory system. Smolt and fry are the most sensitive to low pH in fresh water. Mortality of smolts is also believed to be associated with their transition from freshwater to the marine environment.
- Liming of watercourses is recognized as an acidification mitigation technique that provides benefits to salmon, and other aquatic organisms. Liming of watersheds provides benefits to forestry and agriculture as well as fish and other aquatic organisms. Pilot liming mitigation projects on water courses are being planned by stakeholders on the West River, Sheet Harbour and the Salmon River in Nova Scotia, and by government and stakeholders on the Dennys River, Maine. A pilot watershed liming project is also being planned by stakeholders within the Felix Brook sub-drainage of the Salmon River, Nova Scotia.
- There is no clear government policy within Canada and the USA as to the responsible agencies for action to mitigate losses of Atlantic salmon stocks by liming rivers and watersheds in acid rain impacted areas.
- Gene banks offer supportive rearing and breeding to maintain the genetic diversity of a salmon population through periods of critically low abundance. Live gene banks can be conducted in refuges, i.e., designated parts of a river or complete river that still has natural reproducing populations, or in limed sections of acidified rivers where remnant stocks can sustain themselves, or in captivity.
- Several diverse public interest groups are seeking resolution of the problems resulting from acid rain. Governments and the public need to be aware of this and support measures to address this issue.
- The North American Commission of NASCO may provide a forum for discussion of progress on Canada-United States acid rain issues as they affect salmon, as none other seems to exist at this time.

The way forward:

- Governments need to adopt policy and develop programmes that encourage or legislate reduction and elimination of acid rain causing emissions and, as well, support mitigation of the impacts of acid rain. The latter needs to be planned for the long term (up to 50 or more years) that it will take to re-establish natural buffering capacity.
- Government, NGO and industry stakeholder partners should develop a strategy and action plan to elevate public awareness and build support for acid rain abatement and mitigation initiatives.
- An ecosystem approach to addressing the acid rain issue is essential to enable effective action and to build public support groups.
- Cooperation among those interested in resolving acid rain issues and partnerships is important to effectively address the problem. It is especially important to further research the ecological impact and cost-effectiveness of stream and watershed liming techniques as mitigative measures and to share information and findings among the government, NGO and industry stakeholders.