

ACID RAIN

KILLS NOVA SCOTIA RIVERS

ACID rain is produced when fossil fuels are burned. Its main constituents are sulphur dioxide, released from coal and oil-fired boilers and ore smelters, and nitrogen oxide, released in exhaust fumes from motor vehicles.

These gases combine with water in the atmosphere forming nitric and sulphuric acids that are carried by winds and return to earth in the form of acid rain, snow, sleet, and fog.

Acid rain is devastating Nova Scotia! The province:

- receives more than twice the acid rain it can safely handle
- suffers from lost and damaged fish habitat
- has seen a decrease of 75% in Atlantic salmon runs to the Atlantic coast (from 45,000 historically to 10,500 in 2000)
- has completely lost salmon runs from 14 of these rivers
- has experienced declines in salmon populations of 90% in another 20 rivers
- receives about 85% of its acid rain from Central Canada and the US mid-west
- is observing a decline in the growth and health of trees and forests
- has moose populations with disturbingly high levels of cadmium

Sources

- > *Nova Scotia State of the Environment Report*
- > *Towards a National Acid Rain Strategy by the - - Acidifying Emissions Task Group*
- > *Natural Resources Canada*
- > *Acid Rain Program, US EPA*
- > *Environment Canada's A Primer on Environmental Citizenship*
- > *Unfinished Business: Why the Acid Rain Problem Is Not Solved - Clean Air Task Force*
- > *Mainland Moose Study Progress Report (N.S.)*

Acid Rain kills and injures:

- forests and rivers
- fish and animals
- people

Acid Rain costs:

- our health care system
- our economic well-being
- our citizens, privately and publicly

Acid Rain cheats us of:

- a clean and healthy environment
- our cultural heritage
- our livelihoods

Acid Rain:

- leaches heavy metals, such as mercury, aluminum, and cadmium from soil and rock, allowing plants and animals to absorb them.
- contributes to decreased productivity in fisheries and forestry, resulting in lower profits and fewer jobs. Recreational fishing for Atlantic salmon and trout is worth \$58 million annually.
- corrodes metals; deteriorates and soils stone and paint on homes, public buildings, and cultural structures, seriously depreciating their value.

Canada and the United States must cut acid rain emissions by 75%

Annually a 75% reduction would:

- prevent 830 premature deaths
- decrease asthma symptom days by 316,300
- reduce health care costs by up to \$8 billion
- allow the environment to naturally accommodate acid rain and, in turn, allow rivers to recover

Acid Rain damage can be controlled by:

- reducing sulphur dioxide emissions by 75% in North America
- conducting government and industry-funded research to clearly determine the role of nitrogen oxide and guide reduction targets
- implementing mitigation and restoration programs
- developing and implementing Atlantic salmon recovery and reintroduction plans
- gene banking distinct Atlantic salmon populations to maintain their genetic diversity
- using hatcheries to maintain and restore Atlantic salmon
- liming rivers to maintain good pH levels

We need your help. Please

1. Urge the following to reduce acid rain causing emissions

- Government
- Polluting industries

2. Speak out on acid rain to

- Media
- Individuals, organizations and schools

3. Make responsible lifestyle choices

- Car pool, use public transportation, walk, cycle
- Recycle and conserve energy

4. Join a conservation organization

- Your local river association
- Nova Scotia Salmon Association
- Atlantic Salmon Federation



Nova Scotia Salmon
Association

pH - The Acid Indicator:

Very small changes in a river's pH (the measure of acidity) can greatly affect Atlantic salmon, our biological indicator.

The pH scale is logarithmic, meaning that a river with a pH of 5.5 is 10 times more acidic than a river with a pH of 6.5.

PH level:

Neutral (neither alkaline nor acidic).

Measurements **below pH 7** indicate increasing acidity.

5.7:

The acidity level of natural rain...no effect.

5.4:

The lowest level Atlantic salmon can tolerate without threat to its survival.

5.3 to 5.1:

Reproduction is adversely affected.

5.0 to 4.7:

50% of the salmon eggs won't hatch; 30% of the fry born from these eggs will die.

4.6 and below:

No natural production occurs. Juvenile reproduction is 100% destroyed.

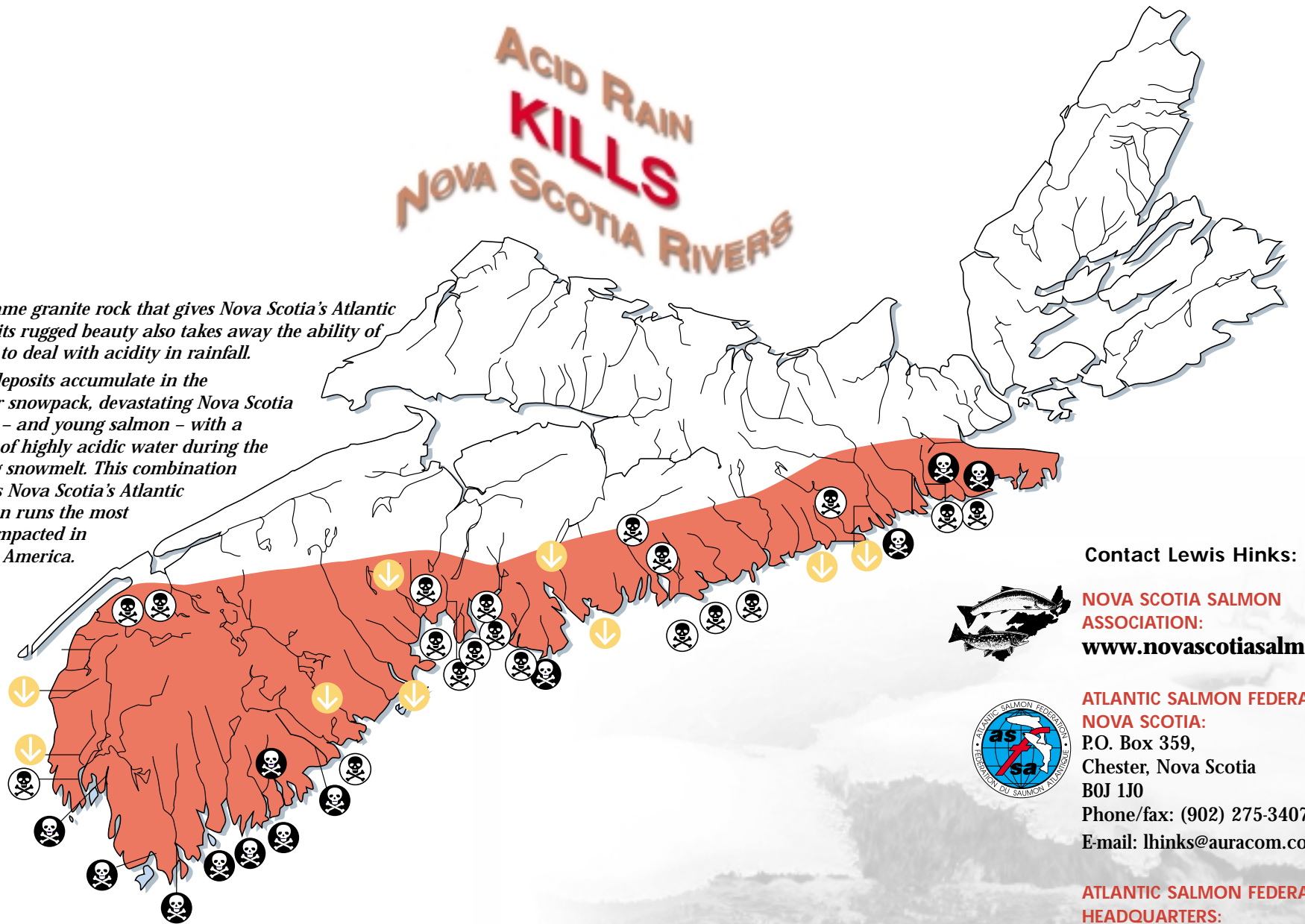
The pH of Nova Scotia's Atlantic coast rivers range from 5.3 (salmon reproduction adversely affected) to below 4.6 (no natural Atlantic salmon production occurs).


Source: Dr. Walton Watt, DFO


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The same granite rock that gives Nova Scotia's Atlantic coast its rugged beauty also takes away the ability of rivers to deal with acidity in rainfall.

Acid deposits accumulate in the winter snowpack, devastating Nova Scotia rivers - and young salmon - with a 'plug' of highly acidic water during the spring snowmelt. This combination makes Nova Scotia's Atlantic salmon runs the most acid-impacted in North America.



 **EXTINCT.** Native salmon runs are now extinct because of low pH levels due to acid rain.

 **REMNANT.** Only remnant populations of Atlantic salmon survive in one or two higher pH tributaries.

 **DEPLETED.** Salmon stocks have been depleted by acidification of some of the smaller tributaries, but over most of the river system salmon production appears normal.

Contact Lewis Hinks:

**NOVA SCOTIA SALMON
ASSOCIATION:**

www.novascotiasalmon.ns.ca



**ATLANTIC SALMON FEDERATION,
NOVA SCOTIA:**

P.O. Box 359,
Chester, Nova Scotia
B0J 1J0

Phone/fax: (902) 275-3407

E-mail: lhinks@auracom.com

**ATLANTIC SALMON FEDERATION,
HEADQUARTERS:**

P.O. Box 5200
St. Andrews, NB E5B 3S8
Sue Scott, V.P. Communications

Tel.: (506) 529-1027

Fax: (506) 529-4438

E-mail: policy@nbnet.nb.ca

www.asf.ca