Aquaculture Facts

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SALMON AQUACULTURE THREATENS WILD SALMON – THE FACTS

- Wild Atlantic salmon are not fished commercially in N.A.
- The Atlantic salmon sold in stores are farmed mostly in open net sea cages
- The salmon aquaculture industry of eastern N.A. is located in waters of southern NF, the Bay of Fundy, and the Gulf of Maine.
- All Atlantic salmon populations located near salmon aquaculture in eastern N.A. are either endangered or threatened.
- Canada produced 39,000 tonnes of farmed salmon on the Atlantic coast in 2010.
- The US produced an additional 11,000 tonnes in Maine.
- As open sea cage salmon aquaculture increases, the number of wild Atlantic salmon decline.
- For example, in the inner Bay of Fundy, there are fewer than 200 wild Atlantic salmon, a decrease from 40,000 in the 1980s.

State of N.A. Wild Atlantic Salmon in the Vicinity of Aquaculture

- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recently designated the segment of wild Atlantic salmon in southern Newfoundland as threatened.
- Wild Atlantic salmon populations in the vicinity of the aquaculture industry in the Bay of Fundy have all been designated by COSEWIC as endangered.
- COSEWIC identified salmon farming as a key threat to all these designated populations.
- The United States has officially listed as endangered all wild Atlantic salmon populations in the Gulf of Maine

Research on Impacts

- The Magaguadavic River in southwest New Brunswick is the N.A. index river for monitoring the impacts of farmed salmon on wild Atlantic salmon.
- This river is situated at the centre of the aquaculture cage sites, and also has several hatcheries that leak juvenile farmed salmon into the river.
- In the 1980s, the annual wild run of salmon to the Magaguadavic averaged 800.
- By 1992, the run was reduced to 293 and by 2010, despite an active restoration program, to 12. From 1992 to 2010, in only one year have more wild than farmed salmon returned to the river.
- In 2008, Dalhousie University (Jennifer Ford, Ransom Meyers A Global Assessment of Salmon Aquaculture Impacts on Wild Salmonids, 2008) confirmed that, globally, there is a much steeper decline in numbers of wild salmon living in rivers adjacent to the salmon farming industry, for some populations by as much as 50%.

Escapes Happen:

- Escapes from open sea cages are inevitable, whether caused by equipment failure due to accident, predators, storms and high wave action, or vandalism
- Not all escapes are reported despite a requirement by NB government
- Under public pressure, the NB industry reported three escape events (184,000 farmed salmon) in the last few weeks of 2010
- The escapes were detected when farmed salmon showed up at monitoring stations on the Magaguadavic and St. John rivers that empty into the Bay of Fundy

- Recently, escapees have been showing up at Magaguadavic River and the Dennys in Maine, indicating another unreported escape has taken place.
- The size of the recent escapees indicate the breach of containment took place in Passamaquoddy Bay.

Genetic Interaction:

- Genetic characteristics of salmon from aquaculture cages have been altered in controlled programs to provide domesticated strains of fish.
- This results in adverse genetic consequences for wild Atlantic salmon
- Negative impacts on wild salmon as a result of interaction with farmed salmon have been documented in numerous scientific reports.
- Specific to the Magaguadavic River, scientific studies have documented:
    - Successful spawning of farmed salmon
    - Interbreeding with wild stocks
    - Fitness reduction in wild salmon as a result of the interbreeding. (Bourret, O'Reilly, Carr, Berg, Bernatchez, Temporal change in genetic integrity suggest loss of local adaptation in a wild Atlantic salmon population following introgression by farmed escapes, 2011)

Growing Sea Lice Problem:

- As few as 10 sea lice can kill an Atlantic salmon smolt going to sea
- The vast crowding in salmon farms encourages a population explosion of sea lice unless treated with chemicals
- Sea lice have become highly resistant to the treatment of choice, SLICE, which can be delivered in feed
- The densities of sea lice in the waters anywhere near salmon farms keeps rising
- Well-boats are now being used that bathe the farmed salmon
- Industry is dissatisfied with the results of treatment with hydrogen peroxide
- Industry wishes to use, and dump, more toxic chemicals that can impact the health of crustaceans
- The drifting larval stages of crustaceans, such as krill, are important as food for many fish

Conservation Actions:

ASF:

- advocates for effective government regulation and enforcement at provincial, national and international levels
- researches and monitors interactions on Magaguadavic River
- documents interactions in published scientific papers
- reports escapees to government, media and public
- researches and advocates closed containment salmon aquaculture
- offers to partner with industry on closed containment research and other environmentally-sustainable practices
- works with conservation partners in Atlantic Coalition for Aquaculture Reform
- partnered with EcoJustice and communities of St. Marys Bay to file an appeal to the NS Supreme Court against sites in St. Mary's Bay

More details of ASF Conservation Actions:

Appeal Against St. Mary's Bay Sites

- In 2010, Kelly Cove Salmon Ltd., a subsidiary company to Cooke Aquaculture applied for aquaculture leases and permits to establish two 42 hectare fish farms about 550 meters off Long Island in St. Mary's Bay.
- Each farm will keep approximately 1 million farmed salmon in open cage pens
- Due to locations in navigable waters, the applications triggered a screening level environmental assessment and solicited comments on three occasions
- NS approved sites despite significant, well documented concerns and opposition during screening process (134 submissions against; one for)
- Local Mikmaq First Nation called for a moratorium until the full impacts could be scientifically assessed.
- threats to traditional fisheries, endangered species and tourism

Freshwater closed containment research

- Partnership with Conservation Fund Freshwater Institute, West Virginia
- 4 months of operation
- Fish are healthy, quadrupled in weight
- Water quality excellent
- Food conversion rate good, food weight equalling fish weight
- 95.5 % survival rate of fish
- No vaccines, harsh chemical, antibiotics
- Information will assist in decision making by industry, government and conservation advocates

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