Media Background

January 2014

Genetically Modified (GM) Fish in Canada

The federal Ministers of the Environment and Health have approved the commercial production of a genetically modified (GM, also called genetically engineered) Atlantic salmon trademarked as "AquAdvantage" salmon. The decision was disclosed in a notice published in the Canada Gazette on November 23, 2013. The decision allows the biotechnology company AquaBounty to proceed with its plan to produce GM salmon eggs in Prince Edward Island (PEI), Canada for shipping to Panama for grow-out and processing.

If fully approved for production and consumption, the GM salmon would be the first GM animal approved for human consumption in the world. The Canadian approval represents the first regulatory approval for this genetically modified species.

The U.S. arm of AquaBounty has asked the U.S. Food and Drug Administration (FDA) to approve the GM salmon for human consumption in the U.S.

GM Atlantic Salmon – "AquAdvantage" Salmon

Genetic modification (also called genetic engineering or rDNA technology) is a controversial technology that allows for the transfer of genetic material directly from one organism to another (across the species and kingdom barriers) at the molecular level, and is dramatically different from animal breeding, posing new risks and unpredictable impacts on the organism and ecosystems.

The GM AquAdvantage salmon was engineered by introducing a growth hormone gene from Pacific Chinook salmon (*Oncorhynchus tshawytscha*) and genetic material from ocean pout (*Zoarces americanus* - an eel-like species) into the eggs of Atlantic salmon (*Salmo salar)*. The company claims the GM fish grow faster than other farmed or wild salmon.

GM Salmon Legal Challenge

Two Canadian environmental groups – Ecology Action Centre (NS) and Living Oceans Society (BC) – are asking a court in Canada to decide if the federal government violated its own law when it permitted the manufacture of the GM AquAdvantage salmon. Lawyers with the charitable organization Ecojustice filed a judicial review application with the Federal Court on Dec. 23, 2013 and served notice of the lawsuit on all parties, including the fish manufacturer AquaBounty, in January 2014.

The legal challenge asserts that the approval is unlawful because it failed to assess whether the GM salmon could become invasive, potentially putting ecosystems and species such as wild salmon at risk.

The main legal arguments of the case are based on the *Canadian Environmental Protection Act*, including:

- That the federal Ministers of Environment and Health acted unlawfully in purporting to complete an assessment of whether the GM salmon is toxic or capable of becoming toxic without obtaining all information required by law;
- That the Minister of the Environment had no jurisdiction to publish a notice setting out the permitted uses of the GM salmon eggs, based on an incomplete toxicity assessment of the GM salmon;
- Alternatively, the Minister of the Environment failed in her legal duties by permitting unassessed uses of GM salmon, such as its grow out in Canada, to proceed.

Public Information on GM Salmon Assessment

In Canada, the process for assessing the GM salmon is cloaked in secrecy. Environment Canada and the company AquaBounty refused to acknowledge that an assessment of the GM salmon was even underway. There have been no public consultations on the GM salmon in Canada.

Additionally, Health Canada could be assessing a request to approve the GM fish for human consumption, however neither the government nor the company will confirm whether such an assessment is underway.

When the decision to approve the manufacture of the GM salmon was made public in late November 2013, the Department of Fisheries and Oceans (DFO) posted a document summarizing a meeting that discussed the risk assessment: "Summary of the Environmental and Indirect Human Health Risk Assessment of AquAdvantage Salmon". To date, this is the only public document describing the Canadian risk assessment.

The U.S. Food and Drug Administration is close to a final decision to allow (or disallow) the GM salmon for human consumption.

AquaBounty plans PEI-Panama-US route for GM salmon

The biotechnology company AquaBounty maintains a research and development facility at Bay Fortune, Prince Edward Island, Canada. The company currently proposes to produce the GM salmon eggs in PEI, to ship them to Panama for grow out and processing, for export into the U.S. consumer market as “table-ready” fish.

Environmental Risks

The DFO summary risk assessment recognized that GM salmon may pose a risk to wild salmon, but placed emphasis on containment measures in reaching its conclusions.

The DFO summary risk assessment made mention of AquaBounty's intent to produce sterile (triploid) female GM salmon for export and grow-out, but recognized that up to 5% of those fish may be able to reproduce. The Canadian approval also allows for non-sterile GM salmon to be used in egg production.

If fertile GM fish were to escape from confinement, it could pose a significant environmental threat. GM salmon may be able to survive and breed in the wild. GM salmon are capable of breeding with brown trout (Oke et al., 2013).

The effects of an escape of GM fish into the wild, including potential interbreeding with wild salmon, could be irreversible. The full environmental impacts of GM fish will only be known if an escape happens.

Atlantic salmon populations around the world, including many populations in Canada, are endangered.

Any risk of GM salmon escaping into the wild is unacceptable, especially when their potential to become an invasive species has not been properly assessed and the future of Atlantic salmon is already threatened.

Opposition in the food and aquaculture industry

- The Canadian Aquaculture Industry Alliance says it does not support the commercial production of the GM fish[i], and the largest producer of farmed salmon, Marine Harvest, "does not support the introduction of GM salmon".[ii]
- Several major U.S. grocery chains signed a pledge not to sell any GM fish, including Trader Joe's and Whole Foods. U.S. polls show that 91% of consumers do not want to eat GM fish.[iii]

Public opposition in Canada

75 organizations in Canada say they oppose GM fish, including the David Suzuki Foundation, Wild Salmon First, the Fundy Baykeeper, and the United Church of Canada. For the full list of organizations: http://www.cban.ca/Resources/Topics/GE-Fish/Statement-Opposing-GE-Fish

For more information: www.cban.ca/fish

[i] Canadian Aquaculture Industry Association, "CAIA Position: Genetically Modified Salmon" September 10, 2010. http://www.aquaculture.ca/files/article-2010-09-10.php

[ii] "Marine Harvest, WWF call for proper GM salmon labelling" Fish Information & Services, December 4, 2013. http://www.fis.com/fis/worldnews/worldnews.asp?monthyear=&day=4&id=65135&l=e&special=&ndb=1%20target=

[iii] National survey "Re: Attitudes Toward the FDA's Plan on Genetically Engineered Fish", Lake Research, U.S. September 20, 2010. http://www.saynotogmos.org/ud2010/docs/fish_survey.pdf