

Genetically Engineered Fish

Cartagena Protocol on Biosafety 11-15 October 2010, Japan

This briefing calls on:

- **All Parties to undertake to prohibit within their jurisdictions the development and growth of fish for commercial purposes, as once approved for commercial use, GE fish may never be contained;**
- **Parties to consider the special transboundary challenges posed by GE fish, including the risks they pose to the environment, with a view to prohibit any facilities (including those for scientific research purposes) that could result in the introduction (either accidental or deliberate) of GE fish into freshwater and marine ecosystem;**
- **All Parties to strongly urge non-Parties, in particular, Canada and the United States of America, to halt any process that could lead to the commercial approval and release of GE fish;**
- **All Parties to strongly urge States that may consider hosting GE fish facilities as a result of possible commercial approval in non-Parties immediately prohibit such facilities as an application of the precautionary approach; and**
- **All Parties to instruct the Secretariat to monitor, compile data, analyze and make recommendations to MOP6 in consultation with Parties, and other relevant organizations, including non-governmental organizations, with the view to establish a permanent international ban to any facilities that could result in the introduction (either accidental or deliberate) of GE fish into freshwater and marine ecosystem.**

Introduction

There is an application to commercially produce GE salmon with a growth hormone that makes them grow faster. A company in Canada, Aqua Bounty Technologies, Inc., has applied to the US FDA to sell its fish, which are genetically modified Atlantic salmon with a growth hormone gene from a Chinook salmon and an antifreeze gene from an ocean pout, and intends to incubate modified eggs in Canada, ship them in coolers to Panama, where they would be raised in tanks and be transported to the United States for sale. This is not the only GE fish under development, but it is the nearest to commercialization.

There are numerous concerns over the welfare and environmental impact of these fast growing fish. There is already concern regarding the environmental effects, human health impacts and welfare of intensive fish farming in aquaculture. Fish are known to escape frequently from aquaculture facilities, which can then interbreed with, or displace, native fish populations. There is a high potential for ecological disruption should GE fish escape from aquaculture facilities including those that are claimed to be land-based and contained. Fast growing GE fish could compete for food, disrupting aquatic food webs and ecosystems. Contrary to industry claims, sterilization of GE fish will not be 100 % effective in a commercial situation, and will not prevent all cross-breeding between GE fish and wild fish.

There is widespread opposition to the farming of GE fish in aquaculture facilities, the most economically profitable method of rearing farmed fish. Several governments and intergovernmental organizations have already taken steps to ensure that any GE fish (e.g. for scientific research purposes) are kept in secure, land-based facilities. However, since escaped GM fish will not respect national boundaries, GE fish must be considered as global releases by the multilateral environmental agreement, the UN Cartagena Protocol on Biosafety.

In a commercial aquaculture situation, the physical containment of these fish can never be guaranteed. Escapes of GE fish into the aquatic environment could have devastating effects on wild fish populations and biodiversity.

Therefore, Greenpeace demands that the genetic engineering of fish for commercial purposes should be prohibited.

Potential Ecological Impacts of GE Fish

Experience shows that the most devastating ecological consequences can be completely unexpected. Escaped GE fish might be able to adapt to new ecosystems, threatening existing species from that ecosystem. There are already many examples of such dramatic ecological consequences from alien and invasive species:

- In 1954, the British colonial administration in Uganda first introduced Nile perch in Lake Victoria. Within 30 years, the carnivorous perch had decimated the indigenous fish populations leading to the extinction of 50% of over 400 different species of small fish in the lake. Also, unlike the native fish, the Nile perch do not dry well in the sun, and the wood fires needed to dry it have increased the rate of deforestation and consequent erosion of the lake's shoreline.
- In Florida, blue tilapia escaped from two aquaculture facilities and has since become established in Everglades National Park. Often, all vegetation and native fish species have disappeared.
- The European zebra mussel has spread into most freshwater habits in the eastern north-American continent, having arrived in the Great Lakes via ballast water released from ships that travelled from Europe. In addition to reduce local species, the invasive mussels also clog water intake pipes. Control and cleaning measures are estimated at US\$3 billion a year.

It is also important to remember that to produce 1 kg of salmon meat requires 3 to 5 kilos of fishmeal – and reportedly even more in the case of GE salmon. Where will the fish to feed the GE salmon come in the context of fast collapse of existing oceans biodiversity? High density aquaculture of GE salmon might face similar problems as conventional aquaculture such as the need to use large quantities of antibiotics to fight disease due to overcrowded condition.

Scientific Uncertainty

Several scientific studies have concluded that escapes of GE fish to the environment could be catastrophic. For example, researchers at Purdue University, USA, found that interactions between traits that would appear to offer a disadvantage and other traits in GE fish that appear to offer some kind of competitive advantage could actually increase the hazard of GE fish in aquatic ecosystems. The researchers found that the release of just 60 of these GE fish into a wild population of 60,000 led to the extinction of both fish population in 40 generations. Laboratory tests have shown that GE fishes are more aggressive predators than their wild counterparts.

Sterilization Won't Be 100 % Effective

While it is possible to achieve close to 100 % sterilization of eggs through careful screening, many people in the industry are doubtful that this kind of screening would be economical under the conditions of commercial production.

Widespread Opposition to the Commercial Development of GE Fish

Many organizations have expressed deep concerns about the hazards resulting from the commercialization of GE fish including the Royal Society of Canada, the US National Academy of Science, the North Atlantic Salmon Conservation Organization and the Swedish Fish Industry Association.

Parties of the Protocol Must Prohibit GE Fish

Several governments, intergovernmental organizations and conventions have already taken steps to try to prevent GE fish from being accidentally or deliberately released into aquatic systems. However, steps need to be taken globally, as any released GE fish will not respect national boundaries. This is why Parties to the Protocol must immediately prohibit GE fish for commercial use.

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Greenpeace Report on *Genetically Engineered Fish*

with scientific references available at

www.greenpeace.org