SB

281

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SB 281

was referred to the Senate Finance Committee

Hearing(s) were held

The bill did not move from Committee

SENATOR KIM ELTON

SB 281
Sponsor Statement

"An Act relating to labeling and identification of genetically modified fish and fish products."

Transgenic foods are those in which the genetic structure has been altered at the molecular level by means that are not possible under natural conditions or processes. There has been widespread concern throughout the world over the largely unknown effects of transgenic, or genetically modified (GM) products on human and environmental health.

In an effort to address concerns raised by consumer, environmental, health, and Alaskan fish marketing groups, SB 281 requires Alaskan retailers to identify and label foods containing fish and shellfish, or fish and shellfish products that have been genetically modified.

The message that Alaskan seafood is more natural than seafood that has been engineered or bred is a highly important marketing tool. This bill, by requiring a differentiation between GM and wild seafood helps highlight Alaska seafood as distinct from GM seafood, thereby doing away with any vagueness that may exist to the consumer when purchasing seafood without labeling, and reinforcing the natural message.

Many GM agricultural products are currently allowed on the U.S. market, and an application submitted by an aquaculture company for the use of a GM, growth-enhanced salmon is pending before the Food and Drug Administration's Center For Veterinary Medicine.

Currently, legislation in the European Union, Japan, New Zealand, and Australia requires labeling on foods made from, or containing GM products. SB 281 is similar to legislation introduced in other states, such as Oregon and California, and it comes with the unanimous support of the Joint Legislative Salmon Industry Task Force, a committee comprised of legislators, seafood harvesters and seafood processors.

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FDA U.S. Food and Drug Administration Department of Health and Human Services

CENTER FOR VETERINARY MEDICINE

INFORMATION FOR CONSUMERS
FOOD AND DRUG ADMINISTRATION
CENTER FOR VETERINARY MEDICINE

QUESTIONS AND ANSWERS ABOUT TRANSGENIC FISH

The following consumer information is provided by John Matheson, Office of Surveillance and Compliance, Center for Veterinary Medicine.

Q. Who regulates animal biotechnology products?

A. The FDA Center for Veterinary Medicine (CVM) regulates, in whole or in part, diverse animal biotechnology products.

Q. Has FDA approved transgenic animals to enter the food supply?

A. No. Most transgenic animals under development are regulated by one or more FDA Centers. There are procedures to request approval to enter transgenic animals into the food or feed supply. No approvals have been granted for entry into the human food supply.

The procedures for biopharm animals (producing drugs or biologics) are described in the 1995 Points to Consider in the Manufacture and Testing of Therapeutic Products for Human Use Derived from Transgenic Animals. For these types of animals, as well as others generated by biomedical research, the Center for Veterinary Medicine (CVM) serves as a consulting group to the other FDA Centers in the food and feed safety evaluation.

Gene-based modifications of animals for production or therapeutic claims fall under CVM regulation as new animal drugs. Investigational applications are filed for these modifications where, with a showing of adequate safety data, the sponsor may request disposition of animals by slaughter for food or for processing into animal feed components.

To date, no transgenic animals have been approved for use as human food. A very limited number have been approved for rendering into animal feed components.

Q. How far along is the development of animal biotech products?

A. Non-heritable modifications (gene therapy) are still in early stages of development for animals, although this is a very active area in human medicine. These products are anticipated to be individual animal injections that would modify only some of the cells of the body to express a protein, protein hormone or enzyme. For example, individual steers could be modified to produce more muscle mass without having to modify the breeding herd, where additional muscle mass could cause calving difficulties.

Heritable modifications or germ-line transgenic animals with agronomic traits are most advanced for fish, and have already begun to receive public attention in the U.S. and abroad. Most of the modifications currently relate to improving animal productivity.

Are there any biotech products currently in use?

A. Yes. CVM's first recombinant DNA product - recombinant bovine somatotropin (BST) for dairy cows.

Q. How will these products be regulated?

A. Most, but probably not all, gene-based modifications of animals for production or therapeutic claims fall under CVM regulation as new animal drugs. As strange as it may seem at first, many of the modifications being investigated involve the addition of new animal drug substances. For example, adding growth hormone to a cow can be accomplished through use of BST injections, through gene therapies to create BST-producing regions in the body of the cow, or through germ-line modification, making a transgenic variety that contains extra BST-coding genes in every cell of the body, including reproductive cells. It all amounts to adding an animal drug, but the conditions are different - dose, areas of the body where the drug is released, opportunity for a withdrawal time, etc. The substances being added are for the purpose of improving animal health or productivity.

Q. Are there specific regulations for transgenic animals?

A. The animal drug provisions of the Federal Food, Drug, and Cosmetic Act best fit transgenic animals that have agronomic traits now being investigated and developed. Other transgenics will no doubt come along that could be viewed as containing food additives, color additives, and vaccines. Development of site-specific gene insertion techniques and animal genome projects could change the scope of potential genetic modifications to yield a wider variety of products than are currently being investigated.

Q. Have any transgenic fish been approved in the U.S.?

A. Transgenic fish of various species of salmon, tilapia, channel catfish and others are being actively investigated worldwide as possible new food-producing varieties. Technology developed for using transgenic fish as laboratory models to study developmental biology is being applied to food fish species with the aim of adding agronomically important traits, like improved growth rates and disease resistance.

No transgenic fish have been approved for producing food in the U.S., although a variety of transgenic fish species can be found in laboratories around the world. As there is active investigation of transgenic fish abroad, as well as in the U.S., the public and the research community are occasionally exposed to predictions of the imminent commercial release of transgenic fish into the food supply. This should not occur without the pre-market approval from CVM, for those fish that have an added gene-based animal drug.

Q. What limitations does current technology have on the production of transgenic fish?

A. The current technology has limitations that affect what types of transgenics can be developed. The "transgenes" are limited to short gene constructs and are inserted randomly and in variable numbers of copies in each individual. This creates difficulty in stabilizing genetic modifications in a breeding population. There may be uncontrolled expression of the transgene. It may be expressed all the time; it cannot be turned off. Insertion sites for the transgenes may inadvertently affect the expression of other genes by disabling them or turning them on at an inappropriate time. The incidental insertion of drug resistance genes from bacterial plasmids introduces further uncertainties as to food safety. The technology for creating transgenic animals is constantly improving and will soon begin to reduce the limitations of the current approaches and improve the competitive balance with other approaches to breed improvement.

Q. What about biocontainment concerns?

A. Breeding programs are needed to stabilize the transgenes in a patentable variety and to produce numbers necessary for regulatory approvals and for marketing. Biocontainment strategies, both from an engineering and biological point of view, are necessary to prevent escape of the transgene into wild fish populations and to provide a means of control over the

unlicensed breeding of the patented variety. These features add to the costs of development and affect competitiveness of the approach versus other, more traditional, breeding approaches. Biocontainment needs are specific for each species and the location where it would be reared.

Q. Are there environmental concerns?

A. The primary environmental concerns about releases of transgenic fish, for example, include competition with wild populations, movement of the transgene into the wild gene pool, and ecological disruptions due to changes in prey and other niche requirements in the transgenic variety versus the wild populations. For example, transgenic tilapia (with cold tolerance similar to the unmodified species) might require little containment in the northern tier of the U.S., but might be excluded from the Gulf States altogether, where tilapia may be a serious exotic invader of freshwater streams and ponds. These site-specific concerns may make it necessary to control the sites where transgenic fish are reared and the level of biocontainment required might differ from site to site. Any biocontainment other than absolute containment will have to be assessed for specific proposed sites.

Q. How will the public accept foods derived from transgenic animals?

A. Germ-line transgenic modifications of animals, including fish and shellfish, have already begun to receive public attention in the U.S. and abroad. Public acceptance of foods derived from transgenic animals will be important to the success of any transgenic variety introduction. Approval by FDA or a food regulatory group in another country does not guarantee public acceptance. Labeling of food from transgenic animals will likely be even more important to consumers desiring a choice than has been observed for milk derived from BST-treated dairy cows or for transgenic plant varieties. Ethical concerns among the public over the appropriate use of animals are issues, not evident with transgenic plants, that may affect public acceptance of transgenic animals as food sources. There is also expected to be variation among the citizens of different countries as to their acceptance of transgenic animals. Development of a world market for a transgenic animal variety is currently fraught with difficulties owing to the varying cultural views and governments.

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Report: Genetically modified fish could pose danger

THE ASSOCIATED PRESS

FAIRBANKS – Genetically modified fish from farms eventually could present "considerable" environmental risks, according to a federal science panel.

The National Research Council devoted several pages to fish in a report on biotechnology it released last week. The U.S. Food and Drug Administration requested the report in response to controversy over genetically modified foods.

The research council ranked fish second-highest, behind insects, in a listing of animal types that would raise concern if given new genes.

Farmed fish that escape can disperse rapidly and widely. Once in the wild, the fish could compete against or disrupt natural fish populations, the report said.

"The committee's review of ecologic principles and empirical data suggests a considerable risk of ecologic hazards" if genetically modified fish enter natural ecosystems, the report concluded.

Tom Gemmell, executive director of United Fishermen of Alaska in Juneau, said the report strengthens the case against fish farms, which his organization opposed.

State law bars fish farms in Alaska waters, but dozens of farms raise Atlantic salmon in British Columbia, mostly around Vancouver Island. The B.C. government recently lifted a moratorium on new salmon farms.

No genetically modified fish are being farmed at this point, according to the Canadian Aquaculture Industry Alliance, which opposes the use of such fish.

But the National Research Council report said the industry could turn toward the new stocks later.

"Considerable research effort has been devoted to development of genetically enhanced fish and shellfish stocks, as they pose considerable benefits to producers," the report said.

The review offered with no specific predictions about what might happen if genetically modified fish escaped. Some farmed fish have escaped from B.C. farms, for example.

"It is difficult to assess the likely ecologic or genetic outcome should transgenic Atlantic salmon escape captivity and invade wild populations," the report said.

Studies have shown that, in the salmon family, larger fish have an advantage in spawning. But other studies indicate large genetically modified fish are less likely to produce healthy young.

The two discoveries together present a danger, the panel said. If a modified gene improves spawning success but hurts juvenile viability, "the result is a gradual spiraling down of population size until eventually both wild-type and transgenic genotypes become locally extinct," the report said.

All this is still theory, the panel notes. The information available to date "does not yet provide a body of data useful" for modeling what might happen.

Atlantic salmon, which account for 80 percent of B.C. farmed salmon production, are a different species from the Pacific varieties and aren't likely to interbreed. But they have been caught in Southeast Alaska and as far west as the Bering Sea. Spawning has been documented in some Vancouver Island streams.

'Frankenfish' spawn controversy Debate over genetically altered salmon

Monday, April 29, 2002
San Francisco Chronicle
CHRONICLE SECTIONS

Jane Kay, Chronicle Environment Writer

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It looks like a North Atlantic salmon. But it grows seven times faster, and it's much more attractive to the opposite sex than a normal salmon.

It's a transgenic fish, the first genetically engineered animal under review for the U.S. food supply. Embedded in every cell of its body are genes from the Chinook salmon and the ocean pout fish that make it grow more quickly.

The altered salmon is likely to become the next focus in the battle over bioengineered food, after controversies over the desirability of genetically altered bovine growth hormones in cows and modified corn, soybeans and canola in cereals and tortilla chips.

In the next year, the U.S. Food and Drug Administration will consider a petition by Aqua Bounty Farms of Waltham, Mass., to farm and market the altered salmon.

Already, the prospect of mutant fish escaping and disrupting already threatened wild populations has prompted lawmakers in several states to take pre-emptive steps. California could become the first state to ban transgenic fish outright.

Last week, the Senate Natural Resources Committee approved a bill by Sen. Byron Sher, D-Palo Alto, that would make it illegal to import, transport, possess or release transgenic fish. They would be considered an "aquatic nuisance," a category that includes piranhas, slugs and giant toads that threaten wildlife.

Another bill by Assemblywoman Virginia Strom-Martin, D-Duncan Mills, would require labeling of transgenic fish sold in markets. And a joint legislative resolution introduced by Assemblyman Joe Nation, D-San Rafael, urges the FDA to deny

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Aqua Bounty's petition and put in place a moratorium on transgenic fish.

'FRANKENFISH' CONDEMNED

The bills -- and Sher's in particular -- have strong support from consumer, environmental and commercial fishing groups, which dub the altered salmon a "Frankenfish" that would eat or outcompete smaller wild species and cause their extinction. What's more, critics say, federal regulatory oversight of bio-engineered foods is not sufficient to guarantee the fish are safe to eat.

Proponents of biotechnology, on the other hand, view transgenic fish as the answer to supplying consumers with healthful fish without depleting the ocean's declining populations. To fish farmers, it means being able to grow salmon in half the time and at lower feed costs.

Sher's bill could abruptly end these hopes. Biotechnology trade groups, the National Food Processors Association, the state Chamber of Commerce, California Farm Bureau and the California Grocers Association oppose the legislation.

Passing a strict anti-transgenic fish state law would create "a precedent, and could poison the well. Once the door is shut, we may never be able to find the key to open it up again," said George Gough, a Sacramento lobbyist for Monsanto Co.

He urges legislators to leave it up to the FDA, which must consult with federal wildlife and fisheries agencies, to decide whether the bio-engineered salmon is safe.

"This is really the first biotech anima' that is going through the review process. The FDA is going to be taking a microscope to this, and it should. When you you say 'fish' or 'beef,' it hits you more than when you say 'soybean, ' " he said.

While Monsanto doesn't work with fish, it's one of the largest producers of transgenic crops, holding dozens of patents on new biotech products, among them soybeans, potatoes, canola and corn. The company believes a California ban would have a chilling effect on the industry and investors.

Opponents of biotechnology say a pre-emptive strike is crucial. About two dozen varieties of genetically engineered fish or shellfish are under development, most aimed at increasing growth and resistance to disease in such species as abalone, oysters, stripped bass, rainbow trout, catfish and

tilapia.

THREAT TO NATURAL RESOURCES

"These genetically engineered fish will pose a threat to our natural resources," said Natasha Benjamin, program officer with the Institute for Fisheries Resources, a research arm of the Pacific Coast Federation of Fishermen's Associations.

"California is known to set a precedent when it comes to environmental standards. We hope to see the state take the lead in this issue, and hopefully other states will follow," she said.

At the crux of the debate is whether the superfish would escape into the wild and harm native salmon populations. Damaged by dams, pollution, invasive species and loss of fresh water, salmon are already struggling for sustainability on the Pacific Coast.

A 1999 study by Purdue University scientists predicted ecological risks from the release of transgenic fish into the wild.

The researchers found the larger transgenic fish were more attractive mates for native fish, thus allowing a trait to spread quickly through the wild population. But because the offspring don't live long, eventually the native population would be wiped out.

The study caused widespread concern because in aquaculture, the escape of farmed fish is inevitable.

TRANSGENIC FISH LAWS

Last year, Maryland passed a law prohibiting transgenic fish any place that might connect with waterways. In Oregon, the law prohibits the release of transgenic fish into locations where they can mingle with wild populations. There are discussions in Alaska over an outright ban.

Representatives of Aqua Bounty Farms say its modified Atlantic salmon won't threaten wild stocks. The company will use only sterile females in netted pens, so, if they escape, they won't spawn and pass along the genetic traits.

Joseph McGonigle, vice president of Aqua Bounty, said the technique that his company uses to sterilize eggs "is 100 percent effective. We will be doing . . . screening on every batch of eggs that is done."

But fish scientists, including some from the aquaculture industry, say there is still a chance that a small percentage of fish will be fertile. And they predict another problem: Wild male salmon will try to mate with the larger but sterile female salmon, depressing reproduction rates.

Aquaculture is the fastest growing segment of agriculture, according to the U.S. Department of Agriculture. In California, sales of farmed fish and shellfish have jumped from $33 million a year in 1991 to $71 million in 1999 from more than 100 producers.

"The majority of our producers are not involved in transgenics. What we're grappling with is that there may be some transgenic techniques that are proven safe that would be excluded by this bill," said Justin Malan, executive director of the California Aquaculture Association.

The trade group is negotiating with the bill's author to change the language. One of the aquaculture industry's problems is that the bill shuts out all commercial ventures.

"It's a question of whether the importation of transgenic fish should be banned or adequately regulated," Malan said. "We don't have a problem with stipulations that will safeguard the environment or public health, but a ban is forever."

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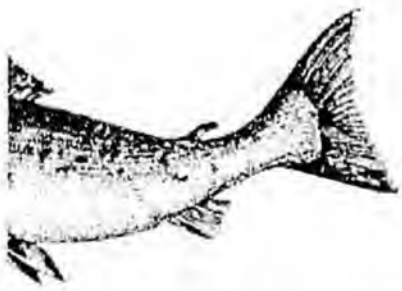
MidwestNaturalFoods.coop

Archives: July/August 2003

GMO Salmon: Now Swimming Upstream to a Table Near You

By Hannah Lewis



Americans eat more than 15 pounds of fish each year, compared to about 70 pounds of beef. That trend is expected to shift over the next couple decades with people eating less red meat and as much as 30 percent more fish, predicts the U.S. Department of Agriculture. Fish is rich in healthy Omega-3 fatty acids, and eating it is believed to decrease risk of heart disease, cancer and other ailments.

The USDA expects Americans to eat more fish as part of a growing health trend. Also, a rapidly growing global aquaculture (fish farming) industry is putting much more fish on the market, supplementing the yield from increasingly depleted fisheries. Soon global supply may increase further if farmers from North and South America to Asia begin raising transgenic (genetically modified) fish.

Scientists have discovered a way to make Atlantic salmon grow twice as fast by inserting genes of other fish species into them. Farmers could cut the time in half for getting their product to market and cut fish-feed costs, too, as these salmon convert food to energy more efficiently than their unmodified counterparts. It could mean better profitability for farmers and/or cheaper prices for consumers. Proponents hail the new technology as a way to feed the growing world population.

The U.S. Food and Drug Administration is now reviewing transgenic Atlantic salmon for commercialization. If approved, the fish could become the first transgenic animal product on the market for human consumption.

But public acceptance will depend on whether consumers can live with yet unknown ecological and human health effects of the new technology.

Environmentalists are concerned because fish raised in netted pens in the ocean inevitably escape into the wild. University of Minnesota researcher Kelly Paulson is trying to predict through lab experiments what might happen if a few transgenic fish escaped from a pen and mixed with the native population.

Of three possible outcomes, two are potentially benign. The third would be

catastrophic Paulson said. "Trojan gene effect" happens when transgenic fish have a mating advantage over wild fish and pass on their genes. The trans-gene then causes unintended, unforeseen genetic problems for subsequent generations, ultimately diminishing the wild population's ability to survive. This is of particular concern as wild Atlantic salmon is already an endangered species.

But Aqua Bounty, the company that developed the fish, says it would breed only sterile females, so if any escaped they wouldn't pass on their genes. Environmentalists warn that remedy may have its own bad effects as males mating with sterile females would result in fewer offspring and decreased population. Furthermore, Paulson doubts 100 percent sterility could be guaranteed or that farms would just spot check for sterility since the cost of screening each individual fish would be costly and labor intensive.

"As scientists...we have some responsibility toward the ecological risk, but as an American, and someone who eats, too, I want to know what I'm eating," said Paulson. Human health concerns are unknown but could include an enhanced genetic ability of transgenic fish to absorb environmental toxins such as mercury, which causes nerve damage in humans.

These considerations are in the hands of the FDA, which is reviewing this product using the same criteria it does to evaluate any new animal drug. Federal regulators made the decision in 1986 that existing laws were adequate to deal with genetically modified animals. But a study released this year by the Pew Initiative on Food and Biotechnology suggests that the FDA is ill-equipped to evaluate these new products, especially on environmental risk assessment.

Another concern about the FDA's evaluation process is that because drug laws require secrecy to protect the applicant from competition, the public is excluded from the debate. The FDA does not even reveal what products are being considered for approval. The public knows about Atlantic salmon only because Aqua Bounty announced it was seeking approval to sell it.

"They could be within days or months or years of commercialization, and [the FDA is] just going to pop this on us one day and expect everyone to understand it?" questioned Paulson.

Judging by scant information in the media about transgenic fish and a lack of knowledge on it even among people in the seafood business, when the product pops onto store shelves, it will be about as poorly understood as any other genetically modified product on the market. And if the FDA doesn't mandate labeling of transgenic salmon, consumers may not even know they're buying it, unless they ask.

Brent Bunn, seafood coordinator at Wedge Co-op, said his customers ask questions about seafood, forcing him to ask his suppliers about what fish were fed and whether they were given hormones, antibiotics or dye. "They expect, if not demand...that we have ingredient lists of what the farmed fish is eating that we're selling them." So Wedge does just that for all types of farmed fish they sell.

Bunn said he would ask suppliers to guarantee their products are not genetically modified organisms (GMOs). "I don't think that they could say, 'Yeah, we don't have GMO salmon' and then we find out that they do. I

mean, that's a lawsuit for them."

Wedge and other natural food co-ops' commitment to organic means those stores are likely to favor GMO-free fish (since GMOs do not meet USDA's National Organic Standards). But even outside the co-ops, most buyers are like Bunn—they respond to customer demands.

"That means badgering your fish monger—what am I eating? And if they can't answer it, don't buy the product because the only true form of protest you have left is your economic protest," Bunn urged.

Consumers opposed to GMOs could also contact their state representatives, urging them to mandate labeling and to reverse a U.S. decision to push the World Trade Organization against the European Union for EU's moratorium on genetically modified foods.

Hannah Lewis is a Twin Cities freelance writer and former co-op produce manager.

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GM animals could threaten environment

US NAS report says GM animals pose greater threat to environment than to human health. | By Tabitha M Powledge

A special committee of the US National Academy of Sciences agrees with long-time critics of biotechnology that transgenic animals could threaten the environment. Genetic manipulation of the food supply, however, is unlikely to pose serious direct hazards to human health, it said yesterday (Wednesday August 21).

In a just-released report that was supposed to focus exclusively on scientific concerns about genetic manipulation and cloning of animals, the committee also touched on several policy issues. It concluded that the nation's current regulatory framework might not be equipped to deal with animal biotechnologies, especially regulations administered by the Food and Drug Administration, which requested the report. It urged labeling of genetically modified (GM) foods, a measure long opposed by industry. And it pleased animal activists by describing possible adverse effects on the health and welfare of transgenic animals.

The committee said the greatest potential adverse impact of GM animals was likely to be their environmental effects, especially because it is hard to identify environmental problems in their early stages and difficult to fix them even after they have come to light. Of chief concern are insects and other animals that are hard to contain and can become feral easily, notably shellfish, fish, mice and rats. The report noted that feral cats, pigs and goats can also do serious ecological damage.

The larger risk is from accidental release of transgenic organisms, although the committee said it had "a high level of concern" about intentional release as well. Escapees might spread a transgene in natural populations or they might be so much fitter that they could outcompete them. Another potential danger is an upset to the balance between predator and prey.

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The report said release of transgenic fish and shellfish, especially salmon, needed immediate attention. "Cultivated salmon have escaped into the wild from fish farms and these salmon already pose ecologic and genetic risks to native salmon stocks," the report pointed out. In the lab, transgenic salmon grow four to six times faster than non-transgenic salmon. According to committee member Eric M. Hallerman, a fish and wildlife biologist at the Virginia Polytechnic Institute and State University, Blacksburg, definitive studies of their fitness in the wild and their potential evolutionary consequences have yet to be done.

By contrast, the committee saw little reason to think that GM food animals posed much of a health threat, with a couple of possible exceptions. Newly introduced proteins might trigger allergies or hypersensitivity reactions in some consumers. Another potential hazard is animals engineered to produce medical products in milk or eggs; the report urged strict controls to prevent carcasses of these animals from entering the food supply.

The report also explored safety issues stemming from animals engineered for biomedical purposes, but drew few conclusions. It cited much-discussed but unresolved questions about transmission of disease organisms from transplanted animal organs, especially porcine endogenous retroviruses. It also noted "the theoretical possibility" that pathogenic viruses might result from recombination between a viral vector containing a transgene and normally nonpathogenic viruses in the same animal. Analogous events have been observed in the laboratory, the report pointed out.

"The applications of biotechnology can have adverse effects on the welfare of animals," the committee noted, citing a number of examples. Ruminants produced by cell-culture techniques typically are bigger and have longer gestations than those produced in the usual way, which creates suffering and health problems for both mother and baby. Transgenic technologies have an exceptionally low success rate, and the animals that do result often have physical and behavioral abnormalities. Pigs intended for human transplants are raised in isolated environments that can lead to abnormal behavioral development. The committee's attention to GM animal welfare drew praise from Michael Fox, head of the Humane Society, who said he wished it had happened a decade ago.

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Threats to the environment

When biotech corporations boast that genetic engineering can do wonders for the environment, we would do well to consider the source. After all, some of these companies are the same ones that have invented such deadly pesticides such as DDT and Agent Orange. These pesticides, it was promised, would help the environment; instead, they turned into environmental disasters.

Environmentalists have many concerns about GE foods. Here are a few:

1. The plight of the Monarch butterfly

Cornell University researchers have found that GE corn may be deadly to the Monarch butterfly. In laboratory tests in the spring of 1999, the scientists found that nearly half of Monarch caterpillars that ate milkweed leaves dusted with GE corn pollen died within four days. The surviving Monarchs that ate the genetically mutated corn pollen were much smaller and had smaller appetites than the control Monarchs, which ate normal corn pollen or no pollen at all.

In 2000, Iowa State University scientists found that plants growing in and near cornfields are being dusted with enough GE pollen to kill monarch caterpillars that feed on them.

Already, GE corn is being grown on 20 million acres of American farmland, right in the heart of Monarch's migratory route between Mexico and Canada.

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And scientists worry that there may be additional surprising scientific discoveries down the road.

2. Increased pesticide pollution

Many of the new GE crops, such as Roundup Ready soybeans, are designed to allow farmers to spray heavier doses of pesticides on their land. These pesticides inevitably will find their way into our water and food supply, endangering humans and wildlife.

New Scientist magazine reports that many farmers that have converted to GE production use as many pesticides as their conventional counterparts, while some GE farmers now use more pesticides.

And one of Britain's leading safety experts, Malcolm Kane (former head of food safety at the supermarket chain Sainsbury's), has revealed that the limits on pesticide residues in soy had been increased 200-fold to help the GE industry. He warned that higher pesticide residues could appear in a wide variety of foods, ranging from breakfast cereals to biscuits.

3. Genetic contamination of the environment

When Scottish Parliament member Robin Harper learned that Scottish scientists were experimenting with genetically modified salmon that grow at four times the normal rate, he was horrified, and called for a ban on all genetic engineering experiments.

"We should be extremely concerned about genetically modified fish because of the danger that they could escape into the wild," he said. "It's a similar, if not even more dangerous threat, to that we are facing with GM plants. If a GM fish escaped or was released accidentally in to the wild it could never be recaptured. This fish could breed with wild populations and devastate the existing natural balance with its modified behavior.

"There can be no doubt as to the huge threat GM fish would be to fish stocks wherever they were released in the World's oceans. This fish, if it

StarLink fiasco increases pressu for regulation

Genetically engineered bugs unc development

"Blue revolution" coming as scientists develop genetically engineered fish

escaped into the North Atlantic, could do untold damage to the ecology both of the north Atlantic and Scottish salmon rivers."

Like Harper, many scientists are concerned about the widespread release of genetically modified organisms (GMOs) into the environment. In the United States, millions of acres of land have been planted with GE crops. Scientists fear that GMOs will be spread, by bird, insect or wind, to non-GE crops--and to the wilderness. And unlike other kinds of waste, genetic contamination cannot be cleaned up, or contained.

4. GE genes can jump species barrier

In May, 2000, Professor Hans-Hinrich Katz, a leading German zoologist, released research that shows that genes used to modify crops can jump to other species and cause bacteria to mutate. Katz found that the gene used to modify oilseed rape had transferred to bacteria living in the guts of honey bees.

"These findings are very worrying and provide the first real evidence of what many have feared," says prominent genetic engineering critic and scientist Dr. Mae-Wan Ho.

"Everybody is keen to exploit GM technology, but nobody is looking at the risk of horizontal gene transfer. We are playing about with genetic structures that existed for millions of years and the experiment is running out of control."

5. Herbicide resistance and fears of the rise of superweeds

Some scientists fear that the extensive planting of genetically engineered crops will lead to a new class of "superweeds" that are resistant to pesticides. The largest class of genetic engineered foods is pesticide-resistant crops, such as Roundup Ready soybeans. The problem is that newly created transgenes may be spread unintentionally--by bird, insect or wind--from target crops to related weed species. The weeds then also pick up resistance to the pesticide.

Nature magazine reported in 1996, for example, that herbicide-resistant GE oilseed rape, released in Europe, has spread to several

wild relatives.

6. Risks to biodiversity

In one especially macabre application of GE technology, scientists seek to develop "terminator" tree farms. The trees would be engineered not to reproduce, and they would be designed to secrete toxic chemicals through their leaves that would kill leaf-eating insects. The trees also would be engineered to include pesticide resistance, meaning that ground flora could be wiped out easily. Critics say the trees might grow faster than before, but they'd be devoid of bees, butterflies, birds and squirrels that depend on pollen, seed and nectar.

The terminator tree farms highlight a growing concern among scientists: the threat genetically engineered crops pose to biodiversity. Scientists estimate that by the year 2000, the world will have lost 95 percent of the genetic diversity present in agriculture 100 years earlier. GE crops are developed from the same monoculture varieties that giant agribusinesses have planted in the latter half of this century, and will only exacerbate the problem.

Moreover, pesticide-resistant crops will allow the application of increasing amounts of powerful pesticides. These pesticides often kill more than the targeted weeds; they frequently kill beneficial plants outside their intended range.

7. Damage to the soil

Scientists are concerned that genetically mutated crops may damage the soil. Researchers for Nature magazine reported in December that some types of GE crops may be leaking powerful toxins into the soil.

Many GE crops, such as corn and potatoes, have been engineered to produce poisons or toxins to fight pests that eat their leaves and stems. Researchers fear that beneficial soil organisms also may be killed, and that some insects may become resistant to the toxins.

Other researchers have revealed that lacewings that ate corn borers reared on GE corn had also died, increasing speculation that

these crops are harming beneficial organisms.

8. Genetically engineered crops put birds at risk

British researchers in 2000 reported that the use of genetically engineered crops modified to tolerate herbicides may severely cut bird populations on farms. Professor Andrew Watkinson and colleagues from the University of East Anglia in Norwich found that bird populations could decline as much as 90 percent in some areas where herbicide-tolerant crops have been sown.

9. The problem of unintended consequences

Biotech firms assure us there's nothing to worry about. Genetically engineered foods, they say, will save the environment.

But it's a story we've heard before. In the mid-1900s, giant agribusinesses took the biological and chemical weapons from two world wars and turned them into pesticides and herbicides. They promised a wondrous new agricultural era of bigger yields and bug-free produce. It was only decades afterwards that scientists began to realize the scope of the environmental devastation wrought by the explosive growth of the pesticide industry.

In the 1960s, scientist Rachel Carson's epic, **Silent Spring**, awakened a generation to the dangers of dioxin and other manmade chemicals in the environment. But it wasn't until 30 years later that scientists began to understand the extent of the problem. Now we know that pesticides and other manmade chemicals are tampering with sexual development and reproduction, in many animal populations and humans as well.

The discovery that genetically engineered corn might be deadly to Monarch butterflies came as a shock to biotech advocates. If biotech companies continue with their massive experiment, what will our scientists tell us 50 years from now?

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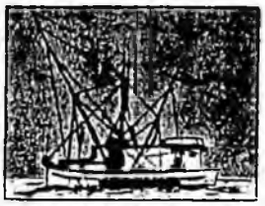

Alaska Trollers Association

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2004 Legislative Positions

House Bills

HCR 25	Support	Alaska Wild Salmon Week
HJR 32	Support	Labeling of wild and farmed / country of origin
HJR 34	Support	USDA Trade Adjustment Assistance Program
HJR 36	Support	NPS mitigate adverse effects of fishing closures and restrictions
HB 396	Oppose	MSY of "important salmon stocks" and ensuring hatchery brood stock.
HB 409	No Action	Maximum length of seine vessel
HB 410	No Action	CFEC permit buy-back programs
HB 415	No Action	Permit holders (not vessels) fish in multiple areas
HB 419	Oppose as written	Regional seafood development associations and taxes
HB 426	Oppose	Tax certain tourism/recreation-related goods and services
HB 433	Support	Labeling and ID of genetically modified fish & fish products
HB 435	Support	Labeling and misbranding
HB 444	Support	Direct marketing taxes
HB 473	No Action	JV fish processing businesses and tax liability.
HB 478	No Action	Issuance of commercial fishing interim-use permits.

Senate Bills

SCR 19	Support	Support fisheries education
SB 27	No Action	Pesticide Use
SB 281	Support	Labeling and ID of genetically modified fish & fish products
SB 282	Support	Labeling and misbranding
SB 286	Support	Direct marketing taxes
SB 315	No Action	CFEC permit buy-back programs
SB 322	No Action	Salmon enhancement tax rate

ASMI Issues

Support 1% salmon marketing assessment
Neutral on mandatory processor assessment
Support ASMI board size of 11-15 members

Southeast Conference

P.O. Box 21989 Juneau Alaska 99802-1989 Tel. (907) 463-3445 Fax (907) 463-5670

February 27, 2004

Senate Resources
Senator Scott Ogan, Chair
Alaska State Legislature
State Capitol, Mail Stop 3100
Juneau, AK 99801

RE: Support SB 281 – Labeling of genetically modified fish

Dear Senator Ogan,

Southeast Conference supports SB 281 relating to the labeling and identification of genetically modified fish and fish products. Southeast Conference is the State-designated Alaska Regional Development Organization (ARDOR), the Federally-designated Economic Development District (EDD), and the Federally-designated Resource Conservation and Development Council (RC&D) for Southeast Alaska. The mission of Southeast Conference is to undertake and support activities that promote strong economies, healthy communities, and a quality environment in Southeast Alaska. Our over 130 Southeast Alaska members include nearly every community in the region, every chamber of commerce, every major economic development organization, 20 transportation organizations, 10 Alaska Native organizations, and more than 50 other organizations.

SB 281 is legislation that was introduced through the marketing committee of the Salmon Industry Task Force and is based on similar legislation that passed the California State legis ature last year. The labeling of genetically modified fish and fish products will help consumers know what they are putting on their dinner plates. It is important to the commercial fishing industry in that it allows our wild Alaska seafood products to be recognized in the marketplace as a superior unmodified food source. The commercial fishing industry is an important component of the fabric of the Southeast region. Differentiating the wild product from a genetically modified product should, in the future, allow for a price differential that will help make the commercial fishing industry more viable in increased ex-vessel value.

The Southeast Conference also recognizes that this legislation is important to the consumer as it required food packaging to be correctly labeled. We encourage you to pass this legislation out of committee. Thank you for your interest.

Sincerely,

Meilani Schijvens

Meilani Schijvens
Executive Director

cc: Southeast Caucus

BIO

BIOTECHNOLOGY INDUSTRY ORGANIZATION

Testimony of the Biotechnology Industry Organization

Submitted to Alaska Senate Committee on Finance

April 28, 2004

Regarding Senate Bill 281:
The Labeling and Identification of Genetically Modified Fish and Fish Products

On behalf of the Biotechnology Industry Organization and its more than 1,000 member companies, please accept this testimony in opposition of mandatory, generalized labeling requirements for biotech foods like those proposed in Senate Bill 281 "An Act relating to labeling and identification of genetically modified fish and fish products." BIO does, however, strongly support the existing federal requirements for accurate and informative food labels, which communicate information that is relevant to health, safety and nutrition.

Senate Bill 281 would require mandatory labeling of biotech fish and fish products developed using biotechnology. This unnecessary and misleading legislation ignores existing science-based federal guidelines on labeling of biotechnology-derived foods. In addition, it would be costly to implement, and would not provide consumers with any beneficial information. Please consider the following rationale:

- **Before being approved for commercialization, all biotech food products (whether plant- or animal-based) must be rigorously reviewed at the federal level for safety—for both human consumption and the environment.** In fact, the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA)—at a minimum—are involved in the approval and regulation of such products. The FDA evaluates scientific research to determine whether transgenic fish are safe for their intended use, for the fish themselves, and for the environment. FDA's environmental assessment is conducted with the cooperation of the National Marine Fisheries Service and the U.S. Fish & Wildlife Service under the requirements of the National Environmental Policy Act and the Endangered Species Act.

- **The labeling requirements proposed by Senate Bill 281 would be inconsistent with the science-based guidance of the federal government.** Under the Federal Food, Drug and Cosmetic Act, the label of the food must reveal all ***material*** facts about the food. For

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instance, the act requires that if a biotech food differs significantly in its nutritional or allergenic properties than its conventionally produced counterpart, that fact must be disclosed on the label. FDA has taken a science-based approach in developing this guidance and decided biotech foods do not inherently "present any different or greater safety concern than foods developed by [conventional methods]." FDA uses the principal of "substantial equivalence"—focusing on the final product, not the process used to develop a food product, in determining how it should be labeled. In a 2002 letter to Oregon's governor, in fact, FDA stated that its "scientific evaluation of bioengineered foods continues to show that these foods, as currently marketed...are as safe as their conventional counterparts." The FDA guidelines are online at http://www.cfsan.fda.gov/~dms/biolabgu.html.

- **Numerous scientific groups, including American Medical Association (AMA), American Council on Science and Health, Council for Agricultural Science and Technology, Institute of Food Technologists, and many more support the FDA's science-based approach to labeling.** In fact, an AMA report found that "[T]here is no scientific justification for special labeling of [biotech foods], as a class, and that voluntary labeling is without value unless it is accompanied by focused consumer education."

- **A patchwork of inconsistent state labeling laws would not benefit consumers.** Mandatory label requirements that vary from state-to-state would not only conflict with the FDA guidelines and be costly to implement and enforce but also would likely confuse consumers.

We hope you will join BIO in opposing Senate Bill 281. If you have any questions or would like additional information on this topic, please feel free to contact Patrick Kelly at 202-962-9200 or by e-mail pkelly@bio.org or Dr. Barbara Glenn, Director of Animal Biotechnology at 202-962-6697 or by e-mail bglenn@bio.org. Thank you for your consideration of this important matter.

Respectfully Submitted,

Patrick M. Kelly
Vice President, State Government Relations
Biotechnology Industry Organization
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Washington, DC 20005
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202-962-9201 [fx]
pkelly@bio.org [e-mail]

SITE: Offnets	SUBJECT OF MEETING:
COMMITTEE: SFIN	BILL # SB281
DATE: 4/28/04	UPDATE #:

PRINT YOUR NAME	COMMUNITY	REPRESENTING/AFFILIATION	DO YOU WANT TESTIFY Y or N
Elise Hsieh		Dept. of Law	Y

SENATE COMMITTEE REPORT
First Committee of Referral

DATE: 1/28/04

FURTHER: Finance

Date of 5-Day Notice: 2/26/04
(in accordance with Uniform Rule 23)

DATE TURNED IN TO OFFICE: 2-4-03

Resources Committee considered SENATE BILL NO. 281

SB 281 GENETICALLY MODIFIED FISH

"An Act relating to labeling and identification of genetically modified fish and fish products."

and recommends:

[ ] be replaced with _____ CS _____ (_____)

[ ] adopt previous _____ CS _____ (_____)

[ ] attached amendment(s)

[ ] adopt Letter of Intent by _____ Committee

[ ] further referral to _____ Committee

Senate Bill:
[ ] Same Title
[ ] New Title

House Bill:
[ ] Same Title
[ ] Technical Title Change
[ ] New Title w/ SCR #____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#
DEC	3/1/04			✓	1
LAW	3/3/04			✓	2

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#

[ ] **APPROPRIATION - no fiscal note**

SIGNATURES AND RECOMMENDATIONS:	DO PASS	DO NOT PASS	NO REC	AMEND
Dyson — Fred Dyson	✓			
Lincoln — [signature]	✓			
L. Ltorn — [signature]	✓			
B. Stevens — Ben Stevens	✓			
Seekins — Kaeph Seekins	✓			
VICE CHAIR:				
Wagoner — Thomas W. Wagoner	✓			