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# Plan Would Expand Ocean Fish Farming

By [MARIAN BURROS](#)

The National Oceanic and Atmospheric Administration is expected to announce a proposal on Tuesday to allow greatly expanded offshore fish farming, up to 200 miles from shore.

The draft proposal of the National Offshore Aquaculture Act calls for development of regulations to permit farming in federal waters and the addition of species to farming, like cod, halibut and tuna, which are farmed in other countries. Fish farming, or aquaculture, is currently confined to state waters, closer to shore.

According to the draft, which intends to quintuple fish farming by 2025, ocean resources would be divided into privatized zones with renewable leases good for 10 years.

"Fisheries are a collapsing industry, and even though aquaculture comes with a lot of baggage, it is absolutely the future of seafood production," said Dr. Daniel D. Benetti, director of aquaculture and chairman of marine affairs and policy at the University of Miami.

Dr. Benetti is working with the Snapper Farm off Puerto Rico, a recipient of a NOAA grant.

But critics are worried that NOAA, a branch of the Commerce Department, has not addressed the health and environmental problems of existing fish farms: pollution from wastes, chemicals and drugs; the impact of escapes on wild fish, including transference of disease and parasites; the dependence on wild fish, which are used as feed for the farmed fish; and the impact on traditional fishing.

In 2003, the Pew Oceans Commission, a private panel of scientists, economists, fishermen and other experts financed by the Pew Charitable Trusts, said expansion of fish farms should cease until national standards and rules were in place for ecologically sustainable aquaculture.

"I believe aquaculture is incredibly important," said Dr. Jane Lubchenco, a professor of zoology at Oregon State University and member of the commission. "Now is the time to make sure it grows in a way that is good for human health and the environment. I would like to see the right kinds of checks and balances before we launch into this massive offshore experiment and it is too late."

Dr. William T. Hogarth, NOAA Fisheries Service director, agrees. "I'll be the first to admit there is a lot of controversy," he said. "We have to do aquaculture in an environmentally safe and compatible way."

NOAA's manager of aquaculture, Michael Rubino, said the proposal was over 10 years in the making. It has the support of the Bush administration.

So far there are few answers to the critics' questions, in part because the draft proposal has no environmental rules. Dr. Hogarth said the agency intended to create regulations through workshops and public hearings if the legislation is passed.

Dr. Rebecca Goldberg, a senior scientist with Environmental Defense, an advocacy group often at odds with the food and agriculture industries, said: "If aquaculture is to be pursued in offshore waters, Americans want it to be with very stringent safeguards. They have to think through the potential for fish escapes, where fish farms can be located to minimize impacts of water pollution and spread of disease."

Each year around two million farmed fish escape in the Atlantic. For that reason, Dr. Hogarth says, pens should be stocked with only native species.

But Dr. Goldberg said even escapes of indigenous species could cause problems. For example, the fertilized eggs of cod cannot be contained in ocean pens, and the fish that hatch from them could have an impact on the seriously depleted stocks of wild cod.

Proponents of offshore fish farming believe that if the farms are placed in the deep ocean, strong currents could dilute waste, uneaten food and medications from the pens. Ocean pens would also put the farms out of the reach of state authorities.

Dr. Goldberg said scattering the farms might ease the pollution problem, but she added, "They do tend to cluster the farms because of proximity to feed and processing plants."

The environmentally acceptable size of fish farms is another unknown. Dr. Benetti of the University of Miami said, "We are not economically sustainable, so we must scale up, and as you scale up you might see some impact."

Rather than increasing the overall food supply, most fish farms provide substitutes for expensive wild species. "The perception of aquaculture is that it plays a key role in providing food for a burgeoning human population," Dr. Lubchenco said, "but most segments of aquaculture, like salmon and shrimp, are not providing food for the poor but for white-tablecloth restaurants."

The fish that should be farmed, because of their smaller environmental impact, said Dr. Lubchenco, are herbivores and omnivorous freshwater fish like tilapia, carp and catfish, and mollusks like oysters and mussels. But the money is in carnivores. And farming tuna, salmon and swordfish depletes populations of wild fish, which are needed to make fish meal. It takes about three pounds of wild fish to produce one

pound of farmed salmon.

One of the most environmentally sensitive methods of aquaculture is integrated fish farming, in which mussels, seaweeds and other species are grown in close proximity with fin fish to recycle waste. In Canada, Dr. Thierry Chopin, professor of marine biology at the University of New Brunswick in St. John, has been growing seaweed, salmon and mussels in the Bay of Fundy since 2001. The seaweed and mussels consume some of the waste from the salmon. Studies have shown that the chemicals fed to the salmon are not passed on to the mussels or the seaweed, making them safe to eat.

Dr. Chopin's program has grown but is not yet commercial. Few companies are interested because integrated farming, in which several species must be monitored, is much more complicated.

Some states are worried about the federal government's plans and have already taken action. Senator Lisa Murkowski, Republican of Alaska, has introduced a bill to prohibit the development of new offshore aquaculture operations until there is legislation to address all the potential problems.

California recently passed stringent regulations governing aquaculture off its coast. "If we get anything close to the California bill, I think we will be doing well," Dr. Lubchenco said. "But I'm skeptical."

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