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Fixing fish farms

Aquaculture has a bad rep, but innovators are finding healthy ways to return it to U.S. waters

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Two miles off the coast of the small Puerto Rican island of Culebra, a grapefruit-size buoy floats on top of the gin-clear water, all but invisible to passing boats. It doesn't look like much, but follow the attached cables 35 feet down and, like a sunken spacecraft, a 12-sided fish cage spreads out near the ocean floor. Filled with snapper and a tropical white fish called cobia, the pen is owned by an upstart company called Snapperfarm, and it may well represent the future of aquaculture.

The science of raising fish or aquatic plants for consumption, aquaculture is the fastest-growing segment of U.S. agriculture and one of the fastest-growing industries in the world. American consumers now spend \$54 billion annually on farmed seafood, an increase of 25 percent over the past five years. Worldwide, fully one third of fish consumed comes from farms.

When it began in earnest about 30 years ago, aquaculture was seen as a way to create an endless supply of marketable fish. But massive growth brought big problems. Salmon and many other species eat smaller fish that are ground up into meal; some of this food falls to the bottom of the pens and combines with fish excrement to suck oxygen out of the water, creating polluted "dead zones." At the same time, farmed fish themselves contain higher levels of antibiotics and pesticides than may be safe. And, ironically, catching enough fish to feed the farmed fish has led to further reductions in wild stocks--the very problem fish farming was intended to relieve.

Offshore. Exposing the industry's problems has led to some changes. Yet, opposition to aquaculture has also turned commercial farmers away from the United States and toward

less regulated waters elsewhere. Today, the United States produces just over 1 percent of the world's farmed seafood, even though it ranks third overall in consumption. "The industry went somewhere else already," says Dan Swecker of Rochester, Wash., who started one of the country's first salmon farms, later bought by a Norwegian company.

The federal government aims to lessen the nation's \$7 billion trade deficit in fish, and the National Oceanic and Atmospheric Administration has endorsed offshore aquaculture as a promising step toward that goal. As part of its initiative, NOAA provides grants to companies like Snapperfarm. Brian O'Hanlon, the company's 24-year-old president, says pens in the open ocean promise cleaner and healthier techniques. Currents carry 500 million gallons of water through the pens each day, he says, washing away sewage and excess food.

Still, offshore aquaculture has its challenges, including transporting people to and from sites and building pens sturdy enough to withstand ocean currents. Others see a solution closer to shore. When mussels, salmon, and seaweed are grown near each other, the mussels and seaweed naturally clean up the salmon waste--and produce additional commercial crops. "It makes sense from an environmental point of view and makes sense economically," says Thierry Chopin, a biologist at the University of New Brunswick-St. John.

With a world population that increasingly hungers for seafood, aquaculture is here to stay. With a bit of innovation, it might just stay in American waters.