

Taming the Wild Tuna

By Paul Greenberg

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IN the wide expanse of the wild ocean, there is perhaps nothing more wild than the world's largest tuna — the giant Atlantic bluefin. Equipped with a kind of natural GPS system that biologists have yet to decode, the bluefin can cross and recross the Atlantic's breadth multiple times in the course of its life. Its furious metabolism enables the fish to sprint at more than 40 miles an hour, heat its muscles 20 degrees above ambient, and hunt relentlessly at frigid depths in excess of 1,500 feet.

Yet in spite of all of its unwieldy and feral characteristics, aquaculture scientists have just announced an important step toward converting the Atlantic bluefin, in rapid decline in the wild, into a farm animal. Researchers at a European Union-financed program, Selfdott, said they had succeeded in spawning the Atlantic bluefin in captivity without hormonal intervention.

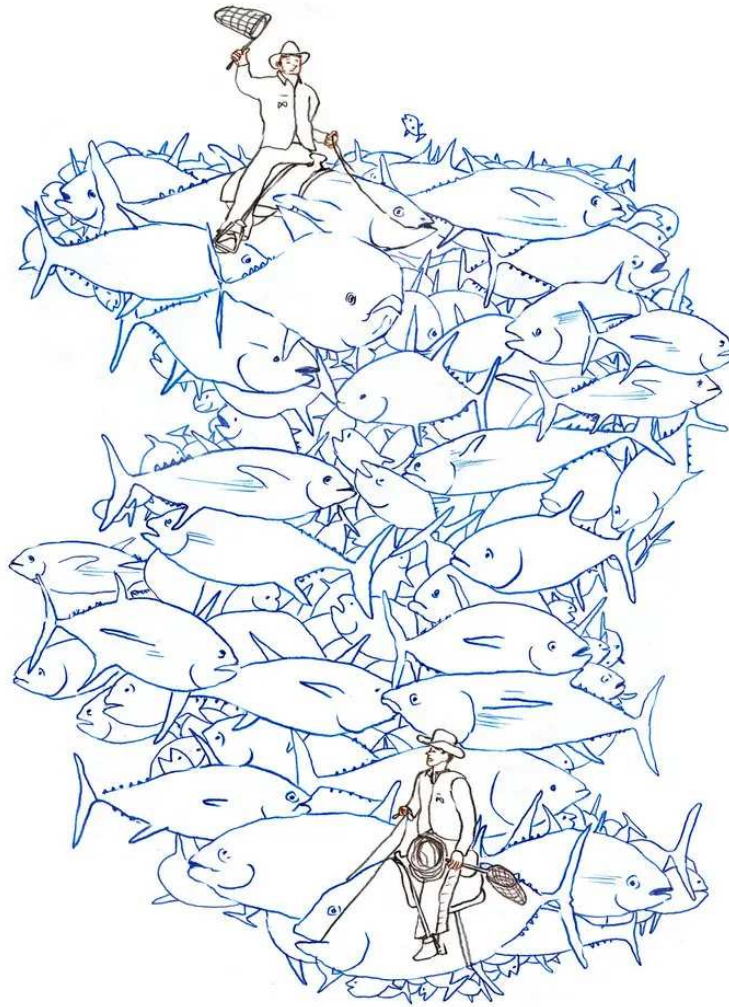
If they can solve the problem of raising the offspring to adulthood — a challenging prospect — the bluefin may soon join Atlantic salmon, rainbow trout, branzino, yellowtail, turbot, shrimp, catfish and tilapia as an industrially farmed staple of the modern fish market. Which brings up an interesting question: Can a farmed version of bluefin tuna be better for the earth — and the species?

The potential taming of the Atlantic bluefin highlights an epochal shift. Seafood today is roughly where landfood was 10,000 odd years ago. Just as Neolithic humans launched a domestication project after the last Ice Age and eventually replaced many wild mammal populations with tame ones, so, too, are modern humans parsing and domesticating the ocean, fish by fish.

In the last 50 years, the global seafood market has transformed from one based on wild fish and shellfish to one in which farming supplies nearly half of the market, according to the United Nations' Food and Agriculture Organization.

Leading this transition is wild Atlantic salmon, which collapsed as a commercial species in the 1960s and was subsequently replaced in the marketplace by farmed Atlantic salmon. Atlantic salmon is now priced at a level so that many consumers can enjoy it, but its availability has not been without repercussions. Farmed salmon are often grown in the pathways of wild salmon migration routes, and the Monterey Bay Aquarium, Blue Ocean Institute and many other ocean-focused nonprofit groups place farmed salmon on their “do not eat” lists, largely because of the threat that farm-born diseases, waste and parasites may pose to already severely depressed runs of Atlantic salmon.

Cultivating Atlantic bluefin tuna, environmentalists argue, could be even more harmful to the ocean than salmon farming. Atlantic bluefin are already ranched in great numbers — taken from the wild and fattened in net pens with wild forage fish like herring and sardines. There, it may take anywhere from 5 pounds to 15 pounds of wild fish to grow a single pound of Atlantic bluefin.



Leif Parsons

The Stanford economist Rosamond Naylor pointed out [in a recent paper in The Proceedings of the National Academy of Sciences](#), that there was not too much room for adding species to the world's aquaculture portfolio.

“Most forage fisheries,” Ms. Naylor wrote “are either fully exploited to overexploited or are in the process of recovering from overexploitation.”

If she is right — and if bluefin tuna farming is ramped up to the level of salmon farming, which produces more than two billion pounds a year — the effect on forage fish, the foundation of the oceanic food chain, could be devastating. A

worldwide overharvest of forage fish could damage not just bluefin tuna populations but other important commercial species that also rely on these fish for sustenance.

But alternatives to forage fish are being developed, including feed pellets made from algae and other vegetable matter. As Frederic Barrows, a fish physiologist and nutritionist with the Agriculture Department, puts it “fish need nutrients, not ingredients” and there are already experimental tuna diets undergoing trials that don’t require fish meal.

Another alternative is to farm species that seem naturally appropriate for domestication. Josh Goldman, an ecologist-turned-fish farmer in Turners Falls, Mass., grows Australian barramundi in out-of-ocean tanks precisely because they are comfortable with farm conditions and don’t require as much fish meal as other species. During Australia’s dry season, wild barramundi end up stuck into “billabongs” — broken-off river oxbows that become hot, stagnant and oxygen poor.

“What does a billabong resemble most?” Mr. Goldman asked. “An aquaculture facility.”

Similarly, Arctic char, a fish closely related to Atlantic salmon, has evolved to survive crowded conditions when its native northern lakes freeze nearly solid in wintertime. Like the barramundi, Arctic char take well to being grown in above-ground tanks that pose no disease transfer risks to wild populations.

Char may be a hard sell to lovers of bluefin tuna. A slice of o-toro bluefin belly, any sushi-lover would say, is a luxurious, sensual experience that a barramundi, a char, let alone a tilapia simply cannot replicate.

If Atlantic bluefin is not farmed, it will most likely become an even more scarce luxury item. Global fishing moratoriums on the species have been proposed (and then rejected by the many nations that catch bluefin). But other options being discussed include drastically reducing fishing quotas in the next few years and closing spawning grounds in the Mediterranean and the Gulf of Mexico to fishing entirely.

Perhaps, in the end, this is what the Atlantic bluefin tuna might really need. Not human intervention to make them spawn in captivity. But rather human restraint, to allow them to spawn in the wild, in peace.

Paul Greenberg is the author of “Four Fish: The Future of the Last Wild Food.”

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