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Discussions about Energy and Our Future

Fish--A Sustainable Food Source or a Tragedy of the Commons?

Posted by [Gail the Actuary](#) on April 14, 2010 - 4:29pm in [The Oil Drum: Campfire](#)

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It seems like fish has been a significant food source, for a very long time. In fact, the oceans are badly overfished because of this. My question is, "What sustainable ways are there to continue to eat fish in the future?"



Image from [Big Bass Pond](#)

If we are short on food in general, one of my first concerns would be **overfishing** of lakes, streams, and areas that are easy to access with small boats (or with large ones). This is really a [Tragedy of the Commons](#) issue--what seems to be good for one, if pursued by all, will deplete the fish stock, and there will be less for everyone. Does anyone have any suggestions on how to solve this problem?

Another possible option is to attempt to raise fish on our own property. On a very small scale, we read instructions such as [these](#):

You can, from your own back yard, raise fish to eat for a fraction of what it costs in the stores. You can rear catfish, carp, bluegill or bass from fingerling size to adulthood in nothing bigger than a 55 gallon barrel by following the steps in this guide.

Step 1 Find a location for your fish. Search for a level area approximately 12 square feet

in size, in partial shade, near a source of water or within reach of your garden hose.

Step 2 Prepare your fish barrel. Clean both barrels and rinse well. Place 4 inches of gravel on the bottom of one barrel and situate the filter firmly in the substrate.

Step 3 Attach a circulation pump or aerator to the fish barrel to ensure there is adequate oxygen in the water and secure a garden hose to the bottom of the barrel to ease in the daily replacement of the tank water.

Step 4 Attach a thermometer to the side of the barrel in a location which will allow the bulb to be submerged. The ideal temperature for your fish tank is between 70 and 85 degrees Fahrenheit. If it is consistently too hot or too cold, you will have to relocate the tank to get more or less sun, accordingly.

Step 5 Fill the barrel and treat the water with commercial de-chlorination treatment drops. Cover the barrel with a pane of glass. Allow the barrel to sit for 48 hours, so the temperature of the water can stabilize.

The guide goes on for quite a few more steps. Clearly this method depends on our current infrastructure for sustainability, but it is an interesting hobby. Issues of maintaining water quality are pretty much pushed off on someone else. You keep replacing water in the tank with fresh water, and dumping the polluted water out.

Another idea, if you have a lake or pond (or even left over swimming pool) is to stock it with fish. I would think there would be a lot of ins and outs to know, to do this successfully. One issue is adequate aeration; another is pollution with too many fish; a third is freezing weather in winter.

On a larger scale, I can imagine people setting up local [fish farms](#). Whether or not it is a good idea, people will put cages in streams and try to grow fish in cages.

I would expect ocean fishing would continue, since boats can be made to run on almost fuel (including wind), and their actual fuel use is pretty low. If there is a bottleneck, it would be in refrigerating and transporting fresh fish long distances, after they have been caught. It seems like over-fishing of fish in the ocean would continue to be a problem.

Mercury Pollution Issues

One thing that concerns me about fish is the mercury pollution issue. The EPA is [fairly sanguine](#) about this issue:

Research shows that most people's fish consumption does not cause a health concern. Elevated methylmercury in the bloodstream of unborn babies and young children may harm the developing nervous system, impairing the child's ability to learn and process information. However, certain sub-populations are at higher risk than the general population because of their routinely high consumption of fish and shellfish (e.g., tribal and other subsistence fishers and their families who rely heavily on locally caught fish for the majority of their diet). Mercury concentrations in fish vary widely. While local freshwater fish also contain methylmercury, the majority of fish species consumed in the

U.S. are ocean species and the methylmercury concentrations in these species are primarily influenced by the global mercury pool. Fish that are higher in the food chain-- such as king mackerel, swordfish, tilefish, and shark--have much higher methylmercury concentrations than fish that are lower in the food chain.

But pollution levels of lakes are not good, if we are thinking of using them as a more major source of our food. A news article from 2009 [reports](#):

The EPA's new report, [National Study of Chemical Residues in Lake Fish Tissue](#), found mercury in all fish from 500 lakes sampled randomly across the continental U.S. The data also showed mercury concentrations in game fish exceed EPA's human health screening levels at 49% of the lakes nationwide. The EPA is taking steps to limit mercury emissions from power plants within the United States. However, Mercury Policy Project's director Michael Bender points out, "Two-thirds of the mercury that's rained on Vermont and the U.S. comes from Asia and elsewhere outside the U.S." Therefore, the international pollution control treaty in the works could have an even greater impact on the U.S.

This study related to predators and bottom dwellers, which would seem to be the fish most affected by mercury pollution.

Questions

1. How do we keep from over-fishing lakes and streams?
2. What experiences have you had with raising fish at home? Would you recommend it for others?
3. Has anyone worked with mercury pollution? I wonder whether the thresholds set by the EPA are low enough. How do we know what a "safe" mercury level is? I read articles like [Autism Risk Linked To Distance From Power Plants, Other Mercury-Releasing Sources](#) and [Exposure To Low Doses Of Mercury Changes The Way The Arteries Work](#) and wonder.



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