

"The Common Tragedy" part 2 by Jerrad Pierce

Last time, we made a case for government regulation of industry and in particular we singled out fishery management. Now we will examine potential policies as well as some that have been implemented. What are the assumptions behind these policies and why have those adopted been of limited success? How might these new recommendations differ?

As you may recall, some of the participants in the Fish Banks game referred to the process as "strip-mining the ocean". Perhaps a better analogy might be "clear-cutting" i.e; the wholesale extraction of biota. If forestry can provide us with a different framework with which to view the problem, forestry management solutions may also lend themselves to adaption for fisheries. While forest management has a long and checkered past, and we are still learning to this day, it's arguable that we have more or less determined proper techniques (whether or not we apply them). Furthermore, forestry has long been tied to farming through exchange of land and ideas and fishery management is certainly a form of animal husbandry. Approaching sustainable fishery management as an extension of sustainable forestry and farming techniques has great potential.

Current fishing policy and practices may be viewed as a system of selective harvesting i.e; removal of mature specimens. Netting size regulations are intended to allow immature fish to escape. However fishing boats generally seek a single target species although they may haul in several the remainder of which are known as "bycatch" and discarded. In farming this would be similar to a mono-culture, vast swathes of a single species. This is how modern farming is practiced, and it requires immense inputs of petro-chemicals as it is not sustainable. Mono-culture has been and is practiced in forestry where it was pioneered in Germany. However the system lacked the variety necessary to maintain homeostasis and is generally regarded as a failure. Traditional farming, and forestry management utilizes

a variety of species and harvests samples of the each population; this is an alternative interpretation of selective harvesting.

Sustainable farming practices generally employ a technique known as crop rotation. Some crops deplete the soil of particular nutrients while other crops may restore them. In order to maintain soil health, promote long term viability and ample yields, a farmer must not plant and harvest the same crop year after year. Traditionally, the fishing industry has exploited a fishery until it has collapsed and moved on to the next one, assuming that there would be one. This has eventually resulted in the adoption and renaming of former bycatch as a commercial product such as “Chilean sea bass” nee Patagonian toothfish. If selective harvesting of fish, in the mono-culture sense, is to be sustainable it ought to include a form of crop-rotation. Instead of hunting salmon, cod or swordfish year after year, these fisheries ought to be allowed to occasionally lie fallow. A fallow, undepleted, fishery can better recover than a fallow depleted fishery as there is a minimum threshold for repopulation.

A crop-rotation and fallow field policy harkens back to a pre-industrial fishing fleet. Another approach may be the complete deindustrialization of fish harvesting, to forgo the miles-long nets and bottom trawling traps and return to the rod reel. Such a system can reduce bycatch and bycatch fatality; creatures often do not survive being thrown back if they’ve been entangled in netting for an extended period of time. It may be hard to meet market demand with this antiquated system and fish prices would no longer be artificially suppressed. This is actually a good thing, as externalities such as the costs of preserving fish for future generations and preservation of fishing and fish-consuming cultures are now factored in. Other fishery management policies to consider are aqua-culture and stocking. Aqua-culture was practiced by the Romans, and today is practiced in open-sea pens, tanks and pools. Unfortunately most farmed fish species are carnivorous,

they consume other fish. Thus, instead of fishing for salmon and other species at the top of the food-chain, resources are diverted to harvest smaller fish species to produce fish meal as feed. This shift in focus may pose even larger problems than fishing for salmon as the food web is perturbed at lower levels. A practical aquaculture would use herbivorous species, or develop an alternative to fish-meal feed such as one that is soy-based. Fish stocking is the practice of aquaculture for the sake of introducing immature fish into the ecosystem, and is generally used to maintain non-native populations such as trout. The system allows man to provide a safer environment for fry and fingerlings, increasing the proportion which may reach maturity. While there are potential issues with stocking, it is being investigated as a means of artificially supporting wild breeding stocks and deserves support.

No single policy will work for all cases, indeed many policies may only serve as partial solutions in most situations. However we should not be afraid to implement many partial solutions, as this could well lead to a more robust system; homeostasis.