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PERSPECTIVES

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ECO-HUMANISM

*FINDING PEACE IN WHAT IS
REMEMBERING COLLEEN MCCRORY
SUBSIDIES & DEEP-SEA FISH DEPLETION
DUMPSTER DIVING IN NEW YORK*



subsidies & deep-sea fish depletion

FEATURE by Rashid Sumaila

That fisheries in the Exclusive Economic Zones (EEZs) of maritime countries, which usually extend 200 nautical miles from shore, are in trouble has been well documented recently. As fish stocks within EEZs have been depleted, fishing effort on deep-sea ecosystems and seamounts has increased. At the same time countries have increased the use of fisheries subsidies, that is, government monetary transfers to the fishing sector, in the misplaced hope that this will keep their fishers employed and maintain or even increase their fish supply. The hope is misplaced because many fish stocks are currently either overexploited or fully exploited.

Even without subsidies, deep-sea fishes are very vulnerable to overfishing. This is because these fishes are long-lived and slow-growing as light, nutrients and food is scarce in the deep-sea. Thus, species inhabiting this environment have low growth rates, late maturity and low fecundity. In addition, deep-sea species exhibit aggregative behavior, and depend on structural habitats, thereby increasing the vulnerability of deep-sea fishes to overfishing. These vulnerable fishes live in ecosystems where habitat structure is provided by delicate species such as long-lived deep-sea corals and glass sponges.

The intrinsic growth rate of a fish is simply the natural rate of growth of the fish per given period, which is dependent on the initial weight of the fish. An intrinsic growth rate of 0.1 for a fish per year means that the biomass of the fish grows by 10% in one year. On the other hand, the interest rate is the rate that the market will pay someone

for saving their money for one year. For example, if a bank pays an interest rate of 5% per annum, then someone who saves \$100 with the bank for one year will receive \$105 at the end of the year. These concepts are important for this discussion because it is well demonstrated in the literature that fish species with low intrinsic growth rates relative to the interest rate faced depletion. This is because for an economically rational commercial fisher, the fish is more 'productive' in the bank than in the ocean. For instance, the deep-sea species *sablefish*, *Pacific grenadier* and *orange roughy* have estimated intrinsic growth rates of 0.025. This implies that for these species, an interest rate of over 2.5% is all that is needed to overfish them. To put things in perspective, both the Canadian and US governments recommend a (interest) rate of 7% for evaluating government projects, a rate at which an economically rational commercial fisher will prefer to liquidate all these fishes and turn them into bank accounts.

Thus, most deep-sea species will have a tough time surviving in a free market system. If in addition, subsidies are provided to the fleet fishing in the deep-sea, the incentive to overfish is likely to increase by orders of magnitude because it becomes far more desirable to mine the deep-sea resources than conduct a sustainable fishery. Fishing firms that will not be profitable will artificially become so, and those already in operation will be able to increase their fishing capacity with the provision of subsidies. In a recent study, my colleagues and I estimated the amount of government subsidies to bottom trawlers active in the high seas to be about US\$162 million



per year, which constitutes 25% of the total landed value (gross revenue) of the fleet. This subsidization rate is higher than the estimated profitability of this vessel group, of about 10% of landed value. The implication of this finding is that, without subsidies, the bulk of the world's bottom trawl fleet operating in the high seas will be operating at a loss, and unable to fish, thereby reducing the current threat to deep-sea and high seas fish stocks.

An important point to note here is that we have little knowledge of stock depletion or diversity losses that continue to occur in the deep and high seas. The combination of low growth rates, high interest (discount) rates, and the lack of adequate knowledge about the deep and high seas, imply that society's goal should be to avoid irreversible damage.

From an ecological perspective, we cannot afford to destroy the deep-sea. From an economic perspective, it has been demonstrated that deep-sea fishers, as a group, cannot afford to conduct deep-sea fisheries without subsidies. To ensure that deep-sea fishes and deep-sea habitat are not irreversibly harmed, immediate action is needed to limit the adverse impacts of deep-sea bottom trawling. This need is recognized by a growing number of countries, and national governments are increasingly designating areas within their EEZs closed to trawling.

At its last meeting in November 2006, the UN General Assembly tried to adopt a resolution to establish an interim moratorium on all high seas bottom trawling. This did not happen, which was unfortunate because doing so would have protected

fragile deep-sea habitats

and fishes. Another

attempt will be made in November 2007 by the UN General Assembly; hopefully the countries will work through the UN to come to agreement this time around. Meanwhile, another global organization, the World Trade Organization (WTO), is currently negotiating a number of trade related issues including the elimination of trade distorting and overfishing subsidies. Success at the WTO will be a great help to the sustainability of high and deep-sea fishes and their delicate and vulnerable habitats. As our research has shown, the elimination of overfishing subsidies will remove the 'artificial' profits that deep-sea bottom trawlers enjoy as a result of subsidies, and thus make the bulk of the fleet unable to fish, thereby protecting the high and deep-seas from trawling gear with their massive steel doors, rollers, cables and nets. HPS

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