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8

Food security implications of global marine catch losses due to overfishing.

Srinivasan UT, Cheung WWL, Watson R, Sumaila UR
 J Bioecon. 2010; 12:183-200

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Evaluations

Evaluated by [J Emmett Duffy](#) NEW EVALUATION

This paper shows that global overfishing results not only in the well-known degradation of biodiversity and ecosystems but also in 'overfishing debt', a paradoxical -- and substantial -- loss of revenue and food security, particularly in the nations that can least afford it.

The pervasive detrimental impacts of overfishing on marine life and ecosystems have been widely publicized in recent years, ratcheting up calls for stricter regulation and protection. A counter-argument commonly heard in debates on this issue is that fishing provides essential jobs, revenue, and food, particularly in poor countries. But could we do better?

Answering this question requires good estimates of a fish population's (or community's) maximum sustainable yield (MSY), which are expensive and thus unavailable for most of the world's fisheries. The authors cleverly sidestepped this problem by first calibrating an empirical relationship between maximum sustainable yield and the maximum recorded catch for those fisheries where such data were available ($R^2=0.84$), and then using this general relationship to estimate MSY for fisheries throughout the rest of the world. Finally, they estimated the difference between MSY and actual yield of overfished stocks -- the overfishing debt -- in currencies of biomass, food energy, and revenues.

The analysis found that 16-31% of world fish stocks are overfished, in line with other recent estimates. The new finding was that, globally averaged, gross revenue lost to fishing beyond sustainable levels was 6-35% of the landed value of the fisheries, depending on assumptions. Interestingly (indeed perversely), these losses are similar in magnitude to the subsidies that support excess fishing capacity. Most troubling of all, the analysis showed that overfishing debt fell most heavily on poor developing nations: among the 43, mostly African, 'Low-Income Food-Deficit Countries' analyzed, losses of potential catch to overfishing averaged a staggering 75% of actual landings. Thus, an estimated 20 million people worldwide were undernourished as a result of unsustainable fishing. And that's on top of the environmental destruction we already knew about.

Competing interests: None declared

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Rating 8
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Classification Key [Changes Clinical Practice](#) [Novel Drug Target](#) [Technique](#) [Clinical Trial](#) [Review](#)

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