

REPLY TO SZUWALSKI:

Recognizing ecological income inequality in the ocean

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Szuwalski (1) suggests that our meta-analysis of global changes in fish stock recruitment capacity (2) should be weighted according to the biomass or catch of individual stocks, instead of weighting each stock equally. Although informative, it is important to recognize that such a perspective heavily biases any global trends in favor of a few large stocks. This bias occurs because a small number of fish stocks contribute disproportionately to global fisheries, with less than 5% of stocks contributing well over 50% of the assessed global catch (Fig. 1). Just as economists have established income inequality as a problem for the global economy (3), ecologists have also recognized that such a focus on “top earners” misses the point about what makes the “natural economy” work. For marine ecosystems, it has been repeatedly shown that ecological diversity at all levels maintains production in the face of climate

variation (4), stabilizes communities (5), and provides valuable ecosystem services (6). The question facing fisheries’ managers is whether ecosystems should continue being managed for the top 5%, or if native diversity and functional food webs are recognized as important measures of fisheries’ prosperity.

We do agree with Szuwalski (1) that managers must ask both questions: (i) How do changes in productivity affect total biomass and total catch, and (ii) how has productivity changed in the community, and how is the environment influencing that change? We asked the second question in our paper, and Szuwalski (1) has highlighted the first. Szuwalski (1) also raises an important issue: Why are the big stocks doing relatively well, whereas the average stock shows a decline? Our first inclination is that fishing plays a role. If the smallest stocks are those stocks that

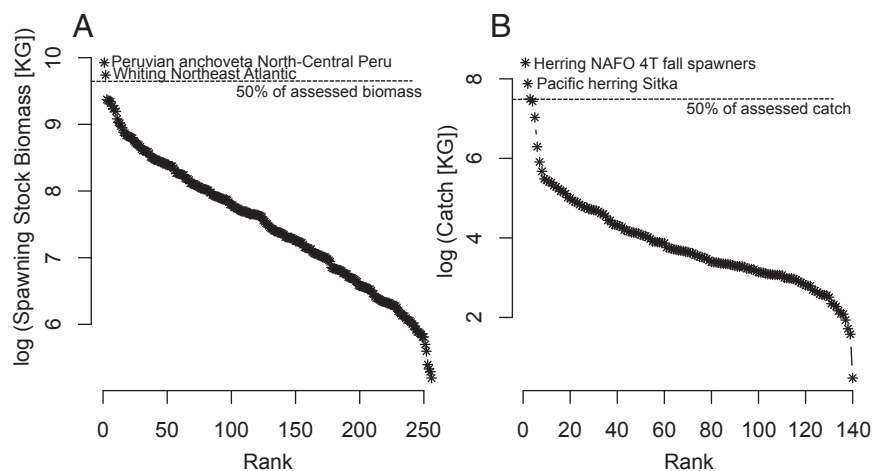


Fig. 1. Rank-log(abundance) curves for global fish stocks in terms of total stock biomass (A) and annual catch (B) with 50% of the total indicated on each plot. The data represent 262 fish stocks analyzed in our previous study (2), with biomass and catch values taken here as the most recent available estimate for each stock. Note that catch data were not reported for all 262 fish stocks for which biomass time series were available, resulting in fewer stocks in B. We restricted the analysis to total catch (as opposed to landings, which are reported for some species). KG, kilogram; NAFO 4T, Northwest Atlantic Fisheries Organization, Southern Gulf of St. Lawrence.

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