



## Agreeing with FAO: Comments on SOFIA 2018

Daniel Pauly<sup>a</sup>, Dirk Zeller<sup>b,\*</sup>

<sup>a</sup> Sea Around Us, Institute for the Oceans and Fisheries, University of British Columbia, Vancouver, B.C., Canada V6T 1Z4

<sup>b</sup> Sea Around Us - Indian Ocean, University of Western Australia, Crawley, WA 6009, Australia

### ABSTRACT

The last three bi-annual State of World Fisheries and Aquaculture (SOFIA) reports by the Food and Agriculture Organization of the United Nations (FAO) gave the impression that they downplayed the stark reality of declining trends in global marine fisheries catches. In contrast, the most recent SOFIA 2018 deserves praise for seemingly striking a different tone, and for more directly and clearly identifying the key issues faced by marine fisheries. This includes the acknowledgment of globally declining catches and several data deficiencies, such as the ‘presentist’ bias in official data reported by countries to FAO, and the utility of catch data reconstructions in informing such data deficiencies, as advocated by the *Sea Around Us* for nearly two decades. FAO also acknowledges its personnel limitations and hence the need to collaborate with non-governmental entities. Further, we congratulate FAO on explicitly addressing in SOFIA 2018 two major challenges in global marine fisheries, namely the effects of climate change and the problems related to subsidies for the enormous Chinese fishing fleets. We applaud FAO for this different, more open tone in SOFIA 2018, which even includes animal welfare consideration, and we hope that it signals a new period of increased FAO engagement with Civil Society and academia, to address the important fisheries and sustainability challenges facing our world.

### 1. A change in tone at FAO Fisheries

Following three instances of critical comments on successive issues of the State of World Fisheries and Aquaculture report (SOFIA) by the Food and Agriculture Organization of the United Nations (FAO) [1–3], including a critical response by FAO [4] followed by a rejoinder by Pauly and Zeller [5], it was a relief to read SOFIA 2018 [6], which seemed to strike a tone considerably different from its predecessors. In the interest of brevity, only marine fisheries are discussed here.

SOFIA 2018 states that the total reported catch of marine fisheries declined from 81.2 to 79.3 million tonnes [p. 4 in 6], which is attributed to lower catches of Peruvian anchoveta (p. 7). Furthermore, FAO comments that “[t]he state of marine fishery resources, based on FAO’s monitoring of assessed marine fish stocks, has continued to decline. The fraction of marine fish stocks fished within biologically sustainable levels has exhibited a decreasing trend, from 90.0% in 1974 to 66.9% in 2015. In contrast, the percentage of stocks fished at biologically unsustainable levels increased from 10% in 1974 to 33.1% in 2015...” [p. 6 in 6].

We won’t quibble with the global representativeness of the stocks that FAO monitors for this assessment: the point is that negative trends in the status of fish stocks established decades ago [7] and confirmed since in subsequent SOFIA reports [e.g., 8,9,10] and other assessments [11,12] have not changed, and FAO does not equivocate in stating these facts in SOFIA 2018 [6].

Similarly, we appreciate the statement on p. 7 [6] that “[c]omplete, accurate and timely national statistics are critical for monitoring the fisheries

and aquaculture sectors, for supporting policy development and implementation at the national, regional and international levels, and for measuring progress towards meeting the Sustainable Development Goals.” This statement by a UN organization is important, given that the importance of reliable catch data for assessment of stocks and hence the status of fisheries has been contested by some [e.g., 13, but see 14]. Furthermore, we would like to stress here that the direct utility and importance of comprehensive catch data for directly assessing the biomass status of fished stocks has now been clearly demonstrated [15–17]. In this context, it is indeed regrettable that “the annual proportion of non-reporting countries grew from 20% to 29% in the last two years” [p. 8 in 6]. This negative reporting trend certainly needs addressing by national governments and international institutions.

FAO also acknowledges for the first time clearly the principle of what we call “presentist bias” [18], i.e., that in many cases an “upgraded [data] system may result in an increase of registered and reported catches, creating an apparent disruption of the national trend” [p. 8 in 6]. This realization is important because the only approach that works against this sort of data bias is “the backward revision of the catch statistics in the database, carried out in collaboration with national offices whenever possible”. Thus, this last statement implicitly recognizes the principles built-in the catch reconstruction approach that we have advocated for the past 20 years [19–21], i.e., the need to comprehensively account for all catches over the full time period back to 1950. Moreover, on p. 93 [Box 5 in 6] the value of catch reconstructions are explicitly recognized, i.e., “FAO recognizes the potential value of catch reconstructions, especially

\* Corresponding author.

E-mail address: [dirk.zeller@uwa.edu.au](mailto:dirk.zeller@uwa.edu.au) (D. Zeller).

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for drawing attention to problematic statistics. Such exercises may provide additional information on fisheries' contributions to food security and nutrition as well as discarded catches, help identify fishery subsectors that are not well covered in national data collection systems and so help countries refine their data collection methodologies and, if necessary, revise their statistics."

While we have to date prepared over 200 national catch reconstructions and published over 100 of them in the primary literature, we could not have said this better.

We also fully agree with the sentiment that "the large uncertainty involved [in reconstruction] must be recognized" [p. 93 in 6] and that FAO will associate "quality scores [...] for each FAO statistical dataset," [p. 94 in 6], as we already do [1,5,21,22], and as often required by reviewers when catch reconstructions are submitted to peer-reviewed journals [e.g., 23,24]. This step of adding data quality scores to official reported datasets will finally acknowledge the fact that officially reported data unavoidably include errors and uncertainty.

Finally, we appreciate SOFIA 2018 explicitly mentioning two looming issues: 1) global warming and its likely effect on fisheries [p. 131 in 6], as tentatively projected by Cheung, Lam [25] and Barange, Merino [26]; and 2) the enormous fishing pressure exerted globally by China's fleets [27,28], enabled by massive subsidies [29–31] now hopefully being revised [p. 183 in 6]. While global warming issues will undoubtedly get worse before they hopefully get better, the prospect of substantial fishing effort reductions by China's central government, as could be achieved through a concerted reduction of harmful subsidies [30,32,33] is clearly good news, even if they may, at first, affect only the domestic fleets.

## 2. Opportunity for open FAO-academic collaborations

A major point for which we applaud FAO is that they have drawn "attention to small-scale fisheries and their distinction from large-scale fisheries, an issue of increasing international interest (Pauly and Zeller 2016), strongly relevant to the 2030 Agenda and its focus on people, coastal communities and livelihoods", and that in order to "reconcile limited budget and the pressure to collect an increasing range of data (FAO 2018b), it has become crucial to promote non-government data collection and management systems" [p. 95 in 6].

If earnestly followed up on, both these points will positively change FAO, which has long been fixated on industrial fisheries and nearly exclusively on working with or through government institutions and affiliated scientists only. We welcome and encourage such change, which should entail a deep and open engagement of FAO with Civil Society and academia.

Thus, overall, we are delighted by the apparent change of tone in SOFIA 2018, which hopefully suggests a change of attitude within FAO - one that even extends to a consideration of animal welfare, an issue of growing importance in aquaculture [34], but which is not yet perceived as such in many fisheries quarters. Let's hope that this change in tone will translate into more collaboration with academic scientists aimed at moving fisheries towards sustainability and healthy, functional ecosystems that can provide livelihoods and food security to millions for many years to come.

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