

# Small-scale Fisheries and Subsidies Disciplines: Definitions, Catches, Revenues, and Subsidies

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*This note summarises the literature on small-sale fisheries; provides estimates of the proportions of total catch, landed value and subsidies that are generated and received by this socio-economically important sector. It concludes by providing suggestions, based on the findings reported herein, to WTO delegates on subsidy disciplines.*

## 1. Introduction

Small-scale fishing plays a crucial role in supporting livelihoods as well as food and nutrition security in communities around the world.

In the World Trade Organization (WTO) negotiations on new rules on subsidies for fishing, several proposals suggest that some kinds of subsidies that would be otherwise prohibited—such as those to capital or operating costs—might continue to be provided to small-scale fishing of different kinds. Some of these proposals suggest that flexibilities for subsidies to different kinds of small-scale fishing could be based on agreed-to definitions. The EU proposal, for example, defines “subsistence” fishing by the use to which catch is put; meanwhile, the proposal by Indonesia defines “artisanal” fishing by the geographic location of the fishing activity, the type of gear used, and the purpose to which catch is put, and defines “small scale” fishing primarily by vessel length. Other proposals, including those by the African, Caribbean, and Pacific countries (ACP) and the least-developed countries (LDC) groups, suggest relying on national definitions of small-scale fishing to establish the scope of the exception. The need for exceptions for some subsidies provided by developing country WTO members is not, however, a point of consensus in the negotiations; whether exceptions are provided is likely to depend on the eventual shape of prohibitions. This note aims to help inform this on-going debate over whether, and what, exceptions might be provided to developing country WTO members.

The specific objectives of this information note are as follows: i) to explain succinctly how the distinction between small-scale and large-scale fisheries has been drawn in the technical literature and international instruments and, in particular, in the author’s own recent work; ii) using the author’s own method of identifying small-scale fishing, to explain the share of fisheries catch that is caught by small-scale fisheries, the landed value of this catch, and what proportion of different kinds of subsidies are provided to these fisheries; and iii) to discuss briefly what the implications could be of using either a common definition, or relying on national definitions, to define fisheries with greater subsidy flexibilities.



This note begins by providing a brief literature review of the subject of small-scale fisheries (SSF). In particular, it presents recent approaches to define the “degree of small scaleness” of fisheries. This is followed with a presentation of data on the share of fisheries catch, revenues, and subsidies to small-scale fisheries. The last section discusses the implications of using a common definition or relying on national definitions of small-scale fishing for the purpose of subsidy disciplines at the WTO.

## 2. Distinguishing Between Small-scale and Large-scale Fisheries

It is widely agreed that small-scale fisheries are a crucial part of the global fisheries sector that needs to be protected and supported (FAO 2015).<sup>1</sup> For instance, it is estimated that small-scale fisheries contribute approximately 30 percent of the global landed value (revenues at the dock), and employs millions of people living in coastal communities, some of them in remote and rural regions. Hence, small-scale fisheries provide crucial livelihood opportunities where such opportunities are limited. They therefore make vital contributions to some of the world’s most vulnerable communities and people.

Agreeing on a clear, universally accepted definition and distinction between small- and large-scale fisheries is truly difficult; a fact acknowledged by the Food and Agricultural Organization of the United Nations’ (FAO) Advisory Committee on Fisheries Research (ACFR) in 2003. Since the FAO’s decision was made, it has been supported both in the literature and by key global documents, such as the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, where country-level definitions are applied (FAO 2015). The main argument against trying to develop a universally accepted definition for small-scale fisheries, as stated in the Voluntary Guidelines, is the fact that the sector is very diverse and dynamic, compounded by the fact that SSF are generally place- and local community-based fisheries that are rich in customs, traditions, and values.

Even though there is no internationally agreed definition of small-scale fishing, the FAO use 24m vessel length as a broad cut-off between small- and large-scale fisheries. Academic studies have developed different methods for identifying small-scale fishing, four of which are described briefly in the paragraphs below.

*Cumulative percent distribution:* This approach categorises fisheries as small- or large-scale on a relative, rather than absolute, scale. There are three steps in this approach: (i) categorise the fisheries in the political entity being analysed by gear types and vessel sizes; (ii) list and rank gear/ vessel combinations in ascending order according to annual catch or landed value per vessel; and (iii) construct a cumulative percentage distribution of catch or landed value with the ranked fisheries and the group of fisheries that provides the first 50 percent of landed value is then classified as “small-scale” and the remainder as “large-scale.” The approach, first proposed by Ruttan et al. (2015) has been applied in a number of countries/regions, including the North Atlantic (Sumaila, Liu, and Tyedmers 2001), New England (Therkildsen 2007), Northeast of Brazil (Damasio, Lopes, Pennino, Carvalho, and Sumaila 2016), and British Columbia, Canada (Gibson and Sumaila 2017a).

*Vessel length split:* This approach simply chooses a vessel length that serves as the cut-off for determining what is small-scale and what is large-scale. In Atlantic Canada, for example, a vessel length of 67m has been used as a cut-off: any vessel that is less than 67m in length is classified as small-scale and a vessel more than 67m in length is considered large-scale. This is generally a very high cut-off point for SSF. As stated earlier, the FAO uses 24m as the cut-off. Also, the European Maritime and Fisheries Fund (Regulation (CE) N° 508/2014) considers vessels to be small-scale if their length is less than 12m and they do not use towed gear. In the last example, SSF are typically “artisanal” and coastal, using small vessels, and targeting multiple resource species using traditional gears (Villasante et al. 2016).

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1 However, it should be noted that a recent model law on artisanal fishing developed by the Latin American Parliament includes a broad definition encompassing artisanal and small-scale fishing together (see Parlamento Latinoamericano y Caribeño 2017).

*Point-based framework:* This method uses a numerical descriptors approach (NDA), which was originally proposed for the segmentation of European fishing fleets (García-Flórez et al. 2014). It is a score-based approach that uses several structural and functional descriptors. The approach identifies a group of relevant technical, biological, and economic descriptors that are used to categorise marine fishing fleets (Table 1). Each descriptor is awarded a score of between 1 and 5 according to a pre-determined range for each descriptor. The scores for each fishery are then tallied, and if the total score is above a certain threshold (e.g. 21), then the fishery is considered to be artisanal or small-scale (Villasante et al. 2016). It should be noted that the NDA can be used at any geographical scale by adapting the final score and/or numerical ranges of each descriptor.

**Table 1. Point-based framework for separating the Canadian Pacific fleet**

Features	Points				
	1	2	3	4	5
Overall vessel length (m)	<35	35-45	45-65	65-100	>100
Type of Gear		Passive		Seine/Active	
Catch/Vessel (t)	<100,000	100,000-300,000	300,000-700,000	700,000-1,000,000	>1,000,000
Crew Numbers	<2	3	4	5	>6
Gross Revenue per harvester (US\$)	<50,000	50,000-250,000	250,000-1,000,000	1,000,000-2,000,000	>2,000,000
License Value (US\$)	<150,000	150,000-250,000	250,000-500,000	500,000-1,000,000	>1,000,000
Vessel Replacement Cost (US\$)	<137,000	137,000-218,000	218,000-500,000	500,000-750,000	>750,000
ITQ fishery	No		Partial		Full

*Note:* A fishery will be assigned a point based on where it falls on the scale for each feature. The totals will range from 9 to 39. Everything scoring 20 points and below is considered SSF. Note that blanks appear in the “Gear” and “ITQ” features as they are categorical and non-numerical categories.

*Source:* Gibson and Sumaila (2017b)

The degree of “small scaleness”: A more recent attempt at providing a lens through which small-scale fisheries can be distinguished from large-scale fisheries, pioneered by our group at UBC, asked the question: what is the degree of “small scaleness” of a given fishery? (Gibson and Sumaila 2017a). The approach consists of the following steps: (i) identify features or characteristics associated with SSF that are widely accepted by academics and practitioners (Table 2); (ii) determine how many fisheries are active in the country or region to be studied; (iii) run all the fisheries identified through the features and characteristics of small-scale fisheries to determine whether or not they have a given feature or not, and give a score of, for example, 1 if it has the feature or 0 otherwise; (iv) add up the scores for each fishery to obtain the total score, which is then an indicator of “small scaleness.” Achieving a total maximum score implies the fishery in question is as small-scale as possible, while a score of 0 implies the opposite. Scores between 0 and the maximum depict the degree of “small scaleness.” An application of this approach found that commonly identified features of small-scale fisheries are present in British Columbia’s fishing fleets to a varying degree (Gibson and Sumaila 2017a). Aboriginal Food, Social, and Ceremonial fisheries and all commercial fisheries in British Columbia are analysed to determine the presence or absence of each of these small-scale fisheries features. The results of this research create a gradient of fisheries, from smallest to largest scale, indicating that many fisheries in British Columbia can be classified as small-scale (Gibson and Sumaila 2017a).

One particular advantage of the above methods is that they are applied at the scale of political entities (e.g. countries or regions within countries), and therefore allow for the fact that gear that is large-scale in one political entity may be categorised as small-scale in another. Still, no approach has universal acceptance. For instance, the 2012 Hidden Harvest study used context-specific definitions for small-scale fisheries (e.g., dated or low levels of technology; labour intensive) (World Bank, FAO, and WorldFish Center 2012). In practice, therefore, country-based definitions are what is currently used in fisheries economics.

Notwithstanding the absence of an agreed international definition of small-scale fishing, there are some elements—referred to above—that are widely accepted by practitioners to be features of small-scale fishing. These are set out in Table 2.

**Table 2. List of common features of small-scale fisheries**

Vessel features	Economic features	Social features
Vessel under 12m (39.3 ft.)	Low fuel consumption (e.g., < US\$10,000)	Fish for food and community use
Non-motorised vessel	Relatively little capital and energy input (e.g. < US\$250,000)	Support social and cultural values
Passive gear	Relatively low yield and income	Regulated through customary rules with some government involvement
Multi-gear	Part-time, seasonal, multi-occupational	
Multi-species	Sold in local markets	
Dated or low levels of technology, labour intensive*	Sustain local or regional economies	
Inshore, limited range to fish, fishing pressure adjacent to community	Individual or community ownership	

*Note: Labour Intensity is used in qualitative terms and is not a quantitative measure of labour in proportion to capital required for fishing.*

*Source: Gibson and Sumaila (2017a)*

### 3. Share of Fisheries Catch, Revenues, and Subsidies to Small-scale Fisheries

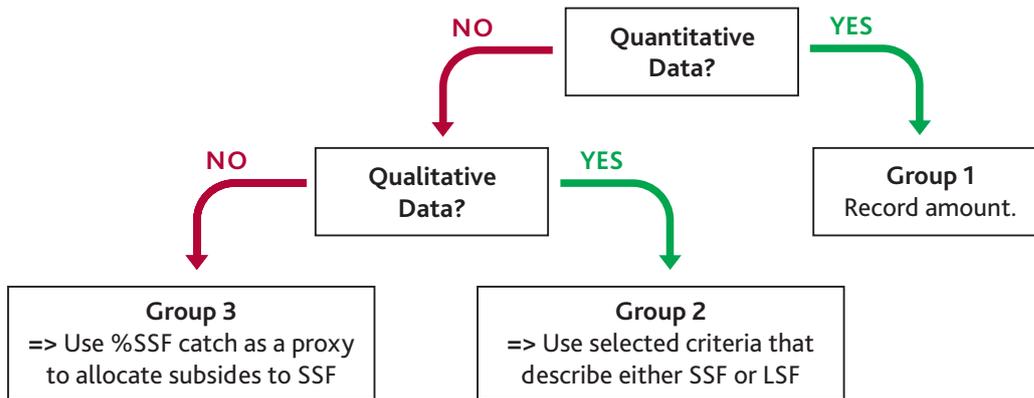
For the analysis of catch proportion to SSF and large-scale fisheries (LSF), we relied on the approach developed by the Sea Around Us (SAU), with small-scale fisheries consisting of subsistence, artisanal, and recreational fisheries (Pauly and Zeller 2016). In contrast, large-scale fisheries are comprised of the entire industrial fleet of a country. It should be noted that the definition of each of these sectors is based on national categorisations sourced from national legislation reviewed by researchers. The catch data used are 10-year averages for the period 2005 to 2014.

In the case of landed value, we combined the catches from the SAU with the ex-vessel price database developed by the Fisheries Economics Research Unit (FERU) in collaboration with SAU (Sumaila, Marsden, Watson, and Pauly 2007; Swartz, Sumaila, and Watson 2013; Tai, Cashion, Lam, Swartz, and Sumaila 2017). Similar to the catch data, we used 10-year averages for the period 2005 to 2014.

The country-level fisheries subsidies database is the starting point for splitting national subsidies into the proportion that goes to small-scale (Sumaila et al. 2016). Of the 146 maritime countries that are included in the database, subsidies in 81 countries were analysed by Schuhbauer et al. (2017), selected based on data availability and the total amount of subsidies they provide globally. In all, these 81 countries gave 98 percent of the estimated US\$35 billion annual global fisheries subsidies.

Details of the methodology used to split national subsidies estimates into the portion that goes to SSF are provided in Schuhbauer et al. (2017). Briefly, the method is depicted below by Figure 1. For each subsidy subtype, the collected information that was found in the literature was grouped into three data categories, as illustrated in Figure 1.

Figure 1: Methodology used to divide 2009 subsidy amounts into SSF and LSF



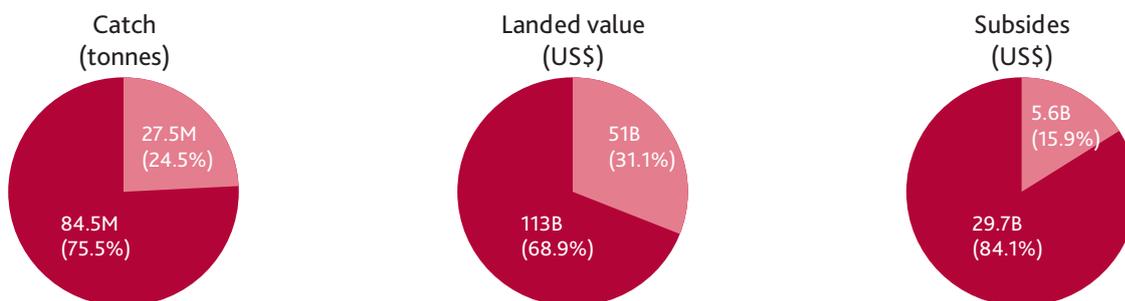
Source: Schuhbauer et al. (2017)

For Group 1, we asked whether there was quantitative data available. If yes, then the indicated subsidy quantity to SSF is recorded (Figure 1). For Group 2, we asked again whether there was qualitative data available? If yes, we used the qualitative information to estimate the amount of subsidies provided to SSF (Figure 1). Qualitative data is often found in government documents or technical reports, in the form of bullet points and tables, which are broken down into objectives. If a subsidy amount was described by more than one objective/bullet point, we split the total subsidy equally between the stated objectives (see example in Figure 1). To be consistent, the following terms and phrases are used to describe SSF: “artisanal,” “subsistence,” “small-scale,” “non-motorised,” “coastal,” and “community-based.” In contrast, the following terms and phrases are used to describe LSF: “industrial,” “large-scale,” “freezer trawlers,” “off-shore,” “over sea,” and “deep sea (Schuhbauer et al. 2017).

Figure 2 displays the proportions of catch, landed value and subsidies that go to small-scale fisheries versus those that go to their large-scale counterparts. The figure reveals that, globally, small-scale fisheries caught 27.5 million tonnes, which was about 25 percent of the average annual catch of 112 million tonnes from 2005 to 2014.

Of the estimated average annual landed value of US\$164 billion generated in the period from 2005 to 2014, US\$51 billion—or 31 percent of the total—was generated by the small-scale sector (Figure 2).

Figure 2: Share of annual average catch, landed value, and subsidies that goes to small-scale versus large-scale fisheries globally



Note: Light red is small-scale and deep red is large-scale fisheries. “M” and “B” stand for “million” and “billion,” respectively.  
Source: Author’s own calculations based on cited sources of data.

Annually, fishing subsidies of US\$35 billion (using 2009 estimate as an example) are given by governments worldwide to the fisheries sector. Figure 1 shows that only US\$5.6 billion (i.e. 16 percent of the total) goes to small-scale fisheries. The disparity between the small-scale and large-scale is even worse when one looks at the capacity enhancing subsidies, where 90 percent of the nearly US\$20 billion is estimated to go to large-scale fisheries (Swartz, Sumaila, and Watson 2013). The largest subsidy is that for fuel, over 90 percent of which is estimated to be given to large-scale fisheries through marine

diesel subsidies, which is mostly outside the reach of small-scale fishers because of the high cost of purchasing and maintaining diesel motors (Swartz, Sumaila, and Watson 2013). These fuel subsidies promote fuel-inefficient technology and help large-scale fishers stay in business, even when operating costs exceed total revenue gained from fishing. Subsidies for port development and boat construction, renewal and modernisation are also likely to give the large-scale fisheries sector an advantage over their small-scale counterparts, who appear to receive only a small percentage of those subsidies.

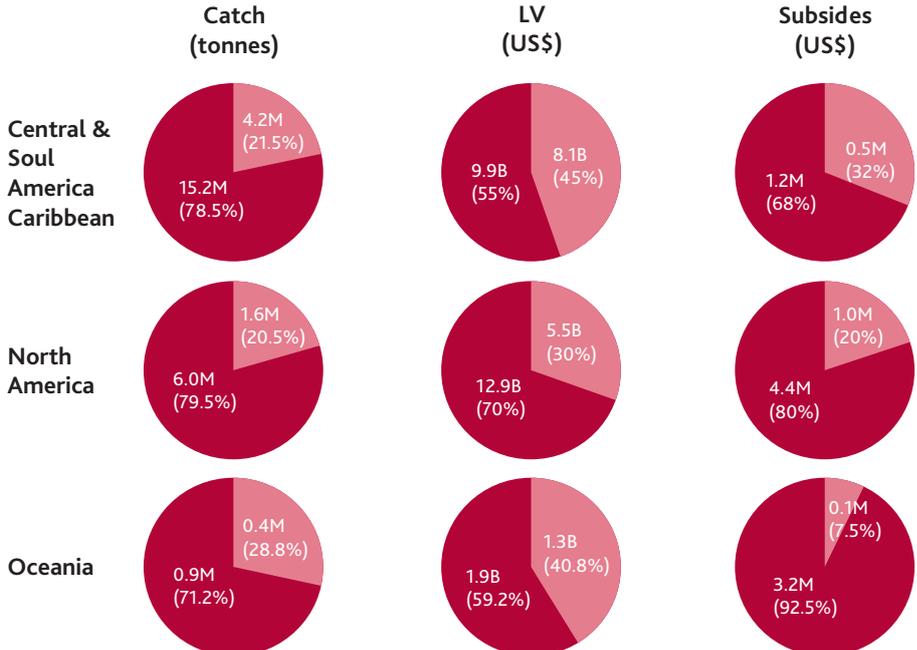
Regionally, we see similar patterns to the global picture with the bias against small-scale fisheries being stronger in some regions (Figures 3a and 3b).

**Figure 3a: Share of annual average catch, landed value (LV), and subsidies given to small-scale versus large-scale fisheries in Africa, Asia, and Europe**



Note: Light red is small-scale and deep red is large-scale fisheries.  
Source: Author's own calculations based on cited sources of data.

**Figure 3b: Share of annual average catch, landed value (LV), and subsidies given to small-scale versus large-scale fisheries in Central & South America, North America, and Oceania**



Note: Light red is small-scale and deep red is large-scale fisheries.  
Source: Author's own calculations based on cited sources of data.

Several interesting observations can be drawn from Figures 3a and 3b: (i) for all regions of the world, the share of landed values generated by small-scale fisheries are larger than the share of their catch, implying that, on average and on a per unit weight basis, their catch is more valuable than those of large-scale fisheries; (ii) the proportion of total subsidies given to small-scale fisheries is lower than the proportion of the landed values they generate; and (iii) large-scale fisheries receive approximately four times more subsidies than their small-scale counterparts, with up to 60 percent of those subsidies promoting overfishing (Swartz, Sumaila, and Watson 2013).

#### **4. Implications of Using a Common Definition or Relying on National Definitions for the Purpose of Subsidy Disciplines**

In principle, the scope and application of a multilateral agreement on fisheries subsidies that include exceptions for subsidies to small-scale fishing would be clearer if the agreement contained a universally accepted definition of small-scale fisheries. There are, it seems, some descriptive elements that are frequently used to identify small-scale fishing in different contexts which could conceivably be used to generate a common definition in a subsidies agreement. However, the reality in the field is that small-scale fisheries are very diverse, within a country as well as globally, making it difficult to develop and apply a single definition worldwide. Further, if consensus over a definition of small-scale fishing has eluded fisheries management experts, it is probably neither appropriate nor practical for governments to try to develop an agreed definition of small-scale fishing in the context of negotiations over subsidies in the WTO.

It might therefore seem more feasible to define the scope of exceptions in a subsidy agreement by using national definitions rather than a global definition. It should be acknowledged, though, that this approach could introduce a lot of flexibility into the disciplines, as governments could (legitimately, in this circumstance) choose to include activity of considerable scale in their national definitions of what is small-scale fishing. As such, if a WTO agreement included exceptions for small-scale fishing, this considerable scale of activity could be eligible for subsidisation. A wide degree of flexibility could potentially undermine the effectiveness of an agreement in supporting the reform of subsidy patterns.

Negotiators face a dilemma: a common definition would be difficult for countries to accept as it may not capture the place and community aspects of their fisheries. Adopt national definitions and you may end up with potentially very wide exceptions that could reduce the effectiveness of subsidies disciplines.

If there were agreement that some flexibility should be provided for WTO members to continue to subsidise small-scale fisheries, negotiators could consider establishing the scope of these exceptions by combining a degree of flexibility towards generally accepted concepts of small-scaleness. They could, for example, reference national definitions that can capture the differences in small-scale fisheries found in different countries, but also include reference in the agreement to an illustrative list of features that are commonly accepted of small-scale fisheries, such as the features in Table 2.

Negotiators could also consider ensuring that there is a minimum level of transparency that would allow subsidy disciplines to be effectively monitored. This could include requiring notification of the subsidies provided to the small-scale sector, along with the national definition of what is small-scale, to the WTO Subsidies and Countervailing Measures (SCM) Committee. To help countries implement this obligation, the SCM Committee could seek the advice of a group of experts and practitioners who can work with countries to help define their small-scale fisheries in a manner that captures key local aspects of the sector without being too flexible to rectify harmful subsidies.

## 5. Conclusion

Currently, national definitions of small-scale fisheries are used in international guidelines, academic literature, and in fisheries management practice. This is because a universally accepted global definition of small-scale fisheries is not yet in place. It is probably neither realistic nor appropriate for the WTO to seek to agree on a new global definition of small scale fishing. If there was agreement in the WTO to applying different rules to subsidies to small-scale fishing, rather than trying to negotiate a new international definition, governments could consider agreeing to use national definitions of small-scale fishing for the purpose of subsidy rules, along with an illustrative list of features commonly accepted as describing small-scale fishing. Governments could also consider requiring that national definitions, and subsidies provided to fisheries meeting these definitions, were notified to the SCM Committee.

## References

- Damasio, L.D.M.A., P.F.M. Lopes, M.G. Pennino, A.R. Carvalho, and U.R. Sumaila. 2016. "Size Matters: Fishing Less and Yielding More in Smaller-scale Fisheries." *ICES Journal of Marine Science* 73, no. 6 (June): 1494-502.
- FAO. 2015. "Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication." Rome: FAO. <http://www.fao.org/3/a-i4356e.pdf>
- García-Flórez, L., J. Morales, M.B. Gaspar, D. Castilla, E. Mugerza, P. Berthou, L. García de la Fuente, et al. 2014. "A Novel and Simple Approach to Define Artisanal Fisheries in Europe." *Marine Policy* 44 (February): 152-59.
- Gibson, D., and U.R. Sumaila. 2017a. "Determining the Degree of 'Small-scaleness' using Fisheries in British Columbia as an Example." *Marine Policy* (in press).
- Gibson, D., and U.R. Sumaila. 2017b. "Socio-economic Contribution of Small-scale Versus Large-scale Fisheries in British Columbia." *Working Paper 2017-05* (in press).
- Parlamento Latinoamericano y Caribeño. 2017. "Ley Modelo de Pesca Artesanal o de Pequeña Escala."
- Pauly, D., and D. Zeller. 2016. "Catch Reconstructions Reveal That Global Marine Fisheries Catches Are Higher Than Reported and Declining." *Nature Communications* 7: np.
- Ruttan, L.M., F.C.J. Gayanilo, U.R. Sumaila, and D. Pauly. 2000. "Small Versus Large-scale Fisheries: A Multi-species, Multi-fleet Model for Evaluating Their Interactions and Potential Benefits." In *Methods for Evaluating the Impacts of Fisheries on North Atlantic Ecosystems*, edited by D. Pauly and T.J. Pitcher, 64-78. Vancouver, BC: University of British Columbia.
- Schuhbauer, A., R. Chuenpagdee, W.W.L. Cheung, K. Greer, and U.R. Sumaila. 2017. "How subsidies affect the economic viability of small-scale fisheries." *Marine Policy* 82 (August): 114-21.
- Sumaila, U.R., A.D. Marsden, R. Watson, and D. Pauly. 2007. "A Global Ex-vessel Fish Price Database: Construction and Applications." *Journal of Bioeconomics* 9, no. 1 (April): 39-51.
- Sumaila, U.R., Y. Liu, and P. Tyedmers. 2001. "Small Versus Large-scale Fishing Operations in the North Atlantic." In *Fisheries Impacts on North Atlantic Ecosystems: Evaluations and Policy Exploration*, edited by T.J. Pitcher, U.R. Sumaila, and D. Pauly, 28-35. Vancouver, BC: University of British Columbia.
- Sumaila, U.R., V. Lam, F. Le Manach, W. Swartz, and D. Pauly. 2016. "Global Fisheries Subsidies: An Updated Estimate." *Marine Policy* 69 (July): 189-93.

- Swartz, W., U.R. Sumaila, and R. Watson. 2013. "Global Ex-vessel Fish Price Database Revisited: A New Approach for Estimating 'Missing' Prices." *Environmental and Resource Economics* 56: 467-80.
- Tai, C.T., T. Cashion, V.W.Y. Lam, W. Swartz, and U.R. Sumaila. 2017. "Ex-vessel Fish Price Database: Disaggregating Prices for Low-priced Species from Reduction Fisheries." Working Paper #2017-03, *OceanCanada*.
- Therkildsen, N.O. 2007. "Small- Versus Large-scale Fishing Operations in New England, USA." *Fisheries Research* 83, no. 2 (February): 285-96.
- Villasante, S., G.J. Pierce, C. Pita, C.P. Guimeráns, J.G. Rodrigues, M. Antelo, J.M. Da Rocha, et al. 2016. "Fishers' Perceptions about the EU Discards Policy and Its Economic Impact on Small-scale Fisheries In Galicia (North West Spain)." *Ecological Economies* 130 (October): 130-38.
- World Bank, FAO, and WorldFish Center. 2012. "Hidden Harvests: The Global Contribution of Capture Fisheries." Report No. 66469-GLB. Washington, DC: World Bank.





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