

# CHAPTER 7

## GLOBAL EVALUATION OF HIGH SEAS FISHERY MANAGEMENT<sup>1</sup>

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Fishing is no longer a coastal phenomenon (Ban et al. 2013a; O’Leary et al. 2012). Over the last half century, advances in fishing technology coupled with coastal stock declines have prompted fisheries to expand beyond coastal waters and out into the high seas (Swartz et al. 2010). These previously inaccessible areas beyond national jurisdiction, that is, beyond the 200-nmi Exclusive Economic Zones (EEZs) of maritime countries, offered access to previously unexploited and extremely valuable fish stocks, especially of tuna. Global fish catch from the high seas thus increased tremendously (see chapter 3). However, limited regulation in these remote areas of ocean and inadequate management quickly led to severe stock declines (FAO 2009).

Regional fisheries management organizations (RFMOs) are intergovernmental bodies tasked with managing fish stocks found mostly in the high seas areas of the world ocean (figure 7.1; table 7.1).

Established by and made up of “member countries,” often maritime countries around the part of the world ocean covered by the RFMO in question but also including any country with a “real interest” in the specific fishery, these members must manage, conserve, and ensure the long-term sustainability of the fisheries resources in their remit (UN 1982, 1995). This has proved to be a difficult task, and RFMOs face many challenges, from structural difficulties (e.g., catch allocation to new members;

Munro 2007) to internal problems (e.g., data deficiencies; Collette et al. 2011; O’Leary et al. 2012), regional issues (including illegal fishing, corruption, and lack of enforcement; Pintassilgo et al. 2010; Sumaila et al. 2007), and broader problems associated with noncompliance with international treaties (Bjorndal and Munro 2003). These issues are not new and have been discussed for many years (Schiffman 2013), but their complexity has inhibited RFMO progress.

In 2010, in response to declining high seas stock trends and the observation that “RFMO performance has not lived up to expectation” (Lodge et al. 2007), a first global evaluation of the effectiveness of RFMOs was conducted (Cullis-Suzuki and Pauly 2010a, 2010b). Here, the key results of this analysis are summarized and updated, based on feedback from RFMO representatives, input from colleagues, and, where available, current data from recent stock assessments.

### UPDATES TO GLOBAL RFMO DATABASE

There are currently nineteen marine RFMOs with management capacity (figure 7.1; table 7.1). Over the last decade, international calls for increasing RFMO coverage have been met (FAO 2012); today, almost every part of the global ocean is covered by at least one RFMO.

### GLOBAL EVALUATION OF RFMO EFFECTIVENESS

#### 2010 Study: Failing the High Seas

In 2010, a study was published that assessed the global effectiveness of eighteen current



**Table 7.1.** Average scores across RFMOs in 2010 and 2013. Note that five RFMOs (PSC, RECOFI, SEAFO, SIOFA, and SPRFMO) lacked sufficient data to be assessed. For supplementary information including score calculations and stock-specific data, see [www.searoundus.org](http://www.searoundus.org).

| Acronym             | Name   | Species assessed  | Mean score (%) |             |
|---------------------|--|---|----------------|-------------|
|                     |  |   | 2010           | 2013        |
| CCAMLR              | Commission for the Conservation of Antarctic Marine Living Resources                             | Patagonian toothfish  | 100.0          | 100.0       |
| CCBSP               | Convention on the Conservation and Management of the Pollock Resources in the Central Bering Sea | Alaska pollock  | 33.3           | 33.3        |
| CCSBT               | Commission for the Conservation of Southern Bluefin Tuna   | Southern bluefin tuna   | 0.0            | 33.3        |
| GFCM                | General Fisheries Commission for the Mediterranean   | Sardine, anchovy  | 33.3           | 33.3        |
| IATTC               | Inter-American Tropical Tuna Commission  | Yellowfin, bigeye, and skipjack tuna  | 33.3           | 77.8        |
| ICCAT               | International Commission for the Conservation of Atlantic Tunas                                  | Bluefin tuna (West and East), yellowfin and skipjack tuna (West and East), bigeye and albacore tuna (North and South) | 37.5           | 25.0        |
| IOTC                | Indian Ocean Tuna Commission   | Yellowfin, albacore tuna, and bigeye tuna   | 77.8           | 77.8        |
| IPHC                | International Pacific Halibut Commission   | Pacific halibut   | 33.3           | 33.3        |
| IWC                 | International Whaling Commission   | Fin, blue, sperm, right, sei, Bryde's, humpback, and minke whales (2 stocks)  | 33.3           | 33.3        |
| NAFO                | Northwest Atlantic Fisheries Organization  | Redfish, cod (2 stocks), American plaice, Greenland halibut   | 41.7           | 20.0        |
| NASCO               | North Atlantic Salmon Conservation Organization  | Atlantic salmon   | 33.3           | 33.3        |
| NEAFC               | North East Atlantic Fisheries Commission   | Blue whiting, mackerel, golden redfish, herring   | 75.0           | 41.7        |
| NPAFC               | North Pacific Anadromous Fish Commission   | Sockeye, chum, and pink salmon  | 77.8           | 77.8        |
| PSC                 | Pacific Salmon Commission  | —   |                | —           |
| RECOFI <sup>a</sup> | Regional Commission for Fisheries  | —   | N/Aa           | —           |
| SEAFO               | South East Atlantic Fisheries Organization   | —   |                | —           |
| SIOFA               | South Indian Ocean Fisheries Agreement   | —   |                | —           |
| SPRFMO              | South Pacific Regional Fisheries Management Organization   | —   |                | —           |
| WCPFC               | Western and Central Pacific Fisheries Commission   | Yellowfin, albacore, bigeye, and skipjack tuna  | 66.7           | 83.3        |
| <b>Total</b>        |  | <b>46 stocks</b>  | <b>48.3</b>    | <b>50.2</b> |

<sup>a</sup>The RECOFI was not assessed in 2010; although RECOFI entered into force in 2001, it still does not provide enough information in its reports to assess the current state of stocks in its remit. RECOFI covers all marine organisms in waters of its member states: Bahrain, Iraq, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

estimates described by FAO (2009). The average score across RFMOs was 49%, ranging from 0% to 100% (table 5.1). There was no correlation

between scores on paper and on the ground, suggesting a disconnect between RFMO intentions and actions.

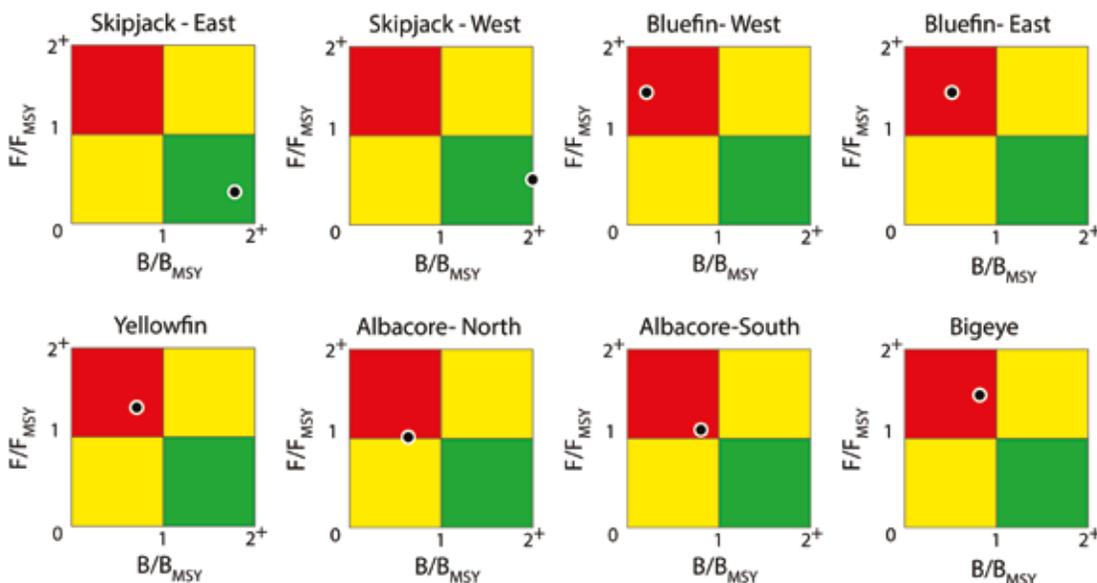
### Current Updated Evaluation

For this update, the focus is on recalculating RFMO effectiveness on the ground. Setbacks in determining RFMO effectiveness on paper centered mostly on data attributes. First, without standardization such data can be difficult to score (Kjartan Hoydal, NEAFC, personal communication, 2013). Furthermore, publicly accessible information can be limited or complicated to locate, or RFMOs can fail to provide information, resulting in a low score. Finally, high compliance does not always correlate with healthy fisheries, as suggested above and also shown in Alder et al. (2001). Thus by focusing on a quantitative and internationally recognized description of stock status, a framework is obtained that is more easily standardized (Froese and Proelss 2012).

To compute scores on the ground, forty-six fish stocks under current management across the fourteen different RFMOs with sufficient information for assessment were evaluated (table 7.1). Of the forty-eight stocks assessed in 2010, three were subsequently excluded after comments from RFMO managers (see Cullis-Suzuki and Pauly 2010a); three stocks were replaced with different stocks of the same species in response to data constraints and availability, and one new stock was added

to the current study. Scores were calculated by plotting  $B/B_{MSY}$  against  $F/F_{MSY}$ , where  $B$  is the current stock biomass,  $F$  the current fishing mortality rate, and  $B_{MSY}$  and  $F_{MSY}$  generally accepted sustainability limits of biomass and fishing mortality rates, respectively (for scoring details see Q scores in Cullis-Suzuki and Pauly 2010b). Each plot had four quadrants; depending on which quadrant the data occupied, the stock was given a score of 0 (red quadrant: overfished and depleted, i.e., “threatened”), 1 (yellow quadrant: overfished or depleted, i.e., “at risk”), or 3 (green quadrant: not overfished or depleted; i.e., “stable”); see figure 7.2 for an example plot for the International Commission for the Conservation of Atlantic Tunas (ICCAT).

Since the 2010 evaluation, ten stocks have changed score (five have gone up, and five went down), and another two have moved from an “overfished” state to a “depleted” one, with no overall change to their score. The updated results reveal that currently, nearly three quarters of stocks are in poor condition, with 20% being threatened (i.e., overfished and depleted) and 52% being at risk (i.e., overfished or depleted). However, there has been a slight improvement of overall average stock scores across RFMOs, from 48.3% in 2010 to 50.2% (table 7.1).



**Figure 7.2.** Current phase plots of eight principal tuna species under the management of ICCAT (similar phase plots for the other RFMOs with stock assessment results may be found at [www.seaaroundus.org](http://www.seaaroundus.org)).

## RECENT DEVELOPMENTS

Given that some RFMOs are doing better than others, and despite some steps toward progress (de Bruyn et al. 2013), it remains overwhelmingly clear that RFMOs are in need of improvement (Webster 2013). This is emphasized here through three important international events that have transpired over the last few years and reflect various aspects of the underwhelming performance of RFMOs.

### ICCAT: Bluefin Tuna and CITES

In 2009, in response to the severely depleted state of Atlantic bluefin tuna (*Thunnus thynnus*), Monaco put forward the proposal to protect this species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES; Nayar 2010). With the world's most profitable fish species on the line (Swing 2013), vocal tuna fishing countries fought the proposal, arguing that ICCAT, not CITES, was the appropriate regulating body to implement tuna management measures; the proposal was thus promptly defeated (FAO 2012). ICCAT, long criticized for its poor management record (Safina 1993), ranks here among the lowest scoring RFMOs (table 7.1) with six out of eight of their stocks qualifying as both overfished and depleted. Since 2010, none of ICCAT's stocks have improved: Five have stayed the same, and three decreased in score, moving from a depleted and underexploited state to a depleted and overfished one (see Cullis-Suzuki and Pauly 2010a; figure 7.2). Although there may have been a flurry of initial effort by ICCAT to improve management after the CITES ban failed (and their organization was brought under international scrutiny; Webster 2011), benefits on the ground have yet to be seen. There is no evidence to suggest that ICCAT is up to the challenge of rebuilding depleted tuna stocks.

### CCAMLR: Failure of Antarctic Protection

With only one stock being assessed, CCAMLR scores the highest among RFMOs (table 7.1). Historically considered to be one of the better RFMOs in regard to conservation (Gilman et

al. 2014), CCAMLR has garnered praise for their management contributions (Bodin and Österblom 2013). Over the last few years, however, CCAMLR has faced mounting criticism for failing to protect parts of Antarctica. The most recent attempt to protect the Ross Sea, supported by strong member countries such as the United States, New Zealand, and the EU, was defeated. This was the latest in a series of proposals calling for more protection in Antarctic waters; indeed, over the last year and a half, multiple proposals have been suggested, and all have been defeated (Cressey 2013). Although such a request for protection was supported by many countries, it was still vulnerable to being blocked by a few, exemplifying yet another fundamental problem associated with RFMOs: mandatory consensus for matters of import among members (Lodge et al. 2007).

### SPRFMO: New RFMO, No More Fish

In 2012, after years of deliberation, SPRFMO finally came into force, and its establishment was deemed “a ground breaking development” (UN 2010). But in the time it took SPRFMO to be instituted, SPRFMO's dominant fishery, Chilean jack mackerel (*Trachurus murphyi*), suffered a decline of almost two thirds (ICIJ 2012). Indeed, over the course of 20 years, hastened by the impending regulatory input from the soon-to-be-functioning RFMO (UN 2010), by 2011, 90% of jack mackerel were gone. It was only then, at 10% of its original biomass levels, that significant catch reductions were agreed on (but were then promptly ignored the next year; Gjerde et al. 2013).

The jack mackerel story highlights a big challenge of the current RFMO framework: Adherence to international treaties such as the UN Convention on the Law of the Sea (UNCLOS) is enforceable only on cooperating states. Therefore, there is incentive not to cooperate (Bjorndal and Munro 2003). RFMOs can be seen as penalizing members by imposing catch restrictions; non-RFMO members, in contrast, are not bound by regulations, and thus the postponement of RFMO establish-

ment becomes, in the short term, beneficial to fishing states (Gjerde et al. 2013). Despite advances in our understanding of these structural failures, it is disappointing to learn that such basic problems continue to plague even the newest of RFMOs.

### THE ROAD AHEAD FOR RFMOS

Combining the results of Cullis-Suzuki and Pauly (2010b) with those of the present evaluation suggests that RFMOs are not effective management and conservation bodies on the high seas. Furthermore, they have not substantially improved over the last few years, as determined here by the state of the stocks in their remit. This is further supported by the recent rejection by RFMOs of conservation-based recommendations from the international community (Cressey 2013; UN 2010). Additionally, one of the biggest impediments to conducting such a study is dependence on available stock assessments (not to mention relevant reference points); these data are pronouncedly lacking in RFMOs and cause serious setbacks to stock evaluation (Froese and Proelss 2012; Powers and Medley 2013).

High seas management appears to be in a state of uncertainty: Recommended best practices have yet to be seriously implemented by RFMOs (Lodge et al. 2007), and strengthened international commitments under UN treaties still await consideration (Druel et al. 2012; UN 2012). Although many documents outline possible avenues for high seas improvement (Ban et al. 2013a; Clark 2011; Druel and Gjerde 2014; Englander et al. 2014; Pew Environment Group 2012; Veitch et al. 2012; Clark 2014), the high seas remain among the least understood and least protected ecosystems in the world (Ban et al. 2013b).

In May 2010, shortly after the contribution by Cullis-Suzuki and Pauly (2010b) was accepted for publication, the authors were invited to present their findings at the UN headquarters in New York during the UN Fish Stocks Agreement Review Conference,<sup>2</sup> and the first author attended (Cullis-Suzuki 2010). The turnout for this panel, which was orga-

nized by staff of the Pew Charitable Trusts and included two other marine scientists and a lawyer, was unexpectedly large and consisted mainly of RFMO delegates, many of whom expressed strong reservations and criticisms about the presentation on the results of the RFMO evaluation (Cullis-Suzuki 2010). Indeed, not only did they overwhelmingly reject its results, but many disagreed with the underlying data, although these data originated for the most part from the stock assessments the RFMOs themselves conducted and made available on their websites. An hour and a half of denunciations during the post-talk question period led to the extraordinary consensus among the delegates that RFMOs could not be the source of these unfavorable data and that any critique of RFMOs was unwarranted. Later on, as a follow-up to this presentation and to the supporting publication, the authors received e-mails from RFMO managers with detailed criticisms of the research presented in Cullis-Suzuki and Pauly (2010b). As a result of one such commentary, three stocks were eliminated from the initial Q score assessment; however, this did not affect the results (Cullis-Suzuki and Pauly, 2010a).

This and a similar but less intense experience of the second author at an event in early 2014 in Stockholm, Sweden, where the updated RFMO evaluation results were presented, exemplify what is perhaps the greatest obstacle to RFMOs achieving sustainably managed fisheries: RFMOs were created to allocate catch between competing fleets. RFMOs are fishery-oriented bodies first and conservation bodies second, if at all. RFMO delegates therefore represent fisheries' interests (Gjerde et al. 2013), and thus RFMO operations reflect their primary objective, which is to catch as much fish as possible, now (Webster 2013).

This basic organizational focus lies at the heart of failed management on the high seas. Moving away from allocation-based targets might mean recasting RFMOs as conservation bodies (Webster 2013), which could in turn lead to the start of the fundamental reform

so urgently needed on the high seas (Gjerde et al. 2013). Actually, the more effective policy, as suggested by White and Costello (2014) and Sumaila et al. (2015), would be the globally more equitable policy to permanently close the entire high seas to fishing and to let maritime countries throughout the world benefit from the resulting resource recovery in their own EEZs.

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## NOTES

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