Chapter 41. Tunas and Billfishes

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1. Introduction

Tunas and billfishes are epipelagic marine fishes that live primarily in the upper 200 metres of the ocean and are widely distributed throughout the tropical, subtropical and temperate waters of the world's oceans

current biomass (often measured only for the spawning fraction of the population) relative to the biomass that would provide the maximum sustainable yield (MSY). A population whose biomass has fallen below B_{MSY} (i.e., $B/B_{MSY} < 1$) is considered to be "overfished"

throughout their neritic distributions. There are some exceptions as some species of non-principal market tunas have been assessed locally by national government fisheries agencies or recently by IOTC. For the South Atlantic Ocean off the coast of Brazil, Thunnus atlanticus was assessed in the year 2000, concluding the population was at healthy levels and not experiencing overfishing (Freire, 2009).

Thunnus unusant

caught by small scale fisheries or as a bycatch[3] of principal market tuna fisheries. Small-scale coastal fisheries targeting both principal market tunas and the smaller non-principal market tunas are poorly reported. Similarly, billfish catches, of which the majority come from industrial tuna fisheries as bycatch, have also been commonly poorly reported and monitored (Miyake et al., 2010).

According to the latest tuna RFMO fisheries stock assessments (Appendix 1), the global picture of the exploitation status of tunas and billfishes indicates that principal market tuna populations are relatively better managed than billfish populations (Figure 2C). Although 37 per cent of billfish populations (7 of 19 populations) are currently overfished and experiencing overfishing, only 9 per cent of the principal market tunas (2 of 22 populations) are considered to be overfished and experiencing overfishing. The majority of principal market tunas are at healthy levels with 64 per cent of the populations not overfished and not experiencing overfishing, and per 18 cent of the populations, although overfished, are no longer experiencing overfishing and therefore are on the path to recovery, if fishing mortality continues to be controlled. The exploitation status of tunas and billfishes also differs among the three major oceans (Figure 2C). In the Atlantic Ocean, the status of only 47 per cent of the populations is currently healthy (not overfished and not experiencing overfishing), in the Indian Ocean the status of half of the populations (50 per cent) is healthy, and in the Pacific Ocean over half of the populations (~56 per cent) is currently healthy and within sustainable levels.

When accounting for the relative contributions of their catches, principal market tuna populations provide the majority of the catches from healthy populations when compared with billfish species. Although 87 per cent of the total catches of principal market tunas come from healthy populations (not overfished and not experiencing overfishing) and only 0.9 per cent come from unhealthy populations (overfished and experiencing overfishing), 60.8 per cent of the total catches of billfish populations come from healthy populations and 16.1 per cent come from unhealthy populations. Healthy populations of skipjack in every ocean make a large per1(alt)6(h)-4(005 Tc 0.005 Tw 9729 0 2.0[(p)

3.

conservation status were largely consistent with the current knowledge about the exploitation status of tuna and billfish populations derived from the RFMO fisheries

patterns and the vertical stratification of the water column, climate change will lead to a

5. Major ecosystem services provided by the species group and impacts of pressures on provision of these services

5.1 Ecosystem services

The impacts of fishing on the abundance of fishes

than 80 countries have tuna fisheries, thousands of tuna fishing vessels operate in all the oceans, and tuna fishery capacity is still growing in the Indian and Pacific Oceans (ISSF, 2010). The popularity of tuna meat has increased remarkably around the globe and now tuna meat is considered to be a relatively low-cost source of protein, which is traded as a global "commodity" product (i.e. high volume, low value, low margins) (Hamilton et al., 2011). The canning and sashimi industries are the major players in the global trade of tuna, particularly focused on the principal market tuna species.

At the other extreme, in some regions of the world tuna and billfish species still contribute substantially to the subsistence of many fishing communities by providing the great majority of dietary animal protein (Bell et al., 2009). The global economic activity that tuna fisheries can generate directly and indirectly is remarkable. Every year at least 2.5 million tons of the global tuna catch is destined for the canning industry [illegible]

6. Conservation responses and factors for sustainability

Tuna

fishing access or catch quotas among the different member countries continues to be one of the most contentious matters in the RFMOs decision-making process, impeding other more timely relevant conservation and management measures from moving forward, according to the International Seafood Sustainability Foundation (ISSF, 2013c). Nowadays, tuna RFMO

measures to require a transition to non

Figure 1. Global catch trends of tuna and billfish species (FAO, 2014). (A) Global aggregated temporal trends of catches by major taxonomic(on.ypp)DFi5(r)4.6(eoum)6.8(pm)6.8(s)1(o).A4.4(B)-4.3( )]03 Tcw 9.y m3.00joMC

Figure 2. Global exploitation status of principal market tuna and billfish species according to the latest fisheries stock assessments conducted by tuna RFMOs. (A) Proportion of populations by exploitation

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