Evaluation of status of commercial fish stocks in European marine subareas using mean trophic levels of fish landings and spawning stock biomass

Article *in* Ocean & Coastal Management · July 2016

DOI: 10.1016/j.ocecoaman.2016.07.002

CITATIONS
10

READS
1,958

3 authors:

Prabath Jayasinghe
National Aquatic Resources Research and Development Agency
32 PUBLICATIONS **60** CITATIONS

SEE PROFILE

Upali S. Amarasinghe
University of Kelaniya
254 PUBLICATIONS **1,761** CITATIONS

SEE PROFILE

Alice Newton
Universidade do Algarve
135 PUBLICATIONS **3,727** CITATIONS

SEE PROFILE

Ocean & Coastal Management 143 (2017) 154–163

Contents lists available at ScienceDirect

Ocean & Coastal Management

journal homepage: www.elsevier.com/locate/ocecoaman

Evaluation of status of commercial fish stocks in European marine subareas using mean trophic levels of fish landings and spawning stock biomass

R.P. Prabath K. Jayasinghe [a, b, c, *], Upali S. Amarasinghe [d], Alice Newton [c, e]

[a] Marine Biological Resources Division, National Aquatic Resources Research and Development Agency, Crow Island, Colombo 15, Sri Lanka
[b] Fundación Universidad Empresa de la provincia de Cádiz (FUECA), University of Cádiz, 11003 Cádiz, Spain
[c] CIMA, Gambelas Campus, University of Algarve, Faro 8005-139, Portugal
[d] Department of Zoology and Environmental Management, University of Kelaniya, Kelaniya, Sri Lanka
[e] NILU-IMPEC, Box 100, 2027 Kjeller, Norway

ARTICLE INFO

Article history:
Received 15 October 2015
Received in revised form
23 June 2016
Accepted 3 July 2016
Available online 15 July 2016

Keywords:
Mean trophic levels
Landings
Spawning stock biomass
Fish stocks
CFP
MSFD

ABSTRACT

Most of the fish stocks in the world, including European fish stocks, are threatened by overfishing and/or degraded environmental conditions. Although the Common Fisheries Policy (CFP) is the main policy instrument managing fish stocks in Europe, there is continued concern as to whether commercial fish stocks will achieve Good Environmental Status (GEnS) in 2020 in accordance with the Marine Strategy Framework Directive (MSFD). In this context, the evaluation of the status of fish stocks in the subareas of FAO fishing area 27 was carried out using mean trophic levels (*MTL*) in fish landings and spawning stock biomass (*SSB*). Comparisons were made before and after 2008 to establish whether the trend is positive or negative. The main data sources for landings and *SSB* were the International Council for the Exploration of the Sea (ICES) advisory reports. *MTLs* in landing and *SSB* were determined for each subarea and the subareas were categorized into four groups, according to *MTLs* after 2008. The first group (subareas I + II, V) had higher *MTL* in landings and higher *MTL* in *SSB* after 2008. Therefore, fisheries in these subareas appear sustainable. The second group was subareas VIII + IX, for which the fish stocks have higher *MTL* in landings but low *MTL* in *SSB*, indicating that *SSB* was being overfished. The third was subarea (VI), where fish stocks have lower *MTL* in landings than those in *SSB* after 2008, which may indicate that fish stocks are recovering. Fish stocks in the fourth group (subareas III, IV and VII) had low *MTL* in landings and the *MTL* in *SSB* was lower than that of landings before 2008. This may be due to heavy fishing. In addition, we estimated the harvest rate (*HR*) of the fish stocks before and after 2008. The results showed that most of the fish stocks have lower *HR* after 2008, indicating that the status has improved, perhaps due to improvements in the implementation of CFP. However, some fish stocks showed high *HR* even after 2008, so that new management options are still needed. Other factors such as eutrophication, seafloor disturbances, marine pollution, invasive species etc., influence *SSB* ecosystem health options and should also be incorporated in the management criteria. Most of these environmental pressures are of high priority in the MSFD, and therefore the findings of this study will be useful for both CFP and MSFD.

1. Introduction

The Common Fisheries Policy (CFP) is the main policy document to manage European fisheries resources. It was adopted in 1983 and has since been revised every 10 years (Aanesen et al., 2012). The latest version was approved by the European Parliament in 2013 (Pastoors, 2014). The main *modus operandi* of the CFP for managing fisheries is to decrease the fishing capacity (Villasante, 2010; Gascuel et al., 2011). However, the very high fishing pressure exerted by EU fishing fleets has been insufficiently reduced by the CFP to achieve healthy stocks and maximum sustainable yield

* Corresponding author. Marine Biological Resources Division, National Aquatic Resources Research and Development Agency, Crow Island, Colombo 15, Sri Lanka.
E-mail addresses: prabath_jayasinghe@yahoo.com (R.P.P.K. Jayasinghe), zoousa@kln.ac.lk (U.S. Amarasinghe), anewton.ualg@gmail.com (A. Newton).

http://dx.doi.org/10.1016/j.ocecoaman.2016.07.002