European pilchard
NW Africa southern
Fishery:
NW Africa southern, Morocco, Senegal, Mauritania, Gambia

IDENTIFICATION
Scientific Name:
Sardina pilchardus

Species Names:
European pilchard, Sardine, European sardine

STOCK INVESTIGATION
Many studies have investigated the stock structure of the European pilchard (formerly "sardine") population widely distributed in the northeast and central Atlantic, and the Mediterranean and Black Sea (e.g. Gonçalves et al. 1988, Fairlie et al. 2002, Karadimas et al. 2005). The stock is divided into three evaluation units: the western African stock, the eastern central Atlantic stock, and the Mediterranean and Black Sea stock. Some uncertainty remains about the structure of the western African stock.

In addition to the western African stock, FishSource considers the following assessment units throughout the species' distribution:

- Northern Adriatic Sea (ICES Divisions 3.m and 3.n)
- Southern Adriatic Sea (ICES Divisions 3.o and Subarea 7)
- Northern Alboran Sea (GSA 01)
- Southern Alboran Sea (GSA 17)

General Fisheries Commission for the Mediterranean (GFCM) and FAO (GFCM 2016) also recognize a stock of the species in the Mediterranean.

ASSESSMENT
Strengths
- The stock is regularly surveyed; in 2017, however, only the Russian and Moroccan acoustic surveys were conducted.
- Stock status is regularly assessed by both the FAO and the INRH; the FAO provides annual scientific advice.
- Scientists, with both the INRH and the FAO, have a good understanding of the species' biology.
- There is a Sub-Regional Fisheries Commission (Commission Suro-Régionale des Pêches, CSR, that includes Mauritania and Senegal), that has conducted efforts to assess and manage the transboundary small pelagic stocks shared within the countries of the region, jointly with Morocco.
- There is a national small pelagic TAC in Morocco, and catch limits are defined for each of the Moroccan and Mauritanian fisheries.
- The national TAC is for small pelagic species as a whole; some methods by INRH yield conflicting results.

Weaknesses
- Stock assessment advice by the FAO is not released in a timely manner; this can add ambiguity.
- The stock structure remains somewhat uncertain.
- Some species in the mixed stock fishery are overexploited - including Atlantic and Common horse mackerel, and round and Madeiran sardinella.
- Stock assessment advice by the FAO is not released in a timely manner; the connection between stock assessments, advice, and harvest limits is not clear.
- The stock is highly dependent on environmental dynamics, and the degree to which management adapts to these factors with respect to catch limits is unclear.
- Quantification of discarding is limited; particularly in Mauritania.
- Some species in the mixed stock fishery are overexploited - including Atlantic and Common horse mackerel, and round and Madeiran sardinella.
- There is some misalignment between the INRH and the FAO regarding the exploited status of the stock; some methods by INRH yield conflicting results.
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- Stock assessment advice by the FAO is not released in a timely manner; the connection between stock assessments, advice, and harvest limits is not clear.
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SCORES
Management Quality:

<table>
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<th>Management Strategy</th>
<th>Managers Compliance</th>
<th>Fishers Compliance</th>
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<td>≥ 6</td>
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Stock Health:

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<th>Current Health</th>
<th>Future Health</th>
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<td>≥ 6</td>
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FIPS

- Morocco sardine - pelagic trawl and seine / Maroc sardine - chalut pélagique et seine
RECOMMENDATIONS

- Support the Sub-Regional Fisheries Commission and Morocco in their efforts to develop a strategic plan for management of the small pelagics fisheries in the region. The management plan should include species specific TACs, joint setting of TACs, and consideration of how environmental variability may affect stocks.

- Work with scientists to understand the uncertainties in the stock assessment and improve the different assessment models and input data (catches, discards, biological data) to reduce the level of uncertainty in the assessment and to work towards resolving the differences between the models.

- Encourage management authorities to release stock assessment results sooner and improve transparency of subsequent management actions, including the setting of catch or effort limits.

- Ask the government/regional authorities to continue to improve catch and discard reporting and to publish fishery compliance information, especially for Mauritania.

- Work with scientists to conduct studies to clarify the stock structure of northwest African pilchard/sardine.

- Press managers to implement a recovery strategy for other target species in the multi-species fishery to ensure that all such species are at least above biologically-based limit reference points (or proxies for the point of recruitment impairment), especially for Cunene and Atlantic horse mackerels, and round and Madeiran sardinellas.

- Work with scientists and managers to expand the at–sea observer programme to provide representational coverage of all components of the fishery to better understand catches and discards, as well as interactions with habitats and all types of bycatch.