

Mackerel

Recent history

A resolution to the long-standing dispute regarding mackerel fishing in the North East Atlantic (NEA) amongst the Coastal States was found on 12 March 2014¹. A five-year arrangement was reached between the EU, the Faeroese and Norway on mackerel in the North East Atlantic.

The arrangement makes room for another Coastal State to join at a later stage, and establishes a number of important principles, including a sharing between the Parties, and commitments to sustainable fisheries and to establishing a new long-term management plan in 2014 following ICES advice. Iceland, has Coastal State status but is not part of this arrangement, neither are Russia or Greenland, who are non-Coastal States. As part of the new arrangement 15.6% of the quota allocation has been set aside for new adherents to the arrangement.

It is highly significant that an important element of this long-standing dispute has been resolved, as it will go a long way in ensuring that the fishery can be regulated and carefully managed again.

Mackerel is the most valuable stock to the Scottish fishing industry, representing about one third of the value of total landings by the Scottish fleet.

Mackerel in the NEA

The NEA mackerel stock includes three spawning components; the western, southern and North Sea, but is assessed by International Council for the Exploration of the Seas (ICES) as one stock^{2,3}. The stock has an extensive migration pattern with widely spread spawning areas. Catch and survey data from recent years indicate that the stock has expanded north westwards during spawning, although the historical known high density spawning area remains consistent and have not changed. The summer feed migration has expanded northwest. This distributional change may reflect changes in food availability and may be linked to increased water temperature, and/or increased stock size.

Traditionally, the fishing areas with higher catches of mackerel have been in the northern North Sea (along the border of ICES Divisions IVa and IIa), around the Shetland Isles, and off the west coast of Scotland and Ireland. The southern fishery off Spain's northern coast has also accounted for significant catches. In recent years significant catches have also been taken in Icelandic and Faeroese waters, areas where almost no catches were reported prior to 2008². This is reflected in the fact Iceland was awarded Coastal State status in 2009. Catches from Greenland were reported for the first time in 2011, and have been increasing since then².

This briefing note details the current mackerel position.

How the NEA mackerel fishery is managed

According to the 1995 United Nations Fish Stocks Agreement (UNFSA)⁴ straddling fish stocks, and highly migratory fish stocks (such as mackerel) have to be managed by a Regional Fisheries Management Organisation (RFMO), which consists of Coastal States and relevant Distant Water Fishing Nations (other nations with a real interest in the fishery)⁵.

North East Atlantic Fisheries Commission

In the North East Atlantic there are several straddling stocks, including mackerel, and the relevant RFMO is the North East Atlantic Fisheries Commission (NEAFC)⁶. NEAFC comprises contracting parties which have all signed up to the Convention on Multilateral Cooperation in North East Atlantic Fisheries, which entered into force in November 1982. There are currently five contracting parties: the European Union (EU), Denmark (on behalf of the Faeroese and Greenland), Iceland, Norway, and the Russian Federation.

Coastal States (CS)

According to the United Nations Convention on the Law of the Sea (UNCLOS)⁷, a Coastal State is a state where a migrating fish stock enters and is found in its waters (defined as a 200 mile Exclusive Economic Zone). Coastal States have both the right to harvest (utilize) the fish stock and the responsibility to cooperate with other Coastal States on the sustainable management of the stock. They have the responsibility to come to an agreement with each other on total allowable

catches from the stock to ensure sustainability and avoid overfishing.

The Coastal States agreement

Since 2009 four Coastal States (EU, Norway, Faeroese and Iceland) have been the signatories to the mackerel Coastal States agreement, under the NEAFC framework. The agreement includes allocating shares of quota based on a historical track record and in accordance with the latest scientific advice for the stock.

During the period 2009 to 2013 the Coastal States failed to reach agreement on quota shares. There was no international agreement on mackerel after the TAC and quota were set in 2008 for 2009, until 2014.

During period many rounds of international negotiations took place to try to resolve this issue before an agreement was finally reached on **12 March 2014**¹.

ICES advice for 2015

The advice from ICES² in September 2014, following the precautionary approach was that catches should be 1,054,000t in 2015, (Not the same as the 2008 management plan which is under revision).

ICES was unable to deliver their advice on the basis of which the Parties could have developed a revised management plan as foreseen in the five-year arrangement^{2a}. The Parties did agree in the absence of this advice to base the TAC (Total Allowable Catch) for 2015 on the precautionary reference points established at the last benchmarking exercise (February 2014).

As a result the TAC for NEA mackerel has been set at 1,054,000t.

- Under the 2014 Mackerel Arrangement, the Delegations agreed^{2a} to the following relative quota shares for 2015: The Faeroese will receive 132,814 t (14.93%), the EU 519,512 t (58.4%), and Norway 237,250 t (26.67%). The parties also agreed to set aside 15.6% (164,424 t) of the TAC as a Coastal State and Fishing Party reserve. The UK has been awarded 245,363 t of the EU quota.
- There has been no announcement of quotas for 2015 for Iceland and Greenland (who are outside the above agreement).
- For 2015 – 2018 the TACs should be based on levels advised through the ICES long term management plan. The Parties have approached ICES with a draft request on a revised long-term management plan evaluation.

ICES advice September 2014²

Scientific advice is provided by ICES. The spawning stock biomass has increased considerably since 2002 and remains high, and is above the precautionary reference level and the Maximum Sustainable Yield trigger levels. The 2002 and 2006 year classes are the strongest year classes in the time-series. The incoming 2011 and 2012 year classes appear to be high. There is insufficient information to reliably estimate the size of the 2013 year class. Over the last six years the pelagic industry has encountered large shoals of mackerel over the entire distribution area and believes stock size has greatly increased overall. The industry also

sees signs of above average recruitment over the last few years, particularly in 2009, 2010, 2011 and 2012².

Benchmarking and comparison with previous assessment and advice

Until 2013 an age based analytical assessment was carried out on the whole stock using catch data and a triennial egg survey to obtain a Spawning Stock Biomass (SSB) estimate. The assessment was benchmarked in 2014 and a new assessment model was set up to take into account the large uncertainty in historical catches prior to 2000. The assessment now uses an age-based state space assessment model (SAM), including a new tuning series in addition to the egg survey index which provides an index of SSB². The SSB from the 2014 benchmark is now estimated to have varied between 2 million tonnes in the late 1990s and early 2000s and 5 million tonnes in the recent years, compared to 1.6 million tonnes and 3 million tonnes in the 2012 assessment. The October 2013 assessment (based on trends in the egg survey) suggested that SSB was increasing, but exploitation rates were unknown. The 2014 benchmark assessment also indicates that SSB is increasing and that fishing mortality is decreasing and is now below FMSY^{2b}.

Changes in mackerel distribution²

The changes in mackerel distribution² and migration have been investigated in an Ad hoc ICES Group on the Distribution and Migration of Northeast Atlantic Mackerel (AGDMM – ICES, 2013b).

There has been a substantial geographical expansion of the spawning distribution to the north and the northwest for the western

component since 2007. However, spawning intensity in these new areas is quite low and the bulk of the egg production still occurs on the historical core spawning areas. There has also been an extension of the spawning season for the western and southern components, with an earlier start of the spawning activity and with maximum spawning intensity occurring one month earlier than in earlier years (April instead of May). A north- and westwards geographical expansion of the summer feeding distribution has also been reported by the summer surveys in the Nordic Seas (IESSNS).

The distribution of juvenile mackerel was found to be very patchy, and the abundance to be highly variable between years. Expansion of nursery areas into northern coastal waters has been observed since the mid-2000s. Along with these distribution changes, physical changes in the environment have also been recorded, with record high summer sea surface temperatures in recent years in the Nordic seas facilitating a larger potential feeding habitat for mackerel.

The question remains as to whether or not these distribution changes are permanent or temporary.

Further research

A joint Nordic ecosystem survey (IESSNS)⁸ was carried out between Norway, Iceland and the Faroe Islands in July and August 2014⁸ (as in previous years). The estimate of the Total Stock Biomass (TSB) for mackerel is around 9 million metric tons, slightly higher than the number in 2013⁹, when stocks were estimated at 8.8 million metric tons.

Under a new research project the Marine Research Institute in Iceland will look at stock structure and give information on changes in the migration pattern²⁰. This project was due to complete in December 2014.

Other influences

Review of MSC certification suspension¹⁰

The certifiers for seven MSC certified mackerel fisheries in the North East Atlantic had their fisheries' certificates suspended in April 2012. Due to the inability of all states targetting NEA mackerel to agree on quota allocations within the TAC, therefore compromising the management system, such that the MSC standard has not been fully met. The suspension is not the same as a certificate withdrawal as suspended certificates can be re-instated on completion of a condition with no need for a new full reassessment. Mackerel caught after 30 March 2012 could not be labelled 'MSC certified'. The fisheries affected were:

- Danish Pelagic Producers Organisation North East Atlantic mackerel (DK); Irish Pelagic Sustainability Association western mackerel (IE); Irish Pelagic Sustainability Group western mackerel pelagic trawl fishery (IE); North East Atlantic mackerel pelagic trawl, purse seine and handline fishery (NO); Pelagic Freezer Trawler Association North East Atlantic mackerel (NL); Scottish Pelagic Sustainability Group North East Atlantic mackerel (UK); Swedish Pelagic Producers Organisation North East Atlantic mackerel (SW).

MINSA - Group action¹¹

During the dispute (June 2012), the MSC welcomed an action plan aimed at solving the ongoing mackerel dispute in the North East Atlantic. The plan was submitted by the Mackerel Industry Northern Sustainability Alliance (MINSA) – the seven MSC certified mackerel fisheries above. The successful development of the action plan meant fisheries' certificates were suspended until 30 April 2014.

In May 2014 MSC announced all affected fisheries, whose certificates expired in 2014, should start their re-assessment processes as soon as practically possible. Over 700 mackerel fishing vessels from Scotland, Denmark, Ireland, Norway, the Netherlands and Sweden, have joined together under the MINSA umbrella to enter MSC reassessment – the largest ever international collaborative approach for such certification this side of the Atlantic.

Assessment began during July 2014 with the aim of recertification by July 2015. All MINSA mackerel fisheries whose certificates expired in 2014 were extended until 31 July 2015.

Marine Conservation Society (MCS)¹²

In January 2013 the MCS changed its advice on mackerel and advised only eating it occasionally. This was revised in May 2013 and is currently - Best Choice: Cornish hand-line caught mackerel (rated 2); Best Alternative: UK/EU/ Norwegian pelagic caught mackerel (rated 3); Least Sustainable Choice: Icelandic and Faroese pelagic caught mackerel (rated 4).

Vessel data collection

The pelagic industry has initiated a ground breaking project to research and implement a vessel data collection programme to enhance the quality of the scientific assessment. The group includes respected pelagic scientists and industry representatives from EU, Norway, Iceland and the Faeroese. Stakeholders are actively seeking mechanisms that would allow inclusion of fishing industry information into the assessment process, and are involved in a number of pilot projects in this regard. Industry has scaled up its participation in the supply chain mackerel RFID tagging project; processing plants in Denmark, Iceland, Ireland and Scotland are now equipped to read mackerel tags, in addition to the existing tag reading facilities in Norway³.

Key Points:

- There was no internationally agreed catch in line with the management plan between 2009 and 2013. The lack of international agreement led to catches in excess of the advised TAC for the stock.
- Recent recruitment, notably in 2005 and 2006 were the largest recorded in the time series of assessments.
- There are strong indications that there has been an increase in stock size and that current levels of catch and landings do not pose a threat to the stock.
- Scottish and other European MSC client groups agreed an action plan to press for resolution of the issue.
- Changes to the distribution and timing of migrations, and mackerel spawning patterns, have raised both scientific and biological considerations, over the political rationale behind each decision.

Glossary of terms used

Management decisions for sustainable fisheries should restrict the risk that spawning stock biomass falls below a minimum limit, or that fishing mortality rates become too high.

- **MSY** (Maximum Sustainable Yield). Referred to as F_{MSY} – fishing at levels that catch the maximum proportion of a fish stock, that can safely be removed on a continuous basis; and B_{MSY} – spawning stock biomass that results from fishing at F_{MSY} for a long time.
- **PA** (Precautionary Approach). Referred to as F_{pa} – precautionary reference point for fishing mortality; and B_{pa} – precautionary reference point for spawning stock biomass.
- **Management Plan**. Agreed by all parties to maintain/rebuild stocks.
- **$B_{trigger}$** . Value of spawning stock biomass that triggers a specific management action.
- **B_{lim}** . Minimum level of spawning stock biomass, or limit biomass is defined. Below B_{lim} = a higher risk that the stock reaches a level where it suffers from severely reduced productivity.
- **F_{lim}** . The limit to fishing mortality.
- **SSB**. Spawning stock biomass or stocks reproductive capacity.
- **TSB**. Total Stock Biomass. Management should prevent spawning stock decreasing below B_{lim} and avoid fishing mortality above F_{lim} . Advice is generally aimed at avoiding the risk that spawning stock falls below the B_{pa} (precautionary biomass) and fishing mortality increases above F_{pa} .

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