

# HORSE MACKEREL 2012

Prepared by Melanie Smith and Dave Japp

## IN OUR REPORT FOR 2012, WE PROVIDE AN OVERVIEW OF SOME OF THE MANAGEMENT AND STOCK-RELATED ISSUES IN THE HORSE MACKEREL FISHERIES IN NAMIBIA AND SOUTH AFRICA.

### ECOSYSTEMS, FISHERIES DYNAMICS AND HORSE MACKEREL IN THE REGION

In the last 10 years or so there has been a global shift towards *Ecosystem-based Management* or the so-called Ecosystem Approach to Fisheries (EAF). The big question underlying EAF is the uncertainty relating to ecosystems – in particular a marine system such as the Benguela. The Benguela is one of the major upwelling systems of the world and has had a somewhat chequered history in fisheries management – notably the collapse of the sardine resource in Namibian waters and the massive over-exploitation of hake in the 1970–1989 period when international trawl fleets fished under the banner of the International Commission for South East Atlantic Fisheries (ICSEAF). That, of course, is all history. Nevertheless, fisheries management in both Namibia and South Africa are now on stable platforms and are underpinned by strong research capacity. Good management in these countries has undoubtedly led to the sustainable use of most fisheries resources of which hake, sardine and horse mackerel are the main species in the Benguela ecosystem.

Horse mackerel, *Trachurus trachurus capensis*, is a key species in the Benguela ecosystem. They occupy an important niche in the ecosystem – unlike many of the larger oceanic mackerel, horse mackerel are a small species. They are predominantly filter feeders (unlike other large oceanic mackerels that are top predators) and shoal in large aggregations feeding on plankton. These aggregations make them suitable for commercial exploitation using either midwater or purse seine nets. Because they are highly mobile, these aggregations migrate large distances horizontally and also diurnally – that is up (at night) and down (in the day) in the water column. This behaviour makes it challenging to not only catch them but also to conduct research and estimate their biomass.

Nevertheless, if we consider all the surveys and available information in the region on horse mackerel, there is an estimated biomass of some 100 000 tons in southern Angola, about 1 million tons in Namibia and a further 400 000 tons in South Africa (west and south coast). Care should be taken interpreting such results and several different estimation methods are applied. The data, however, shows that horse mackerel is a major contributor to the fish biomass in the region (at least 1,5 million tons) and is probably the largest source of fish protein in Africa, making it a key source of food security. Horse mackerel management between the three countries is therefore one of the highest priorities for the Benguela Current Commission (BCC), which is based in Swakopmund, Namibia.

### HORSE MACKEREL IN NAMIBIA

In the Benguela ecosystem, horse mackerel is in the highest abundance in Namibia. The fishery is primarily “industrial” – that is processing catch on a large scale using midwater trawl vessels. The fishery extends from just south of Walvis Bay northwards to the Angolan border where the catches are highest – see the map (figure 1) showing the catches between 1997 and 2011. It is no coincidence that the highest catches occur in the north as this is an area of high plankton productivity. There is some uncertainty regarding the state of the stocks between Angola and Namibia as the aggregations are found in both countries. In Angola, however, fishing for horse mackerel using large industrial trawls is not permitted. Management of horse mackerel in Angola, therefore, differs somewhat from Namibia as it is a primary species caught by artisanal fishers, so their focus is on sustaining the artisanal fisheries.

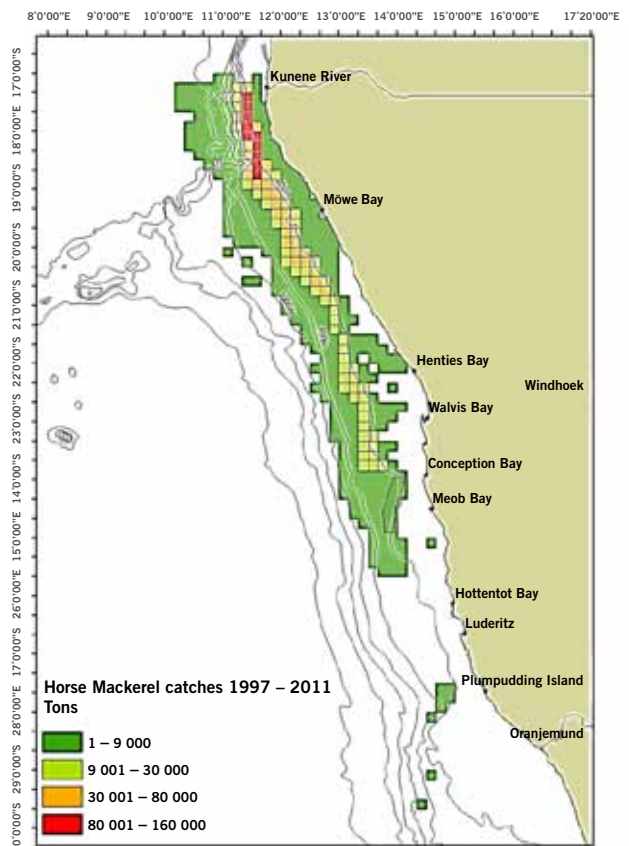


FIGURE 1: Spatial pattern of catches of horse mackerel in Namibia from 1997 to 2011

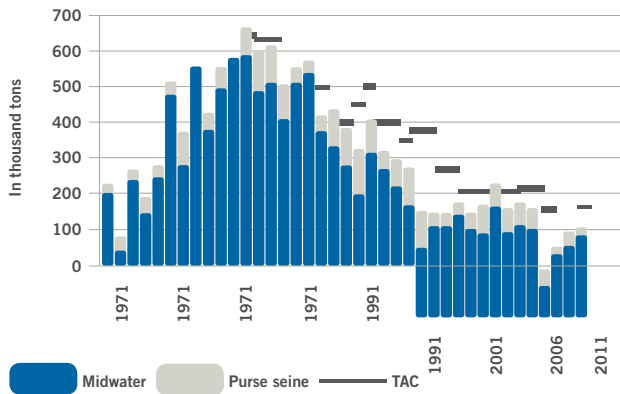


FIGURE 2: Catches and TAC of horse mackerel in Namibia from 1971 to 2011

Although catches of up to 660 000 tons were reported in Namibia in the early 1980s (figure 2), catches have, on average, declined to about 260 000 tons in the last decade. In 2006, the resource was showing clear signs of stress and catches decreased to below 250 000 tons. Since 2009, however, the midwater fleet has been experiencing higher catch rates and also a bigger size class of fish. Research on horse mackerel in Namibia aims primarily to provide scientific advice to management for the setting of TACs and management options to the Minister of Fisheries. The relative survey biomass level was estimated to be extremely low in 2006 and 2007 but has remained fairly high and constant over the last three years. This improvement in the resource was also evident in the increased average catch-at-length from 20 cm in 2007 and about 22 cm in 2008 to 25 cm in 2009 and 2010. Although variable each year, there is usually an overlap in horse mackerel catch-at-length between the pelagic (purse seine) and midwater fleets of 14 – 20 cm total length. With the most recent increase in abundance indices in Namibia, the stock was estimated to be in a good condition. Presently the stock status is estimated to be around the maximum sustainable yield (MSY) level of between 250 000 – 300 000 tons. For the 2012 fishing season, a TAC of 320 000 tons has been issued.

## FISHERIES FOR HORSE MACKEREL IN SOUTH AFRICA

Several fisheries exploit horse mackerel in South Africa. On the south coast, adults are targeted by the midwater trawl fishery and are also caught as a by-catch by the hake-directed trawl fishery. On the west coast, juvenile horse mackerel is a by-catch in the purse seine fishery for sardine and anchovy (figure 3). The midwater trawl fishery has been managed using a constant catch strategy since 2001 and a Precautionary Maximum Catch Limit (PMCL) is set for adult horse mackerel on the south coast only. This is the principle target of the *MFV Desert Diamond*. This vessel, catching for the Oceana Group (Blue Continent Products), fishes the combined allocations of the majority of the rights holders in the midwater sector.

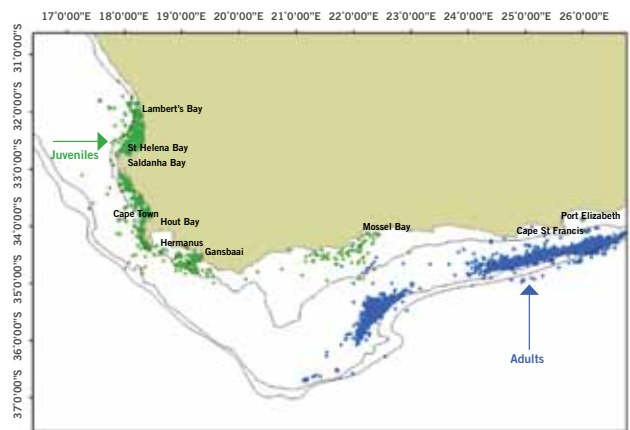


FIGURE 3: Observer data showing the distribution of juvenile horse mackerel (primarily on the west coast) and adults on the west coast and adults on the south coast

The precautionary upper catch limit (PUCL) has been maintained at 44 000 tons in recent years and accommodates both midwater effort and by-catch in the hake-directed demersal trawl sector. A PUCL of 5 000 tons has been set for this sector in recent years. In late 2011 and early 2012 this catch limit for the small pelagic sector was problematic. With increasing volumes of juvenile horse mackerel being caught by the purse seine vessels on the south coast, as well as a noticeable increase in the abundance of juveniles on the west coast, fishers found it increasingly difficult not to exceed the 5 000 tons catch limit (due to incidental catches). This precautionary catch limit was subsequently temporarily increased to 12 000 tons. Current research and modelling at DAFF is aimed at finding a new management procedure to accommodate the variability in juvenile abundance.

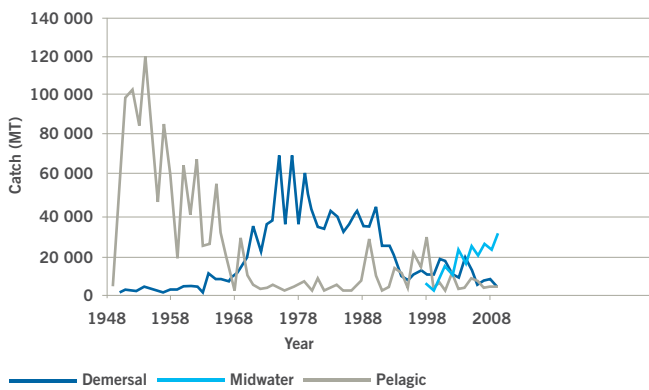


FIGURE 4: Historical time series of horse mackerel catches in South African waters (after Furman and Butterworth, 2011).

Data inputs used for the assessment and management of the adult stock fishery on the south coast (figure 4) are based on numerous sources. These include the historical catches of the Japanese fleet on the Agulhas Bank and also the ongoing demersal hake-directed research surveys. These surveys give abundance estimates using both bottom trawls and acoustics methods. In addition, Oceana also contributed to the scientific working group deliberations by presenting data reflecting the performance of the *MFV Desert Diamond*. These commercial catch data showed a steady increase in catch rates in the fishery since 2002 with an average catch rate for this period of 20,33 tons per hour trawled.

An age-structured production model continues to be used as the basis for the setting of the PMCL. The most recent assessment indicates an increase in horse mackerel abundance of about 20% over the last five years, primarily as a result of good recruitment. For the 2012 fishing season, targeted trawling by the midwater trawl sector is permitted to take 31 500 tons, whereas 12 500 tons are set aside for by-catch in the demersal trawl fishery. By-catch of juveniles in the purse seine fishery may not exceed 5 000 tons but remains subject to a possible alternative management strategy.

*Furman, L.B. and Butterworth, D.S. 2011. Updated assessments and projections under alternative future catch levels for horse mackerel. FISHERIES/2011/OCT/SWG-DEM/49*