

2014 STATUS OF HORSE MACKEREL IN SOUTHERN AFRICA

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Namibian Horse Mackerel

Current management measures

The annual allowable catch (TAC) for horse mackerel *Trachurus capensis* for the 2014-2015 season was set at 350 000 t. One of the main objectives of the fishery is to maintain the horse mackerel stock at the Maximum Sustainable Yield (MSY) level and to achieve the best possible scientific advice is used. This advice includes the use of indices from the commercial sectors exploiting the resource (which in Namibia is the mid-water and purse seine fisheries), and importantly, the annual (independent) scientific acoustic surveys. Acoustic surveys for horse mackerel are dependent on continuity in methodology from year to year as well as the availability of suitable survey vessels. Namibia has a good record of surveys since independence based mostly on the fisheries research vessel *FRV Welwitschia*.

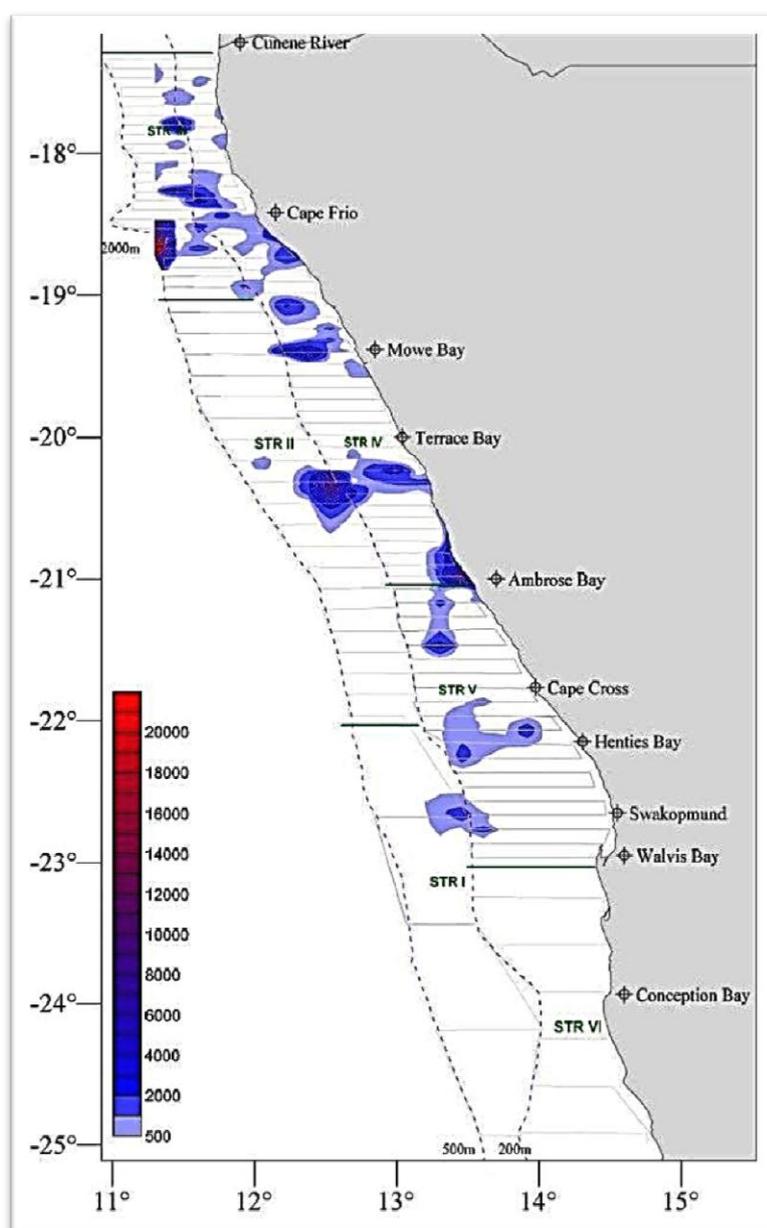


Figure 1. Course track (grey lines) and trawl stations with horse mackerel (red circles) and without (blue circles) horse mackerel of the horse mackerel and small pelagics biomass survey 2014. The purple dotted lines represent the 200 m and 500 m isobaths or 2000m isobath (North of 18° 30'S) and horizontal red lines are the stratum latitudinal boundaries. (after Uanivi and Van der Plas, 2014)

The figure above shows both the survey design of the 2014 acoustic survey conducted on the *FV Welwitschia* from late February to March and the distribution of horse mackerel (Uanivi and Van der

Plas: Horse mackerels and small pelagics surveys of the Northern Benguela (17°15` - 25°00`S) by the Ministry of Fisheries & Marine Resources). Typically horse mackerel are found mostly in the northern Benguela and their highly migratory and aggregating behaviour means their distribution patterns are patchy (see the Figure 1).

Management and Management Plans

Namibia and Angola both participated in the development of management plans for their horse mackerel fisheries in late 2013 through the *Anglo Caribbean Pacific (ACP)* programme funded by the European Union. These plans which were developed separately for each country also considered the transboundary aspects, in particular the dynamics of the stocks and different species between the two countries. The Angolan fisheries for horse mackerel are quite different to that of Namibia. Whereas the Namibian fishery is dominated by the larger vessels using mid-water gear with a much smaller purse seine fishery (mostly for juveniles), the Angolan fisheries are more diversified using smaller purse seine vessels (also referred to as semi-industrial) that transfer their catch into large “mother” vessels at sea for processing. Angola also has a significant artisanal sector that depends on horse mackerel fishing along the coast in the inshore using a multitude of fishing techniques and gear types. What is also of interest is the dynamic between the two species. In Angola the dominant species is *Trachurus trecea* (Cunene horse mackerel) and in Namibia it is *T. capensis*. Transboundary surveys undertaken through the Nansen Programme aimed to improve our understanding of the dynamics between these two species in the border area between these two countries.

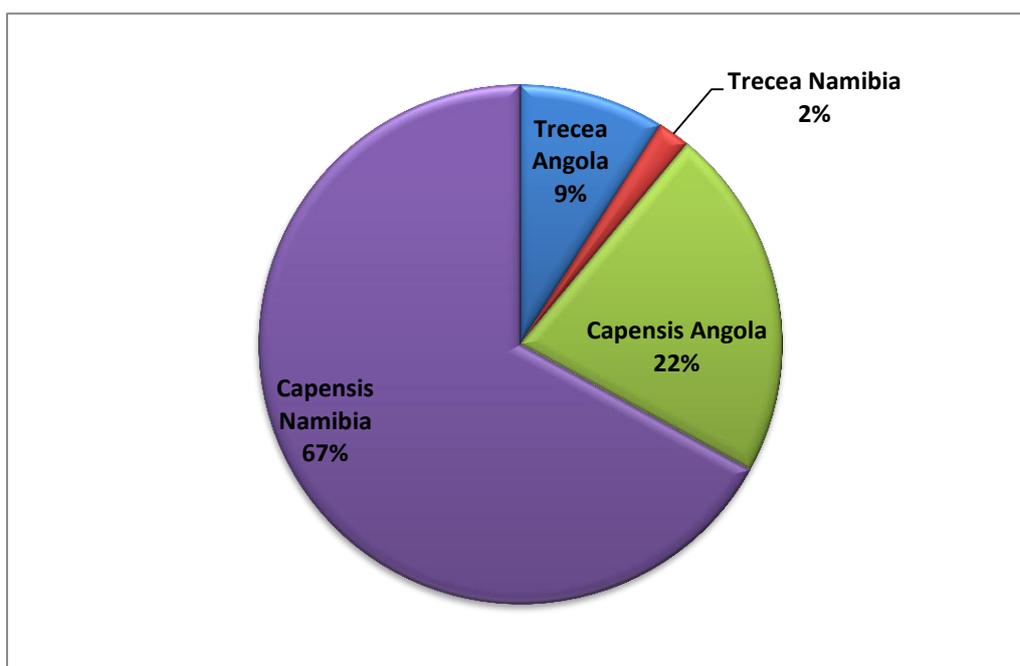


Figure 2. Average availability of biomass of the two horse mackerel species in the Angola-Namibia transboundary area.

The consolidated results of these surveys is illustrated in the figure above. In the transboundary area on average, 67% of the total horse mackerel biomass is cape horse mackerel (*T. capensis*) found in Namibian waters, 22% is in Angola with the remaining biomass (some 11%) that of Cunene mackerel found mostly in Angola (9%). These surveys also suggest that there is no obvious trend in the availability of horse mackerel in each country other than that there are periods of high and low abundance. The inter-annual variability it is believed, is primarily associated with both seasonal and inter-annual warm

water intrusions associated with the Angola Benguela Front (ABF). In years when the ABF moves south into Namibia the availability and abundance of Cunene mackerel seems to increase.

Stock Status

The Namibian Horse mackerel stock has been assessed since 2002 using a fleet-disaggregated age-structured production model with both historical and current data. Catch-at-age data and acoustic biomass survey estimates described earlier are used to estimate the status of the stock. The assessments for 2013 suggested that the stock is above the Maximum Sustainable Yield (MSY) level, with the replacement yield from 1990 to 2010 estimated to have been around 250 000 t. Average catches for 1990 to 2010 (Figure 3) have been about 300 000 t which were above the estimated replacement yield. However, the lower average catches of 212 000 t since 2007 may have allowed the stock to recover to MSY level. In 2012, the TAC for the mid-water horse mackerel fishery was set at 300 000 t, and 219 000 t was landed. There remains optimism re the state of the resource with the 2013 TAC set at 325 000 t and now in 2014, at 350 000 t.

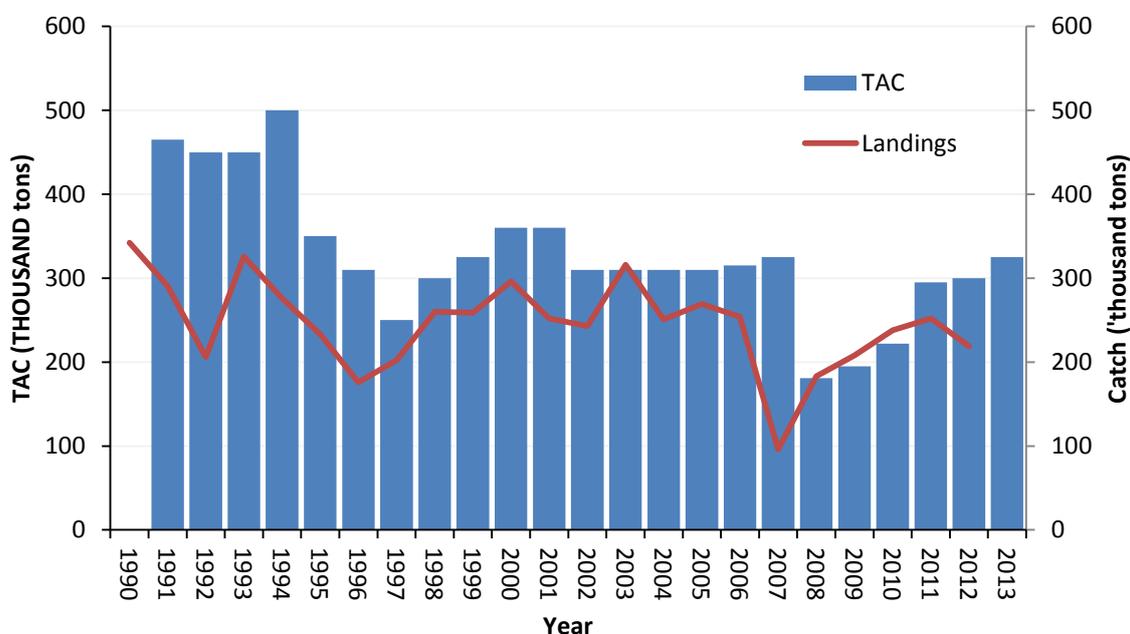


Figure 3: Namibia horse mackerel (*T. capensis*) TAC and landings from 1990 to 2013 (after: Fishery Management Plan for the Namibian Horse Mackerel Fishery, 2013)

The South African horse mackerel

The South African horse mackerel fishery is managed by a Precautionary Maximum Catch Limit (PMCL), which in 2014 was set at 50 615 tonnes. The PMCL is calculated annually using catch rate (CPUE) data from the *FV Desert Diamond* and abundance indices from research surveys as input data into the stock assessment model (Figure 4). The output model result is the Total Allowable Catch (TAC). The TAC for the 2014 midwater trawl sector has been set at 38 115 tonnes, which is a 10% increase from 2013 (34 650 tonnes). The remaining PMCL (12 500 t) forms the demersal trawl bycatch reserve, which is the same as last year.

Juvenile horse mackerel are also caught as a bycatch in the small pelagic purse seine fishery targeting sardine and anchovy and thus, a precautionary limit of 15 553 tonnes was set for the small pelagic sector, which is a 20 % increase since last year. This is due to the availability of unusually large numbers of juvenile horse mackerel on the West Coast. The increase in the potential “bycatch” of horse mackerel in the other directed fisheries for small pelagic species (anchovy, sardine and red-eye pilchard) could have had severe implications for these fisheries as it threatened their closure if the horse mackerels precautionary catch limits were reached.

In 2012 a scientific task team of the Demersal Working Group at DAFF recommended the implementation of a “new approach” to managing by-catch of juvenile horse mackerel in the small pelagic fishery. This recommendation was that a catch restriction be set for a period of three years that would effectively set the “available” by-catch in any given year according to the by-catches made in the previous 2 years. This rule, now referred to as “PUCL₃” allows for flexibility in annual allocations. It also “satisfies acceptable levels of risk identified in the analyses”. The application of this procedure seems to be working with a total juvenile horse mackerel catch of 18 000 t set for a three-year period.

The demersal and midwater catches show a decline since 2012 (Figure 4).

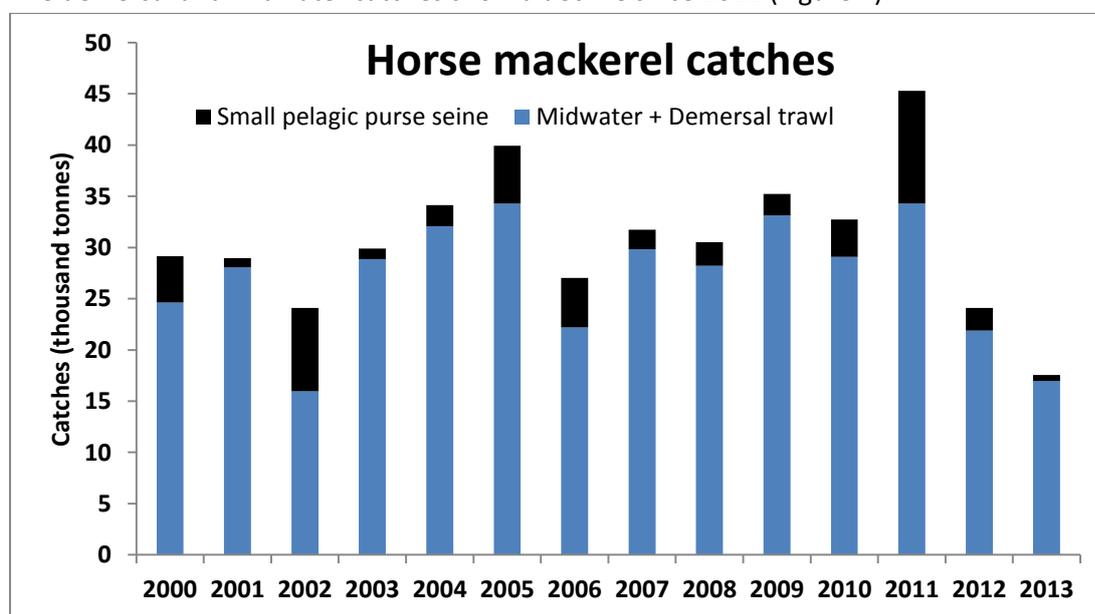


Figure 4. Horse mackerel catches for the trawl sectors (midwater and demersal) and the small pelagic purse seine sector.

Although not of immediate concern, the modelling of the catch rates based on the primary vessel in the fishery (*FV Desert Diamond*) also suggested a decline in horse mackerel availability in 2012 (Figure 5). The fishery continues to be closely monitored and has 100% independent Observer coverage with strict by catch limits, particularly for hake.

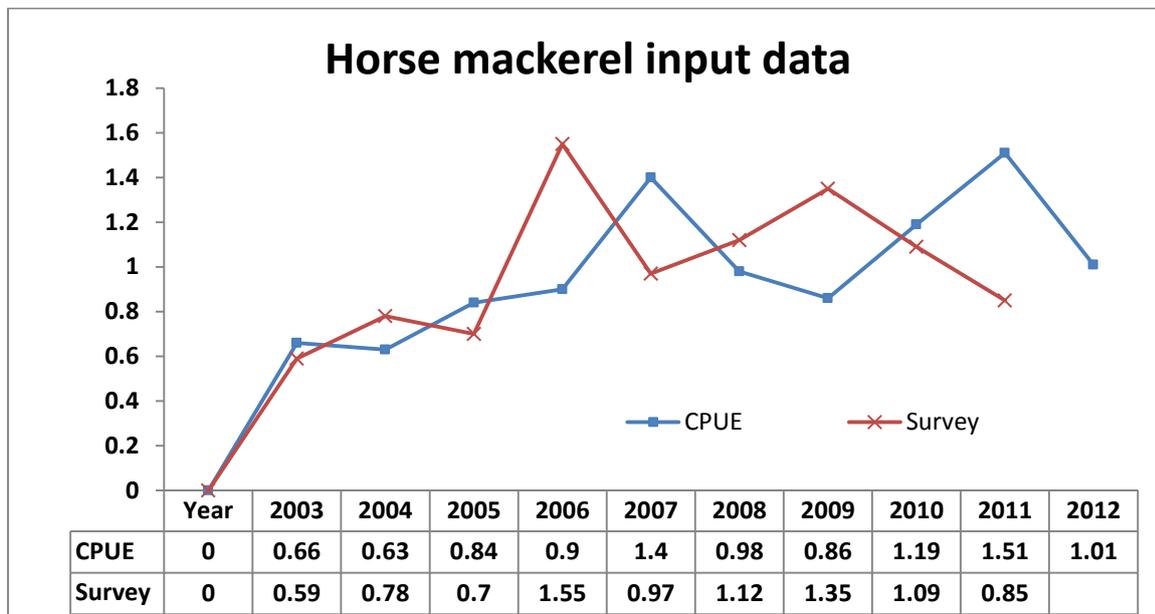


Figure 5. *Desert Diamond* GLM standardized CPUE and autumn demersal survey abundance indices, for the purposes of calculating the 2014 TAC (Furman 2013).

The decline of catches is linked to the unavailability of horse mackerel in the traditional fishing zones off the East coast. It is not known what the reason for this unavailability is, but we do know that the East coast fisheries in general experienced difficulties over the past two years, notably the squid fishery as well as the inshore trawl fishery. This could well be due to environmental oceanographic appearances or even the results of an increase in seismic activities.

The Department of Agriculture, Forestry and Fisheries has not been able to derive any specific explanation for this, given that no surveys have taken place since 2012. *Desert Diamond* Fishing has applied for permission to allow the vessel to fish west of the 20 degree East longitude, which is the line that defines the western boundary of the current fishing grounds. The rationale behind this request is based on knowledge of increased volumes of horse mackerel being caught by demersal hake directed trawlers coupled with the need to investigate if there has been a westward shift in the resource.

References:

- Furman, L. (2014). Recommendation for the 2014 TAC for the Horse Mackerel Directed Midwater Fishery. (*FISHERIES/2013/OCT/SWG-DEM/62*)
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