STATUS AND MANAGEMENT OF THE SOUTH AFRICAN HAKE TRAWL FISHERY – 2018

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Stock status and Catches

Catches in the hake fishery are taken by three different sectors with trawl split between the inshore trawl and deepsea trawl. While the deepsea trawl remains the dominant part of the fishery, the catch taken by the inshore trawl and longline approximates 10% of the Total Allowable Catch (TAC). Increasing amount of inshore hake is been taken in the deepsea sector where the target species is the deepwater hake *Merluccius paradoxus*. While the trawl sector has a strictly controlled effort level of about 50-60 trawlers, the longline sector has up to 150 vessels each allocated catches of between less than 100t and as low as 30 t. The hake TAC in 2015 and 2016 was fixed at 147 500 t and in 2017, while the OMP-2014 further resulted in a decrease of TAC to 133 119 t. Driving these changes are low survey and commercial catch rates for shallow water hake (*M. capensis*) on the South coast, which are being carefully monitored. The trend in the TAC since 2014 has been gradually downwards (Figure 1) as the OMP responds to the indices used to determine the state of the hake stocks.

The most recent (May 2018) assessment of the hake stocks indicated that the deep-water *Merluccius paradoxus* and the shallow-water *M. capensis* are however both above the biomass target reference point i.e. $B_{MSY}$ (Figure 2). This suggests that the Operational Management Procedure (OMP) for the hake fishery, which is designed to return or maintain the stocks at $B_{MSY}$ or greater, depending on the state of the respective stocks, is responding as it was intended. Included in the indices used in the OMP are the catch rates for *M. capensis* (Figure 2a) and *M. paradoxus* (Figure 2b). These trends reflect a mostly stable or positive hake stock.
Figure 2a. Standardised CPUE indices for shallow-water hake on the south and west coasts (after Glazer and Fairweather, 2017)

Figure 2b. Standardised CPUE indices for deep-water hake on the south and west coasts (after Glazer and Fairweather, 2017)

Further inputs into the OMP reference set include the model estimates of the Spawner Biomass ($B_{sp}$) as a fraction of the spawner biomass at MSY ($B_{msy}$) as shown in Figure 3.

Figure 3. Female spawning biomass trajectory for *M. paradoxus* (left) and *M. capensis* (right) shown relative to $B_{MSY}$. The horizontal and vertical dashed lines mark MSY and years in which historically the hake catch rates were at their lowest over the decades.
Management

In addition to catch limits (TAC or output control), the deep-sea trawl fishery is also controlled by limiting fishing effort (input or TAE control). The “number of fishing days” permitted by trawler operators is based on the current catch rates (as shown in Figures 2a and 2b) which, with the permitted catch and vessel power, translates into a sea day (trawling day) allocation. This measure therefore ensures that in addition to catch limits, effort cannot be exceeded i.e. it mitigates the potential for misreporting of catch. Such measures, which are voluntarily applied by the industry, are encouraged and strongly supported by the Marine Stewardship Council (MSC) given the potential weaknesses in the current monitoring systems of the hake fisheries.

Further the OMP-14 for “hake” (which is now under revision), the maximum allowable annual increase in the hake TAC is set at 10%, and the maximum allowable annual decrease at 5%. The OMP also has exceptional case conditions, including responses that may be needed if the biomass estimates fall below designated limit reference points. The OMP also sets an upper cap on the TAC, that cannot exceed 150 000 t, so with that, the final TAC output for the South African hake for 2018 is 133 119 t - a 5 % decrease from last year.

Industry-funded research

In addition to the routine research undertaken by DAFF, the fishing industry has voluntarily initiated its own investigations in the interests to better understand conservation aspects of the hake fishery. The Fisheries Conservation Project (FCP) agreement was signed in April 2016 between WWF South Africa and SADSTIA. This is a three-year Fisheries Conservation Project (FCP) through which includes:

- Improving the understanding of the level and nature of discarding in the trawl fishery;
- The assessment of the status of non-target species retained by the fishery; and
- Developing initiatives for both ongoing monitoring and, where appropriate, management of non-target species.

The primary aim of the project is broadly therefore to inform the understanding of the main non-target species in the trawl fishery, specifically angelfish, cape dory, gurnard, horse mackerel, jacopever, kingklip, monk, octopus, panga, ribbonfish, biscuit skate and snoek. The information being collects will support the stock assessment of these bycatch species in the hake trawl and will also be used to measure the status of these species against the WWF Southern African Sustainable Seafood Initiative (SASSI). SASSI is a programme that has been developed by WWF SA that endeavours to reduce pressure on listed species, which are categorized by a “traffic light” system to indicate their sustainability status i.e. green = best choice, orange = think twice and red = don’t buy. Essentially, industry aims to promote the status for the main non-target species from red or orange to green.

In addition to the FCP project, the SADSTIA observer programme is also collecting information on discards in the fishery in order to quantify the discard rate per species. The SADSTIA-funded observer programme covers about 40% of trawl fishing grounds (Figure 4). This routine programme was recently revised with a focus on discard species.
Figure 4. Spatial distribution of the observer samples showing total sample weight (kg) of unsorted samples summed per 5 min grid block. The trawl footprint has also been shown.

The observers are instructed to sample the length and weight of the unsorted catch, the discarded catch and to record the retained catch information per trawl in order to estimate bycatch rates, absolute bycatch volumes, discard rates and absolute discard volumes for all species of fish caught by the hake trawlers. This research is underway and preliminary results should be available before the end of the year (Figure 5).

Figure 1. Flow chart showing the composition of the total catch (retained and discarded catch) and when the observer samples are collected (left).