The South African hake (*Merluccius. capensis* and *M. paradoxus*)

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Hake are targeted by three fishery sectors: deep-sea demersal trawl, inshore demersal trawl and hake longline. Two other fisheries catch hake; the handline fishery based on the South Coast, which has declined significantly (140 t reported in 2014) and the horse mackerel-directed midwater trawl, which has a small incidental catch of about 880 t. The offshore trawl sector remains the dominant hake sector targeting the deepwater species (*M. paradoxus)* catching about 85% of the hake in South African waters. Over the last decade hake catches have fluctuated around approximately 130 000 t apart from low levels of approximately 110 000 t in 2009 and 2010. In 2014 the catches reached the highest level of the decade (145 000 t) with a 10% increase since 2013 (Figure 1). For operational reasons in some years the allowable catch was not taken.

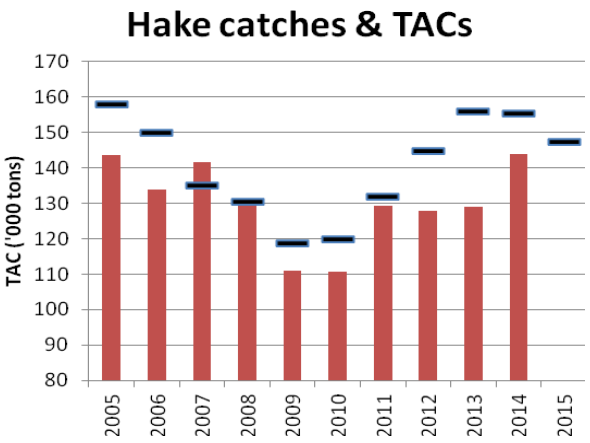

Figure 1. Hake catches (red columns) and TACs (black bars) for the last decade (DAFF 2014)

The revised OMP-2014

The Operational Management Procedure (OMP) for hake, which is amended every four years, was revised in 2014. This meant that new data (such as the hake longline data) and any new relevant information was reviewed and updated. During this process the OMP was still used to generate Total Allowable Catch (TAC) recommendations for the following year. Thus, using the new OMP, the TAC for 2015 was set at 147 500 t, which is a 5 % decrease on the 2014 TAC of 155 280 t (Figure 1).

An OMP is essentially a set of rules to regulate how the TAC value will be calculated each year and the new OMP-2014 will be used for the next four years, until 2018. Future catch rate projections under this OMP estimate that *M. paradoxus* abundance, as indicated by the catch-per-unit-effort (CPUE), will increase on the west coast but will remain stable on the south coast (Figure 2). The catch rates for *M. capensis* however indicate that the resource will increase on both the west and south coast. The projections of survey abundance estimates (Figure 3) appear to be stable, albeit increasing marginally, for *M. paradoxus on* both coasts, whereas *M. capensis* on the south coast is forecast to decrease by 2017.

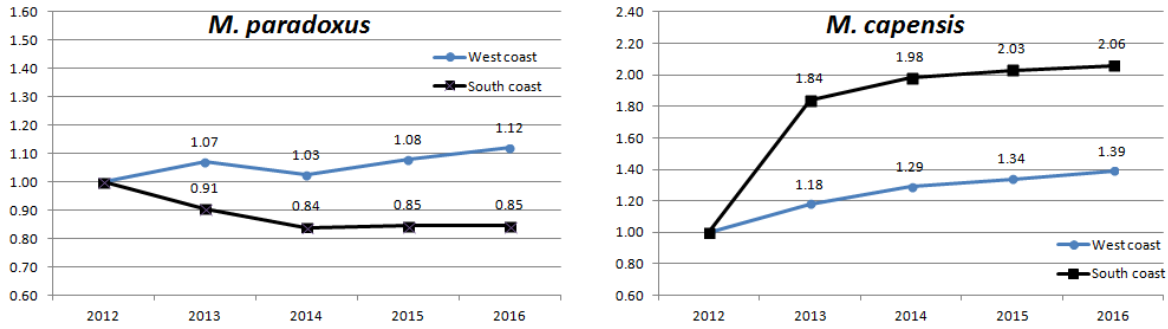

Figure 2. Projected GLM-standardised CPUE indices for deep and shallow-water hake

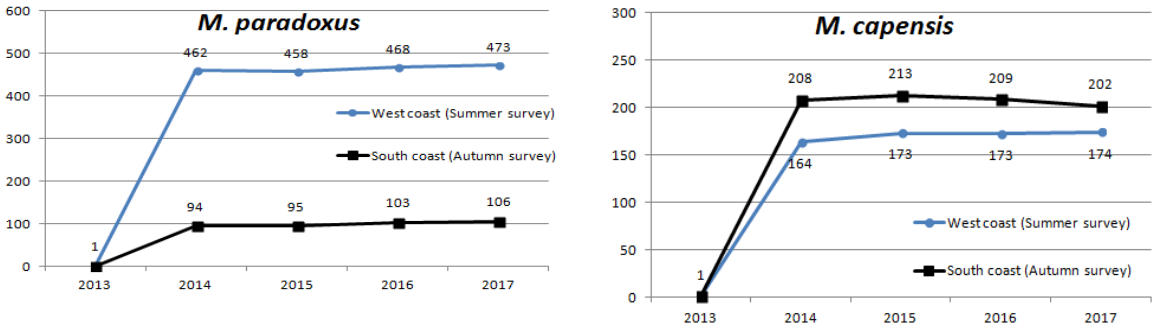

Figure 3. Projected survey abundance indices for deep and shallow-water hake

Re-certified by MSC

In 2004 the South African hake trawl fishery became the first hake fishery in the world to be certified by the Marine Stewardship Council (MSC). The fishery was re-certified in 2010 and, after a rigorous 12-month re-assessment process, achieved accreditation for the third time in 2015. The re-assessment process incorporated gathering information relative to the fishery during a site visit in March 2014, which involved discussions with experts and stakeholders, and reviewing relevant literature. The final draft report (Andrews *et al.* 2015) stated that the MSC assessment team "identified very few weaknesses in the fishery" and recommended that the hake trawl fishery should be re-certified subject to three conditions required to raise the score of specific performance indicators above 80%.

The conditions identified are :

- The continuation of the rebuilding strategy for deepwater hake which are deemed to be at a low level ;
- Acquisition of information about the impacts of the inshore fishery on seabirds and as for the offshore sector, the development of a programme to mitigate any impacts that may be identified; and
- Action to address the management of potential impacts of trawling on benthic habitats.

To address each of these conditions the client (SADSTIA) has drawn up a "client action plan" to ensure that progress is made to improve the fishery and so meet the MSC conditions. Of particular interest is the method established to gather increased data on seabirds for the inshore fishery. The fishery consists of 14 vessels, of which only three are suitable for observers. This requires a two-pronged approach to monitor seabird bycatch within the fishery, consisting of: 1) the use of seabird specialist observers onboard vessels that can accommodate them to assess and quantify seabird interactions; and 2) the use of electronic monitoring devices (such as video cameras) to assess seabird interactions on vessels, which are not suitable for an observer because of the small size of the vessels.

The inshore trawl bycatch management system

The inshore trawl sector on the south coast primarily targets *M. capensis* although Agulhas sole is also targeted by a number of "sole specialist" vessels. Vessels on the inshore trawl grounds have an incidental catch of many species other than that targeted (hake and sole). This catch is commonly referred to as "bycatch" which in MSC terminology is referred to as either "primary" species (those retained and have commercial value) or "secondary" species (those mostly discarded and in very small amounts). The bycatch can therefore comprise of up to 140 species that can make up to about 38% of the total catch by mass, although 98% of this bycatch is made up of only 20 species (Attwood *et al.* 2011). While Precautionary Upper Catch Limits (PUCLs) apply to the primary bycatch species in the offshore and inshore fisheries for horse mackerel, monk and kingklip, there are currently no similar management measures for other bycatch species caught by the inshore fishery. In order to address this a two-tiered approach involving a combination of Fishery Management Areas (FMAs) and co-management of the bycatch species of concern using a catch limit system was proposed and is currently been tested collaboratively with the fishing industry, WWF and DAFF.

Four potential FMAs (or proposed closures) were identified, located at De Hoop, Tsitsikamma, Algoa Bay and Stilbaai (Figure 4). These sites were selected on the basis of multiple criteria with an emphasis on minimising the closure of existing fishing grounds while maximising the representation of bycatch species in protected areas and addressing the protection of benthic habitats (Sink *et al.* 2013). Experimental catch limits have been proposed for seven bycatch species (panga, silver kob, carpenter, chokka squid, St Joseph, sharks, skates, and gurnards) as a basis from which to determine the level at which a PUCL could be set for each species. This experiment started in 2014 and will continue for the rest of 2015 with a view to formalise the implementation of a PUCL system, if appropriate, in 2016.

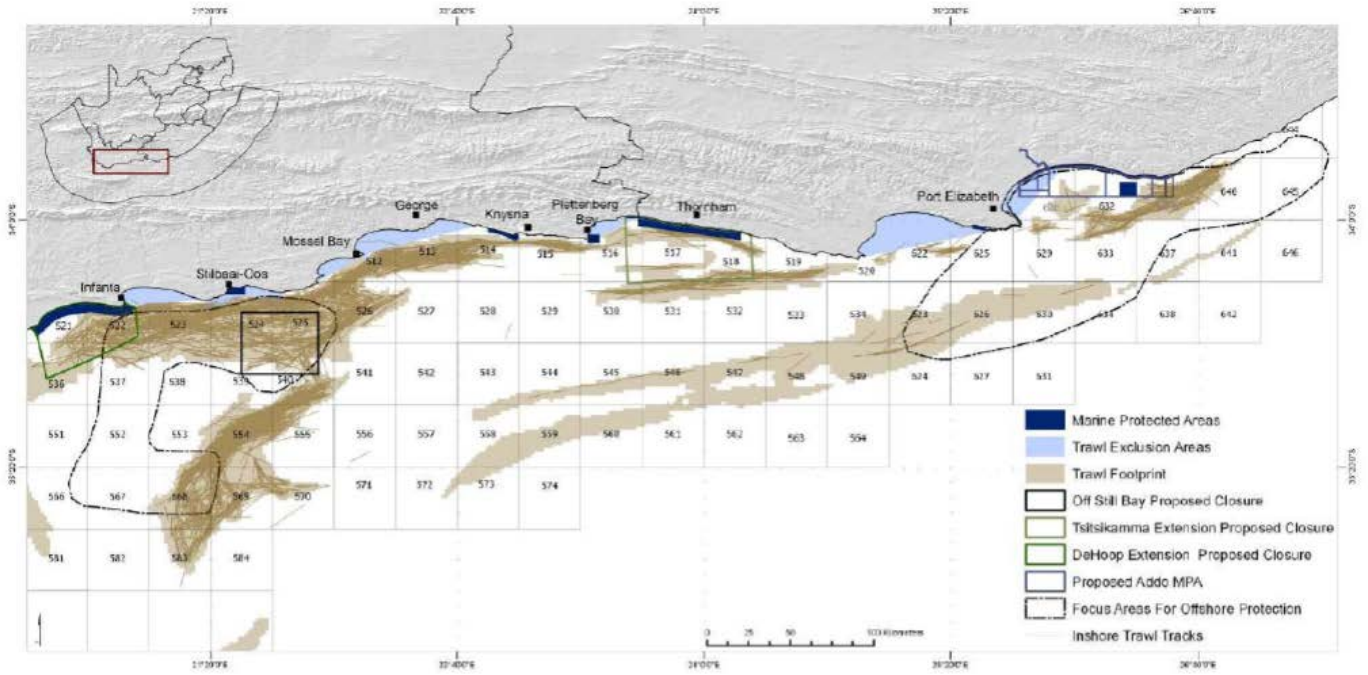

Figure 4. Existing and proposed spatial management measures that contribute to bycatch management in the inshore demersal trawl fishery, including proposed Fishery Management Areas (FMAs) (Sink et al 2013)

References

Attwood C, Petersen S and Kerwath S 2011. Bycatch in South Africa's inshore trawl fishery as determined from observer records. ICES Journal of Marine Science. 68(10), 2163 – 2174.

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