

2014 STATUS OF SOUTH AFRICAN HAKE RESOURCE

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The South African hake fishery since 2013

For the 2014 fishing season the Total Allowable Catch (TAC) for both species of hake, shallow water *Merluccius capensis* and deep water *M. paradoxus*, was set at 155 280 tons. This is a 0.6% decrease on the 2013 TAC of 156 075 t (Figure 1).

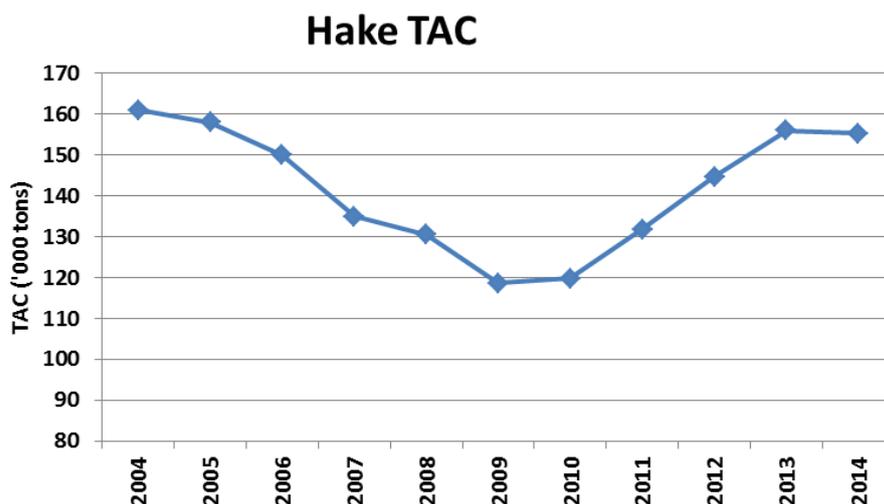


Figure 1. Hake TACs for 10 years from 2004 – 2014

Annual scientific stock assessments underpin the management of the hake resource. This annual assessment process culminates normally in October whereafter the scientific advice is submitted to management for consideration (amongst other management matters). The scientific assessment process is simplified through an Operational Management Procedure (OMP) which effectively is a set of rules in response to the critical inputs of the stock assessment model. These inputs vary but include the commercial catch per unit effort (Figure 2) and the independent research trawl survey abundance indices (Figure 3).

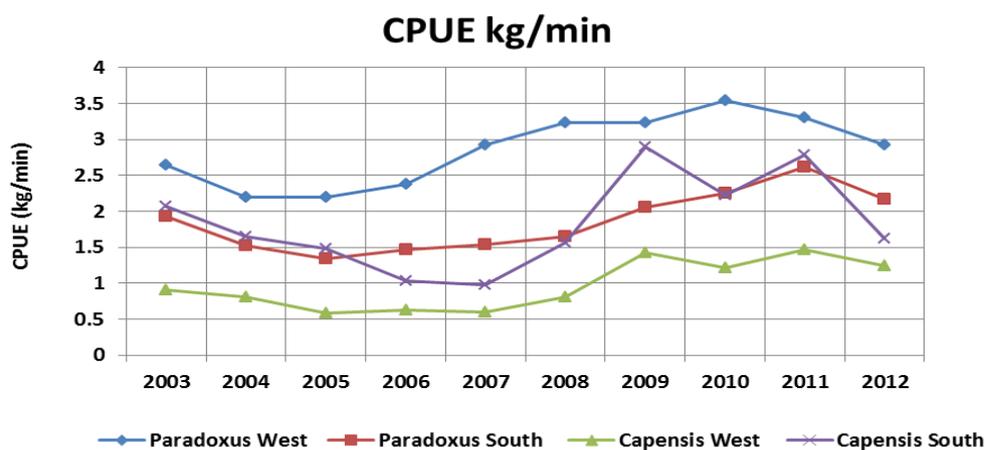


Figure 2. GLM-Standardised CPUE trends up to 2012

The first OMP was implemented in 1990 and has since been revised every four years. Modifications of the main model are only made if exceptional circumstances prevail that may necessitate changes to the model parameters. The OMP is presently undergoing review with the only expected change relating to the incorporation of indices from the hake-directed longline fishery (which catches about 6% of the allowable catch). Three demersal surveys to obtain independent scientific biomass estimates of hake were conducted during 2013 and 2014. Results from these surveys are added to the long-term biomass time series and the preliminary results of these surveys are shown in Figure 3.

Due to the ongoing problems with the department's (DAFF) own survey vessels (in particular the *FRS Africana*) a commercial hake trawler (the *M.V. Andromeda*) was adapted for scientific deployment and was used for these surveys. Although the gear used on the *M.V. Andromeda* was the same as the *F.R.S. Africana*, these results will however not be used in the next stock assessment due to the need for further gear calibration to standardise the results with the historical data of the *FRS Africana*. The biomass estimates from the commercial trawl nevertheless suggested that the relative biomass of both *M. paradoxus* and *M. capensis* on the west coast has improved marginally from 2013. The relative biomass estimates for the south coast (Figure 3) is less clear suggesting that deep-water hake has improved while that of shallow-water hake has declined. We stress that standardising of surveys between vessels used is a complex calculation and that these results are relative indices. Changes in vessels and gear used may therefore have impacted on the biomass estimates.

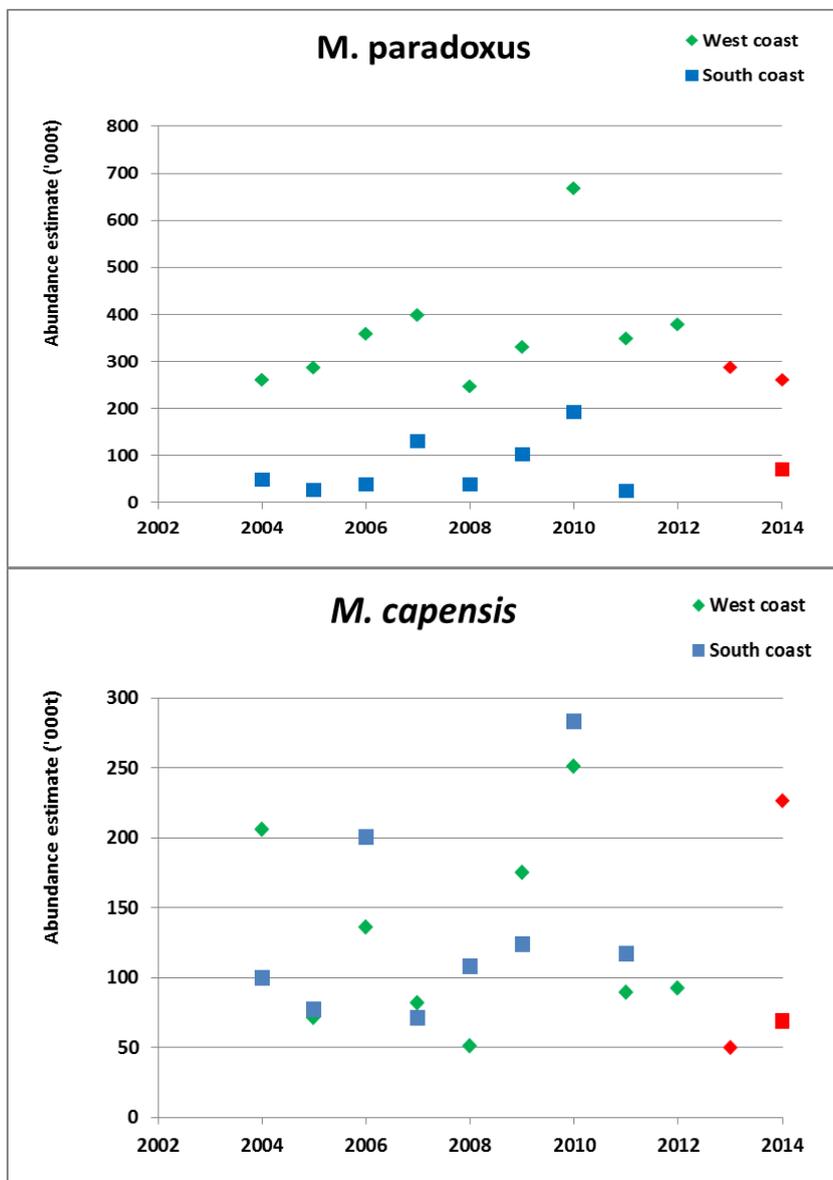


Figure 3. Preliminary results of abundance estimates collected during the 2013 and 2014 demersal surveys on the industry owned vessel, the *M.V Andromeda* (red)

Transboundary or not?

One of the fundamental management questions pertaining to our hake fisheries relates to “stock structure”. For example we not only have two species of hake (deep and shallow) but also potentially different stocks. The same species can have different stocks whose general biological parameters may be similar but which may be separated due to environmental or other parameters.

Namibia and South Africa have always assumed our two hake species are different stocks in each other’s country and have assessed them as such. Apart from the political dimension, this has implications for the management of these species if in fact our deep-water hake for example is all one stock. If this is the case then the deep (or shallow) water hake may in fact constitute a “transboundary” stock and this would require consolidated management and a single stock assessment. This is naturally a highly contentious issue as the hake populations are not fully understood and it is still unclear whether the hake resources are transboundary or not.

The Benguela Current Commission (BCC) together with EcoFish are in the process of developing a new framework to improve our understanding of the basic processes in the Benguela ecosystem and thereby improve the assessment of hake in Southern African waters.

To date, genetic research suggests that for *M. capensis* there are no significant genetic differences between adult fish sampled in Namibia and South Africa i.e. that they are probably a single stock. On the other hand the genetic indicators used for deep water hake (adults only) suggested that there may be two different populations of *M. paradoxus* in Namibia and South Africa., (Heyden et al. 2007. *Mol. Phylogenet. Evol.* 42. 517-527). Further, spawning of *M. capensis* in both Namibia and South Africa lends weight to the hypothesis that there is likely to be separate stocks of this species between the two countries. For *M. paradoxus* however, the genetic markers suggest two different populations in Namibia and South Africa conflicts with the fact that there is no direct evidence of spawning of deep-water hake in Namibia. (Kiange et al. 2007. *Afr. J. Mar. Sci.* 29(3). 379-392). This implies that there is a single stock found predominantly in South African waters and that this species recruits to Namibia from South Africa. Clearly this uncertainty means that the stock dynamics of the transboundary hake resources between the two countries remains uncertain and that integrated management of hake would be premature until there is stronger scientific evidence.

The benthic rehabilitation experiment.

The Marine Stewardship Council (MSC) certificate is an eco- label that was awarded to the hake trawl fishery in 2004 for meeting the global standards for sustainable fishing practices. It is revised and renewed every four years. The fishery will be reassessed in 2014 and hopefully re-certified for a third period.

Numerous “conditions” relating to the second certification period had to be addressed before moving ahead with the recertification process in 2014. In response to one of the MSC conditions on habitat impacts a benthic “rehabilitation” experiment to monitor the possible recovery of sea-life in fallow trawl lanes was conducted earlier this year from a research vessel using a towed camera sled and a benthic grab. The experiment, which is ongoing, involved closing frequently commercially-trawled grounds (trawl lanes) while keeping some lanes open for comparison (Figure 4). The first

