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STATUS AND MANAGEMENT OF THE SOUTH AFRICAN SQUID AND WEST COAST ROCK LOBSTER— 2019



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1 West Coast rock lobster: TAC determination for 2019/2020

In the past the global Total Allowable Catch (TAC) for the West Coast rock lobster resource was calculated using an Operational Management Procedure (OMP) approach, similar to the management approach used for the hake, pelagic fish and South Coast rock lobster resources. However, because the resource has been judged to be in exceptional circumstance, the TAC recommendations in recent years have not been based on an OMP, and the TAC has been based on stock assessments and resource biomass projections updated annually.

The global TAC is divided amongst different sectors each of which is further divided and allocated to the following super-areas:

- Areas 1 and 2 (Port Nolloth and Hondeklipbaai);
- Areas 3 and 4 (Lamberts Bay and Elandsbaai);
- Areas 5 and 6 (Saldanha Bay Area);
- Area 7 (Dassen Island); and
- Area 8+ (Cape Point, and east to Gansbaai).

1.1 Management considerations for 2019/2020

As has happened since the 2016/17 fishing season, fresh stock assessment calculations and forward projections of resource performance were run during 2019 in order to develop a TAC recommendation for 2019/2020. Past levels of IUU fishing in the sector, and assumptions about future levels are a critical driver of the results of those calculations. During 2019 these IUU fishing levels were reviewed yet again. Two main sources of information are used to calculate IUU fishing levels. These are the results of confiscations from police activity, known as the ‘compliance data’, and calculations based on international trade data, known as the “TRAFFIC estimates”. A new feature of the 2019 deliberations on IUU fishing levels has been a distinction between IUU channelled into the local market, and IUU channelled into the export market. The relevance of the two information sources has been that the TRAFFIC estimates provide an estimate of abundance and trend in export related IUU, and the “compliance data” has been taken to reflect the trend in the sum of export and local IUU.

In 2018 scientific recommendations for WCRL, based on the compliance data and the TRAFFIC estimate, used a future poaching level of approximately 1500 MT. The calculations forecast that in the absence of any commercial fishing, but allowing for IUU, the resource would achieve ~13% growth in male resource biomass above 75 mm between 2006 and 2025. A step-down TAC policy of 1085 MT for 2018/2019 and 244 MT for 2019/2020 and beyond was forecast to achieve 7% growth in male resource biomass above 75 mm. This harvest policy divides the benefit to the resource and the industry equally and was eventually the option chosen by the minister.

The revised estimate of exported poached catch for 2018 is 318 MT. The analysis of the compliance data was revised. This showed evidence of a reduction in poaching in 2018 compared to 2017. The WCRL SWG decided to base management decisions on locally sold poached lobster levels of either 400 MT or 700 MT. Added to the 318 MT exported poached amount gives either 718 MT or 1018 MT poached in total. These changes to the poaching estimates, and updated stock assessments changed the estimates of resource biomass growth rates 2006 to 2025. The catch that splits the benefits to the resource and the industry equally is now estimated to be 640 MT, and the resource biomass growth rate at this level is 15%. The sustainability threshold occurs however at 1275 MT (this is the maximum catch that can be classified as sustainable). On the baseline calculations, a status quo TAC of 1084 MT for the future would therefore still allow for some small resource biomass growth. At the time of writing the Minister’s decision to maintain the status TAC and sector allocations has been announced publically.

The evidence for a decline in poaching represents a significant opportunity for the management of the resource, since this appears to be the result of the new shortened fishing seasons. It is the one measure that may be able to limit the scale of IUU fishing. The industry have proposed yet additional effort regulations to further capitalise on the benefits that seem on offer from these shortened fishing seasons, using sea days allocated pro rata to quota. There is a view that the use of sea day limitations in addition to the shortened seasons can further limit IUU. Industry are of the view that such a measure can be introduced in an administratively manageable manner. A realistic expectation would be to see such a system in place for the 2020/2021 fishing season and not for the 2019/2020 season.

There are a number of issues on the periphery of the scientific debate that can if fully articulated lead to smaller or larger TAC levels in future years:

- 1) Further revisions of IUU estimates.
- 2) Repeated failure to reach resource biomass rebuilding targets.
- 3) Formally incorporating uncertainty into setting TACs.
- 4) Trends in somatic growth rates which were very poor in the November 2018 moult
- 5) A re-evaluation of the status of the resource, and considering the sub-legal sized biomass.

The trend in the WCRL global TAC since 1991/1992 is shown in Figure 1.

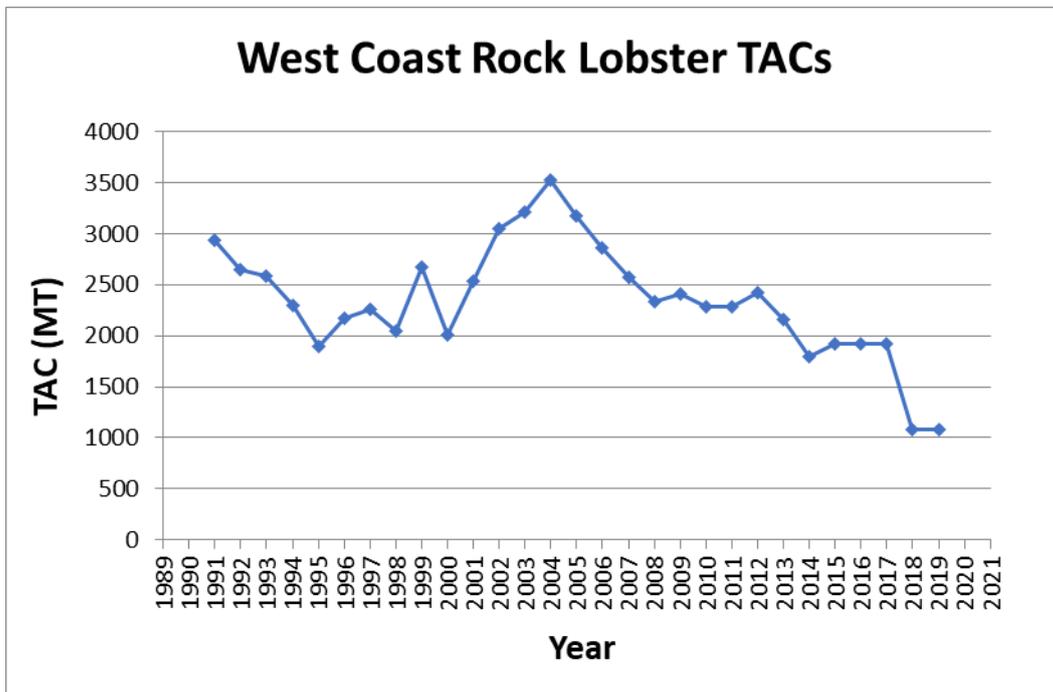


Figure 1. TACs for the West Coast rock lobster resource, 1991/1992 to 2019/2020 fishing seasons. In this plot 1991 refers to the 1991/92 fishing season.

1.2 EFFORT CONTROLS.

In 2017/2018 the scientific committee for West Coast rock lobster had proposed that, in an attempt to limit effort in the fishery, and to allow compliance personnel to focus their energy more effectively, shortened fishing seasons which are different in different management super-areas would be put in place. These new fishing seasons remain a feature of the management system for the fishery for the 2019/2020.

2 South Coast rock lobster: Status, TAC, Prospects

Although also based on the exploitation of a spiny rock lobster resource, the South Coast rock lobster is a capital intensive and high cost fishery, features more commonly associated with a trawl fishery. The SCRL fishery is conducted from 7 vessels which range in length from 30 to 40 metres and deploy between 3500 and 6000 plastic traps per vessel. These plastic traps are deployed along a main line roughly 2 km in length and spaced such that each line carries between 150 and 200 traps. A typical set involves the deployment of 20 such lines and the usual configuration is to deploy two sets of 20 lines which are hauled on alternative days with an average soak time of 48 hours. Fishing depth ranges from 100 to 250 metres. Traps are winched collectively by line. Catch rates in the order of 1 lobster per every three traps per set are typical in this fishery, yielding catch rates in the order of 0.1 kg / trap / pull on a tail weight basis. Crew complements per vessel vary between 25 and 40. The SCRL fishery is therefore a complex and high cost operation where running a vessel above its breakeven point requires careful management of vessel schedules, the selection of fishing locations, and capital financing.

The South Coast rock lobster (SCRL) fishery is managed by a combination of input and output controls. The output control is a TAC with associated IQs (Individual Quotas), and the input control is a Total Allowable Effort (TAE) which is a limitation on the number of fishing days. The TAC is the primary control measure. The TAE, based on a fishing day allocation, is a secondary measure. Up until the 2015/2016 fishing season, the TAE was designed to be an active constraint on the fishery roughly 1 in 20 years. An important development during 2015 was a revision of the effort controls (TAE) used in the management of the fishery. Up to 2014 the TAE was set on the basis of a 1:40, pool out basis. This means that the effort control, expressed as fishing days, was at a level of “tightness” that only in one year out of 40 would the industry have difficulty landing their TAC, because effort levels were too low. The pool out aspect means that a 10% buffer of fishing days would be held in reserve to assist worthy applicants with additional extra-ordinary effort. This pool amount is added on to the basic 1:40 years calculated number of fishing days. During 2015 as a result of an initiative by DAFF and an agreement between DAFF and the South Coast Rock Lobster Industry Association, the basis for the TAE was tightened to a level of 1:20 “Pool-In”, where the pool of 10% is subtracted from the basic number of fishing days calculated.

The TAC for the fishery is being managed by means of an OMP in which the TAC is capped at 450 MT, and with an objective to rebuild the spawning biomass by 30% over the period 2006/07 to 2025/26, an increase in the rebuilding amount of 20% used in the previous OMP.

The following data are used in the management of the resource:

- 1) Catch-per-unit-effort – measured as kg tails per trap set
- 2) Catch-at-length data
- 3) Tagging data

2.1 Summary of the 2019/2020 TAC decision.

During 2019 the OMP for the SCRL resource was revised. Forward projections of the resource biomass and the TAC showed that in striving for the 30% rebuilding target the TAC would temporarily decline by 5% and then gradually increase in the future. The responsible scientific committee was of the opinion that it did not make sense to reduce the TAC and then rather rapidly reverse this decision in the ensuing years. This would cause unnecessary industrial dislocation. Further calculations showed that achievement of the rebuilding target would not be compromised if the TAC was not reduced for the next two fishing seasons below the 321 MT level. This approach was accepted, and as a result the 2019/2020 TAC advice was for a TAC of 321 MT. Subsequently a TAC of 321 MT tail weight has been set by the Minister.

Figure 2 shows the TACs since the 1989/1990 fishing season, and up to the 2019/2020 fishing season.

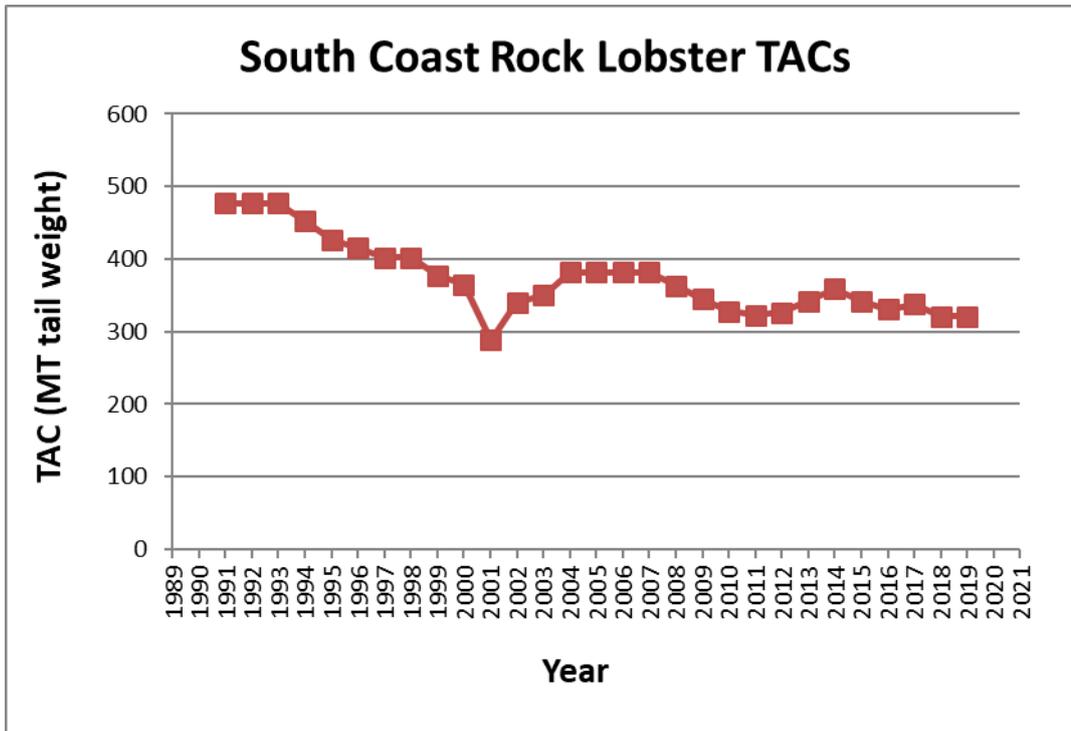


Figure 2. TACs in the South Coast rock lobster fishery 1989/90 – 2019/20.

2.2 MPAs

A series of new MPAs have been established in the South African EEZ and a number of these are located within the SCRL fishing area. These MPAs are detailed in the Government Gazette No. 42479, dated 23 May 2019. Some of these MPAs are subdivided into areas where SCLR is permitted (controlled zones), and those where no SCRL fishing is permitted. Based on historical catches, the new MPAs affect about 4.5% of the SCRL catch. Controlled Zones allow only for fishing of specified species. Four of the designated Controlled Zones allow for SCRL fishing. These are: Sundays Offshore Controlled Zone, Cannon Rocks Offshore Controlled Zone (both Addo Elephant Park MPA); Agulhas Bank Controlled Zone (Agulhas Bank Complex MPA); and the Gxulu Offshore Controlled Zone (Amathole Offshore MPA).

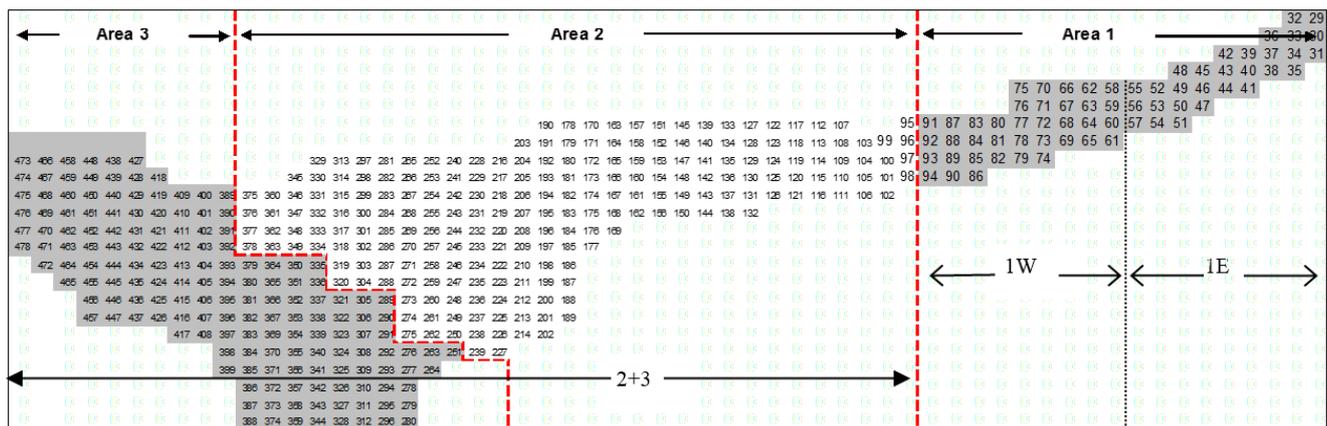


Figure 2. The fishing grounds showing the statistical areas that are used in the formulation of scientific advice for resource management, South Coast rock lobster resource.

3 Squid jigging industry

The fishery is an effort-controlled fishery, where effort is managed by a combination of vessel and crew allocation permits and closed seasons. A safe effort level is estimated by mathematical models which use the following input data:

- Jig catch data
- Trawl catch data
- Jig CPUE data
- Trawl CPUE data
- Spring survey biomass index from demersal trawl surveys
- Autumn survey biomass index from demersal trawl surveys

The management of the resource was reviewed at an international workshop held at the University of Cape Town in 2012. Some of the scenarios submitted to this meeting suggested that the scope for effort increases in the fishery was limited.

The following is a summary of important milestones in the fishery:

- Total effort in the fishery rose between the period 1995 to 2010, while the number of crew permits in the fishery remained unchanged and the number of vessels was reduced. The catch rates peaked in the period 2008 and 2009 as did effort levels despite the existence of an additional closed season of 6 weeks duration in 2008, 2009 and 2010.
- From 2010 to 2013, catch rates declined to a low point. Although it may be that the effort level reached a point at which it impaired the recruitment reproductive capacity of the resource, similar declines in the availability and/or productivity of other resources (notably sole and horse mackerel) at about the same time suggests that the experience in 2013 was more likely an environmentally driven event.

The mathematical models of the resource suggest that the effort level in 2010 was 15%-20% higher than would produce a 5% chance that the 2022 resource biomass would fall less than 20% of the pristine resource biomass. Any appraisal of this result needs to recognise the semi-arbitrary nature of this risk measure. Nevertheless, this was a motivation for proposals for effort reductions in the fishery. Two approaches to reduce effort were considered:

- **Reduce crew permits only:** One was to eliminate vessels which had previously under-utilised their opportunities (i.e. days at sea) in the fishery. Under this approach the required 15 - 20% reduction in effort (to 250 000 man days) is achieved when the total number of crew permits are reduced by 57%. This calculation assumes that the vessels which remain in the fishery utilise an average number of fishing days as typical for each vessel in recent years.
- **Introduce an additional 4 month closed season, reduce crew permits slightly:** Another approach considered to achieve a target effort level of 250 000 man days was to declare an additional 4 month long closed season, coupled with eliminating vessels which previously underutilised the time available for fishing. Under this approach the number of crew permits are reduced by about 7.6% from 2422 to 2238 crew permits by eliminating vessels that have underutilised seadays in the past. This calculation assumes that the remaining vessel do not increase their seaday usage per month beyond what was typical in recent years for the remaining open period of fishing.

Managers are concerned about latent effort in the fishery which could increase effort levels. The reality of latent effort is however strongly contested by industry representatives, they suggest that the data are either incorrect and/or that the majority of vessels are already turning trips around at close to the maximum level.

The final management recommendation was to retain crew permits at 2422 and institute extra seasonal closures during April, May and June, additional to the regular five week closure during October and November. No vessel specific effort caps were imposed. On paper, this amounts to far less than the desired reduction in effort. Calculations presented in this document indicate that the net effect of this measure is very little, if any, reduction in effort. The best available science predicts that as a consequence of these measures there will be a larger than 5% frequency of resource biomass falling below 20% of pristine.

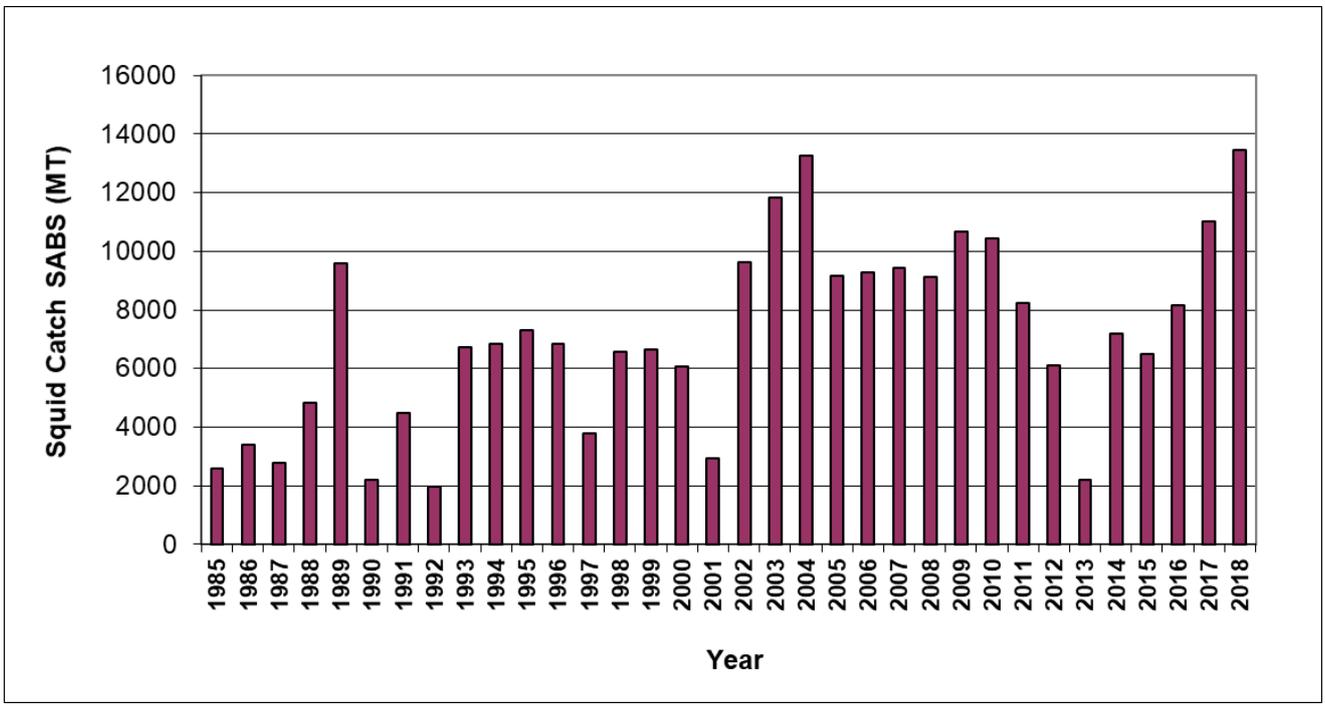


Figure 4. Catches in the squid jigging fishery 1985 to 2018.

Table 1. Table of effort controls and closed seasons for the squid jigging fishery.

Year	Effort Controls	Closed Season
2005	2423 unrestricted crew, 22 restricted crew	5 weeks Oct / Nov
2006	2423 crew or 138 vessels	5 weeks Oct / Nov
2007	2422 crew or 138 vessels	5 weeks Oct / Nov
2008	2422 crew or 136 vessels	5 weeks Oct / Nov + 6 weeks
2009	2422 crew or 136 vessels	5 weeks Oct / Nov + 6 weeks
2010	2422 crew or 136 vessels	5 weeks Oct / Nov + 6 weeks
2011	2422 crew or 136 vessels	5 weeks Oct / Nov
2012	2422 crew or 136 vessels	5 weeks Oct / Nov
2013	2422 crew or 136 vessels	5 weeks Oct / Nov
2014	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)
2015	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)
2016	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)
2017	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)
2018	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)
2019	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov (19 October to 30 November)