

West Coast rock lobster: Status, TAC, Prospects

The West Coast rock lobster resource is managed by means of an Operational Management Procedure (OMP) for the determination of a global TAC. Key inputs into the OMP each year are

- The commercial catch-per-unit-of-effort (CPUE) for both hoop net and trap fishing,
- The Fisheries Independent Monitoring Survey (FIMS) index, and
- The somatic growth rates.

The global TAC is divided amongst different sectors of the fishery (nearshore, offshore, interim relief, recreational), each of which is further divided and allocated to the following super-areas (see Figure xx):

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, east to Gansbaai).

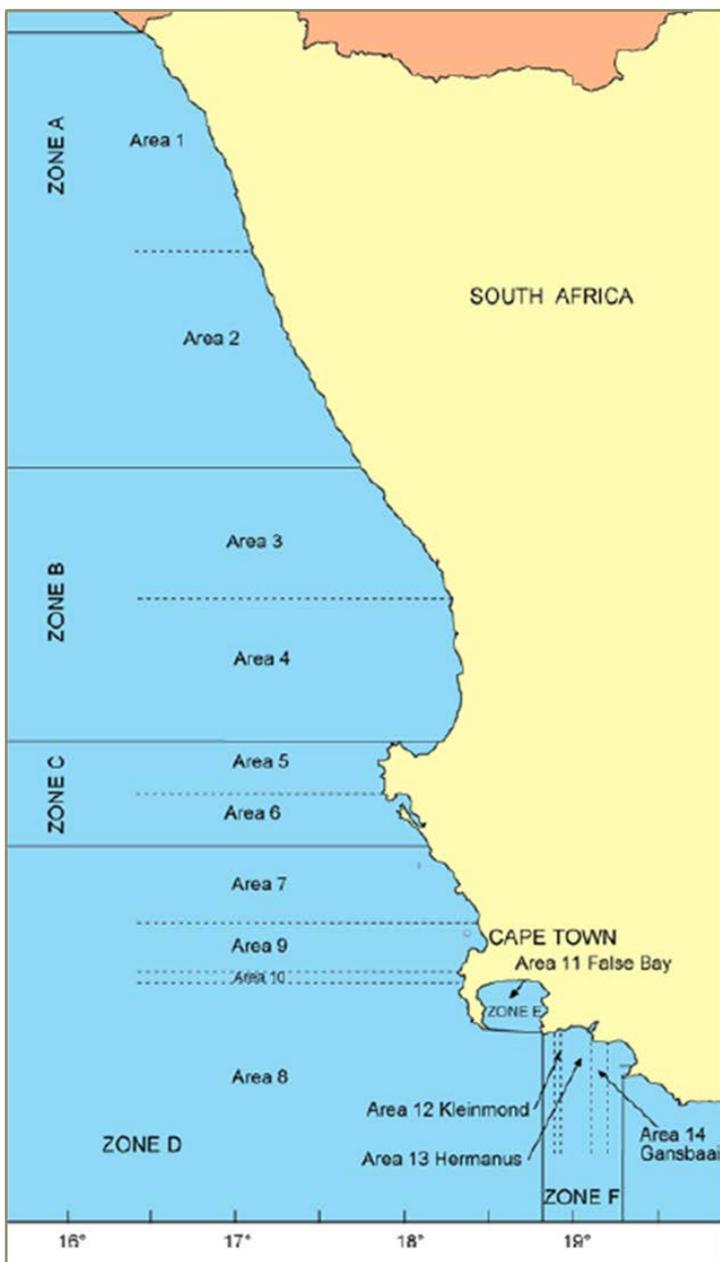


Figure xx. West Coast rock lobster fishing zones and areas. The five super-areas are A1-2 corresponding to Zone A, A 3-4 to Zone B, A5-6 to Zone C, A7 being the northern-most Area within Zone D, and A8+ comprising Area 8 of Zone D in conjunction with Zone F. Source (DAFF).

OMPs are revised every four years. Work on the revision of the OMP was carried out in 2010 and 2011, applicable to the 2011/12, 2012/13, 2013/14 and 2014/15 TACs. A review of the decisions made during the last four year is given below.

2011/2012 TAC

During 2011, prior to the start of the 2011/2012 fishing season, the scientific working group (SWG) reviewed a number of alternate OMPs. The OMP eventually submitted to management was designed to achieve a 35% biomass recovery by 2021. This is a higher level of recovery than was built into the previous OMP, a consequence of greater risk aversion towards the management of the resource, due partly to the fact that under previous OMPs the desired level of rebuilding was not achieved. There were also concerns about the high level of depletion the resource is estimated to have sustained over the course of the fishery. Management modified this OMP so that the long term recovery level of 35% was unaffected, but the 2011/2012 allocation to the offshore sector was set at the level associated with a 30% recovery target (1540.65 MT), a variant for which calculations had been carried out. There was also a request from the Interim Relief sector that the minimum legal carapace length for their sector be reduced from the current 80mm CL to 75mm CL as for the other commercial sectors, and this was granted. The final OMP, which commenced with the 2011/2012 fishing season, accommodates these changes. Following this, there was a further request, given good fishing performance in Area 5 and 6 and concerns about the biological status of Area 7, to transfer 40 MT from Area 7 to Area 5+6. This modification was also incorporated into the OMP.

The result for 2011/2012 was a global TAC of 2426 MT, a 6.1% increase from the 2010/2011 TAC of 2286 MT.

2012/2013TAC

For the 2012/2013 season, DAFF kept the TAC the same as the 2011/2012 TAC of 2426 MT. This was a cause for great concern given the advice of a 150 MT reduction by the scientific working group. The matter was well publicised and resulted in at least one case being heard by the law courts. The short term benefit of an unchanged TAC for 2012/2013 is, however, not without medium to long term costs. The new OMP contained the following two protective provisions:

- 1) **TAC reduction constraint rule:** The previous OMP limited TAC reductions to 10%. The new OMP made provision for as much as a 30% reduction under certain circumstances.
- 2) **The low abundance rule:** There was an 'Exceptional Circumstances rule' that provides for the closure of all fishing in a super-area should that super-area underperform to a sufficient degree. Following this, the SWG would have to convene and reconsider the OMP with a view to the possible transfer of TAC to other super-areas.

2013/2014 TAC

During late 2012 and early 2013 catch rates at Dassen Island were poor. It became clear that the Area 7 abundance index would fall below the exceptional circumstances low abundance threshold. Stock assessment results were presented during 2013 that suggested that virtually the entire biomass of

lobsters above 75 mm CL had been removed from Area 7. As a result it was agreed that for the 2013/2014 fishing season, fishing at Dassen Island would proceed on an experimental basis at a 80 MT allocation, split 20 MT per month for each of the months of December 2013, January 2014, February 2014 and March 2014.

However, given that OMP management of the fishery was suspended, it was agreed that management of the resource would proceed on a different basis. The intention was to try to stick to the OMP framework in the remaining super areas insofar possible, including adherence to the 35% recovery target. Part of this involved a substantial increase in the trap fishing tonnage allocated for Areas 5+6, and a very substantial reduction in the effort allocated for recreational fishing. However, given that a number of issues were now up for debate, the scale of poaching in the fishery was also reconsidered, and a substantial 25% increase in poaching relative to previous assumptions was built into the mathematical model. The final outcome from this process was a global TAC allocation of roughly 2160 MT for 2013/2014.

2014/2015 TAC

During 2014, scientific deliberations on the 2014/2015 TAC resulted in a negative reassessment of the medium term productivity of the WCRL resource in some of its super areas. The situation in Area 8+ was/is a particular cause for concern, as are widespread reports of increasing levels of poaching, coupled with the use of increasingly brazen methods of illegal fishing. Revised stock assessment results estimate that the resource in Area 8+ has been underperforming relative to the assessment results that were used to develop the OMP in 2010 and 2011. Forward projections indicate that a deterioration in the situation at Area 8+ would occur under status quo TAC conditions. Given that the annual tonnage allocated to Area 8+ comprises the bulk of the global TAC, it seems likely that the global TAC will decline further for the 2014/2015 fishing season. It is also likely that fishing at Dassen Island will continue on an experimental basis, most likely at the 2013/2014 level of 80 MT. The global TAC awaits a decision by the minister, DAFF. Sectoral splits (offshore, nearshore, small scale and recreational) will become available when that decision is announced in October or November of this year.

2015/2016 TAC

During 2014 and 2015 work progressed on the development of a new OMP for the West Coast Rock Lobster fishery, to form the basis for the scientific recommendation on the TAC for the 2015/2016, 2016/2017, 2017/2018 and 2018/2019 fishing seasons. It was decided at an early stage of this process that the OMP should be structured along the same lines as the previous OMP, in particular with respect to the 35% rebuilding strategy, and the buffering of TAC allocations for the nearshore, interim relief and recreational components of the fishery. It was evident during these deliberations that there was some room for alternative management options without imposing large reductions on the TAC. The industry submitted proposals for the re-introduction of a tolerance to allow for the movement of TAC from one area to another under pre-agreed circumstances. The final agreed TAC contained a constraint of an 11% change in the TAC from one year to the next. An OMP formula was adopted in July of 2015. The situation at Dassen Island was discussed during these deliberations, and it was indicated that most likely, given the improved catch rates at Dassen Island, normal fishing could resume there in the 2016/ 2017 fishing season.

The data facing the scientific work groups for the calculation of the 2015/2016 fishing season was mixed and showed the following features:

- Stable lobster growth rates at Dassen Island, An increase in growth rate in Zone A, and growth rate declines elsewhere such as Cape Point and Lamberts Bay to Saldanha Bay
- CPUE declines at Area 8

- Signs of improving catch rates at Dassen Island (Area 7)
- Improved catch rates in Zone A (Areas 1+2) and Area 3+4
- Improved bakkie catch rates in Area 5+6.

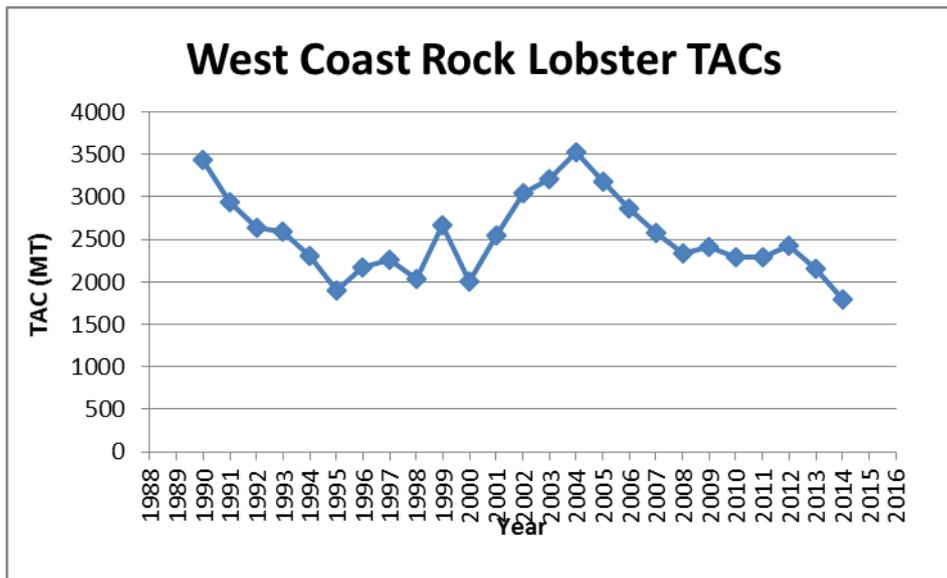


Figure XXX. TACs for the West Coast rock lobster resource since 1990.

The TAC for 2015/2016 is sub judice at the time of writing pending an announcement by the Minister and the Department of Agriculture, Forestry and Fisheries.

South Coast rock lobster: Status, TAC, Prospects

The South Coast rock lobster (SCRL) fishery is managed by a combination of output controls and input controls. The output control is a Total Allowable Catch (TAC) and IQs (Individual Quotas) and the input control is a Total Allowable Effort (TAE) which is a limitation on the number of fishing days per season. The TAC is the primary control measure. The TAE, based on a fishing day allocation, is a secondary measure. The TAE has been designed to be an active constraint on the fishery roughly 1 in 20 years.

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

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

An Operational Management Procedure (OMP) is in effect for the determination of the TAC. This OMP is based on an interpretation and calculation of trends in CPUE in recent years, separately for each of three areas, Area 1E, Area 1W and Area 2+3. The location of these areas is shown in the map in Figure X.

The OMP has however been under almost constant revision over the last four fishing season. The OMP formula was revised and retuned in 2010, whereupon the SWG agreed to apply it for a further two fishing seasons, for the 2010/2011 and 2011/2012 fishing seasons. In 2012 the OMP was further revised and a TAC of 326 MT was adopted for the 2012/2013 fishing season. Further revisions to the OMP were effected during 2013 and this led to a 5% increase in the TAC to 342 MT for 2013/2014. Until that time the fishery was being managed under a 20% rebuilding strategy which aimed to rebuild the spawning biomass by 20% between 2006 and 2015.

During 2014 the OMP for resource was reinvestigated and re-revised. Stock assessment results tabled at that time indicated that the resource was in a healthy state with an overall spawning biomass of in excess of 35% of pristine. There were some concerns expressed about the performance of the resource in the east however, which weighed on the deliberations somewhat. During this phase of deliberations DAFF requested that the 20% rebuilding target be reconsidered. As a result a rebuilding target of 30% from 2006 to 2025 was agreed to, on the understanding that this would be opened up for rediscussion in four years time. It was also agreed that catches in Area 1E would be closely monitored. In addition it was agreed that there would be an obligatory increase in the TAC for the 2014/2015 fishing season of 5% to 359 MT tail weight. The sequence of TACs that have followed all these deliberations are as follows, for the last five fishing seasons:

2010	328
2011	323
2012	326
2013	342
2014	359

Figure 2 shows the TACs since the 1989. The medium term forecasts of resource performance considered during 2014 suggest that there is a good chance that the TAC will not fall below 342 MT for the next three to four years. The TAC for 2015/2016 is sub judice at the time of writing pending an announcement by the Minister and the Department of Agriculture, Forestry and Fisheries.

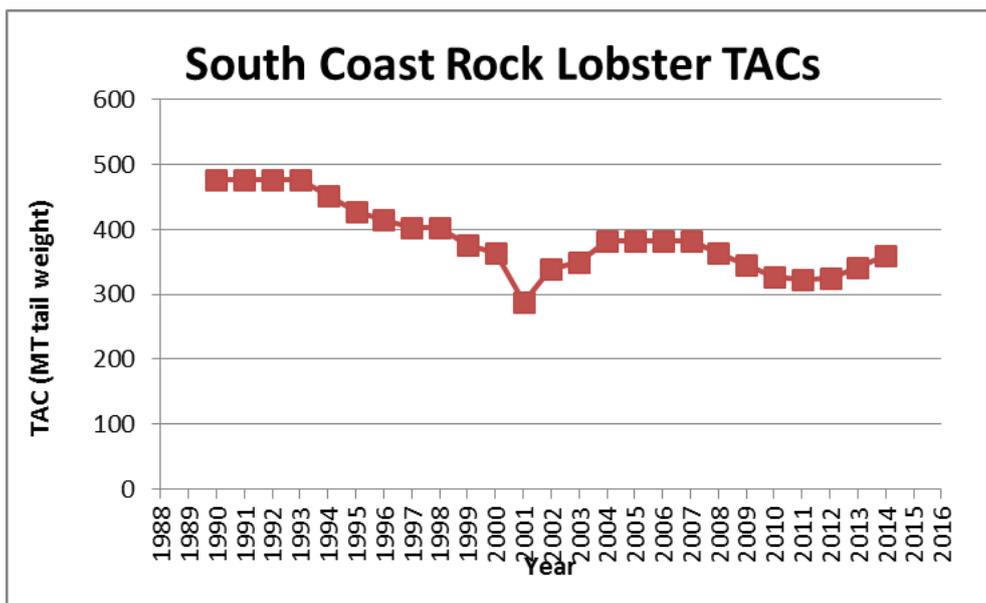


Figure 2. TACs in the Suoth Coast rock lobster fishery 1989/90 – 2013/14.

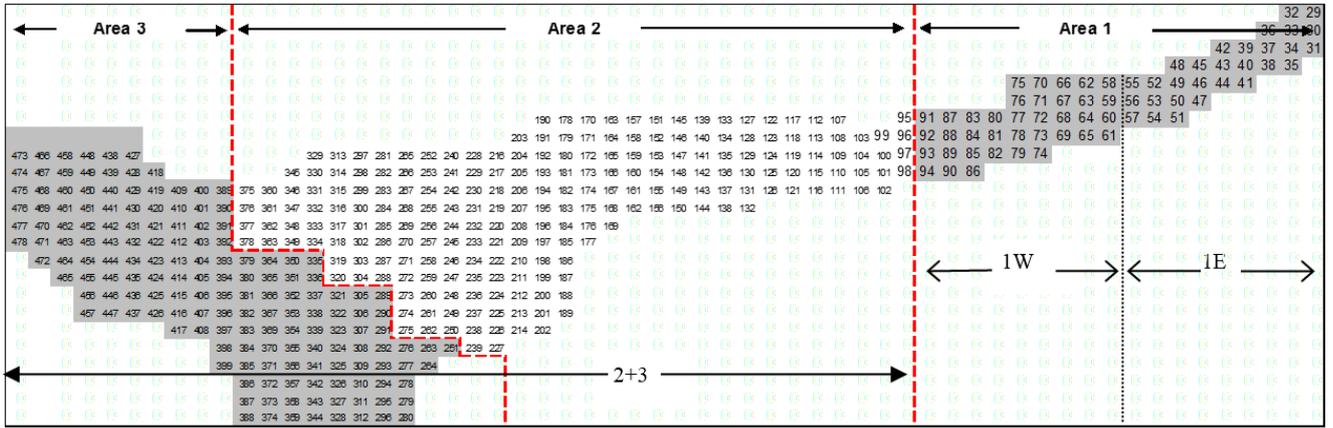
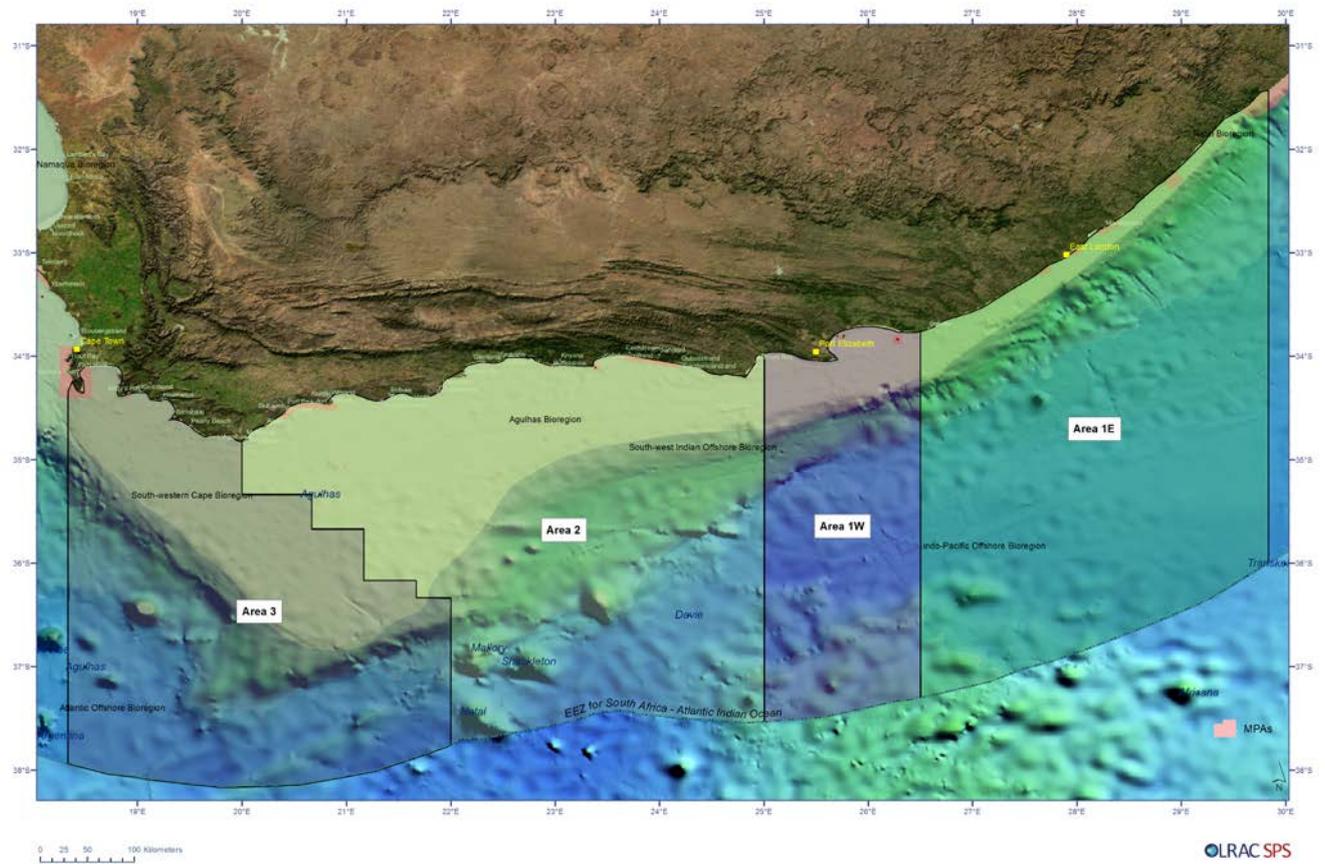


Figure 1: The fishing grounds showing the statistical areas that are used in the formulation of scientific advice for resource management, South Coast rock lobster resource.



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 for the resource on the basis of mathematical models which make use of the following data:

- jig catch data
- trawl catch data
- jig CPUE data
- trawl CPUE data
- spring survey biomass index
- autumn survey biomass index

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 there was very limited scope for increasing effort in the fishery. Since that time the catch rates in the fishery have declined, particularly in 2012 and 2013, and given the constant effort nature of the fishery, catches in 2012 and 2013 were substantially reduced compared to the period 2002 to 2011. As a result additional closed seasons were recommended for the 2014 fishing season.

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

- Total effort in the fishery rose between the period 1995 to 2010, even though the number of crew permits in the fishery remained essentially 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.
- Thereafter, from 2010 to 2013, catch rates declined to a low point, it seems likely that the recorded CPUE understates the extent of the overall decline in resource abundance. It does seem based on this sequence of events that the level that the effort reached reduced the recruitment reproductive capacity of the resource and that this caused the reduction in CPUE levels. The mathematical models do, for example, interpret the sequence of events as being due to a reduction in recruitment.
- Similarly low recruitment levels have been experienced in the fishery before, according to the mathematical models, but coincident with such high effort levels. The combination of the two caused the beginning year biomass in 2012 to be the lowest on record, and 2013 was only slightly larger. This led to very poor economic performance in the fishery.

The mathematical models of the resource suggest that the effort level in 2010 was 15%-20% higher than would produce an acceptable biological risk in the 2022 resource biomass - acceptable biological risk is defined as a 5% chance that the 2022 resource biomass will be less than 20% of the pristine resource biomass. The advisability of this measure of biological risk is of course debateable, any appraisal needs to recognise the semi-arbitrary nature of this risk measure. Nevertheless this has been used to drive the various proposals tabled at the squid SWG 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 underutilised 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 the 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 have for many years been concerned about the management of effort in the fishery, since data suggests that a large number of the 136 vessels in the fishery utilise far fewer than the available seadays. The effort that these vessels could use is known as latent effort. Without any additional closed seasons the full utilisation of this latent effort could theoretically double the amount of effort used, although the reality of trip turnaround times puts constraints on the maximum the effort can reach at less than double, but nevertheless above a safe effort level. As a result the proponents of the effort reduction options in the previous paragraph also proposed that effort permitted per vessel be capped at each vessel’s historic effort level, suggesting that this could be monitored by VMS. 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. In contradiction to this view, there were no significant reductions in fishing effort levels when additional closed seasons were declared in the past. Note that the actual catch and effort records for the 2014 and 2015 seasons provide an opportunity to verify or refute these positions. At the time of writing the 2014 effort data were not available and/or their acquisition fell outside the scope of this document.

The final management recommendations for 2014 and 2015 retained crew permits at 2422 and instituted an additional three month closed season instead of four months. 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 watered down measures there will be a larger than 5% frequency of resource biomass falling below 20% of pristine.

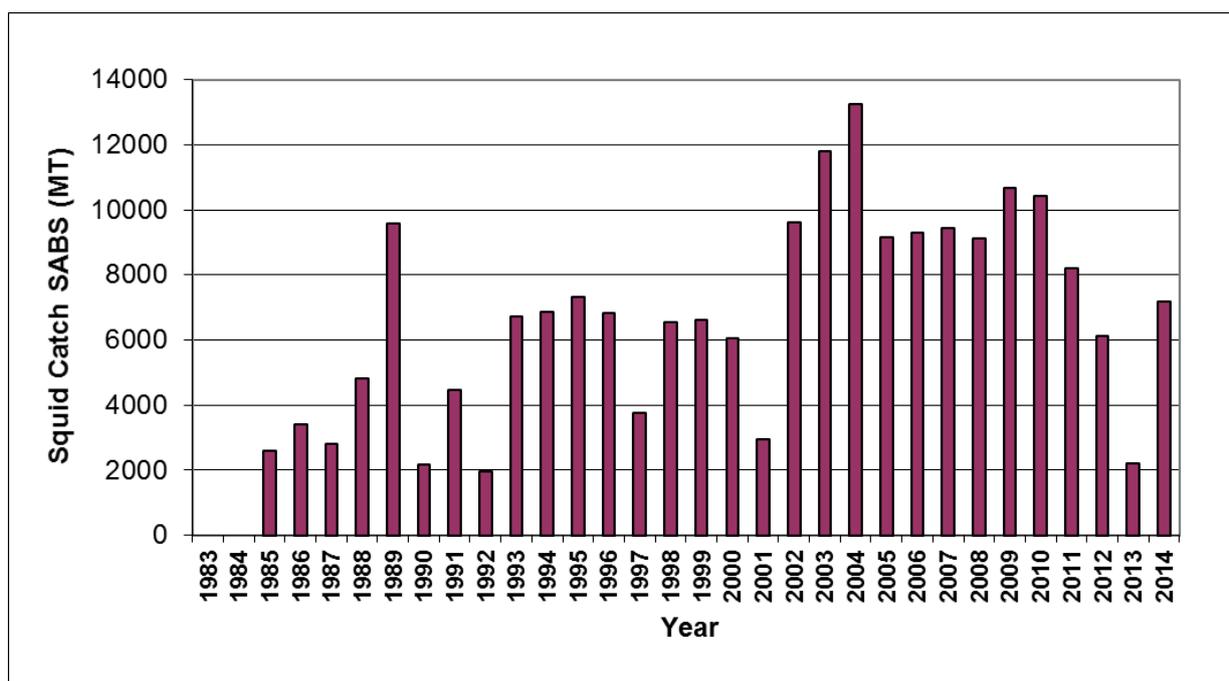


Table && Table of effort controls and closed seasons for the squid jigging fishery.

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
2015	2422 crew or 136 vessels	April, May, June + 5 weeks Oct / Nov