Surveillance Report
South African Hake Trawl Fishery

Certificate No.: **MML-FC-005**

Moody Marine Ltd.
April 2008

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1.0 GENERAL INFORMATION

Scope against which the surveillance is undertaken: MSC Principles and Criteria for Sustainable Fishing as applied to the South African Hake Trawl Fishery

Species: Two species are targeted, deep-water hake *Merluccius paradoxus* and the shallower (warmer) water species *M. capensis*.

Area: Hake trawl fisheries within the South African EEZ.

Method of capture: Trawl fishery only.

Date of Surveillance Visit:	**10-15 March 2008**			
Initial Certification	**Date: 16 April 2004**		**Certificate Ref: MML-FC-005**	
Surveillance stage	**1st**	**2nd**	**3rd**	**4th**
Surveillance team:	**Lead Assessor:** **Andrew Hough** **Assessor(s):** **G Tingley, J Powers, D Japp, J Combes**			
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2.0 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

This report contains the findings of the fourth and last surveillance audit in relation to this fishery. Many findings relate to compliance with the Conditions of Certification set out in the original certification report.

Information has been collected principally from the industry client body (SADSTIA), various fishing companies and the management authority (Marine and Coastal Management; MCM). Consultations have also been undertaken with the MARAM stock assessment team at the University of Cape Town in relation to overall stock assessment and meeting a number of conditions and WWF/Birdlife International, South Africa (in relation to Condition 7 (impacts on seabirds) and overall views) and Active Fishing News in relation to stock status. Members of the MSC assessment team have also attended various workshops in Southern Africa relevant to this assessment.

For each remaining condition, the report sets out the requirements of the original condition ('Activity assessed'), the proposed action plan by the client and results presented to date (the 'SADSTIA Progress Report') and the evaluation of this by the assessment team ('Observations' and 'Conclusion'). This includes a re-evaluation of the scoring allocated to the relevant Performance Indicators in the original MSC assessment (finalised in 2004) - where the requirements of a condition are met, the Performance Indicators are re-scored and if the score is 80 or more, then the condition is closed.

A major management activity affecting the fishery in recent years has been the latest long-term fishing rights allocation. Rights allocations were made in the hake trawl sector in January 2006 and in the other hake sectors (handline and longline) in February and March respectively. This has taken considerable resources from both MCM and industry bodies. Fishing rights are now allocated for a further 12 years and, although subject to some further court action (litigation), should have increased the management resource available for other activities.

Item	Comments
1	**Condition of Certification 1: By-catch**
Activity assessed	It is recognised that by-catch landings play an important role in the economics of the South African hake trawling industry. However, it has been acknowledged by both MCM and industry that measures to protect populations of by-catch species are required to be strengthened. The process of introducing by-catch management plans has been initiated by MCM, but it is incumbent upon both MCM and industry to put in place a suitable plan as soon as possible. A plan should include reference points for by-catch species and, where appropriate, suitable stock rebuilding measures. Initially, kingklip, kob and monk are principal candidates for attention, but an appropriate structured approach is also required for other by-catch species. **Timescale**: An agreed by-catch management plan should be in place within **1 year** of certification. This plan should be implemented, at the latest, within **6 months** of agreement (i.e. 18 months following certification). **Relevant Performance Indicators**: 2.1.4.1; 2.1.5.1; 2.3.1.3
SADSTIA Progress Report	**ACTION** SADSTIA presented a bycatch Management Policy Document and has established a great deal of common ground with MCM in subsequent discussions. As a result joint product (bycatch) management measures for monk (precautionary catch limits; PCL) and kingklip (seasonal closed areas and a PCL) have been introduced by way of the 2005 trawling permit conditions. (*the permit is a formal legal instrument in terms of Section 13 of the Marine Living Resources Act and the Conditions carry the full force of law)* **PLANNED ACTION** 1. Industry and MCM to finalise joint Deep-Sea Bycatch Management Plan Responsibility MCM & SADSTIA **Timing** Undertaken in August 2005. 2. Overall effort controls to be re-introduced to the deep-sea sector **Responsibility** MCM **Timing** August 2006. 3. Conduct research to improve comprehension of biodiversity effects of trawling on the totality of bycatch species. **Responsibility** MCM **Timing** ongoing as part of Ecosystem exercise (see Condition 3). 4. Experimentation to investigate and measure bycatch mitigation effects of square mesh and escape panels in the inshore trawl fishery. **Responsibility** MCM and Inshore Industry **Timing** commence January 2007. 5. Discuss and settle Cob catch reduction measures with Industry **Responsibility** MCM **Timing** Meeting held February 2005; Implementation will occur when finalised 2005 permits and/or Amended Regulations are issued (Second Quarter 2005).
Observations	The conclusions of the last annual surveillance report (2007) were as follows: *"Whilst the essential requirements of this condition have been met, through various initiatives, according to the original targets, the ability of management to track and respond to by-catches has not been fully demonstrated. It is expected that once robust systems for monitoring, control and implementing mitigation actions (should these be required) are in place, then this condition can be closed (although extension of such controls to other by-catch species should continue to be considered). The development of such management systems should be planned for within the term of the present certificate, and then the requirements of this Condition will be considered to be met.* *Three Performance Indicators relate to this condition – 2.1.4.1, 2.1.5.1 and 2.3.1.3 (some of which also relate to Conditions 4 and/or 7). Where a Performance Indicator is addressed by multiple conditions, a notional score of 80 will be applied to those elements of the Performance Indicator addressed by the condition being closed. The final score for the*

	Performance Indicator will, however, only be determined when the last relevant condition is closed. These Indicators will therefore be subject to total or partial re-scoring following confirmation of the requirements above." Progress to limit, control and reduce bycatch of key species has continued. A variety of controls, most of which can be described as tested, have been introduced and established, including PCLs, closed areas (e.g. kingklip spawning grounds) and move-on behaviours for vessels exceeding specified levels of bycatch. Implementation of these measures is either though voluntary agreements at industry level and/or through government regulation (issued permit, under the Marine Living Resources Act) which carries a statutory requirement coupled with official enforcement, as is the case with the PCLs. Development of the most appropriate assessment(s) for kingklip continues and is viewed as timely and appropriate. This process will continue to provide direction for the future management of kingklip bycatch. The focus on three key bycatch components, monk, kingklip and kob, has been appropriate as these were identified for specific attention during the certification process. Future bycatch management may need to focus on other species potentially at risk of depletion.
Conclusion	The assessment team concludes, based on documentation presented and from the various stakeholder meetings, that the Condition placed upon the fishery in respect of the bycatch of fish has been met. The requirements of this Condition have therefore now been met. Three Performance Indicators (PI) related to this Condition: 2.1.4.1, 2.1.5.1, 2.3.1.3. PI 2.1.4.1 also relates to Conditions 3 and 4 and so is considered under Condition 4. PI 2.1.5.1 also relates to Conditions 3, 4 and 7 and so is considered under Condition 7 PI 2.3.1.3 SG 80: Appropriate rebuilding measures are being implemented. Measures have been tested and can be shown to be rebuilding the affected populations. SG100: Appropriate rebuilding measures are being implemented to promote recovery as quickly as is possible. Additional measures are being implemented to prevent problems in the future. The wording of the original scoring commentary was: "*Kingklip populations have been depleted through line fishing. Targeted line fishing for kingklip has now been stopped and overall rebuilding procedures for kingklip have been implemented in terms of TAC's as management measures. Also, all targeting practices for kingklip were stopped voluntarily by the trawling industry after the collapse of the stock. More detailed by-catch management procedures for the trawl fishery are needed and are currently in preparation*." As detailed above, precautionary catch limits for kingklip are now in place with additional management measures to limit fishing mortality, including closed areas on spawning grounds (a tested procedure). In relation to the original condition, the score for this PI is now revised to 80. We note, however, that work is also ongoing in relation to other by-catch species and this will be evaluated as part of the current re-assessment.

2	**Condition of Certification 3: Ecosystem Relations**
Activity assessed	There are some gaps in the understanding of ecosystem relations due to fishery impacts, notably the removal of large amounts of biomass (hake and by-catch) from the system and ecosystem relationships of juveniles. Further research (perhaps through expanding the existing modelling approaches) should be undertaken to improve the understanding of ecosystem impacts of the fishery. This should be directed towards the assessment of the capacity of the ecosystem (in terms of productivity and diversity) to recover from fishery-induced impacts. Liaison between ecosystem and stock assessment modelling should be investigated. **Timescale**: Appraisal of research requirements and production of a detailed plan within **12 months** of certification. Initial outputs of research within **2 years** of certification. This will be subject to ongoing annual monitoring thereafter. **Relevant Performance Indicators**: 2.1.1.4; 2.1.4.1; 2.1.5.1; 2.1.5.5
SADSTIA Progress Report	**ACTION** 1. A three-year BCLME funded project "Ecosystem Approaches to Fisheries Management in the BCLME" was implemented in 2003. The resultant S A Science and Modelling Group (under the leadership of Dr Lynne Shannon; MCM) has switched emphasis to the demersal fisheries, especially hake, for year 2 (2005). It is currently appraising the research requirements for the hake fishery and trophic work is ongoing. **ACTION PLANNED** 1. Action 1 above satisfies Condition 3. 2. Continuity of the ecosystem approach will be secured by setting up a formal Scientific Working Group to input EAF approaches to the management of South African fisheries (inclusive of hake). **Responsibility** MCM **Timing** on completion of the BCLME project in January 2006. 3. Another BCLME funded project "Community Structures on the South Coast" (with the principle investigator Mr. Dawit Yemane) has also been implemented. A key objective of the study is to document shifts in benthic biodiversity as a result of demersal trawling and long lining in established trawl grounds. *The study mentioned above also cuts across Condition 4*
Observations	The conclusion of the last surveillance report was as follows. "*The requirements of this condition have been met according to the target timescale.* *Four Performance Indicators are associated with this Condition; 2.1.1.4, 2.1.4.1, 2.1.5.1, 2.1.5.5. With the exception of Indicator 2.1.1.4, however, the requirements of these indicators are also being met through other Conditions (e.g. Performance Indicator 2.1.4.1. is also covered by Conditions 1 and 4). The approach adopted will therefore be to re-score Performance Indicators which are entirely covered by the current condition. As described above, where a Performance Indicator is addressed by multiple conditions, a notional score of 80 will be required and applied to those elements of the Performance Indicator addressed by a condition being closed. The final score for the Performance Indicator will then be determined when the last relevant condition is closed"*
Conclusion	The requirements of this Condition have therefore been met and re-scoring of relevant PI's can be concluded. Four Performance Indicators (PI) related to this Condition: 2.1.1.4, 2.1.4.1, 2.1.5.1 and 2.1.5.5. PI 2.1.4.1 also relates to Conditions 1 and 4 and so is considered under Condition 4. PI 2.1.5.1 also relates to Conditions 1, 4 and 7 and so is considered under Condition 7 PI 2.1.5.5 also relates to Conditions 4 and 7 and so is considered under Condition 7 PI 2.1.1.4

	SG 80: The main elements of the functioning of the ecosystem, relevant to the fishery, have been documented and are understood SG100: Detailed information is available on the potential for affected elements of the ecosystem to recover from fishery related impacts. The wording of the original scoring commentary was: "*Food web relations are well documented for both adult and juvenile fish but understanding of interactions with the fishery are less clear. Also, not all of the main elements of ecosystem functioning relevant to the fishery are [not – the word not was used in the original assessment text but creates a double negative, clearly a typographical error] fully understood, principally juvenile relations and the effects of the removal of large numbers of adults (the main predator in this environment).* *Hake is currently in a management regime aimed at stock recovery. The basis for this has been effort reduction and the removal of foreign effort with the 200 nm EEZ declaration. Hake stocks have shown good recovery but are still in a rebuilding phase. However, the emphasis has been on stock assessment and effort control but without significant spatial of temporal management (except for divisions between West and East coasts and Inshore and Deepsea fisheries with different mesh limits)."* As detailed in earlier surveillance reports, significant further work has been carried out on the food web relations of Hake in Southern Africa – notably in extending previous work (ECOPATH/ECOSIM) on pelagic species to hake including addressing the removal of biomass by this and other fisheries. Integration of ecosystem parameters into the stock assessments has also progressed. In relation to the original condition, the score for this PI is now revised to 85.

3	**Condition of Certification 4: Effects of Trawling on Benthic Habitat**
Activity assessed	While information exists on habitat types and fishing areas, sufficient to infer the level of interaction, specific studies should be undertaken as follows: a) Document the spatial distribution of fishing effort using available data (e.g. trawl tracks and VMS). Characterise the distribution of sediment types over trawl areas. Relate spatial distribution of fishing effort to the total area and distribution of habitat types and estimate the proportion of each habitat type impacted and the degree of impact relative to trawling activity (e.g. low, medium, high). **Timescale:** within **18 months** of certification b) Review the nature of the gear used in the fishery and provide evidence (from this fishery or from other similar fisheries elsewhere) that fishing operations using such gear are effective in avoiding significant adverse effects on habitats. **Timescale:** within **6 months** of certification c) Identify areas of habitat type that are: • rare • hold species that are rare or endangered • are particularly susceptible to the effects of trawling • are subjected to extensive impact (e.g. a significant proportion or the majority of habitat is impacted to high degree). Impacts on diversity should be included. **Timescale:** initial appraisal within **12 months** of certification with a gap analysis, relevant research plan and subsequent data collection, if necessary; within **4 years** of certification d) Consider creating protected areas containing the above, as appropriate, to limit or mitigate impacts of trawling on benthic habitat. **Timescale:** within the term of the current certification **Relevant Performance Indicators**: 2.1.3.1, 2.1.4.1, 2.1.5.1, 2.1.5.4, 2.1.5.5, 3A.7.2, 3B.2.1
SADSTIA Progress Report	<u>SADSTIA Action and Plan</u> **ACTION** 1. SADSTIA has contracted Fisheries & Oceanographic Support Services cc FOSS to generate the information needed to fulfil Condition 4a and 4b. Regarding 4a almost all necessary inputs with respect to fisheries data and spatial information (especially trawl tracks) have been acquired and are being integrated. FOSS are obtaining further inputs for the estimation of biodiversity effects. Regarding 4b the literature review is completed but we have asked FOSS for more work on assessing gear effects. 2. A costly, dedicated ship-based, Norwegian funded project "The effects of trawling on the structural and functional properties of marine soft-sediment assemblages in relation to use of MPAs in an Ecosystem Approach to Fisheries management and biodiversity conservation (under the leadership of Professors J Gray, University of Oslo and J Field, University of Cape Town) has been approved in all aspects for implementation in 2006. **ACTION PLANNED** 1. No further action planned in respect of 4a and 4b as we anticipate that this will be covered by the work presently being conducted. SADSTIA plans to assess the result of this work and reconsider any need for further investigation. **Responsibility** SADSTIA 2. It is anticipated that the "Norwegian" project will fulfil the needs for 4c above and consequently no further action is planned. 3. The submersible "Jago" to be engaged to revisit formerly identified sites to take grab samples for biological analysis. **Responsibility** MCM **Timing** January 2006.
Observations	The conclusion of the last surveillance report was as follows: "*The first two elements of this condition (a and b) have been successfully completed, and it is*

	noted that these have generated a large amount of interest (presently there are four related research projects conducted by UCT and WWF drawing on the outputs from this work, including biodiversity, modelling and offshore marine protected areas - the latter project has been embraced by SADSTIA who proactively have initiated an independent assessment of the potential to introduce offshore MPA's in South African waters – addressing element d) of the condition). However, progress with part c) of this condition appears behind target – the timescale for this being April 2008. A research programme to complete the definition and distribution of habitat types and to define the susceptibilities of hard and semi-hard substrates to trawl impacts therefore needs to be designed, commissioned and funded. This should access, as far as possible, data that has already been collected, or is planned to be collected in the near future, for this or other industries and should include similar work with fisheries internationally. *Seven Performance Indicators relate to this condition – 2.1.3.1, 2.1.4.1, 2.1.5.1, 2.1.5.4, 2.1.5.5, 3A.7.2, 3B.2.1 (some of which also relate to Conditions 1 and/or 7). These Indicators will therefore be subject to total or partial re-scoring following confirmation of the requirements above.*" There has been considerable work and progress on addressing this, the most challenging element of the certification Conditions. As mentioned above, items a) and b) of this Condition have already been addressed. Items c) and d), which can be considered as closely linked require the client to: "*Identify areas of habitat type that are:* • *rare* • *hold species that are rare or endangered* • *are particularly susceptible to the effects of trawling* • *are subjected to extensive impact (e.g. a significant proportion or the majority of habitat is impacted to high degree).* *Impacts on diversity should be included.* ***Timescale:*** *initial appraisal within* ***12 months*** *of certification with a gap analysis, relevant research plan and subsequent data collection, if necessary; within* ***4 years*** *of certification* *Consider creating protected areas containing the above, as appropriate, to limit or mitigate impacts of trawling on benthic habitat.* ***Timescale:*** *within the term of the current certification*" As noted under PI 2.1.5.4, the issue of trawlers moving into deeper water at the time of the initial MSC assessment was a key concern in this regard. It is recognised that there have been technical issues involved with addressing item c) in full. Notably, the comparative study on trawling effects initiated by NORAD was delayed and SADSTIA had an expectation that the results of that study would be completed before this final surveillance audit. It is now apparent that results are only likely to be available in 2009. The team noted that the time slippage is completely outside the control of SADSTIA. However, given this, and in recognition of the need to address the Condition, SADSTIA have (a) effectively worked collaboratively (including providing financial support) with a number of agencies and individuals to address the key aspects of the Condition and also (b) developed a pro-active approach to managing fishery-seabed interactions in their sector. Specifically, three initiatives have been either started or significantly progressed over the last year. These include (i) the continuation of the soft substrate work at UCT (partial fulfilment of item c); (ii) the substantive development of an approach to defining MPAs by SANBI that will encompass key elements of the environmental protection for habitats and some species (addressing point d); and (iii) the substantive work on 'ring-fencing' the activities of the fishery to known fishing grounds, which will protect areas so far un-fished or only lightly fished and also enable appropriate focus on MPA development (which addresses point c). Of these, the latter is perhaps the most significant. Under this initiative, established trawl grounds, and associated substrates, have been identified and 'ring-fenced'. Trawling outside of these established areas is now not permitted without appropriate prior investigations in line

	with the requirements of this condition. It is also of note that the work that SANBI is progressing in finding ways of defining areas suitable for consideration for protection (e.g. as MPAs) includes defining substrate and habitat types in the marine environment which further addresses items c) and d). Given the technical difficulties associated with extensive benthic research programmes, SADSTIA have therefore addressed the issue in an alternative and precautionary manner – by assuming that all habitats outside of established grounds are potentially sensitive (by reason of their rarity, species composition or susceptibility to the effects of trawling) and by preventing these from being exploited. The potential for damage to sensitive habitats through exploration of new trawl grounds has therefore been addressed. The issue of protecting representative areas of habitat that are subject to extensive impact is addressed through the ongoing MPA proposals.
Conclusion	The assessment team have been impressed by the quantity and quality of the work carried out by all groups in this area to date. SADSTIA are commended in their activity, support and encouragement of others to deliver the outputs seen by the team. The team is pleased to note that the overall requirements of this Condition as originally phrased have therefore now been met. Seven Performance Indicators (PI) related to this Condition: 2.1.3.1, 2.1.4.1, 2.1.5.1, 2.1.5.4, 2.1.5.5, 3A.7.2 and 3B.2.1. PI 2.1.5.1 also relates to Conditions 1, 3 and 7 and so is considered under Condition 7 PI 2.1.5.5 also relates to Conditions 3 and 7 and so is considered under Condition 7 PI 2.1.3.1 SG 80: Impacts of gear use on the habitat are identified including extent and location of use. Habitat perturbations appear sustainable. SG100: The physical impacts on the habitat due to use of gear have been studied and quantified, including details of any irreversible changes. The wording of the original scoring commentary was: "*The extent and location of gear use are accurately recorded, both historically and now via VMS. Distribution of habitats has also been accurately recorded.* *Trawlers target known / safe fishing grounds with typically flat muddy bottoms (and so with limited impact on reef structures etc). The only reported destructive trawling practices were up to 1996 when foreign fleets were permitted on South Coast targeting reef areas – known as the 'Foreign Triangle'. No doubt damage then was extensive to corals and substrate. However, there is now evidence that the species targeted by these vessels (panga) is recovering and this could be an indicator of substrate recovery.* *The long history of the fishery and general concentration on known areas is suggestive of stability, however, evidence of impacts relies on general literature on the effects of trawling on substrate world-wide."* As discussed above, and in earlier surveillance reports, significant progress has been made in determining the location, habitat types and general impacts associated with demersal trawl gear. Recent initiatives to 'ring-fence' trawl grounds within existing areas have also stabilised the extent of habitat affected. In relation to the original condition, the score for this PI is now revised to 80. PI 2.1.4.1 SG 80: Levels of acceptable impacts (e.g. biological reference points) for key aspects of the ecosystem within main fishing areas have been estimated and are regularly reviewed. SG100: Levels of acceptable impact for key populations (such as of indicator species) and habitats have been estimated and are subject to frequent review.

	The wording of the original scoring commentary was: "*Impacts on hake stocks are well estimated and reviewed. Species which occur in the bycatch of the hake fishery are primarily kingklip, squid, horse mackerel, sole and monkfish. Kingklip is perhaps the highest profile bycatch species in the trawl fishery (after the stock collapse due to longlining pressure). The monk assessment is problematic due to the nature of data (particularly the difficulty of extracting clear targeting of this species from other fisheries).* *Separate assessments have been carried out for kingklip, squid and horse mackerel, and CPUE's, survey indices and TAC's are monitored for the other species. The interplay between fisheries are noted in the management advice and in some cases a bycatch set-aside has been included in the TAC.* *By catch is therefore estimated, the effects of different fishing practices have been established and are periodically reviewed. Also, trophic relations (of by-catch species and hake) are included within ecosystem models, but appropriate levels of impact are not determined as a result.* *Acceptable levels of impact on benthic habitat are not established."* The wording in relation to this PI related primarily to by-catches, as discussed under Condition 1 above. As noted, appropriate levels of impact, and associated management measures, have been implemented for the key by-catch species identified in the original assessment. The Condition also relates to trophic relations, discussed under Condition 3, and benthic impacts, for which information has been synthesised and initial measures (notably ring-fencing) have been introduced. In relation to the original condition, the score for this PI is now revised to 80. We note, however, that work is ongoing in relation to other by-catch species, and further identification and management of impacts on benthic habitat and these will be evaluated as part of the current re-assessment. PI 2.1.5.4 SG 80: No unacceptable impacts of the fishery on habitat structure within major fishing areas have been demonstrated. SG100: Effects on habitat structure are documented and are within acceptable tested/justified limits The wording of the original scoring commentary was: "*The current hake targeting with trawls suggests no major impact on habitat structure given existing grounds fished, although no specific studies have been carried out.* *Management measures are in place to minimise impacts, such as steel bobbins not being permitted in the trawl fishery and only small plastic bobbins are allowed on foot ropes The issue of trawling moving into deeper water may, however, be a cause for concern in this regard."* As discussed above, significant further work has been undertaken on this issue and to date, no unacceptable impacts have been demonstrated, but appropriate precautionary management measures have begun to be implemented, notably by ring-fencing existing trawl grounds. In relation to the original condition, the score for this PI is now revised to 80. We note, however, that work is ongoing in relation to further identification and management of impacts on benthic habitat and this will be evaluated further as part of the current re-assessment. PI 3A.7.2 SG 80: There is evidence that fishing operations are effective in avoiding significant adverse effects on the environment, especially in critical or sensitive zones such as spawning or nursery areas. SG100: There is direct evidence that fishing operations implement appropriate methods to avoid significant adverse impacts on all habitats. The wording of the original scoring commentary was: "*A number of measures have been implemented to minimise impacts on benthic habitats. These include:*

- *Deep-sea trawlers are not permitted to operate in water shallower than 110 m*
- *The non-use of heavy gear and recent developments in gear technology allowing fishing in a semi-pelagic manner (including small plastic bobbins, foot ropes, trawl doors). These are applied to avoid loss of gear and incidentally reduces impacts*
- *Spatial distribution of fishing effort (and so area impacted) is restricted by the use of appropriate navigation technology*
- *Exclusion of trawlers from bay areas and implementation of inshore MPA's. Use of VMS allows tracking and warning of vessels in the vicinity of exclusion areas.*

No specific nursery areas are defined, but the west coast fishery operates in waters deeper than 200 m and commercial targeting of juveniles is avoided.

However, there is no evidence available of the effectiveness of these measures in terms of impacts on habitat outside exclusion areas and in recent years, commercial trawling effort has moved into deeper water targeting larger fish."

As discussed above, a notable development has been the ring-fencing of trawl grounds, preventing extensions into deeper water without appropriate prior investigation. Also, the kingklip spawning ground closed area provides protection to this species. VMS monitoring is proven to detect potential non-compliances surrounding closed areas. In relation to the original condition, the score for this PI is now revised to 80. Again, we note that work is ongoing in relation to further identification and management of impacts on benthic habitat and this will be evaluated further as part of the current re-assessment. This on-going work includes a much broader (than fisheries) approach to defining protected areas but that will also be used in defining areas suitable for MPAs.

PI 3B.2.1
SG 80: There is evidence that fishing operations are effective in avoiding significant adverse effects on the environment, especially in critical or sensitive zones such as spawning or nursery areas.
SG100: There is direct evidence that fishing operations implement appropriate methods to avoid significant adverse impacts on all habitats.

The wording of the original scoring commentary was: "*As described above, measures within the fishery to minimise impacts on benthic habitats include many operational measures. These include:*

- *Deep-sea trawlers are not permitted to operate in water shallower than 110 m*
- *The non-use of heavy gear and recent developments in gear technology allowing fishing in a semi-pelagic manner (including small plastic bobbins, foot ropes, trawl doors). These are applied to avoid loss of gear and incidentally reduces impacts*
- *Spatial distribution of fishing effort (and so area impacted) is restricted by the use of appropriate navigation technology*
- *Exclusion of trawlers from bay areas and implementation of inshore MPA's. Use of VMS allows tracking and warning of vessels in the vicinity of exclusion areas.*

No specific nursery or spawning areas are defined, but the west coast fishery operates in waters deeper than 200 m and commercial targeting of juveniles is avoided.

However, the effectiveness of these measures has not been demonstrated."

Issues related to this PI are discussed above, and compliance appears good. In relation to the original condition, the score for this PI is now revised to 80.

4	**Condition of Certification 6: Compliance monitoring**
Activity assessed	Although compliance is generally good, occasional transgressions are recorded within the sector. Evidence should be provided that compliance in the hake trawl sector is improving. If evidence is not forthcoming, then appropriate instruction, training or corrective actions should be implemented **Timescale**: A first review should be carried out within **12 months** of certification. This will be subject to ongoing annual monitoring thereafter. **Relevant Performance Indicator**: 3B.5.2
SADSTIA Progress Report	**ACTION** 1. MCM has commissioned a large new "offshore" vessel "*Sarah Baartman"* and an "inshore" vessel "*Lilian Ngoyi"* as part of the fleet of Environmental Protection Vessels. MCM will be receiving a further two "inshore" vessels during the course of 2005. 2. Coupled to the new fleet of high tech Environmental Protection Vessels was the recruitment of forty-two new Fishery Control Officers (FCOs). All FCOs will receive specialised training in various aspects of monitoring, control and surveillance. Three FCOs have received highly specialised investigative and forensics training in the UK under a EU-SADC sponsored program. 3. 100% VMS coverage of hake fleets completed and operational. 4. Tougher compliance related Permit Conditions introduced for the 2005 season. 5. MCM continues to review compliance on an ongoing basis.
Observations	The conclusions of the last surveillance report were as follows. "*The requirements of this condition have been met according to the target timescale. However, the collation of data on transgressions is apparently difficult to determine within MCM reporting systems* *Performance Indicator 3B.5.2 relates to this condition. However, this Condition was established to determine an ongoing level of monitoring, control and surveillance to ensure compliance within the licensed fishery. According to the original wording, this condition will be maintained until such time as the fishery is subject to an MSC re-assessment.*"
Conclusion	As this is the last surveillance report on this fishery under the current certification, the relevant PI is now re-scored. PI 3B.5.2 SG 80: Fishers are fully compliant with relevant management requirements. SG100: Fishers are fully compliant with, and fully supportive of, a code of conduct which incorporates legal, and administrative requirements The wording of the original scoring commentary was: "Compliance is considered generally good and there have been very few prosecutions in the hake trawling sector. However, even with the MCS procedures outlined in 3A.8.2 above, compliance offshore is, by its very nature, difficult to monitor and some transgressions are reported, such that it cannot be said that fishers are <u>fully</u> compliant." Some issues in relation to compliance, and monitoring, control and surveillance, have been identified over the past four years, but the situation appears to have improved and compliance appears good. In relation to the original condition, the score for this PI is now revised to 80.

5	**Condition of Certification 7: Impact of Trawling on Seabird Populations**
Activity assessed	The impact of fishing on seabirds has been generally considered insignificant. However, recent studies in other fisheries (notably in the Falkland Islands) have identified previously unconsidered interactions between trawl fisheries and seabird populations. Accordingly, appropriate and quantifiable studies should be carried out within the trawl industry (representing the various geographical areas in which fishing takes place) to determine the extent of significant interactions. The results of these studies should be considered in relation to the status of affected populations. Appropriate mitigation measures should be implemented where trawl fishing constitutes an important component of total mortality on protected or threatened populations. **Timescale**: A monitoring plan should be developed within **6 months** of certification and implemented within **12 months** of certification. The results of this monitoring should then be subject to at least annual review with any mitigation measures implemented as appropriate. **Relevant Performance Indicators**: 2.1.5.1, 2.1.5.5
SADSTIA Progress Report	**ACTION** In October 2004 SADSTIA contracted the Percy Fitzpatrick Institute of African Ornithology to conduct a formal fifteen month long investigation of the magnitude and mitigation of seabird trawl gear interactions.
Observations	The conclusions of the last surveillance report were as follows. "*The wording of this condition required that, where significant interactions are determined, that* "Appropriate mitigation measures should be implemented where trawl fishing constitutes an important component of total mortality on protected or threatened populations*"*. *Research in response to this condition has identified a significant fishery-seabird interaction and the key actions to address this have been identified and implemented. The efficacy of these actions (i.e. Tori lines) should, however, be periodically monitored. More importantly, other approaches to reducing the level of impact (i.e. additional appropriate mitigation measures), principally by making fishing vessels less attractive to seabirds as a food source need to be explored and those found to be effective should be implemented and monitored. Additional monitoring of existing mitigation measures and development and implementation of additional appropriate measures, also with post implementation monitoring, are required. Owing to the potential for animals, in this case, birds, to change their behaviour in changing circumstances (i.e. changing industry operating procedures), it should be recognised that periodic monitoring of the effectiveness of all mitigation measures is also likely to be needed. The impact of the fishery on these vulnerable species will need to be demonstrably reduced to levels that are not likely to lead to population decline before this condition can be closed. Work to define what are 'acceptable' levels of by-catch (in terms of population dynamics) for each species would assist this process.* *Two Performance Indicators relate to this condition – 2.1.5.1 and 2.1.5.5 (which also relate to Condition 1 and/or 4). These Indicators will therefore be subject re-scoring following confirmation of the requirements above*." Significant improvements in the reduction of unintentional impacts on seabirds have been reported following the introduction of specific mitigation measures (Tori lines). The compliance of the vessels in deploying these lines appropriately also appears to be good. All interested stakeholders reported this as a genuine co-operative success and one that could be built upon in other areas. As noted, in the last surveillance report (see above) it will be important to adequately monitor performance of these measures in future. Thus appropriate programmes to collect and report compliance (vessel logs, scientific observer reports, etc.) and effectiveness (specific, focussed studies) will need to be an ongoing part of effective seabird interaction management.

Conclusion	The overall requirements of this Condition have therefore now been met. Two Performance Indicators (PI) related to this Condition: 2.1.5.1 and 2.1.5.5. PI 2.1.5.1 SG 80: There is a comprehensive evaluation of the effects of the fishery on the ecosystem based on existing information. SG100: The effects of the fishery on the ecosystem have been identified by appropriate comparative and/or experimental studies. The wording of the original scoring commentary was: "*The effects of the fishery on the ecosystem have all been subject to a degree of evaluation. In particular, the effects of the removal of hake biomass has been evaluated and managed and effort has been made to understand the effects of fishing on target and by-catch species. Impacts on seabirds are not considered likely to be significant but equally, have not been the subject of any specific, quantified, studies.* *Also, ecosystem effects have been modelled, although emphasis has been placed on the pelagic components, with hake considered as a top predator. In this context, hake cannibalism present a unique set of dynamics, both intra and inter-specific. Attempts have been made to model the effects of cannibalism and also the effect of this on mortality estimates.* *Benthic habitats are known and measures have been taken to limit impacts on these, but no specific studies have been undertaken."* This PI is affected by Conditions 1, 3, 4 and 7. As discussed above, significant work has been undertaken in determining the ecosystem impacts of the trawl fishery in terms of by-catches, general trophic effects, benthic habitat effects and interactions with seabirds. In relation to the original condition, the score for this PI is now revised to 80. PI 2.1.5.5 SG 80: The effects of the fishery on biological diversity and productivity have been considered and no unacceptable impacts have been found. SG100: The effects of the fishery on biological diversity and productivity have been quantified and are within acceptable tested/justified limits The wording of the original scoring commentary was: "*Impacts on productivity have been evaluated, to an extent, through the development of ecosystem models and there is no evidence of unacceptable impacts.* *There are also no indications of impacts on biological diversity, although the effects of the hake fishery on benthic diversity or on seabird populations have not been directly studied. The establishment of existing and future Marine Protected Areas (MPA's) will safeguard, to some extent, benthic habitat and species diversity."* This PI is affected by Conditions 3, 4 and 7. As discussed above, significant work has been undertaken in determining the ecosystem impacts of the trawl fishery in terms of general trophic effects, benthic habitat effects and interactions with seabirds. In relation to the original condition, the score for this PI is now revised to 80.

6	**Latest results of stock assessment and status of stock**
Activity assessed	Additional modelling work has been conducted since the last surveillance report which updated the assessment, re-examined the OMP and developed TAC recommendations. Additionally, aspects of the data used to partition the species were examined. Also, the CPUE and survey indices were monitored and analyses conducted such that they could be used appropriately in the OMP determination of TAC.
Observations	This issue was discussed extensively during the last surveillance audit, and changes in the perception and management of the two species/stocks led to the formulation of a new condition

(Condition 8). The conclusions of the last surveillance audit in this regard were:

"*Ongoing developments within the management system, and specific responses to internationally-attended workshops and conditions/recommendations made during the MSC review, have led to commensurate developments in the scientific management of the hake resource. In particular, efforts have been made to collect data on species separation and to use these data in developing species-specific assessments (originally the species were combined due to how the original catch statistics were collected). These have led to the re-evaluations of the resource discussed above.*

In the context of the MSC surveillance programme, the fishery will (early in 2008) be subject to its final surveillance audit. If the client wishes to maintain certification beyond expiry of the current certificate (in April 2009), then the fishery will also progress through a re-assessment in 2008. The changes caused by the species separation and accompanying (and still ongoing) stock re-evaluations will therefore be closely monitored.

Two Performance Indicators relate to this issue of stock status:

PI 1.1.6.1. Is the stock(s) at or above reference levels?
SG60. The stock is close to the limit reference levels.
SG80 The stock is above the precautionary reference levels

The first results from the assessment following species separation are that M capensis is at a level above 80 and M paradoxus is at a level above 60.

At the original MSC assessment, the 'combined stock' was considered to be below 80 and so PI 1.2.1 was required:

PI1.2.1. If the stock is below the precautionary reference point, are measures to rebuild the stock specified?
SG60. Appropriate rebuilding measures through reduction in exploitation exist and are being implemented. Measures have not been tested.
SG80. Appropriate rebuilding measures are being implemented to promote recovery within reasonable time frames. Measures have been tested and can be shown to be rebuilding the stock.

MCM and industry have developed a 'rebuilding plan' (i.e. developed a new management procedure) that has resulted in immediate and appropriate management responses (through reductions in TAC and effort). This new plan has been tested by simulation (as was the plan originally evaluated in the MSC assessment) in relation to the robustness of the plan to many different future scenarios. The current rebuilding plan is therefore considered to meet the same level of performance (in terms of the MSC standard) as the original plan, but has been developed in light of new information.

At present, it is concluded that appropriate rebuilding measures are being implemented which would promote recovery within relevant timeframes. Measures have been tested by simulation. However, these have not yet been shown to be rebuilding the stock. The Score for this PI (75) is therefore below 80 and so a new condition must be raised. This condition, which addresses PI 1.2.1 is as follows.

Condition 8. Rebuilding Measures.

The ecological system supporting the hake resource (and the data taken from it over the next two years) is unlikely to be definitive about whether or not improvement is occurring over that time period. However, the OMP seeks recovery at a rate of 2.4% per annum. Recovery at this level should be demonstrated at subsequent audits prior to full review at any future MSC re-assessment.

Also, periodic milestones should be identified between present stock status and recovery of the stock to Bmsy. Milestones should be under development at the final annual surveillance audit and will be subject to full review at any future MSC re-assessment."

As noted in the previous year's surveillance report, considerable stock assessment modelling work

	was done in order to partition the catch of the two species and to assess the two species separately. Results indicated that the status of *M. capensis* was above common reference levels, whereas the status of *M. paradoxus* was not. Therefore, the Operational Management Procedure (OMP) was reconstructed, tested and implemented, based upon the new assessment methodologies, as noted before. The OMP developed for *M. paradoxus* defined a recovery trajectory (a recovery plan) with appropriate ranges of uncertainty for the stock. On the basis of the OMP methodology it was expected that for average conditions, there would be a reduction in total catch of hake of about 10%. However, the OMP procedures were designed to adjust to conditions that exist in any particular year. Therefore, annual TACs are expected to vary from year to year, while still keeping the recovery trajectory within the scope of uncertainty originally defined. In 2007 the assessment was updated and the OMP was used to adjust the TAC based upon the agreed rules (see Rademeyer and Butterworth 2007a, Rademeyer and Glazer 2007). Given the further year's survey and CPUE information, the OMP output (endorsed by the Minister) implemented a TAC of 130,532 t for 2008. This constitutes a reduction of 3%, which is within the range projected by Rademeyer and Butterworth (2007b), but less than the median of their predicted distribution which had indicated a further 10% reduction. These updated data are therefore providing some indication that either the resource is at the moment recovering faster than the median rate anticipated (a 2.4% increase, although there will be fluctuations around this), or that it was not as depleted as estimated earlier. It is recognised, however, that it is inadvisable to draw too strong conclusions on this point at this early stage, given the inherent natural fluctuations to which the resource is subject and the difficulties in determining status and projection estimates.
Conclusions	The overall requirements of this Condition have therefore now been met. One Performance Indicators (PI 1.2.1) related to this Condition, as outlined above. PI 1.2.1 If the stock is below the precautionary reference point, are measures to rebuild the stock specified? SG60. Appropriate rebuilding measures through reduction in exploitation exist and are being implemented. Measures have not been tested. SG80. Appropriate rebuilding measures are being implemented to promote recovery within reasonable time frames. Measures have been tested and can be shown to be rebuilding the stock. As discussed above, rebuilding of the stock is progressing through implementation of the OMP, in line with the projections of the stock assessment, which has been tested by simulation. The score for this PI is now revised to 80. Note that there are requirements of the OMP which assist with monitoring and re-evaluation: Every year there will be a review of population and fishery indicators, and any other relevant data or information on the population, fishery and ecosystem, to conduct a routine updated assessment (likely to be core reference set models, used in the OMP testing, refitted to take a further year's data into account). On the basis of this, to determine whether there is evidence for exceptional circumstances. Examples of what might constitute an exceptional circumstance in the case of [hake] include, but are not necessarily limited to: survey estimates of abundance that are appreciably outside the bounds predicted in the OMP testing; CPUE trends that are appreciably outside the bounds predicted in the OMP testing; and catch species composition in major components of the fishery or surveys that differ markedly from previous patterns (and so may reflect appreciable changes in selectivity). Also, every two years an in-depth stock assessment (more intensive than the annual process above) will be conducted, and in particular including the conduct of a range of sensitivity tests. Also, a full re-evaluation of the OMP will be conducted in 2011.

7	**Any complaints against the certified operation; recorded, reviewed and actioned**
	The conclusions of the last surveillance report in this regard were: "*A general concern in the hake fishery (trawl, longline, handline) is the increased availability of small hake (less than 1000 g) and decreased availability of large hake. MCM have not yet reacted to this as the data used for the annual assessments is only based on the catch and effort after the completion of a calendar year – so there is a lag in the response to any changes in the fishery.* *There has been comment made on small hake being landed and particularly on an observer report relating to large amounts of small hake being caught by trawlers and certain bycatch species (shark). The source of the report regarding small hake has been identified (the information was provided confidentially to Moody Marine). The Observer report and comment stemming from this report originated from another fishery certification scheme undertaking an audit of I&J (who presented an Observer report to the auditor). This report was based on a single report from an I&J freezer vessel which was then erroneously extrapolated to the entire South African fleet.* *Nevertheless, it is clear that in the last two years there has been an increase in smaller fish and the processing companies have had to adjust processing lines to accommodate larger quantities of small hake. To be able to judge the effect of this trend, the stock assessment must be followed through assuming the application of the commercial and research-based length frequencies that will determine recruitment (amongst other parameters in the models used). High juvenile catches do not necessarily imply an unsustainable fishery but this is an important issue which will be monitored following the next annual stock assessment.* *The shark by-catch issue was considered during the original assessment which noted that "other regular by-catch species (such as elasmobranchs) are the subject of population monitoring by MCM. Although these do not all have stock assessments as for commercial species, good records exist of appropriate indices of abundance". It is also noted that monitoring of Condrichthyes has continued in offshore (separately for west and south coasts) and inshore fleets (Walmsley et al 2006 and 2007) and that MCM has very recently appointed a shark scientist. A request for an update on impacts of shark by-catches has been made to SADSTIA.*" The status of shark caught in both trawl (demersal shark) and pelagic longline fisheries in South Africa is not fully defined. There are, however, concerted efforts being made by both MCM and other research institutions to estimate the extent of shark exploitation (both directed and as bycatch). This includes the appointment of a permanent shark scientist and the work towards assessing the primary shark species that includes the demersal sharks such as Mustelus sp and Galeorhinus. Further, the delay by MCM in approving the National Plan of Action on sharks is noted, but indications are that the NPOA will be accepted and implemented by MCM in 2008. Indications from research survey abundance indices, with the exception of a few species, indicate no decline, or at least are highly variable giving no clear indication of stock status. It is also noted that skate contributes significantly to the bycatch volumes in the inshore trawl fishery and that one species *Raja miralatus* appears to be impacted more heavily than other skate species – a subject of ongoing monitoring. A meeting was held in relation to the re-assessment of the fishery with a representative of 'Active Fishing News' which raised a number of general concerns surrounding the governance of the hake fishing industry in general. As the points raised were of a general nature, these will all be addressed holistically as part of the ongoing reassessment of the fishery. Other than these issues, we are aware of no other complaints against the certified fishery.

10	**Any relevant changes to legislation or management regime.**
	No changes have occurred to date (other than those discussed above) which would cause a review of the status of the fishery in relation to the MSC standard.

11	**Overall Conclusions**

	The overall management of the fishery through SADSTIA and MCM continues to at least the level as during the main assessment. SADSTIA, often working in concert with MCM and other research organisations, have taken appropriate measures to address the conditions of certification raised during the MSC certification assessment. All conditions of certification raised during the initial MSC assessment of this fishery have now been met, to at least the 80 level, within the timeframe of the present certificate.

Information Sources:
Meetings

1. 10 March 2008. SADSTIA; CAR Bross, T Reddell, G Bezuidenhout, F Kuttel, R Ventura, S Salie, T Bennett
2. 10 March 2008. I&J; S Salle, M Graz, T Bennett, B Rose
3. 10 March 2008. Sistro. T Reddell
4. 11 March 2008. MARAM, UCT; D Butterworth, R Rademeyer, E Plaganyi, C Edwards, A Brandao
5. 12 March 2008. MCM; R Leslie, C Moses, J Augustyn, S Pheeha, T Frantz, N Dana, P Goosen, D Strauss, R Razack
6. 13 March 2008. WWF/Birdlife International/University of Cape Town/SA National Biodiversity Institute; C Attwood, M Honig, R Ryan, J Barendse, S Petersen, B Watkins, L Atkinson, K Sink
7. 13 March 2008. Active Fishing News; Gary Simpson
8. 13 March 2008. MCM; Peter Sims
9. 13 March 2008. SECIFA. R Human, C Bacon
10. 14 March 2008. SADSTIA; CAR Bross, , T Reddell, G Bezuidenhout, F Kuttel, R Ventura, S Salle, T Bennett

Reports etc

Rademeyer , R.A. and D.S. Butterworth. 2007a. Routine Update of the South African Hake Baseline Assessment. 2007:WG-Dem:H:08

Rademeyer, R.A. and D.S. Butterworth. 2007b. Output from the South African Hake OMP-2006 for the 2008 TAC recommendation. 2007:WG-Dem:H:09

Rademeyer, R.A and J.P. Glazer. 2007. The 2006 Operational Management Procedure for the South African *Merluccius paradoxus* and *M. capensis* Resources. 2007:WG-Dem:H:01.

Guidelines used:

a. MSC Principles and Criteria for Sustainable Fishing
b. MSC Fishery Certification Methodology Version 6
c. TAB Directives (all)