Surveillance Report
South Georgia icefish trawl Fishery

Certificate No.: **MML-F-081**
Moody Marine Ltd.
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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 Georgia icefish trawl Fishery

Species: Icefish (*Champsocephalus gunnari*)

Area: South Georgia Maritime Zone

Method of capture: Pelagic trawl

Date of Surveillance Visit:	28 Sept 2011			
Initial Certification	**Date:** 22 Oct 2010		**Certificate Ref:** MML-F-081	
Surveillance stage	**1st**	**2nd**	**3rd**	**4th**
Surveillance team:	**Lead Assessor:** **J Combes** **Assessor(s):** **P. Medley**			
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2.0 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

This report contains the findings of the first surveillance cycle in relation to this fishery.

The client's response to the Conditions of Certification was set out in an Action Plan, which was appended to the final certification report. Action on this was examined as a part of this first surveillance. For each condition, the report sets out progress to date. This progress has now been evaluated by the Moody Marine assessment team ('Observations' and 'Conclusion') against the commitments made in the Action Plan. This assessment includes a re-evaluation of the scoring allocated to the relevant Performance Indicators in the original MSC assessment. 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.

Information regarding this year's audit has been collected from meeting with the client in Cambridge, UK, at the annual GSGSSI, industry and science meeting, and various other sources of information as listed at the end of this report.

	ITEM	COMMENTS
1.	Stock status update	The catches taken in 2009 and 2010 seasons have been negligible. A commercial decision was made not to search for fish for an extended period. The client does not believe fish of a suitable size are abundant primarily due to the recent low availability of krill in the area. There have been no changes to the fishing practices and there has been no evidence of IUU activity in this fishery. A new assessment was presented at the surveillance audit which marks a change in the stock assessment methodology, but this recent assessment had not been reviewed at CCAMLR (although the methodology was under consideration at previous CCAMLR meetings). The 2010 assessment was available from the CCAMLR website as a public document. The harvest strategy is effectively to maintain a minimum level of escapement. The strategy is highly precautionary as it is based on biomass levels very likely lower than those which are actually present. This, together with observed catches being negligible over the last 2 years, implies that the stock biomass very close to the unexploited biomass, and therefore the stock is only very lightly fished.
2.	Condition 1	

Condition 1. Establish a robust index of spawning biomass

Relevant scoring indicators(s)		
1.1.1.5	Is there an understanding of the relationship of recruitment to parental stock? SG 80 Adequate indices of recruitment and spawning stock are estimated and used. Sufficient years of data are available to establish a general relationship between stock and recruitment SG100 The relationship between stock and recruitment is well understood with high statistical reliability.	Score: 70

Assessment Team comment

Accurate indices of recruitment are available, but indices of spawning stock are much less reliable. Sufficient years of data are available to establish a general relationship between stock and recruitment. Data are used as appropriate and management seeks to compensate for the uncertainty.

The recruitment is monitored well, with smaller fish easily detected in the catches. However, the year class strength is highly variable. There is no simple relationship between recruitment and parent stock size around

South Georgia, and environmental effects on the ecosystem dynamics and icefish and krill abundance are currently being investigated as a cause for recruitment success, making estimation of reliable reference points difficult.
It is less clear as to the status of the spawning stock, and hence how this might be related quantitatively to recruitment. It is not clear what the unexploited spawning stock abundance might be. Possible historical catches which are not currently being used in the assessment implies that the spawning stock may currently be at a relatively low level (see also PI 1.1.2.1). In addition, information on the fate of four years and older fish is unclear as they do not appear in the catches, adding considerably to the uncertainty as to the measurement of spawning stock size.

The intent of this condition should be to develop a more reliable index of spawning together with appropriate reference points should be developed.

A plan to address this area of uncertainty should be developed. To address these concerns the following information is required but not necessarily limited to:

Summary of activity	**Timescale and required deliverables**
Develop plan to establish an index of spawning biomass	2.1. Present plan to assessment team one year after certification
Spawning biomass index developed	2.2. Present reports to assessment team four years after certification

3.	Polar client action plan	**Response** A time series of larval abundance data from inshore and offshore areas are currently being collected by the BAS staff at KEP and from the South Georgia Patrol Vessel, Pharos. It is planned to continue collecting and analysing these data for the next few years, in order to identify and quantify the icefish larvae in them. The index of icefish larval abundance will allow comparisons to be made against the spawning stock biomass (SSB), as estimated by the scientific survey, to investigate the relationship between icefish recruitment and SSB. **Action 1** A plan to investigate the relationship between the SSB of icefish with the available indices of larval abundance will be presented to the assessment team at the first surveillance audit. **Action 2** The results of the investigations into the relationship between the SSB of icefish with the available indices of larval abundance will be presented to the assessment team at the fourth surveillance audit and if appropriate a spawning biomass index will be developed.
4.	AT observation at Surv 1	A PhD. student will be recruited (Jan 2012) to develop such an index from available data. Currently, an acoustic survey is thought most likely to provide appropriate data, but trawl and larval survey data will also be available. The student, should, among other things, consider what data might be used and how it might be combined to produce a sufficiently reliable index. The way the index might be used can be tested using the simulation developed under Condition 4.
5.	AT conclusion from Surv 1	A plan has been developed to deal with this issue, but is dependent on recruiting a suitable PhD. Student at Aberdeen University, and that this student will make sufficient progress to meet the condition. While the client will not have full control over this research (the primary objective of PhD research to be awarded a PhD), it should be apparent from early on whether the focus of the research should be sufficient to meet the condition. It is therefore recommended that the next Surveillance Audit includes a meeting with the student. Condition 1 is on track
6.	Condition 2	

Condition 2. Address uncertainties in the survey index to ensure robustness for stock assessment

Relevant scoring indicators(s)		
1.1.1.6	Is information collected on the abundance/density of the stock? SG80 Fishery dependent and/or fishery independent indices are available on the abundance/density of the stock. Uncertainties have been analysed and any uncertainties addressed in ways which allow trends to be determined from the indices. Indices are suitable, either independently or in conjunction with other analyses, to provide a high degree of confidence in the evaluation of stock abundance trends. SG100 Multiple fishery dependent and fishery independent indices are available on the abundance/density of the stock with sufficient time series to allow trends in abundance to be quantified. Where fishery independent surveys are used (for juveniles and/or adults) the design of the survey(s) is statistically rigorous and robust, indices are consistent and there is clear evidence that they are proportional to the stock size. Uncertainties have been fully accounted for.	Score: 75

Assessment Team comment

Fishery dependent and fishery independent indices are available on the abundance of the stock, primarily from trawl surveys (but also commercial CPUE). Indices are suitable, either independently or in conjunction with other analyses, to provide confidence in the evaluation of stock abundance trends. The score is lowered to 75 as uncertainties have not been fully analysed.

Trawl surveys have been undertaken since 1988 with a total of 15 surveys to 2007. UK has undertaken the recent random stratified bottom trawl surveys of South Georgia and Shag Rocks. This survey provides estimates of abundance and density by strata. However, there are no credible estimates of how much the bottom trawl survey underestimates abundance.

Acoustic surveys are possible, but it is difficult to differentiate icefish from krill. However research is being carried out which has the aim of developing methods to distinguish krill and icefish. These data, if successful, could be incorporated in future models. Development of acoustic surveys is the most promising way to deal with the biomass estimate bias.

The fishery dependent CPUE data are not currently used in the model. Commercial CPUE series are taken from C1 logbook and observer data. Being a pelagic trawl fishery, there are questions as to how reliable these data are as an abundance index.

A plan to address this area of uncertainty should be developed. To address these concerns the following information is required but not necessarily limited to:

Summary of activity	Timescale and required deliverables
Uncertainties associated with the existing index should be fully analysed. If found not to be robust then alternative indices should be explored and implemented.	2.1. The analysis of uncertainty should take place within two years of certification and. 2.2. Implementation, if appropriate, should be initiated within 5 years of certification
Investigate ways to determine the icefish that is in the water column above the bottom trawl headline, and how to incorporate this information into the survey-derived index of abundance trends.	2.3. The assessment team to monitor progress at each annual surveillance audit 2.4. Fish survey index to be developed, tested and fully operational by fourth year after certification.

7.	Polar client action plan	**Response** Uncertainties have been expressed associated with the spawning stock biomass estimates

		from the SG survey. These relate to the ability of the survey gear to accurately estimate the icefish in the water column; with a bottom trawl the net height will not sample any fish above the headrope. Currently correction factors are used to transform the survey data into estimates of abundance. In order to estimate the proportion of fish evading capture above the headrope height and confirm the correction factors it is intended to investigate the use of underwater cameras on a sample of the survey trawls. Client group vessels are equipped with SIMRAD EA500 acoustic gear to identify target fish. Currently one of the vessels also has an acoustic data logger to record acoustic data allowing both survey and commercial data to be recorded and compared with logbook and observer data **Action 1** Uncertainties associated with the existing survey index will be analysed to ensure the robustness of the stock assessment. This analysis will take place within the first two years of the certification. If required modifications to the current indices or alternative indices should be explored and implemented by the final year of certification. **Action 2** The proportion of icefish in the water column above the bottom trawl headrope will be investigated through the use of acoustic sensors with data loggers in both commercial (Polar Ltd are content to deploy dataloggers/equipment on commercial trawls) and the annual scientific surveys funded by GSGSSI. This information will be analysed to investigate how it can be incorporated into the survey index of abundance. The potential for cameras to be attached to the trawl gear to examine icefish behaviour will also be investigated and if possible implemented. This will commence with the 2011 survey and the results will be reported by the end of the fourth year of certification.
8.	AT observation at Surv 1	This condition is closely related to Condition 1, and it is planned that it will be addressed by the PhD student at Aberdeen University to be supervised by Paul Fernandez who is an acoustics expert. It is currently believed that acoustics are most likely to improve the survey, either applying a correction to trawl and other data, or as an independent source of information. We agree that that acoustics would be a useful method to correct for biases which are suspected to afflict the trawl survey. However, it is noted that the condition requires that uncertainties are properly assessed, not eliminated, and therefore this should form part of the research.
9.	AT conclusion from Surv 1	As for Condition 1, the plan depends upon the recruitment of a suitable PhD research candidate, which is acceptable. It is recommended that a meeting with the PhD student is included as part of the next Surveillance Audit if possible. Condition 2 is on track
10.	Condition 3	

Condition 3. Establish biomass limit with a biological rationale

Relevant scoring indicators(s)		
1.1.3.1	Are there appropriate limit and target reference points based on stock biomass and/or fishing mortality? SG 80 Appropriate limit and target reference points are justified based on stock biology (e.g. a stock-recruitment relationship) and are internally consistent given data and assessment limitations. Reference points may be probability based, but account fully for known uncertainties in data and assessment models. SG100 Limit and target reference points are justified based on	Score: 75

	stock biology, uncertainty, variability, data limitations and statistical simulations of these factors	

Assessment Team comment
There are appropriate precautionary target and limit reference points, justified based on stock biology and it is internally consistent given the data and assessment limitations. However, the limit reference point does not account fully for known uncertainties in the data, notably that older Russian data, that are considered suspect, are in fact valid. It is noted that management applies greater precaution to account for this (e.g. zero TACs have been set in relation to low survey estimates of biomass) and so a score of 75 is awarded.

The reference points are based on a precautionary approach and conform to the CCAMLR standard for management. The biological basis for the level of risk aversion and depletion level are not tightly tied to the biology of this species, but are conservative compared to the standard practice in fisheries.

For this fishery the reference point used is based on a 75% escapement of the total mortality. This reference point is used as a conservative limit point in the absence of a clear estimate of a stock-recruitment relationship.

The status of the stock depends on accurate determination of the reference points. Currently the reference points do not take account of older catch data due to uncertainties with respect to species identification, and state of the ecosystem at this time (low fur seal abundance). Although exclusion of these catch data may turn out to be appropriate, the possible effect of including these on the reference points still needs to be considered.

A plan to address this area of uncertainty should be developed. To address these concerns the following information is required but not necessarily limited to:

Summary of activity	**Timescale and required deliverables**
Analyse historical and current data on icefish stock dynamics and establish whether the introduction of a Blim or Blim proxy into icefish management is necessary.	3.1. Analysis completed and presented to the team and to CCAMLR FSA two years after certification
If indicated by the analysis (in 3.1), revise BLim or B Lim proxy and introduce into South Georgia icefish management.	3.2. If indicated revise BLim or BLim proxy in South Georgia. Four years after certification

11.	Polar client action plan	**Response** Historical and current data on icefish recruitment and spawning stock size (See Condition 1) will be analysed to investigate if the introduction of a B_{lim} or B_{lim} proxy into icefish management is necessary. The fishery is currently managed to CCAMLR's precautionary limits. GSGSSI may bring in B_{lim} proxy above and beyond the current conservative CCAMLR limits if such a restriction is required if the SSB drops below a certain level. It will be necessary to introduce any proposed changes at the CCAMLR Working Group on Stock Assessment and Methods (WG-SAM) before they go to the Working Group on Fish Stock Assessment (WG-FSA) **Action 1** Historical and current data on icefish stock dynamics will be investigated alongside the requirements within the ecosystem (e.g. predator requirements) to establish whether the introduction of a B_{lim} or B_{lim} proxy into icefish management is necessary. The analysis of historical and current catch data to determine if a B_{lim} or B_{lim} proxy is necessary for icefish management and will be completed and presented to the assessment team and CCAMLR FSA / SAM within two years of certification. **Action 2** If such a measure is indicated by the analysis, GSGSSI will define B_{lim} or B_{lim} proxy and introduce this into South Georgia icefish management either through the CCAMLR assessment linked to the current harvest control rules set out in the CCAMLR Conservation Measures or independently.

12.	AT observation at Surv 1	We pointed out that a limit reference point is a requirement for MSC certification and not an option. The client indicated that an improved limit reference point is being developed. Several approaches are being considered: a) An empirical approach based on relative larval abundance index compared to biomass estimates. It was pointed out that there was no evidence of any change in recruitment over the range of biomass observed, so the lowest biomass observed is likely to be a safe level. b) The simulation for Condition 4 would be used to test a limit reference point as part of the HCR, when fishing would be reduced to a minimum to protect against recruitment overfishing. This would be a risk-based limit reference point. c) An updated stock assessment with a Beverton and Holt stock recruitment relationship can be used to estimate reasonable limit reference point based on stock dynamics, life history parameters and estimated variability. We noted that work carried out for condition 4 is useful for this condition and therefore that some progress has been made in meeting this condition, although it remains incomplete.
13.	AT conclusion from Surv 1	Adequate progress has been made with this condition. We note however, that CCAMLR does not routinely report status relative to a limit reference point, although status is implied through application of the harvest control rule (HCR). Including Blim in the management system implies that it would have to be considered as part of the HCR (Action 2 above). Condition 3 is on track
14.	Condition 4	**Condition 4. Harvest control rules**

Condition 4. Test the current and future decision rules against plausible states of nature

Relevant scoring indicators(s)		
1.1.4.2	Are clear, tested decision rules set out? SG 80 Clear decision making rules exist, are fully documented, and have undergone testing - through implementation or simulation. Decision rules are reconciled with reference points and with data and assessment limitations. SG100 Clear, documented and tested decision rules are fully implemented. They have been fully reconciled with reference points, have been periodically evaluated and shown to be robust to all major uncertainties.	Score: 75

Assessment Team comment

Clear, documented decision rules are fully implemented. Although generic, these are sufficiently precautionary to account for this. They have been fully reconciled with the precautionary reference points and have been periodically evaluated, albeit generically, and shown to be robust to most uncertainties. The rule does not appear to have been tested, however, against the full range of plausible scenarios of stock status and future states of nature.

Clear documented harvest control rules are published by CCAMLR and are applied annually in CCAMLR advice on TACs. The rules are precautionary, but are generic and have not been tested in this case. For example, if the current assumptions with respect to the unexploited stock are incorrect, it has not verified that the decision rule is sufficiently precautionary to allow stock recovery.

Historical Russian catches, all or part, could have come from this stock so current stock could be rebuilding so current fishing pressure on stock could be impeding rebuilding

A plan to address this area of uncertainty should be developed. To address these concerns the following information is required but not necessarily limited to:

Summary of activity	Timescale and required deliverables
Test the current and future decision rules against plausible states of nature	4.1. Evidence of testing/modelling of current decision rules against plausible states of nature presented to the Assessment Team one year after certification. For example a management strategy evaluation could be used to show that decision rules are robust.

15.	Polar client action plan	**Response** The harvest control rules for icefish are clearly laid out by CCAMLR. Given these rules and the known biology of icefish do the decision rules set out allow the fishery to be maintained and if necessary recover? Two additional questions that need to be investigated here are "What may have changed in the South Georgia ecosystem" and "Were the reported high catches of icefish in early years of the fishery possible?" The changes in the structure may represent a regime shift in the South Georgia ecosystem. Previously artificially low levels of whales and seals occurred in the Southern Ocean and specifically around South Georgia due to hunting by man. This modification of the natural equilibrium situation may have reduced the amount of krill taken by these top level predators leaving more krill available for other predators such as icefish. In addition the low level of predators in low-krill years would mean that less of an impact would occur on icefish which has been identified as a possible alternate food source during these periods. **Action 1** The historic population levels of marine mammals at South Georgia will be estimated from data sources such as the History of Marine Animal Populations (HMAP) project (www.HmapComl.org), which is part of Census of Marine Life (www.CoML.org) and other data sources on whaling / sealing at South Georgia. These data may give an idea of the approximate reduction in pressure on krill and icefish at key times and allow the current harvest control rules to be tested in situations where we have the normal population size as seen at present and the possible high concentrations in the absence of large numbers of marine mammals. The modelling of the plausible states of nature for the icefish stock in various scenarios will be presented at the first surveillance audit at the end of the first year of certification.
16.	AT observation at Surv 1	The client provided a preliminary report with a simulation study testing the CCAMLR rules against possible states of nature (MRAG, 2011). The simulation study covered the original concerns of the assessment team, and showed that the harvest control rules were robust and had little negative impact on the stocks over the scenarios considered. Therefore, this work meets the requirement for this condition. To complete the task, the assessment team made two further recommendations. a) The simulation should report clearer statistics to assess the performance of the HCR. For example, the ratio of SSB produced by the HCR to the SSB should no fishing be occurring, or a regret function comparing the HCR performance against the performance with perfect knowledge. Although the reported statistics supported the conclusions, they were not easy to understand due to the high noise incorporated into the simulation. b) The study should undergo some sort of peer review. This need not be very formal, but it would be useful to allow other scientists to review the analysis to check results are realistic and ensure that the range of uncertainty in the states of nature is covered. Furthermore, it was noted that the scientists undertaking the study had not achieved some of their original objectives in mapping out the possible states of nature and degree of background variability. The assessment encouraged further progress should be made if possible in improving the operational model, which in turn will be useful in developing and testing alternative HCRs.

17.	AT conclusion from Surv 1	The work undertaken meets the condition, which is therefore closed. The score of PI 1.1.4.2 has been raised to 80, meeting the SG80 requirements. However, the final report and any review of the analysis will be considered in the next surveillance audit Condition 4 is closed but the assessment team will review further progress (see further recommendations above) at subsequent surveillance audits
18.	Recommendation 1	

Recommendation 1. Conduct an ecological risk assessment of the fishery to ensure that research is targeted and justified.

Relevant scoring indicators(s)		
NA	P1 & P2 in general. No particular scoring indicator was identified	NA

Summary

The Assessment Team recommend that the client, with partners (ie GSGSSI, MRAG, BAS), conduct an ecological risk assessment of the fishery to ensure that research is targeted and justified. The Assessment Team would like to see a review/report and subsequent research strategy at the surveillance audit at the end of the first year of certification.

Note this is a recommendation only and not a condition of certification. None the less the Assessment Team have identified an area of concern or uncertainty that would benefit from further information during the five years the fishery will be certified.

19.	Polar client action plan	**Response** Currently research in the South Georgia icefish fishery is determined by the requirements for the stock assessment and by the CCAMLR Scientific Committee and through the various CCAMLR Working Groups. The required research is therefore open to review by all CCAMLR Member States at various levels before implementation. An annual discussion on future research requirements is held at the annual South Georgia science meeting which is held after the industry meeting each year. At this meeting all future research is discussed by GSGSSI, FCO, MRAG and BAS. Scientific attendance at all key meetings by MRAG, BAS or both is confirmed with both the BAS core-science programme and South Georgia projects being involved.
20.	AT observation at Surv 1	Various activities have been undertaken that would be useful in an ecological risk assessment, including developing an ECOPATH model (which is as yet incomplete), and compiling information to address Condition 4 An annual research meeting is conducted each year around the time of the surveillance audit. The client has undertaken to consider this recommendation is relation to their other priorities. It was pointed out that this recommendation encouraged the fishery to continue to move towards an ecosystem approach to fisheries management.
21.	AT conclusion from Surv 1	This recommendation remains outstanding. The client has undertaken to review this recommendation, but the assessment team recognise that resources are limited and this recommendation may not have a high enough priority at this stage.

22.	Recommendation 2	

Recommendation 2. Use information from the survey trawls to assess the potential impact on depletion and recovery of benthos.

Relevant scoring indicators(s)		
NA	P2 in general. No particular scoring indicator was identified	NA

Summary

The Assessment Team recommend that the client, with partners (ie GSGSSI, MRAG, BAS), use information from the survey trawls to assess the potential impact on depletion and recovery of benthos. The Assessment Team would like to see a review/report at the surveillance audit at the end of the second year of certification.

Note this is a recommendation only and not a condition of certification. None the less the Assessment Team have identified an area of concern or uncertainty that would benefit from further information during the five years the fishery will be certified.

23.	Polar client action plan	**Response** All benthos recovered during the survey is fully logged and recorded. This would represent a full impact on the depletion of benthos through this fishery as the commercial fishery only utilises pelagic gear that has no benthic impact. A brief report on the benthic impact of the survey only will be presented at the end of the second year of certification.
24.	AT observation at Surv 1	The recommendation here was to look at the historical bottom trawl survey and the benthos caught at the different survey stations over time. Benthic experts were included in the team that conducted the 2011 ground fish survey commissioned by GSGSSI. The data on benthos caught in the bottom trawl survey have yet to be analysed, but a review is planned over the next 1 to 2 years to identify what might be done with it. It is by no means certain that the data are of sufficient quality or quantity to support productive analysis. The client emphasised the various actions which have been undertaken to mitigate risk, such as introduction of MPAs and data collection on recording the interaction between (longline) fishing gear and the benthos. In addition, it was noted that a habitat map was being developed which would help manage this risk as well as provide a baseline for sampling and monitoring.
25.	AT conclusion from Surv 1	The assessment team accepts that the quality of the data are uncertain, but believe that the data may provide a useful source of information for ecosystem management, defining levels for acceptable and reversible habitat impacts and improving the scores under habitat and ecosystem related performance indicators. Therefore, the assessment team has encouraged the client to continue with this work.
26.	Recommendation 3	

Recommendation 3. Produce an annual summary, using observer information, of the interaction of commercial trawls with the seabed.

Relevant scoring indicators(s)		
NA	P2 in general. No particular scoring indicator was identified	NA

Summary

The Assessment Team recommend that the client, with partners (ie GSGSSI, MRAG, BAS), produce an annual summary, using observer information, of the interaction of commercial trawls with the seabed. The Assessment Team would like to see a review/report at the surveillance audit at the end of the second year of certification and annually thereafter.

Note this is a recommendation only and not a condition of certification. None the less the Assessment Team have identified an area of concern or uncertainty that would benefit from further information during the five

years the fishery will be certified.

27.	Polar client action plan	**Response** As stated, the commercial fishery utilises pelagic gear that has no benthic interactions or impacts. The gear on each vessel in the icefish fishery is inspected by the Government Officers on South Georgia prior to the commencement of fishing to ensure that no bottom trawling gear such as rock-hoppers, large bobbins or bottom chafers are on board. Scientific observer reports from the client group vessels in the commercial fishery will be checked and collated into a report at the end of the second year of certification and annually thereafter detailing any benthic interactions that have occurred.
28.	AT observation at Surv 1	Commercial fishing has not taken place since the fishery certified. There was no interaction between trawls and the seabed in 2010. The client agreed to report any interactions in the same way bird mortality. This recognised that such interactions would be very rare as pelagic trawls are used. It was expected that routine reporting of observer data should indicate no seabed interaction has occurred, and therefore direct reports of this fact should be adequate.
29.	AT conclusion from Surv 1	Given no interactions are expected, it is adequate to report this routinely in each year's summary of the fishery. Should significant interactions be detected, such interactions would be reported in more detail.
30.	Recommendation 4	

Recommendation 4. Establish the most effective bird mitigation measures.

Relevant scoring indicators(s)		
NA	P2 in general. No particular scoring indicator was identified	NA

Summary

To encourage continued development and implementation of best practice, the Assessment Team recommend that the client, with partners (ie GSGSSI, MRAG, BAS), establish the most effective bird mitigation measures. The Assessment Team would like to see

- a review/report
- protocols developed and implemented that participant fishing boats must follow
- monitoring procedures for fishery officer and observers at the surveillance audit at the end of the first year of certification.

Note this is a recommendation only and not a condition of certification. None the less the Assessment Team have identified an area of concern or uncertainty that would benefit from further information during the five years the fishery will be certified.

31.	Polar client action plan	**Response** The most effective bird mitigation measures for trawl fisheries have been investigated over the last few years and papers have been and will be presented to the CCAMLR Working Group on Incidental Mortality Associated with fishing (WG-IMAF), e.g. Sullivan et al. (2009)[1]. This will ensure that appropriate mitigation measures are incorporated in the CCAMLR Conservation Measures applicable to the fishery for vessels, observers and CCAMLR inspectors. NB: GSGSSI Government Officers will utilise the same principles as CCAMLR Inspections when checking mitigation measures.
32.	AT observation at Surv 1	Sullivan et al. (2009) outline and justified the procedures used in the area 48.3. Among other measures, net binding is used and works at reducing accidental bird mortality when the net is set. CCAMLR CM 42-01 describes net binding to be used in all trawl fisheries in 48.3 in

[1] Sullivan, B. Clark, J., Reid, K and Reid L. (2009) Development of effective mitigation to reduce seabird mortality in the icefish (*Champsocephalus gunnari)* trawl fishery in Subarea 48.3. CCAMLR WG-IMAF (in press).

		some detail. Net binding is not required in other icefish fisheries in CCAMLR, although other bird mitigation measures (CM 25-03) are applied in the same way. Therefore these rules have been promoted through CCAMLR. The concern behind the recommendation was that the detailed procedures have not been codified into a single accessible document. This still has not been done. However, it was pointed out that there have been no new entrants to the fishery, and the critical procedures are well described in the licence requirements and well understood by the current participants.
33.	AT conclusion from Surv 1	Given the information above, it was considered that the intent of the recommendation has been met. Any residual concern over new entrants should be incorporated into recommendation 5. Recommendation 4 should be closed.
34.	Recommendation 5	

Recommendation 5. Prepare and formalise an education package for new entrants to the fishery.

Relevant scoring indicators(s)		
NA	P3 in general. No particular scoring indicator was identified	NA

Summary

The Assessment Team recommend that the client, with partners (ie GSGSSI, MRAG), prepare and formalise an education package for new entrants to the fishery giving the full suite of expectations for participants in the fishery and the rationale for those expectations. Skippers can use it to train crew. This education package would contain the type of information current communicated to the vessel owners and operators, but be systematically organized for clear and effective communication.

The Assessment Team would like to see a pack for skippers and possibly additional material for use in training vessel crews at the surveillance audit at the end of the first year of certification.

Note this is a recommendation only and not a condition of certification. None the less the Assessment Team have identified an area of concern or uncertainty that would benefit from further information during the five years the fishery will be certified.

35.	Polar client action plan	**Response** An education package for new entrants to the client group fishery will be prepared for skippers for training vessel crews when and if more vessels join the client group. Currently GSGSSI and CCAMLR distribute relevant material to the management of the fishery to vessels directly and through their flag states as appropriate and the education package should not ideally overlap with any of this information to reduce any possibility of confusion in implementing Conservation Measures.
36.	AT observation at Surv 1	Given that there have been no new entrants in the fishery, this recommendation has not been addressed. It would only come into force with a new entrant into the fishery who was not familiar with the procedures and ethos of this fishery. In reality any new entrant would be known by Polar and therefore would be appropriately informed. Licence conditions provide a detailed description of the requirements. Observers help by informing the vessel captain of good practice while at sea. This good practice is included in observer training and the observer manual.
37.	AT conclusion from Surv 1	The implication remains that any new entrant would benefit from help and training in operational procedures appropriate for this fishery. This would require the same standard applied to all participant in the fishery Furthermore, the ability to apply techniques such as bird mitigation measures specific to area 48.3 (see recommendation 4), should be a requirement. The assessment team agreed with the client, the recommendation would only apply if a new entrant were to enter the fishery. Furthermore, that developing such a code of practice and

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<tr><td></td><td></td><td>training was the responsibility of the management authority, although the client should co-operate as far as possible should materials and training be developed.</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>38.</td><td>Any complaints against the certified operation; recorded reviewed and actioned</td><td>No complaints against the certified operation were received by Polar, MML or MSC.</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>39.</td><td>Any relevant changes to legislation or regulation</td><td>Nothing substantial to report since certification</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>40.</td><td>Any relevant changes to management regime</td><td>Nothing substantial to report since certification</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>41.</td><td>Annual catch data reporting (MSC Policy Advisory 22):</td><td>Total TAC established for the fishery in the most recent fishing year: 2011 – 2305T

Unit of Certification (UoC) share of the total TAC established for the fishery in the most recent fishing year: 2011 -1955

Client share of the total TAC established for the fishery in the most recent fishing year: 2011 -1955

Total greenweight catch taken by the client group in the two most recent calendar years. 2009: 1332t 2010: 0.074T 2011: 0.until Sept 28 2011.</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>42.</td><td>Plan for future surveillance audits</td><td>CR 27.11.1.1 contains a formula to assess the format that the annual surveillance audit should take

Table C3 Criteria to determine surveillance score

<table>
<tr><th>Criteria</th><th>Surveillance Score</th><th>SGTF at surv 2</th></tr>
<tr><td>1. Default Assessment tree used?
Yes
No</td><td>
0
2</td><td>2</td></tr>
<tr><td>2. Number of conditions
Zero conditions
Between 1-5 conditions
More than 5</td><td>
0
1
2</td><td>1</td></tr>
<tr><td>3. Principle Level Scores
≥85
<85</td><td>
0
2</td><td>0</td></tr>
<tr><td>4. Conditions on outcome PIs?
Yes
No</td><td>
2
0</td><td>2</td></tr>
<tr><td></td><td></td><td>Total score 5</td></tr>
</table>

The score of 5 translates to the requirement for annual on site surveillance audits (CR 27.22.1.2 Table C4: Surveillance Level)</td></tr>
</table>

		MSC Certification should therefore continue with audits annually
43.	Overall Conclusion from surv 1	This was a successful surveillance audit. Condition 4 is closed but further recommendations are included. The remaining conditions have longer timeframes for delivery and are on track. No changes in management have taken place that would detrimentally affect the performance of this fishery against the MSC standard and the fishery continues to meet the requirements of the MSC Standard. MSC Certification should continue with audits annually.

Appendix 1 - Stakeholder submissions TAB 29

The opportunity for stakeholders to meet the assessment team during the site visit, or send written submissions, was announced on the MSC website on 16 Aug 2011. Known stakeholders were also sent the announcement via email. IMM did not receive any responses.

Information Sources:

Meetings
- 28 Sept 2011. Clent: A Reid, I. Perez Buallo
- MRAG consultants to client. R Mitchell, Tom Peatman
- GSGSSI M. Collins & J Brown

Reports etc
CCAMLR website. 2010 stock assessment

CCAMLR (2010) Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 11 to 22 October 2010). Annex 8 of the Report of the Twenty-ninth Meeting of the Scientific Committee for the Conservation of Antarctic Marine Living Resources held in Hobart, Australia, from 25 to 29 October 2010. SC-CAMLR-XXIX. Appendix S: Fishery Report: *Champsocephalus gunnari* South Georgia (Subarea 48.3).

Standards and Guidelines used:

1. MSC Principles and Criteria for Sustainable Fishing
2. MSC Fishery Certification Methodology Version 6. September 2006
3. TAB Directives - all