MACALISTER ELLIOTT AND PARTNERS LTD

SURVEILLANCE VISIT REPORT FOR THE TRISTAN DA CUNHA ROCK LOBSTER FISHERY *(JASUS TRISTANI)*

CERTIFICATE NO.: MEP-F-007

SURVEILLANCE YEAR 1

Undertaken by:

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MEP QA REF: 2208R05B

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1. GENERAL INFORMATION AND SUMMARY CONCLUSION

Fishery Name	Tristan da Cunha rock lobster			
Unit of Certification	Rock lobster (*Jasus tristani*) from the islands of the Tristan da Cunha group			
Species	*Jasus tristani*			
Area	South Atlantic (FAO Area 47)			
Method of capture	Baited traps			
Client Address	Ovenstone Agencies PTY Ltd. Unit G7, Victoria Junction Prestwich Street, Green Point 8001 Cape Town, South Africa			
Client Contact Name	Andrew James, Dorrien Venn			
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Certificate number	MEP-F-007			
Certificate Issue Date	20 June 2011			
Certificate Expiry Date	20 June 2016			
Audit stage	Year 1	Year 2	Year 3	Year 4
Audit experts	Jo Gascoigne, David Japp			
Surveillance Audit Date	May 21-23, 2012			
Audit recommendation	The fishery is required to meet three conditions (one for each MSC Principle). The conditions relating to Principles 2 and 3 are required to be met within two years of certification. The team is satisfied the fishery is on target to meet these conditions. Although the fishery is behind in relation to the Action Plan for Condition 1 (requiring the management authorities to define in advance the rules for setting the TACs.), the team found that there are circumstances beyond the control of the client (the grounding of the bulk carrier *Oliva* on Nightingale Island in March 2011, with significant implications for the stock status in the immediate area and possibly the adjacent Inaccessible Island). The MEP team is satisfied that appropriate management action is being taken and that the fishery is still on course to meet the condition before re-certification. The MEP team concluded that no corrective action is needed at this stage. This issue, as well as the client's action taken to mitigate the impacts of the *Oliva* disaster, should be reviewed at the next scheduled audit (June 2013). The MEP team concluded that the rebuilding of the			

	stock post-*Oliva* is being conducted in accordance with the MSC standard (review of the rebuilding plan against PI 1.1.3). MEP concludes that the fishery **should** remain certified for another year.

2. INTRODUCTION

This report presents the conclusions of the first annual surveillance audit for the MSC-certified Tristan da Cunha rock lobster fishery (*Jasus tristani*). The fishery was certified on 20 June 2011 by the Conformity Assessment Body (CAB) MacAlister Elliott and Partners Ltd. The assessment team consisted of Jo Gascoigne (MEP lead auditor, P1), Johan Groeneveld (Oceanographic Research Institute, Durban, P2) and David Japp (CapFish Ltd., Cape Town, P3). The site visit for the audit was carried out by Jo and David on 21-23 May 2012. During the site visit, the following people were interviewed in person or remotely:

- Dr Andrew James, Ovenstone
- Dorrien Venn, Ovenstone
- Capt. Clarence October (FV Edinburgh)
- Prof. Doug Butterworth, MARAM
- Dr Sue Johnston, MARAM
- James Glass, Tristan Director of Fisheries (conference call)
- Sarah Glass and Tanya Green, Tristan Fisheries Department (responsible for data entry and management on Tristan Island and for the submission of these fishery data to MARAM)
- Martin Purves, MSC

The fishery finds itself in a complex situation as a consequence of the grounding of the bulk carrier *Oliva* on Nightingale Island on 16 March 2011. The vessel broke apart and sank, contaminating Nightingale and nearby Inaccessible with 1500 t of heavy fuel oil and depositing 65,000 t of soya beans on the seabed around Nightingale. The accident occurred after the assessment of the fishery was completed although the effective certification date of the fishery on 20 June 2011 was issued after the *Oliva* incident. In the subsequent follow up to the incident, test fishing and surveys were undertaken to measure the possible impact of the *Oliva* (oil and soya bean cargo) on the lobster resource. Preliminary results from the test fishing suggest that there may have been considerable mortality (or migration) of adult lobster at Nightingale (assumed due primarily to soya pollution) and also potentially of juveniles at Inaccessible and Nightingale (assumed primarily due to oil). The subsequent precautionary management strategy adopted resulted in the full closure of the fishery for the 2011-12 season at Nightingale (65 t) and a reduction in the TAC at Inaccessible from 95t to 53t. The response of management to the impact of the incident on the lobster stock is discussed in detail below in relation to the MSC standard.

3. GENERAL OBSERVATIONS

The *Oliva* incident and its consequences are discussed in detail in Section 4 below. In this section we consider other changes in the fishery since certification.

3.1 STOCK ASSESSMENT MODEL AND PEER REVIEW

During the assessment scoring, an age-based assessment model was being tested using the fishery data for Nightingale Island. This model has now been extended to include the remaining fished areas in the Tristan archipelago (Gough, Inaccessible and Tristan islands) and now forms the basis of the management advice provided by MARAM. This new modelling approach replaces the previous method of estimating replacement yield which, as noted in the Certification Report, is not particularly useful when the stock biomass is above the MSY level, as is likely in this case. Details of both models are given in the Certification Report.

The new stock assessment methodology has recently been evaluated (peer reviewed) by MRAG, under a contract with the Island Council. This review was published in March 2012 (Edwards et al. 2012) and focuses on the stock assessment model and process. Phase two of the peer review will assess the management strategy. MRAG found some minor issues with the model code, and also performed some additional sensitivity analyses, but overall their report concludes that the MARAM modelling approach is appropriate given the limitations of the data available, and is a suitable and robust basis for management of the fishery.

The most significant gap in the data identified by MRAG (and previously identified by MARAM – see for example Johnston and Butterworth 2011) is the issue of growth rates at each island. Currently there are two different growth models for lobster at Nightingale Island, based on data collected by Dr David Pollock (South Africa) and James Glass (Tristan Island) respectively. These two models growth models, when used as inputs to the stock assessment model, give rather different results for stock productivity. This issue was brought into particularly sharp focus when attempts were made to predict the recovery rate of the stocks at Nightingale from the impact of the *Oliva* (see Section 4). As a result of this, the need for new data to verify growth rates has been prioritised in the research plan (see below.) In 2012 a tagging programme was started, with 10,000 lobsters tagged at the three top islands (excluding Gough for the moment) during the post-season biomass surveys. This tagging programme is planned to continue at least for the 2012-13 and 2013-14 seasons.

3.2 ADVICE, TACS AND CATCHES

The management advice based on the new stock assessment model can now reflect a number of objectives (to be defined by the management authority – i.e. the Tristan Department of Fisheries), rather than just estimating replacement yield. These may include i) maintaining exploitable biomass (and hence stabilising catch rates) at a given level (i.e. replacement yield); ii) maintaining a target proportion of the estimated pristine spawning biomass (K) or iii) some mixed or interim strategy depending on the specific conditions at each island. The advice based on these objectives is shown in Table 1, along with the final TAC decision for each island and the catch for the 2011/12 fishing season. The TAC decision was taken following MARAM's 'balanced intermediate strategy' (iv) (Butterworth and Johnston 2011a).

Table 1. Advice from MARAM based on four alternative management objectives. Adjusted TAC values post-*Oliva* given in brackets. (Some alternative figures are given for Nightingale and Gough based on alternative growth models – the values considered most likely are given here). Taken from Butterworth and Johnston 2011a and from Ovenstone quota reconciliation report for 2011-12.

Management objective	Tristan	Gough	Nightingale	Inaccessible	surveys
i) No change in TAC from 2010-11	180	85	72	105	-
ii) Replacement yield	174	94	76	88	-
iii) Maintain spawner biomass at 0.85K	220	112	43	110	-
iv)'Balanced intermediate strategy'*	174	95	65	95	-
2011-12 TAC	174	95	65 (0)	95 (53)	-
2011-12 catch	174.8	95.8	0	53.7	4.0

* Based on need to maintain catch rates at Tristan, mixed strategy for the other islands

For the 2010-2011 season, the replacement yield model was still in use, as described in the Public Certification Report. This assessment lead to recommendations on the TAC as set out in Table 2. These recommendations were based on the estimates of replacement yield (which provide a range of values given various model input ranges), but also on the assumption that since a new operational management procedure was under development (see Table 1; as per Condition 1 – see below) it was probably not appropriate to make large changes to the TACs, given that the existing TACs were within the model output ranges (Johnston and Butterworth 2010). The final TAC and the catch from the 2010-11 season is also given in Table 2. Due to the *Oliva* incident the TAC was not caught in full: 9.3 tonnes were not landed at Nightingale and 51.7 tonnes were not landed at Inaccessible.

Table 2. Estimated replacement yield (MARAM advice), TAC and catch for each island and for surveys for seasons 2010-11 and 2011-12. All figures in tonnes. Taken from Johnstone and Butterworth 2010 and from the Ovenstone quota reconciliation report for 2010-11.

	Tristan	Gough	Nightingale	Inaccessible	surveys
2010-11 MARAM range of replacement yield estimates	172-188	75-88	72-75	106-110	-
2010-11 TAC	180	85	72	105	-
2010-11 catch	180.8	86.9	62.7	53.3	3.5

3.3 RECENT TRENDS IN CPUE

At all the islands except Gough, nominal CPUE has declined since a peak around 2004-2006 (Figure 1). At Tristan, CPUE in the 2011-12 season started high but declined abruptly after Christmas; however a small amount of fishing by the Edinburgh at the end of the season showed a high catch rate. The reasons for these changes within season are not clear. At Gough, CPUE has been on a generally increasing trend, and catch rates are reported to be high there relative to the other islands. CPUE at Nightingale collapsed after the *Oliva* incident – this is not included in Figure 1.

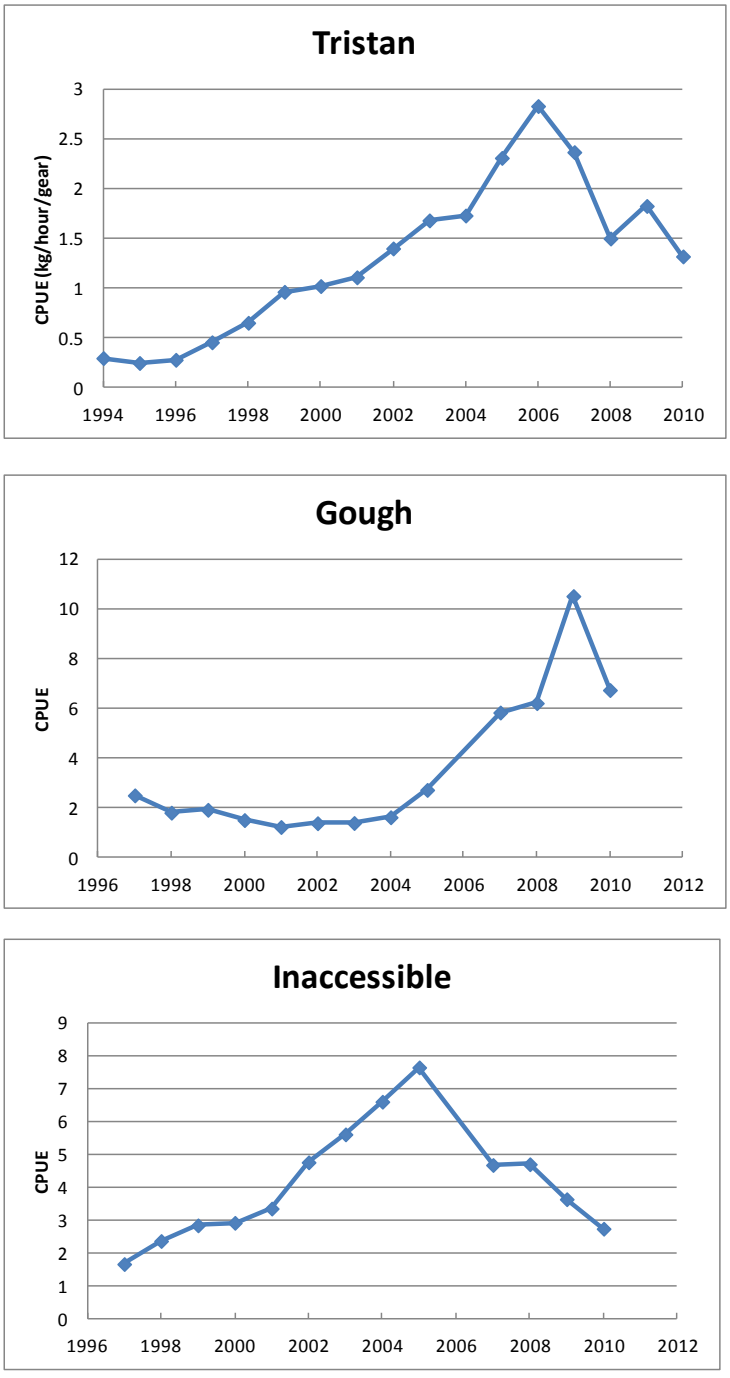
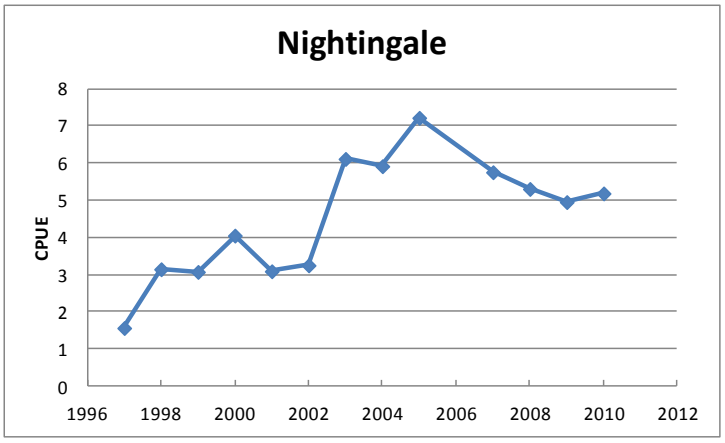


Figure 1. Trends in nominal CPUE from the powerboats at Tristan and from the Edinburgh longlines at the other islands – note that the units of effort are therefore different at Tristan and thus this graph is not directly comparable with the others. Trends in standardised CPUE are reported by MARAM to be similar for all areas. The year on the x-axis refers to the year in which the season starts. Information provided by Sue Johnstone, MARAM.



Although nominal CPUE reflect downward trends in recent years the replacement yield model used as the basis for the 2011/12 resulted in an unchanged TAC. Based on the new model and stock management objectives decided by the Tristan Government, the catches for the 2012/13 season will be set in June 2012. The team have however noted the nominal CPUE trends and will review the model outputs in the 2013 audit also taking into consideration the management implications of the *Oliva* incident.

3.4 PHYLOGENETIC STATUS OF *JASUS TRISTANI*

Recent genetic research (Groeneveld et al. 2012) suggests strongly that *Jasus tristani* is synonymous with *Jasus paulensis* – the species found at the St. Paul and Amsterdam Islands and Seamount 150 in the southern Indian Ocean – a remarkable result considering the distances involved. Since the name *Jasus paulensis* has precedence, it is likely that this will become the scientific name for Tristan rock lobster.

There is a fishery for *J. paulensis* in the St. Paul and Amsterdam islands, which are French territories. Groeneveld et al. (2012) conclude, however, that the species most likely exists as a metapopulation with periodic or occasional genetic connectivity rather than direct linkages at the population dynamics level. The MEP team therefore concluded that this discovery has no particular implications for the MSC certification status of Tristan rock lobster, and that a review of the status of the Indian Ocean fishery was not necessary. For the moment, MEP will continue to refer to the species as *J. tristani*, to avoid confusion.

3.5 OTHER GENERAL COMMENTS

- Tristan Fisheries Department confirm that Ovenstone have operated according to the concession agreement and the licence requirements, with no incidents of non-compliance (Annex 1).
- No IUU has been detected at Gough (traps in the water or washed up, vessels sighted) since certification.
- Catch rates of octopus are not reported to have changed significantly since certification.

4. THE *OLIVA* INCIDENT AND IMPLICATIONS FOR CERTIFICATION OF THE FISHERY

4.1 CONSEQUENCES OF THE *OLIVA* INCIDENT

Although the *Oliva* ran aground at Nightingale in March 2011, it was only at the start of the 2011-12 season that it became clear that the incident had had impacts on the lobster populations at Nightingale and potentially at Inaccessible. The pre-season biomass surveys at Nightingale showed a big reduction in catch rates, with some traps coming up covered in black goo (assumed to be decomposing soya). At the same time, surveys by snorkelers around Nightingale, Inaccessible and Tristan (the latter used as the best available comparative / control location) showed significantly lower densities of juveniles in the surf zone around the two islands oiled by the *Oliva*, although sample sizes were small and there is no direct evidence for a causal link to the *Oliva* (i.e. no pre-*Oliva* data). As a precaution, the TAC at Nightingale was reduced to zero for the 2011-12 season, while the TAC at Inaccessible was reduced from 95t to 53t (taken from modelling conducted by MARAM based on scenarios proposed by Patrick Franklin and Sue Scott, who were retained by the Tristan Government as advisors for most of this work) (Johnston and Butterworth 2011, Butterworth and Johnston 2011b).

In November 2011, a workshop was held in Cape Town, bringing together Ovenstone, the insurers of the *Oliva* and scientific advisors from both sides, including MARAM. At the workshop, the following was agreed:

- Based on available preliminary survey data it was agreed that the best estimate for *Oliva*-related juvenile mortality at Nightingale is currently 80% (±15% (2 S.E.) - minimum uncertainty). This estimate to be revised on receipt of further data.

- It was agreed that the estimate of 35% for *Oliva*-related juvenile mortality at Inaccessible, currently used for the model, should be reconsidered for next fishing season when further data should be available; there is no basis on which to reconsider this estimate at the moment. Nonetheless it was noted that this value is a ‘guesstimate’.

- Based on available test fishing and survey data it was agreed that the best estimate for *Oliva*-related adult mortality at Nightingale is currently 50% (±15% (2 S. E.)).

As made clear in the workshop conclusions, these estimates are extremely uncertain. Estimates of juvenile mortality were based on a small number of surveys, particularly at Inaccessible. Further snorkelling surveys were undertaken in early 2012 – the final survey report is however not yet available.. It is understood that due to difficult environmental conditions, this survey strategy is proving difficult, although work is ongoing. Further test fishing has also been carried out at Nightingale to try and quantify the impact and recovery rate of adult (exploitable) lobster biomass, and more will be carried out in July and September – this should help considerably in terms of quantifying changes in adult biomass since the incident. It should be noted that there are three possible mechanisms to account for the decline in catches of adult lobster *viz.* direct mortality, migration out of the area or trap avoidance. Under the circumstances differentiating between these mechanisms is extremely difficult – but each one (or a combination of each) potentially has different long-term implications for the stock recovery. The test fishing results up to March 2012 are currently being analysed by

MARAM; further test fishing will continue for as long as the commercial fishery at the island remains closed.

4.2 STOCK REBUILDING SCENARIOS

Final decisions on the TACs for Nightingale and Inaccessible remain to be taken, but discussions with MARAM and with the Director of Fisheries at Tristan (James Glass) suggest that the fishery at Nightingale might remain closed for the 2012-13 season. At Inaccessible the TAC is likely to be kept at the post-*Oliva* 2011-12 level (53 t), primarily because it appears that the surveys have not so far provided any meaningful new information about impacts on juvenile lobster around Nightingale and Inaccessible. For the long term the Island Fisheries Department and Council, in collaboration with the concession holder (Ovenstone) have agreed that the management objective should be to recover the catch rate at Nightingale and Inaccessible as quickly as possible, and at least by 2020. This strategy is not only to minimise the implications of the grounding on the ecosystem but also to recover the stock biomass to previous levels as quickly as possible. This latter approach is vital to maintain the economic viability of the fishery, which becomes uneconomic when catch rates fall.

In order to evaluate catch levels that would allow rebuilding of the stocks at Nightingale and Inaccessible (as well as to evaluate long-term losses to the fishery), MARAM used the age-structured population model to analyse a series of scenarios, as follows (noting that this modelling was undertaken prior to the workshop):

Nightingale – oil and soya impacts; two growth models – 24 scenarios in total

- oil impacts: no impact vs. 'safe case' 50% mortality 0-3 year olds vs. 'worst case' 100% mortality 0-3 year olds
- soya impacts: no impact vs. adults migrate away for one year vs. three years vs. 70% mortality
- growth models: Glass vs. Pollock

Inaccessible – oil impacts only; three scenarios in total:

- no impact vs. 'safe case' : 35% mortality of 1-3 year olds plus 18% 2011 recruitment failure vs. 'worst case' : 70% mortality of 1-3 year olds plus 35% 2011 recruitment failure

The modelling approach was to ask what level of constant catch (CC) would allow stock biomass targets to be reached over a given time period, for each scenario. The biomass targets were estimated by projecting forward the stock assessment model based on an assumption of a constant catch fixed by the TAC (estimated replacement yield) for the 2011-12 season without *Oliva* impacts (i.e. 65 t for Nightingale and 95 t for Inaccessible). The results are summarised for Inaccessible in Table 3 and for Nightingale in Table 4. The results for Nightingale are only presented here for the 'James Glass' growth model, because it is considered by MARAM and the Fisheries Department to be the most plausible model (the evidence is that growth rates at Nightingale are higher than at Inaccessible, while the Pollock model growth rates are lower – see Butterworth and Johnston 2011b for a discussion on this issue).

Table 3. (after Table 1 in Butterworth and Johnston 2011b). Inaccessible Island CC values for the periods 2011-2015, 2016-2020, 2021-2030 and 2031-2060 that will result in the various target biomass values being reached under various oil spill effect scenarios.

Oil spill scenario	CC 2011-2015	CC 2016-2020	CC 2021-2030	CC 2031-2060
Target biomass (year target reached)	337 t (2016)	330 t (2021)	325 t (2031)	323 t (2061)
No effect	95 t	95 t	95 t	95 t
Safe case	53 t	83 t	95 t	95 t
Worst case	9 t	70 t	95 t	95 t

Table 4. (after Table 2 in Butterworth and Johnston, 2011b). Nightingale island CC values for the periods 2011-2015, 2016-2020, 2021-2030 and 2031-2060 that will result in the various target biomass values being reached, assuming the "James Glass growth" model under various combinations of oil spill and soya impact scenarios.

Oil spill scenario	Soya impact	CC 2011-2015	CC 2016-2020	CC 2021-2030	CC 2031-2060
Target biomass (year target reached)		234 t (2016)	242 t (2021)	248 t (2031)	250 t (2061)
No effect	None	65 t	65 t	65 t	65 t
Safe case	None	10 t	50 t	65 t	65 t
Worst case	None	0 t	11 t	65 t	65 t
No effect	1 yr migration*	76 t	65 t	65 t	65 t
Safe case	1 yr migration	11 t	51 t	65 t	65 t
Worst case	1 yr migration	0 t	11 t	65 t	65 t
No effect	3 yr migration**	137 t	65 t	65 t	65 t
Safe case	3 yr migration	22 t	50 t	65 t	65 t
Worst case	3 yr migration	0 t	11 t	65 t	65 t
No effect	70% die in 2011	0 t	52 t	65 t	65 t
Safe case	70% die in 2011	0 t	13 t	64 t	65 t
Worst case	70% die in 2011	0 t	0 t	58 t	65 t

* Under the 1 year migration scenario, non-zero constant catch starts in 2012 (i.e. after one year of zero catch) ** Under the 3 year migration scenario, non-zero catch starts in 2014.

Essentially, Table 3 tells us that for Inaccessible, if the TAC of 53 t (2011-12) is maintained, it will allow for rebuilding of the stock by 2016 under the 'safe case' and sometime before 2021 under the 'worst case'.

For Nightingale (Table 4), under the worst possible scenario (70% adult mortality plus 'worst case' juvenile impacts), a zero catch does not rebuild the stock until sometime just after 2021. Under the 'worst case' oil impact scenario it is in fact impossible to rebuild the stock by 2016, even with zero catch and no adult impacts. Conversely, for the 'safe case' of juvenile impacts, the stock can be rebuilt by 2016 except under the 70% adult mortality scenario, where it can be rebuilt by some time just before 2021 under zero catches. For the worst case soya impact, it is also impossible to rebuild the stock before 2016, although it is predicted to rebuild before 2021 under zero catches, except for the combination of both worst cases as previously noted. Note that for the two 'migration' scenarios, the constant catch to 'rebuild' the stock to the target biomass is actually higher than the no impact case after the end of the migration period, because the zero catch in earlier years has been 'banked'.

4.3 DEALING WITH THE *OLIVA* IMPACTS UNDER THE MSC STANDARD

In relation to the MSC standard, the likely depletion of the stock biomass by this incident means that the MEP assessment team decided to invoke PI 1.1.3 – recovery of depleted stocks. Normally, PI 1.1.3 would be scored if the fishery scores between 60 and 80 in PI 1.1.1. However, in this case, PI 1.1.1 was scored using the RBF (the score given came from the PSA) and it is not very clear how to incorporate the possible consequences of the *Oliva* incident into the PSA scoring – the consequences of the incident for the stock biomass are in any case still unclear, for reasons given above. The team decided that the most important point was that the fishery should have a rebuilding plan in place which is responsive to information on the population status as it becomes available – as described in the scoring guideposts for PI 1.1.3. The audit team therefore attempted to score the fishery against PI 1.1.3, as presented below, on the basis that this provides an indication of whether the rebuilding plan proposed for the fishery is in accordance with the MSC standard.

PI 1.1.3: Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe.

Scoring issue	SG60	SG80	SG100
a) rebuilding strategy design	Where stocks are depleted rebuilding strategies, which have a **reasonable expectation of success**, are in place		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete **within the specified timeframe**
Rationale	The overall rebuilding strategy is to rebuild catch rate (i.e. stock biomass) as quickly as possible, suggesting low TACs in the short term, although decisions about TACs for the upcoming season have not yet been made. Projections of rebuilding are based on i) an underlying stock assessment methodology that has recently been validated by peer review and ii) impact scenarios which although uncertain were agreed by experts at the Cape Town workshop to be the best available in the short term. The audit team therefore concluded that the rebuilding strategies were based on the best-available scientific information and as such should have a reasonable expectation of success, assuming that they are adapted as new information becomes available. This issue is therefore met at the SG60 and SG80 level. In relation to SG100, since the test fishing data is not yet analysed, there is no direct information available on whether rebuilding has started at Nightingale. At Inaccessible likewise, since impacts (if any) were on the juveniles, they will not manifest themselves in the fished part of the population for several years, although the ongoing surveys may elucidate the situation earlier. Simulations by MARAM are therefore based on very uncertain assumptions. There cannot therefore be said to be 'strong evidence' of rebuilding or of a given timeframe, as yet.		
b) rebuilding timeframes	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or **3 times its generation time**. For cases where 3 generations is less than 5	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or **2 times its generation time**. For cases where 2	The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the depleted stock

Scoring issue	SG60	SG80	SG100
	years, the rebuilding timeframe is up to 5 years.	generations is less than 5 years, the rebuilding timeframe is up to 5 years.	
Rationale	The target rebuilding time for stock recovery is 2020 at the latest, although clearly this may depend on what the impacts really were (particularly the juvenile impacts, which are unclear at this point). Generation time is difficult to evaluate, particularly for data-poor stocks such as these, but can be approximated by estimating the age-class that makes the maximum contribution to egg production. Assuming here 50% maturity of females at age 5 (see Certification Report PSA analysis), natural mortality of 0.1 (used in the MARAM model) and the Glass growth curve, and assuming that egg production is directly proportional to female weight, then this leads to an estimate of generation time by the assessment team of 7 years (Annex 2; noting that this is a very rough and ready approximation). 2020 is 9 years from the date of the Oliva, corresponding to just over one generation time. Therefore SG80 is most likely met. This is probably the shortest practicable rebuilding timeframe given the uncertainty in the impacts and the intent to maintain a TAC of zero at Nightingale where there have been direct impacts on the adult stock, at least until the situation becomes more clear (via testing fishing and further surveys), but the requirement of SG100 to rebuilding within one generation time means that it is not met – this may not be possible for this stock.		
c) rebuilding evaluation	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling or previous performance that they will be able to rebuild the stock within the **specified timeframe**	
Rationale	Monitoring is place via commercial CPUE at Inaccessible and via test fishing at Nightingale where the commercial fishery is closed. The test fishing mimics commercial fishing (i.e. the captain selects fishing areas on the basis of maximising catch) so that results in terms of CPUE should be directly comparable with previous years' commercial fishing at Nightingale. Monitoring of the juveniles in ongoing, although difficult. The test fishing results at Nightingale are currently being analysed, while at Inaccessible impacts, if any, will not yet have fed through to the fishing part of the stock (since the duration from recruitment to the benthos to minimum legal size is at least three years). There is therefore no direct evidence of rebuilding as yet. The MARAM simulations evaluate several scenarios, and in all but the worst case at Nightingale, simulations suggest that rebuilding is possible by the target date. The worst case evaluated (70% mortality of adults plus 100% mortality of 0-3 age classes) is considerably worse than impacts considered plausible under the conclusions of the workshop, so on this basis it seems safe to say that it is 'highly likely' based on simulation modelling that the stock can be rebuilt within the specified timeframe.		
Score and conclusion	All the scoring issues are met at the 80 level, but none of the 100 level SGs are met, therefore the score is 80. **The rebuilding strategy therefore meets the requirement of the MSC standard for stock rebuilding.**		

5. PROGRESS ON IMPLEMENTING CLIENT ACTION PLAN

The fishery was certified with three formal conditions plus one *de facto* condition arising out of the use of the RBF for Principle 1. These are as follows:

- Condition 1: The fishery needs a more formal and transparent harvest control rule;
- Condition 2: The fishery should record quantitative data on interactions with ETP species (birds);
- Condition 3: The fishery should prepare a formal research plan;
- Condition 4: The fishery cannot be recertified using the RBF for Principle 1, and therefore requires reference points by the time of recertification.

Conditions 1-3 required that the client prepare an Action Plan (see Certification Report) with a timetable for how the conditions would be addressed. Since Condition 4 does not arise out of any scores <80, no formal Action Plan is required for this condition. However, the client chose to include it in the same way as the other formal conditions, to ensure that by the time of re-certification the issue has been addressed. We consider all four conditions below on the basis of the Action Plan, but it is important to note that the Action Plan in relation to Condition 4 has no implications for certification at this stage.

Below we review each condition in term, considering the progress the fishery has made relative to Year 1 of the Client Action Plan.

Condition 1

PIs	1.2.2 – Harvest control rules and tools
Issue	While the team agreed that the harvest control approach had been successful up till now, it is not considered to be sufficiently well defined or transparent. This means that should a difficult situation arise (such as an unexplained decline in CPUE) it might be difficult for the Tristan management authorities to take appropriate decisions to sustain the optimal social and economic benefits derived from the fishery. *The management authorities need to define in advance the rules for setting the TACs under various circumstances. These rules should be transparent and accepted by all parties in the fishery.*
Action Plan Year 1	Consult with MARAM and Tristan Fisheries Department on the status of the work – ongoing as new data is obtained. MARAM and Tristan Fisheries Department to cooperate in completing the refinement of the age structured population model being applied to the Nightingale data and then extend it to the other 3 islands. Variants of these models for each island will then be used as the operating models for simulation testing of alternative candidate control rules for each island. Ultimately one such rule will be selected for each island to achieve the desired trade-off between the objectives of improved future catch levels (with their associated socio-economic benefits) and low risks of unintended resource depletion. A

	process of consultation amongst all stakeholders in the fishery will take place to choose amongst the options for HCRs, given their different anticipated performances indicated in simulation trials, so as to best achieve the trade-offs desired by those stakeholders.
Actions during Year 1	The age-structured model has been extended to all four islands and now forms the basis of the stock assessment for all islands (Butterworth and Johnston 2011a). This stock assessment model has been peer-reviewed by MRAG (Edwards et al. 2012) and found to be appropriate and robust. The work towards definition of control rules for each island has been started – as per the four alternative management objectives set out in Table 1. The objective is that the Tristan Fisheries Department, in discussion with other stakeholders, select one of these management objectives (not necessarily the same one at each island) to form the basis of an OMP for each island. Progress has, however, been slowed down by the *Oliva* incident – MARAM have put all their resources into trying to assess the long-term impacts on the fishery and the most appropriate management response, while the Fisheries Department has dealt with a considerable additional workload in terms of surveys, sampling and tagging. In fact, it is not clear that an OMP can be put in place for Nightingale (or probably for Inaccessible) until the medium and long-term impacts of the *Oliva* are clearer.
Evidence provided	Butterworth and Johnston 2011a Edwards et al. 2012 Discussions with Andrew James and Dorrien Venn, Ovenstone, 21 May 2012; Doug Butterworth and Sue Johnston, MARAM, 22 May 2012; James Glass, Tristan Director of Fisheries, 22 May 2012 (by phone).
Conclusion of audit	The fishery is behind the timetable set out in the Action Plan, due to circumstances beyond the control of the fishery. The MEP team consider that the fishery is still on track to meet this condition by the time of re-certification, on the basis that the Action Plan timetable proposes that it be met within two years (i.e. there are three years 'spare'). MEP did not feel that it is appropriate to flag up a non-conformance on the fishery at this point, given the situation it faces due to the *Oliva*, and given that the *Oliva* situation has been managed in accordance with the MSC standard (see analysis in Section 4). The situation will be reviewed at the next audit, due in June 2013.

Condition 2

PIs	**2.3.3 – ETP species, information**
Issue	The fishery should keep quantitative data on close interactions with ETP species. This can take the form of noting the number of sea birds interacting with the Edinburgh – either suffering mortality or being released following the bird release protocol. It can be included in the observer protocol, or carried

	out by any other convenient means, as long as the data are quantitative and credible. The data should periodically be reviewed to ensure that mortality on ETP species from this fishery remains low. *Interactions with ETP species, primarily birds, need to be monitored and incorporated into the Observer and Fishing log books.*
Action Plan Year 1	Include sea bird interaction in Observer and Fishing Logbooks.
Actions during Year 1	A section on seabird interactions has now been included in the captain's logbook for the Edinburgh (it was considered more appropriate to include it here than in the observer data forms, because seabird interactions all take place at night when the observers are off duty, but when an officer is on duty). The logbook form is included as Annex 3 of this report. According to the captain of the Edinburgh, a crew member patrols the vessel periodically during the night looking for seabirds on board and releasing them as necessary – this crew member notes down the data for inclusion in the logbook. As noted in the Certification Report, there are numerous posters around the Edinburgh showing the protocol for handling and releasing seabirds (Annex 4). The data for interactions with seabirds are provided for 2010-11 and 2011-12, for each island, in Annex 5. Nearly all interactions take place during rare episodes when for safety reasons the deck lights have to be switched on at night. Most of the birds can, however, be released unharmed. Dead birds can be sent to the Percy FitzPatrick Ornithology Institute at the University of Cape Town if requested – this is the responsibility of the Tristan Government observers to organise as necessary.
Evidence provided	Logbook recording seabird interactions and mortality (Annex 3) Data for seabird interactions for 2010-11 and 2011-12 (Annex 5) Discussions with the captain of the Edinburgh (Captain Clarence October), 22 May 2012.
Conclusion of audit	This condition has been met. The next audit should ensure that the data continue to be recorded as has been done up till now.

Condition 3

PIs	**3.2.4 – Research plan**
Issue	The fishery should work with the Tristan Fisheries Department to review existing research and make an assessment of key gaps in knowledge of the target species, by-catch species, ETP species, habitats and the wider eco system. On the basis of this analysis, the fishery should develop a prioritised research plan indicating where actions can be taken and where resources will

	be allocated as and when they become available. *The fishery should develop a formal, strategic research plan.*
Action Plan Year 1	Liaise with Tristan Fisheries Department, MRAG and MARAM to o Identify good practice from existing certified fisheries of a similar scale; o Agree research and information requirements with the Fisheries Department and MARAM; o Make use of the MRAG review to formulate a strategic research plan; o Agree priorities for research
Actions during Year 1	The Tristan Fisheries Department prepared a draft research plan based on the research priorities identified by the *Oliva* incident and by the MRAG review of MARAM's stock assessment work (included as Annex 6 of this report). The draft research plan has been reviewed by MARAM and Ovenstone, but has not yet been formally agreed by all stakeholders. The research priorities identified in the draft plan are the following: i. To continue with test fishing at Nightingale until commercial fishing operations resume; ii. To assess the feasibility of conducting regular juvenile surveys at Nightingale, Inaccessible and Tristan and the usefulness of the data collected; iii. To conduct further tagging at all islands; iv. To develop and implement appropriate Management Procedures in consultation with stakeholders with the objective of maintaining (or recovering, where the *Oliva* spillage has had a negative impact) the Tristan Lobster stocks close to the agreed target reference points, agreed by the Tristan Island Council and other stakeholders; v. To continue with work related to the monitoring of the stock.
Evidence provided	Draft research plan – see Annex 6 Edwards et al. 2012 Report to Tristan Administrator of workshop on the Tristan lobster fishery and the *Oliva*, 16-18 November 2011, Cape Town.
Conclusion of audit	The Action Plan for Year 1 for this condition has been met. The plan is in draft form and will be finalised by the second audit in 2013.

Condition 4 – *de facto* condition

PIs	1.1.2 – Reference points
Issue	While the MEP team agreed with MARAM that the stock status is likely to be around or above B_{MSY}, the level of information available was not sufficient to say with a high degree of certainty that this is the case. *Appropriate reference points for the stocks should be defined according to PI 1.1.2 (target and limit reference points). Management interventions should be put in place as necessary aimed at moving the stocks towards or maintaining them at or above the target reference points.*
Action Plan Year 1	Consult with MARAM and Tristan Fisheries Department on the status of the work.
Actions during Year 1	Work by MARAM on identifying suitable reference points as part of the OMP has not progressed since the *Oliva* incident, for reasons noted under Condition 1 above.
Evidence provided	Discussions with MARAM, 22 May 2012.
Conclusion of audit	As noted above, the Action Plan for this 'condition' is informal and indicative. The MEP team does not see any reason for concern at this point about the fishery meet the requirements for re-certification. Progress will be reviewed at the next audit.

6. TRACKING AND TRACING OF FISH PRODUCTS

The Chain of Custody report for this fishery (MEP 2010) concluded that the fishery is low risk and that Ovenstone therefore do not require Chain of Custody certification.

A brief review of the process of product handling from catch to sale by Ovenstone showed that there have been no significant changes since certification. A slightly larger range of products is now produced by the fishery (see list below) but the buyers are the same. At present, no product from this fishery is being sold as MSC. Following the observers in the chain of custody report, Ovenstone demonstrated that their invoices now state that the produce is MSC and include the fishery certification number, and the sub-contractor (cold store) has been made aware that they are handling MSC product.

List of products:

- whole raw frozen lobster
- whole cooked frozen lobster
- sashimi-grade whole raw frozen
- lobster heads
- frozen raw tails
- frozen raw octopus (not MSC)

7. CONCLUSION

For one condition (Condition 1) the fishery has not been able to fully adhere to the timetable set out in the Action Plan, due to circumstances beyond its control – although progress has been made. MEP does not consider it likely that the fishery will be unable to meet the condition by re-certification on this basis, nor does it consider it appropriate to penalise the fishery at this stage, for the reasons set out above. MEP proposes that this issue be reviewed at the next audit (June 2013). The other formal conditions are on track as per the Action Plan. Progress on the *de facto* condition (reference points) is also somewhat behind the informal timetable – this has no implications for this audit, however.

The MEP team evaluated the impacts of the *Oliva*, and the assessment and management process put in place to deal with it, against the MSC standard – specifically against PI 1.1.3 on stock rebuilding. MEP concluded that the rebuilding of the stock after the *Oliva* incident is being managed in a way that is compatible with the MSC standard (score 80).

Overall, MEP concludes that the fishery should remain certified for another year. MEP proposes that progress against Condition 1 be reviewed with care at the next audit (June 2013).

8. RECOMMENDATIONS OF THE AUDIT TEAM

The audit team had no particular recommendations. MEP congratulates the Tristan Fisheries Department, Ovenstone and MARAM for the professional and responsible way they have dealt with a very challenging set of circumstances in the year since certification.

9. SURVEILLANCE SCORE

In accordance with the new Certification Requirements v1.2, the frequency of future surveillance visits was calculated for this fishery. The overall surveillance score is calculated by adding the scores from table 5 and matching those with the Surveillance Level in Table 6. This fishery's score was calculated at 5 which implies a normal surveillance level with annual on-site surveillance audits.

Table 11. Criteria to determine Surveillance Score (see Certification Requirements v1.2, Section 27.22.1.1)

Criteria	Surveillance Score	UK Fisheries/DFFU/Doggerbank Score
1. Default Assessment Tree used?		
Yes	**0**	**2**
No	**2**	
2. Number of conditions		
Zero conditions	**0**	**1**
Between 1 – 5 conditions	**1**	
More than 5	**2**	
3. Principle level Scores		
≥85	**0**	**2**
≤85	**2**	
4. Conditions on outcome PIs?		
Yes	**2**	**0**
No	**0**	
Total Score		**5**

Table 12. Surveillance level (see Certification Requirements v1.2, Section 27.22.1.3)

			Years after certification or recertification			
Surveillance score (from Table C3)	**Surveillance level**		**Year 1**	**Year 2**	**Year 3**	**Year 4**
2 or more	Normal Surveillance		On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & recertification site visit
1	Remote Surveillance	Option 1	Off-site surveillance audit	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit & recertification site visit
		Option 2	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit	
0	Reduced Surveillance		Review of new information	On-site surveillance audit	Review of new information	On-site surveillance audit & recertification site visit

MEP therefore concludes that this fishery is subject to 'normal surveillance'.

10. REFERENCES

Butterworth D.S. and Johnston S.J. 2011a. Recommendations on rock lobster TACs for the Tristan group of islands for the 2011-12 season.

Butterworth D.S. and Johnston S.J. 2011b. Recommendations on adjustments of 2011/12 catch limits at Inaccessible and Nightingale islands in response to the impacts of spills of oil and soya as a result of the *Oliva* incident.

Edwards C., Rademeyer R. and Mees C. 2012. Fisheries Advice to the Tristan da Cunha Administration. Phase I: Review of stock assessments for rock lobster fisheries in the Tristan da Cunha archipelago. MRAG Ltd London, 23 pp.

Groeneveld J.C., von der Heyden S. and Matthee C.A. 2012. High connectivity and lack of mtDNA differentiation among two previously recognised spiny lobster species in the southern Atlantic and Indian Oceans. Marine Biology Research 8, 764-770.

Johnston S.J. and Butterworth D.S. 2011. Effect of the 2011 oil and soya spill events on rock lobster yields at Inaccessible and Nightingale islands. Document MARAM/Tristan/2011/Sep/13

ANNEX 1 – LETTER FROM TRISTAN DIRECTOR OF FISHERIES RE COMPLIANCE BY OVENSTONE

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MSC ANNUAL AUDIT OF THE TRISTAN DA CUNHA FISHERY

In relation to Tristan's first annual audit for the MSC certification on the 21st May, I can confirm that Ovenstone have been operating according to the concession agreement and according to our licencing requirements.

There have been no incidents or issues of non-compliance since certification, and the Tristan Fisheries Department and the community in general are happy with the way things are going in the fishery.

A Research Plan will be put in place once MRAG has done their assessment on MARAM's work, which will be looking at Harvest Control Rules (HCR) and Operating Management Procedures (OMP). Their advice will be sent to the Fisheries Department, which in return will be presented to the Fishing Committee and Island Council, so that everyone will be on-board.

I have bird data for the last two fishing seasons which will be sent to you in due course, and our new logbooks printed for this coming season, have been redesign to include bird data.

Yours sincerely

James Glass

ANNEX 2 – SUMMARY OF APPROXIMATE ESTIMATE OF GENERATION TIME, FOR THE PURPOSES OF SCORING PI 1.1.3.

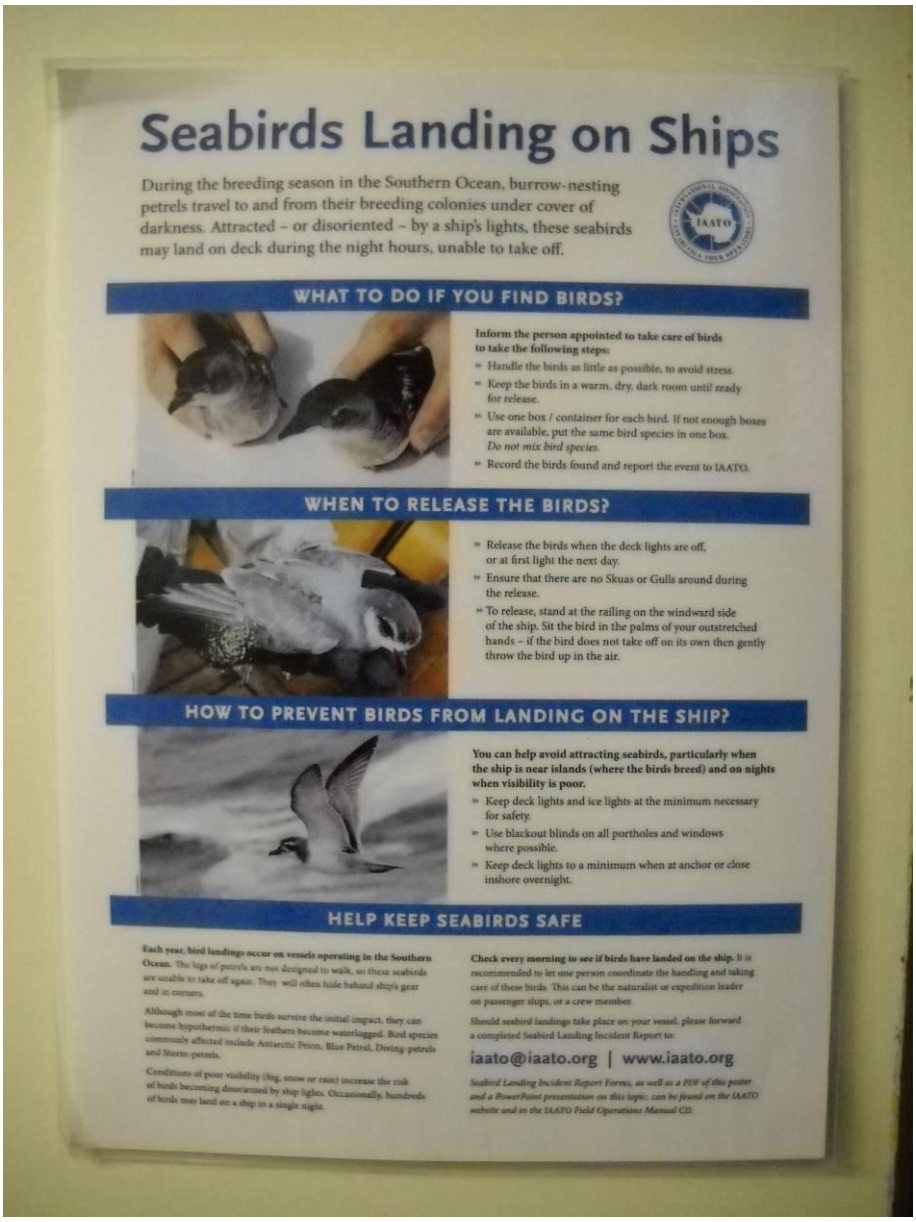
DISCLAIMER: THIS IS AN APPROXIMATE ESTIMATE FOR INTERNAL MEP PURPOSES AND SHOULD NOT BE CITED ELSEWHERE AS BIOLOGICAL REALITY!

age class	proportion mature	M	proportional survival	female CL	weight index	relative egg production of year class
4	0.2	0.1	1	55	1663.75	333
5	0.5	0.1	0.90	65	2746.25	1242
6	0.8	0.1	0.82	72	3732.48	2445
7	1	0.1	0.74	75	4218.75	3125
8	1	0.1	0.67	76	4389.76	2943
9	1	0.1	0.61	77	4565.33	2769
10	1	0.1	0.55	78	4745.52	2604

Notes:

1. Proportion mature taken from estimate of 50% maturity at age 5, with other ages approximated. A full maturity curve was not used.
2. Natural mortality is that assumed in the stock assessment model – a discussion of this assumption is available in Edwards et al. 2012.
3. Mean female CL (carapace length) at each age is estimated from the Glass growth curve given in Butterworth and Johnston 2011b.
4. Weight index is $CL^3/100$
5. Relative egg production estimated by (proportional maturity) x (proportional survival) x (weight index) for each age class.
6. Generation time is approximated by the age class with the highest egg production – i.e. age 7 according to this estimate.

ANNEX 3 – POSTERS ON BOARD THE EDINBURGH DEMONSTRATING HOW TO HANDLE AND RELEASE SEABIRDS.



Seabirds Landing on Ships

During the breeding season in the Southern Ocean, burrow-nesting petrels travel to and from their breeding colonies under cover of darkness. Attracted – or disoriented – by a ship's lights, these seabirds may land on deck during the night hours, unable to take off.

WHAT TO DO IF YOU FIND BIRDS?

Inform the person appointed to take care of birds to take the following steps:

- Handle the birds as little as possible, to avoid stress.
- Keep the birds in a warm, dry, dark room until ready for release.
- Use one box / container for each bird. If not enough boxes are available, put the same bird species in one box. *Do not mix bird species.*
- Record the birds found and report the event to IAATO.

WHEN TO RELEASE THE BIRDS?

- Release the birds when the deck lights are off, or at first light the next day.
- Ensure that there are no Skuas or Gulls around during the release.
- To release, stand at the railing on the windward side of the ship. Sit the bird in the palms of your outstretched hands – if the bird does not take off on its own then gently throw the bird up in the air.

HOW TO PREVENT BIRDS FROM LANDING ON THE SHIP?

You can help avoid attracting seabirds, particularly when the ship is near islands (where the birds breed) and on nights when visibility is poor.

- Keep deck lights and ice lights at the minimum necessary for safety.
- Use blackout blinds on all portholes and windows where possible.
- Keep deck lights to a minimum when at anchor or close inshore overnight.

HELP KEEP SEABIRDS SAFE

Each year, bird landings occur on vessels operating in the Southern Ocean. The legs of petrels are not designed to walk, so these seabirds are unable to take off again. They will often hide behind ship's gear and in corners.

Although most of the time birds survive the initial impact, they can become hypothermic if their feathers become waterlogged. Bird species commonly affected include Antarctic Prion, Blue Petrel, Diving-petrels and Storm-petrels.

Conditions of poor visibility (fog, snow or rain) increase the risk of birds becoming disoriented by ship lights. Occasionally, hundreds of birds may land on a ship in a single night.

Check every morning to see if birds have landed on the ship. It is recommended to let one person coordinate the handling and taking care of these birds. This can be the naturalist or expedition leader on passenger ships, or a crew member.

Should seabird landings take place on your vessel, please forward a completed Seabird Landing Incident Report to:

iaato@iaato.org | www.iaato.org

Seabird Landing Incident Report Forms, as well as a PDF of this poster and a PowerPoint presentation on this topic, can be found on the IAATO website and in the IAATO Field Operations Manual CD.

ANNEX 4 – EDINBURGH LOGBOOK SHEET SHOWING HOW BIRD DATA IS RECORDED (EDITED TO FIT ON ONE PAGE)

Tristan Crayfish Logsheet - Longlines

Vessel: **Trip No:** **Sailing Date:** **Island:** Gough/Inaccessible/Nightingale

Line No.	Trap Type	SHOOTING DETAILS						DEPTH IN M / FMS		HAULING DETAILS			Retained Catch kgs	Discards kgs
		Date	Time	No. Traps	Area	Area No.	Heading	Start	End	Date	Time	No. Traps		

Seabird Interaction with Fishing Vessel									
Bird Species	on board	dead	Bird Species	on board	dead	Bird Species	on board	dead	Wind Direction/Speed & Weather Conditions
Broad-billed Prion			Atlantic Petrel			White-face Storm Petrel/Skipjack			
Diving Petrel/Pinnamin			Soft-plumaged Petrel			White-bellied Storm Petrel			
Little Shearwater			Kerguelen Petrel			Other =			
comments									

Signed: ..... Master

Signed: ..... Observer

ANNEX 5 – SEABIRD INTERACTIONS RECORDED IN 2010-11 AND 2011-12

Island	species	2010-11			2011-12		
		landing	**released alive**	**dead**	**landing**	**released alive**	**dead**
Gough	broad-billed prion	12	11	1	198	188	10*
	great shearwater	2	2	0			
	soft-plumaged petrel				13	13	0
	diving petrel				14	12	2*
	storm petrel				131	126	5*
Nightingale	broad-billed prion	17	17	0	n/a – fishery closed		
	soft-plumaged petrel	20	20	0			
	diving petrel	4	4	0			
	storm petrel	72	70	2**			
Inaccessible	broad-billed prion	29	28	1	4	4	0
	soft-plumaged petrel	14	14	0	2	2	0
	diving petrel	2	2	0	1	1	0
	spectacled petrel	2	2	0			
	storm petrel				15	14	1
	great shearwater				1	1	0

* All 17 birds killed at Gough in 2011-12 came from one incident where the lights had to be put on during poor weather. An estimated total of 175 broad-billed prions, 120 storm petrels, 4 diving petrels and 6 soft-plumaged petrels landed on the boat, and despite attempts to release them, 17 dead birds were found the next day in a search of the vessel.

** The estimated 72 storm petrels at Nightingale in 2010-11 also all came from a single incident when lights had to be put on for essential repairs. Two were killed.

ANNEX 6 – DRAFT RESEARCH PLAN

DRAFT **15 May 2012**

Tristan lobster fishery research plan

1. Research conducted and Data Collected

Fisheries- independent surveys: Annual biomass surveys are carried out from the MV Edinburgh at each island. These surveys are carried out twice per season, fishing 4 transects at Nightingale, 5 transects at Inaccessible and 8 transects at each of Gough and Tristan with each round of fishing. The MV Edinburgh sets 9 small mesh (50mm) traps per line at selected depths along transects perpendicular to the coast at each island. The catch rate information resulting from these transects will shortly be incorporated into assessments as an additional index of abundance, as well as the size distribution of the catches which, because of the smaller lobsters taken by the small-meshed traps will also give an improved indication of incoming recruitment. At a later stage, the planned Management Procedure for the resource may be refined to include these data as well as CPUE as indices of abundance.

Catch monitoring: Commercial CPUE is constantly monitored and all catch and effort data are submitted to MARAM for GLM standardisation before input to assessment models. Future work will attempt stratification at a smaller spatial scale. Approximately 5000 random samples are collected at each island every season to monitor sex ratios and size at maturity with the aim of improving the biological information base on which management is based. These data also provide size composition data which are used as input to the assessment model. In combination these data also provide information on the volume and size composition of discards, which is also taken into account in the assessment model.

Tagging: As part of the remedial action to manage the impact of the Oliva casualty, a tagging program was implemented at Nightingale, Inaccessible and Tristan in January 2012. The objective is to collect growth data (currently limited) which will improve the age structured assessment model presently being refined by MARAM. It is the intention to conduct further tagging on a regular basis at all islands in the future. Over time this information will also be input to the assessment model as the recaptures will provide independent information on the magnitude of fishing mortality.

Test Fishing: Following the grounding of the MV Oliva on 16 March 2011 and the subsequent closure of fishing at Nightingale a series of test fishing has been carried out at

Nightingale during the months of July, September, October, November, December 2011 and January 2012 to monitor the impact of the soya spill on the resource. These months were selected on the basis that historical data are available for comparative purposes. Test fishing will continue at Nightingale until commercial fishing operations resume.

Juvenile lobster assessment program:

Independent juvenile count studies were carried out at Nightingale, Inaccessible and Tristan in September 2011 and February 2012, to determine the viability of such surveys and establish whether a continued juvenile survey program should be carried out to obtain a better understanding of juvenile abundance and trends at these islands both in terms of measuring the impact of the Oliva on the larval and juvenile life stages at Nightingale and Inaccessible, and providing insight into the longer term recruitment dynamics in this fishery. The data collected are presently under analysis to assess this viability.

Data collection ETP species: The Tristan Fisheries Department participates in the ACAP process, including on-going collection of data on seabirds and seabird interactions with the fishery.

2. Objectives

To continue to collect fisheries dependent and independent data for incorporation into the age structured assessment model.

To review and revise target and limit reference points based on on-going scientific assessment and management procedure analyses.

To review the Tristan Lobster management system and the scientific work and resource management advice provided by MARAM, based on recommendations from MRAG's review of this work.

To formulate a Strategic Development Plan approved by the Island Council that recognises the need for a long term strategy for the management of the lobster resource (to be effected through the development and implementation of Management Procedures) to ensure that optimal social and economic benefits continue to be derived from the fishery.

To implement new fishing logbooks at the start of the 2012-2013 season (1st July)

3. Research Priorities

Research priorities have been set based upon an analysis of data requirements to fill gaps in the knowledge and management of the fishery. Key areas that have been identified are:

- The impact of the Oliva casualty on the larval and juvenile life stages at Nightingale and Inaccessible (oil);
- The impact of the Oliva casualty on the adult population at Nightingale (soya);

- Tagging and Data collection by way of a biological sampling program to improve lobster growth rate assessment, a key input function for the resource modelling work;
- Data collection to improve knowledge of larval settlement and juvenile recruitment.

Based on the above, the research priorities are set out below:

vi. To continue with test fishing at Nightingale until commercial fishing operations resume;

vii. To assess the feasibility of conducting regular juvenile surveys at Nightingale, Inaccessible and Tristan and the usefulness of the data collected;

viii. To conduct further tagging at all islands;

ix. To develop and implement appropriate Management Procedures in consultation with stakeholders with the objective of maintaining (or recovering, where the Oliva spillage has had a negative impact) the Tristan Lobster stocks close to the agreed target reference points, agreed by the Tristan Island Council and other stakeholders;

x. To continue with work related to the monitoring of the stock.