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MSC SUSTAINABLE FISHERIES CERTIFICATION

On-Site Surveillance Visit - Report for New Zealand Hoki Fishery

4th Surveillance Audit

November 2016

Certificate Code	F-ACO-030
Prepared For:	**Deepwater Group Limited**
Prepared By:	**Acoura Marine**
Authors:	Jo Akroyd, Graham Pilling & Rob Blyth-Skyrme

Contents

1 Introduction

1.1 Scope of Surveillance

This report outlines the findings of the 4th Annual Surveillance of the New Zealand Hoki fishery. The scope of the certified fishery and therefore of this surveillance is specified in the Unit of Certification set out below:

UoC 1

Species:	Hoki *(Macruronus novaezelandiae)*
Geographical area:	New Zealand HOK1
Method of capture:	Mid-water trawling and bottom trawling
Stock:	New Zealand Hoki, HOK1
Management System:	NZ Quota Management System (Ministry for Primary Industries)
Client Group:	Deepwater Group Limited

1.2 Aims of the Surveillance

The purpose of the annual Surveillance Report is fourfold:

1. to establish and report on whether or not there have been any material changes to the circumstances and practices affecting the original complying assessment of the fishery;
2. to monitor the progress made to improve those practices that have been scored as below "good practice" (a score of 80 or above) but above "minimum acceptable practice" (a score of 60 or above) – as captured in any "conditions" raised and described in the Public Report and in the corresponding Action Plan drawn up by the client;
3. to monitor any actions taken in response to any (non-binding) "recommendations" made in the Public Report;
4. to re-score any Performance Indicators (PIs) where practice or circumstances have materially changed during the intervening year, focusing on those PIs that form the basis of any "conditions" raised.

Please note: The primary focus of this surveillance audit is to assess changes made in the previous year. For a complete picture, this report should be read in conjunction with the Public Certification Report for this fishery assessment, which can be found here:

https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/new-zealand-hoki/second_reassessment-downloads-1/20120925_PCR.pdf

1.3 Certificate Holder Details

Fishery name	New Zealand Hoki		
Species and Stock	New Zealand Hoki (*Macruronus novaezelandiae)* HOK1		
Date certified	25th September 2016	Date of expiry	1st June 2018 (certificate extended via variation)
Surveillance level and type	Level 1 - Onsite		
Date of surveillance audit	21st – 23rd November 2016		
Surveillance stage (tick one)	1st Surveillance		
	2nd Surveillance		
	3rd Surveillance		
	4th Surveillance	✓	
	Other (expedited, etc.)		
Surveillance team	Lead assessor: Jo Akroyd Assessor(s): Graham Pilling & Rob Blyth-Skyrme		
CAB name	Acoura Marine		
CAB contact details	Address	6 Redheughs Rigg Edinburgh EH12 9DQ	
	Phone/Fax	0131 335 6662	
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	Contact name(s)	Polly Burns	
Client contact details	Address	Deepwater Group Ltd. PO Box 5872, Wellesley Street, Auckland, 1141, New Zealand	
	Phone/Fax	+64 09 379 0556	
	Email	george@clementgroup.co.nz	
	Contact name(s)	George Clement	

2 Surveillance Process

2.1 Findings of the original assessment

The NZ Hoki fishery was originally certified in 2001, and subsequently recertified in 2007 and 2012. As a result of the reassessment, in 2012, the assessment team raised one condition of certification. This condition was closed at the first annual surveillance. In addition, several recommendations were made which, whilst not obligatory, the client is encouraged to act upon within the spirit of the certification. The original recommendations have all been closed. A new recommendation was raised at the 2015 surveillance audit and progress assessed during this audit.

2.2 Surveillance Activity

2.2.1 Surveillance team details

This on-site surveillance visit was carried out by Jo Akroyd, and Rob Blyth-Skyrme with Graham Pilling as a remote P1 assessor. The Team Leader was Jo Akroyd.

Jo Akroyd (P3 & TL)

Jo is a fisheries management and marine ecosystem consultant with extensive international and Pacific experience. She has worked at senior levels in both the public and private sector as a fisheries manager and marine policy expert. Jo was with the Ministry of Agriculture and Fisheries in New Zealand for 20 years. Starting as a fisheries scientist, she was promoted to senior chief fisheries scientist, then Fisheries Management Officer, and the Assistant Director, Marine Research. She was awarded a Commemoration Medal in 1990 in recognition of her pioneering work in establishing New Zealand's fisheries quota management system. Among her current contracted activities, she is involved internationally in MSC fishery certification of offshore, inshore and shellfish fisheries as Fisheries Management Specialist and Lead Assessor. She has carried out the Marine Stewardship Council's (MSC) certification assessment for sustainable fisheries. Examples include New Zealand (hoki, southern blue whiting, albacore, scallops), Fiji (longline albacore), Japan (pole and line tuna, flatfish, snowcrab, scallops), China (scallops), and Antarctica (Ross Sea tooth fishery). Jo is a member of the MSC's Peer Review College, and has completed the MSC v1.3 and v2.0 training modules.

Graham Pilling (P1)

Currently the principal fisheries scientist (stock assessment and modelling section) at the Pacific Community (SPC), Graham has over twenty years' experience working in tropical, temperate and polar marine and freshwater ecosystems, gaining in depth experience in the practical assessment and management of pelagic and demersal fisheries through a wide range of methodologies, and the provision of scientific advice to fisheries managers around the world. Fisheries studied include industrial tuna fisheries and artisanal reef fisheries in the tropics and Arabian Gulf. The impacts of anthropogenic influences such as oil spill events and climate change on fish stocks and fisheries have been examined. Graham has designed and developed models to simulate the long-term impacts of uncertainty in stock biology and assessments on fisheries management, and methods to assess and manage data poor fisheries. He has also reviewed international biological stock assessments for scientific rigor. Chair of STECF SGMED (2008) and FAO GFCM stock assessment meetings for assessment of demersal species within the Mediterranean Sea (2008 and 2009), and chair of the FAO meeting on data poor fisheries (2010). Member of a large number of Marine Stewardship Council accreditation teams assessing fisheries for sustainability against the MSC principles. Has played a key role at international commissions in tropical and polar regions. His work has contributed significantly to the institutional strengthening of fisheries institutions in the tropics.

Rob Blyth-Skyrme (P2)

Rob started his career in commercial aquaculture, but prior to undertaking his PhD he shifted focus to the sustainable management of wild fisheries. After his PhD he went to the Eastern Sea Fisheries Joint Committee, one of the largest inshore fisheries management bodies in England, where he became the Deputy Chief Fishery Officer. He then moved to Natural England, the statutory adviser to UK Government on nature conservation in English waters, to lead the team dealing with fisheries policy, science and nationally significant fisheries and environmental casework. Rob now runs Ichthys Marine Ecological Consulting Ltd., a marine fisheries and environmental consultancy. As well as carrying out

general consultancy, he has undertaken all facets of MSC work as a lead assessor, expert team member and peer reviewer across a wide range of fisheries, including those targeting groundfish. Rob is a member of the MSC's Peer Review College, and has completed the MSC v1.3 and v2.0 training modules.

2.2.2 Date & Location of surveillance audit

The on-site audit was carried out from the 21st to 23rd November 2016. The meetings were scheduled to take place in Wellington but due to recent earthquake events and safety concerns the meetings were transferred to Auckland. This meant some stakeholders participated via video link and conference calls.

2.2.3 Stakeholder consultation & meetings

All stakeholders were invited to participate in the audit process. They were sent an email inviting them to participate and/or send a written submission.

2.2.4 What was inspected

For P1, stock status and catch status were reviewed

For P2, a focus of the audit was on the interaction between the fishery and ETP species, including sea lions, fur seals and seabirds. Updated capture data were presented and considered by the audit team.

The single recommendation on habitat classification and impacts was also reviewed, but while progress is being made on various strands of work linked to the issue, no new results were presented this year.

For P3, management, legislation and compliance were reviewed.

2.2.5 Stakeholder Consultation

A total of nine stakeholder organisations and individuals having relevant interest in the assessment were identified and consulted during this surveillance audit. The interest of others not appearing on this list was sought through the postings on the MSC website.

The stakeholders who attended the meetings included the Ministry for Primary Industries (in person and via conference calls), NIWA research scientists (via video link), Department of Conservation (via conference call) and Forest and Bird (in person).

No written submissions were received.

2.3 Surveillance Standards

2.3.1 MSC Standards, Requirements and Guidance used

This surveillance audit was carried out according to the MSC Fisheries Certification Requirements FAM 1.3 using process v2.0.

2.3.2 Confirmation that destructive fishing practices or controversial unilateral exemptions have not been introduced

No indication was given or suggested during the surveillance audit to suggest that either of these practices is in evidence for this fishery

3 Updated Fishery Background

3.1 Changes in the management system

There have been no substantial changes in the management system.

MPI have initiated consultation on the " Future of our Fisheries". The proposals they are consulting on include (1) the Fisheries Management System review, (2) Integrated Electronic Monitoring and Reporting System and (3) Enabling Innovative Trawl Technologies. Submissions are required to be submitted by 23rd December 2016

It is proposed that In October 2017 electronic reporting and VMS on all vessels (currently only required on vessels>28m) will be introduced and video monitoring in October 2018

3.2 Changes in relevant regulations

Changes in regulations for foreign charter vessels means that now all vessels fishing in New Zealand waters must be NZ flagged and consequently are subject to all NZ legislative requirements.

3.3 Compliance

The MPI compliance team completed a compliance risk assessment review in 2011 and updated this in 2012. Since then, there have been four prosecutions all relating to discarding. Senior officers and the company received fines and the vessels were seized. All the vessels involved have left New Zealand and ceased trading. The new foreign charter regulations make it more difficult for foreign vessels to operate, as they must be NZ flagged and subject to NZ legislation.

The MPI Compliance Manager reported that the hoki fishery is compliant with fisheries law.

3.4 Changes to personnel involved in science, management or industry

MPI have appointed two new important personal. Manager Fisheries Science and Manager Fisheries Stock Assessment.

Ongoing work at MPI has not been affected by these changes and they continue to support the DWG initiative to maintain certification of the NZ deepwater fisheries.

3.5 Changes to scientific base of information including stock assessments

A new stock assessment was carried out in 2016 using research time series of abundance indices (trawl and acoustic surveys), proportions at age data from the commercial fisheries and trawl surveys, and estimates of biological parameters. New information included acoustic and trawl surveys, and updated catch at age data. The general-purpose stock assessment program, CASAL (Bull *et al*. 2012), was used and the approach, which used Bayesian estimation, was similar to that in the 2015 assessment (McKenzie 2016).

The stock assessment process involved a considerable set of initial 'exploratory' model runs, which generated point estimates ('Mode of the Posterior Distribution' runs). These results were used to define the assumptions to be used within the second modeling phase, where fully Bayesian analyses were used to develop posterior distributions for all quantities of interest.

The initial modeling identified that the run equivalent to the 2015 base case failed to fit the most recent Sub-Antarctic biomass estimate well, and gave unacceptably poor residuals. An alternative run, in which process error for the Chatham Rise and Sub-Antarctic trawl survey series was estimated, was used as the base case for 2016. This run estimated lower process error for the Chatham Rise surveys (0.146) but a higher process error for the Sub-Antarctic trawl survey series (0.376). The impact of the higher process error is to increase the uncertainty in the biomass estimates for the western stock. The base case model also assumed natal fidelity, age-dependent natural mortality, and fixed catchability across the whole time series for the Sub-Antarctic trawl survey series (previous models have assumed two q values).

Sensitivities to the base case model included: that with a fixed process error (at 0.2) for both trawl survey series (a setting comparable to the 2015 base case); that where natal fidelity was not assumed but adult fidelity remained; and that with a fixed natural mortality and single sex ('domed

spawning selectivity'). Results from the east and west regions (and $\%B_{current}/B_0$ for the two regions combined) are shown in Table 1.

Table 1. Estimates of spawning biomass for the base case (*) and sensitivities (median of marginal posteriors with 95% confidence intervals in parentheses). $B_{current}$ is the spawning biomass in mid-season 2015–16. The base case 1.7 estimates the process error for CRsumbio and SAsumbio, whereas run 1.6 sets these at 0.20. All other sensitivities are conducted against the base case 1.7.

Run	B_0 ('000t)		$B_{current}$ ('000t)		$B_{current}$ (%B_0)		
	E	W	E	W	E	W	E+W
1.7*	556 (439.712)	1039 (838,1473)	325 (214,477)	616 (355,1082)	58 (44,75)	59 (40,79)	59 (46,73)
1.6	551 (450,685)	953 (797,1254)	330 (221,488)	483 (292,837)	60 (45,77)	51 (35,69)	54 (43,68)
1.8	679 (518,905)	1170 (926,1521)	355 (216,546)	957 (510,1761)	52 (36,68)	80 (52,132)	70 (53,103)
1.9	645 (450,936)	1116 (859,1565)	406 (254,644)	772 (464,1206)	63 (49,81)	68 (51,88)	67 (54,80)

In the 2016 assessment the probability that the stock was above $35\%B_0$ is 1.00 for the base case (0.98 for the base case run in 2015). The Harvest Strategy Standard defines that the western stock has been fully rebuilt (i.e. at least a 70% probability of being above the lower bound of the management target of 35% B_0) for at least three years. The eastern stock is also above $35\%B_0$ (lower 95%CI of the 2016 base case = 44%).

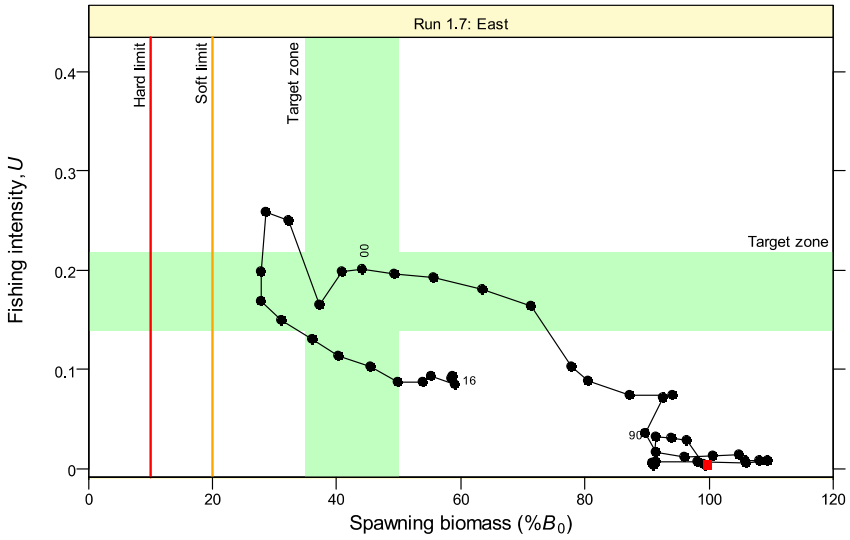
Fishing intensity on both stocks from the base run (1.7) estimates of deterministic B_{MSY} were 29% for the E stock and 25% for the W stock.

For the eastern Hoki stock, therefore, B_{2016} was estimated to be 58% B_0; Virtually Certain (> 99%) to be at or above the lower end of the target range and Likely (> 60%) to be at or above the upper end of the target range. B_{2016} is Exceptionally Unlikely (< 1%) to be below either the Soft or Hard Limit. Overfishing is Exceptionally Unlikely (< 1%) to be occurring.

For the western Hoki stock, B_{2016} was estimated to be 59% B_0; Very Likely (> 90%) to be at or above the lower end of the target range and Likely (>60%) to be at or above the upper end of the target range. B_{2016} is Exceptionally Unlikely (< 1%) to be below the Hard Limit and Very Unlikely (< 10%) to be below the Soft Limit. Overfishing is Unlikely (< 40%) to be occurring.

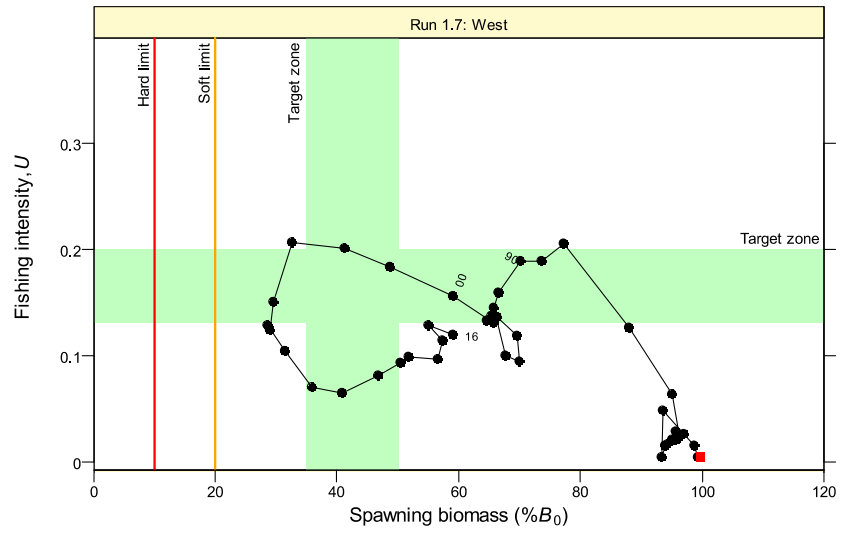
Base case stock trajectories are provided below.

HOK1 Eastern Stock biomass trajectory.



Trajectory over time of fishing intensity (*U*) and spawning biomass (% B_0), for the eastern hoki stock from the start of the assessment period in 1972 (represented by a red square), to 2016 (16). The red vertical line at 10% B_0 represents the hard limit, the yellow line at 20% B_0 is the soft limit, and the shaded area represents the management target ranges in biomass and fishing intensity. Biomass estimates are based on MCMC results, while fishing intensity is based on corresponding MPD results.

HOK1 Western Stock biomass trajectory.



Trajectory over time of fishing intensity (*U*) and spawning biomass (% B_0), for the western hoki stock from the start of the assessment period in 1972 (represented by a red square), to 2016 (15). The red vertical line at 10% B_0 represents the hard limit, that the yellow line at 20% B_0 is the soft limit, and the shaded area represents the management target ranges in biomass and fishing intensity. Biomass estimates are based on MCMC results, while fishing intensity is based on corresponding MPD results.

Five-year projections were carried out for the base model (1.7), by selecting future recruitments at random from those estimated for 2005-2014, and assuming catches to be the same as in 2016. The projections indicated that the E and W biomasses are likely to increase slightly over the next 5 years. The estimated probabilities of either stock being less than the soft or hard limit at the end of the five-year projection period is negligible. Both stocks are projected to remain above the 35-50% B_0 target range at the end of the projection period. In the east, the current catch was Exceptionally Unlikely (< 1%) to cause overfishing, while in the west it was very unlikely (<10%) to cause overfishing.

This TACC applied to all areas of the EEZ (except the Kermadec FMA which had a TACC of 10 t and which is closed to demersal trawling). There was an agreement with the Minister responsible for fisheries that only 100 000 t of the TACC should be taken from western stock areas. With the allowance for other mortality at 1300 t and 20 t allowances for customary and recreational catch, the 2014–15 TAC was 161 529 t. The TACC was decreased to 150 000 t from 1 October 2015, with an agreement that 90 000 t should be taken from western areas.

The next assessment is scheduled for mid 2017.

3.6 Traceability

There were no issues reported or identified in this fishery. All NZ hoki is MSC certified.

3.7 TAC and catch data

Figure 3.7-1

Table 3.7-1 TAC and Catch Data

TACC	**Year**	**2016-17**	**Amount**	**150,000 t**
UoA share of TAC	**Year**	**2016-17**	**Amount**	**150,000 t**
UoC share of TAC	**Year**	**2016-17**	**Amount**	**150,000 t**
Total green weight catch by UoC	**Year (most recent)**	**2015-16**	**Amount**	**136,718 t** **(HOK 1E 56,533t, HOK 1W 75,365t)***
	Year (second most recent)	**2014-15**	**Amount**	**161,528 t****

*Note: The sum of HOK 1E & W sub-area catches amount to less than the total hoki catch of 136,718 t because operators with less than 200 t are not required to report by sub-area (FishServe, 2016).

** Note: The total HOK 1 ACE available for 2014-15 was 167,574 tonnes (due to under-catch the previous year)

3.8 Summary of Assessment Conditions

There are no conditions.

4 Results

4.1 Recommendation 1

Performance Indicator (PI) & Score	Relevant PI	Relevant scoring issue/ scoring guidepost text	Score
	2.4.1	N/A	N/A
Recommendation	To review at the next audit the research work to assess bottom trawl footprint and impact, by BOMEC habitat class or an improved tool when it becomes available.		
Progress on Recommendation: **Year 3**	None – the condition was introduced only at the Year 3 audit.		
Progress on Recommendation: **Year 4**	An update against this recommendation was provided to the Audit team, highlighting that the BOMEC habitat classification scheme was considered to be of limited value for assessing trawl and dredge impacts on benthic fauna and habitats in New Zealand waters, and that a variety of work streams are being pursued in order to better understand interactions (DWG 2016). Going forward, it is understood that the preferred approach is the development of a spatially explicit, risk-based approach, similar to an approach applied in Australian waters (Pitcher *et al*. 2015). In the last year, progress has been made regarding three key work areas: i) quantifying the trawl footprint, ii) improving knowledge of benthic distributions, and iii) assessing risk to benthic habitats from trawling. However, the audit team well appreciates the complexity and cost of undertaking science in deep water, and that the work is ongoing – no results or outputs were presented. Therefore, this will continue to be an area of interest to future audit and assessment teams.		
Status of recommendation: **Year 4**	This recommendation remains open.		

5 Conclusion

5.1 Summary of findings

This fishery remains certified

6 References

P1

Ballara, S.L. & O'Driscoll, R.L. (2016). Catches, size, and age structure of the 2014–15 hoki fishery, and a summary of input data used for the 2016 stock assessment. New Zealand Fisheries Assessment Report 2016/40. 122 p.

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MPI (2016). Annual Review Report for Deepwater Fisheries for 2014/15. MPI Technical Paper No: 2016/09. MPI: Wellington

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Appendix 1 – Re-scoring evaluation tables

None

Appendix 2 - Stakeholder submissions

No written submissions received

Appendix 3 - Surveillance audit information

NA

Appendix 4 - Additional detail on conditions/ actions/ results

NA

Appendix 5 - Revised Surveillance Program

It is proposed that this fishery enter a reassessment process commencing in April 2017 with an onsite visit in June 2017