Surveillance Report
***Pandalus borealis* SFA 5, 6 Fishery**

Certificate No.: **MML-F-126**

Intertek Moody Marine
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Authors:
Don Aldous, Howard Powles

Intertek Moody Marine
10A Victory Park
Victory Road
Derby
DE24 8AF
United Kingdom
Tel. 01332 275741

1.0 GENERAL INFORMATION

Scope against which the surveillance is undertaken: MSC Principles and Criteria for Sustainable Fishing as applied to the *Pandalus borealis* SFA5,6 Fishery

Species: Northern Shrimp (*Pandalus borealis*)

Area: Shrimp Fishing Area (SFA) 5 and 6.

Method of capture: Trawl

Date of Surveillance Visit:	**November 7, 2013**			
Initial Certification	**Date: 20 March 2012**		**Certificate Ref: MML-F-126**	
Surveillance stage	**1st**	**2nd**	**3rd**	**4th**
Surveillance team:	**Lead Assessor: Don Aldous** **Assessor: Howard Powles**			
Company Name: **Address:**	Canadian Association of Prawn Producers 1362 Revell Drive Manotick, Ontario K4M 1K8 Canada Northern Coalition 238 Mt. Scio Road, St John's, NL A1C 1B4 Canada			
Contact:	Bruce Chapman			
Tel No: **E-mail address:**	613 692 8249 bchapman@sympatico.ca			

2.0 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

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

The client's response to the Conditions of Certification was set out in a Client Action Plan (CAP), which was appended to the Public Certification Report. Progress associated with the actions set forth in the CAP was examined as a part of this surveillance audit. For each Condition, the report sets out progress to date. This progress has been evaluated by the Intertek Moody Marine (IMM) Audit Team (set out below as 'Observations' and 'Conclusion') against the commitments made in the CAP. This assessment includes a re-evaluation of the scoring allocated to the relevant Performance Indicators (PIs) in the original MSC assessment. Where the requirements of a Condition are met, the PI is re-scored at 80 or more and the Condition is "closed out".

The surveillance audit methodology as defined in the current version of the MSC Certification Requirements is followed in this audit and so the MSC criteria for determining the level of surveillance audit that the fishery requires is followed (see Annex 3).

Information Sources:

Meetings
All stakeholders from the full assessment were contacted by email prior to the surveillance audit and a notice of the pending audit was placed on msc.org on October 3, 2013. Only the Newfoundland and Labrador provincial department of Fisheries and Aquaculture requested a meeting.
During the site visit, meetings were held as follows:

- November 7, 2013 with the client;
- November 7, 2013 with the client and DFO; and
- November 8, 2013 with the Newfoundland and Labrador provincial department of Fisheries and Aquaculture.

Reports
DFO 2013a. Assessment of northern shrimp (*Pandalus borealis*) and striped shrimp (*Pandalus montagui*) in the eastern and western assessment zones (Shrimp Fishing Areas 2 and 3). Can. Sci. Adv. Sec. Sci. Adv. Rep. 2013/031: 24 pp.

DFO 2013b. Assessment of Divisions 2G-3K (shrimp fishing areas 4-6) northern shrimp. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2013/012: 21 pp.

DFO 2013c. Oceanographic conditions in the Atlantic zone in 2012. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2013/057 : 18 pp.

DFO 2013d. Results and recommendations from the ecosystem research initiative – Newfoundland and Labrador's expanded research on ecosystem relevant but under-surveyed splicers. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2012/058 : 15 pp.

DFO 2013e. Identification of additional ecologically and biologically significant areas (EGSAs) within the Newfoundland and Labrador shelves bioregion. Can. Sci. Adv. Sec. Sci. Adv. Rep. 2013/048: 26 pp.

DFO 2013f. Ecological Risk Assessment Framework (ERAF) for coldwater corals and sponge dominated communities. http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/risk-ecolo-risque-eng.htm, consulted November 15, 2013.

DFO 2012d. Fisheries Management Decisions. Northern shrimp in Shrimp Fishing Areas 0, 1 and 7
http://www.dfo-mpo.gc.ca/decisions/fm-2012-gp/atl-030-eng.htm

DFO 2012e. Fisheries Management Decisions. Northern Shrimp in Shrimp Fishing Areas 2-6 http://www.dfo-mpo.gc.ca/decisions/fm-2012-gp/atl-031-eng.htm

Gilkinson 2012. Recent DFO (Newfoundland and Labrador Region) studies of the Grand Banks benthos at small and large spatial scales. CSAS Res. Doc. 2012/114 : 34 pp.

NAFO 2013c. Report of the Fisheries Commission Working Group of Fishery Managers and Scientists on Conservation Plans and Rebuilding Strategies (WGFMS-CPRS). 9-11 July 2013. NAFO FC Doc. 13/5 : 17 pp.

Standards and Guidelines used:

1. MSC Principles and Criteria
2. MSC Certification Requirements v1.3
3. Guidance to the MSC Certification Requirements, v 1.3

Update on Stock Status	***SFAs 5, 6*** Assessments are carried out biennially, with a status update in intervening years. Assessments are done under the DFO Regional Advisory Process (RAP). The most recent full assessment was conducted in February 2013 (DFO 2013b). TACs are set by DFO early in the calendar year, with input from stakeholders via the NSAC, and consistent with the reference levels established using the DFO precautionary approach. The February 2013 assessment concluded that the resource has remained near average in SFA 5 but has declined from a peak in 2006 to near 1996 levels in SFA 6. Resource status is assessed based on a DFO fall multi-species research vessel (RV) bottom trawl survey series (1996-2012), which provided information on shrimp distribution, abundance, biomass, recruitment, and size. Trends in fishery performance were also inferred from fishery catch per unit effort (CPUE) and fishing patterns. Spawning stock biomass and exploitation rate index are compared with reference levels in a precautionary approach framework. *SFA 5* Catches increased from about 15,000 t during 1997–2002 to around 23,000 t in more recent years (since 2004/5). TACs have been at 23,300 t/yr from 2004/05 until 2012/13. The fishable biomass index increased from around 90,000 t in 1996-99 to 184,000 t in 2001. The index has been around 150,000 t from 2004 onward. The 2012 estimate is 147,000 t. Female SSB index increased from 40,000 t in the 1996-99 period to 96,000 t in 2001 and has since decreased. The 2012 estimate is 63,000 t. Catch per unit effort increased from 1992 to 2001 and has oscillated around this higher level since then. Recruitment prospects are uncertain, as there is no apparent relationship between a recruitment index (abundance of small shrimp) and subsequent spawning stock biomass. Exploitation rate has varied without trend around 15 % over most of the time series. Research survey SSB was assessed to be in the Healthy Zone within the IFMP PA Framework (Figure 4). The 2012/2013 exploitation rate is expected to have been about 16 %. If the 23,300 t TAC is maintained through 2013/2014 and taken then the exploitation rate will remain at 16 %.

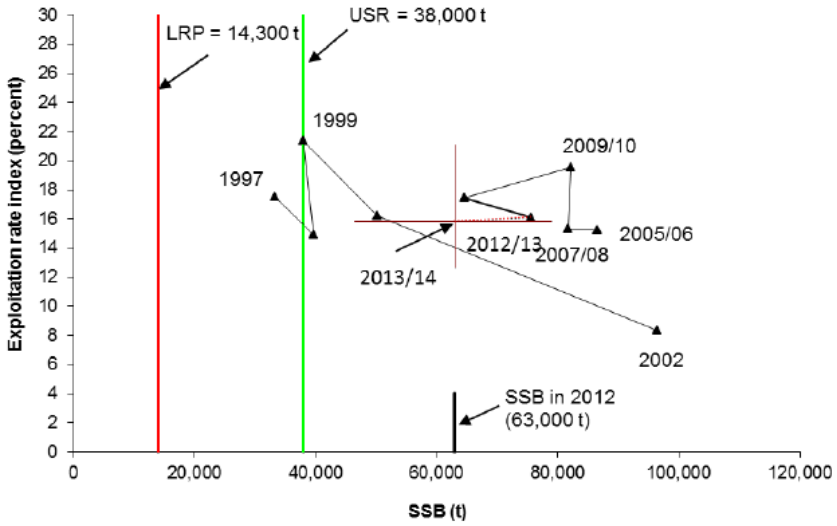

Figure 4. Northern shrimp, SFA 5. Error bars are 95% confidence intervals. (Source: DFO 2013b Fig. 17).

SFA 6

After remaining at high levels for 5 years, catches decreased from a peak of 81,000 t in 2007/08 to 46,000 t in 2009/10, increasing to around 60,000 t/yr since (Figure 5). TACs reached a peak in 2003/04 after increasing over many years, declined thereafter to 77,932 t/yr in 2004/05 to 2007/08, increasing to 85,725 in 2008/09 and 2009/10, and subsequently declining to 60,245 in 2012/13.

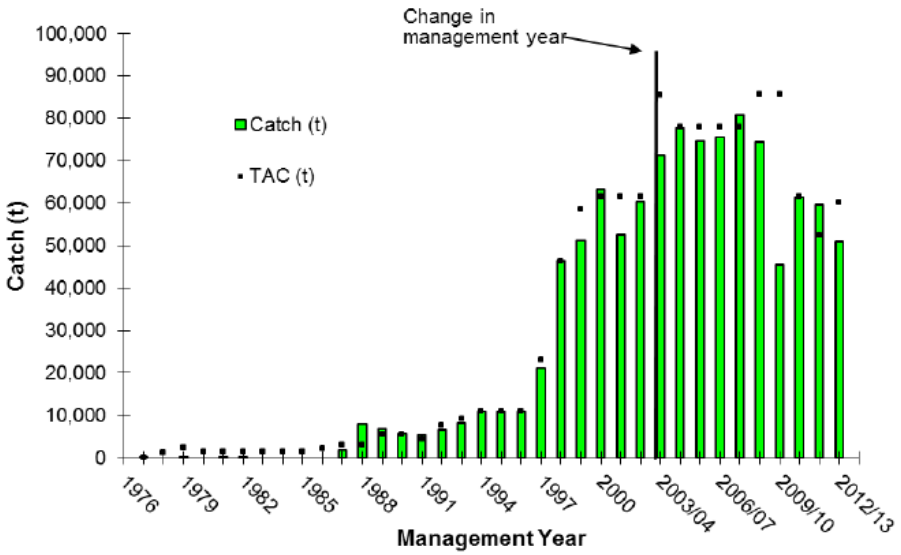

Figure 5. Northern shrimp catches and TACs, SFA 6. (Source: DFO 2013b Fig. 3).

The fishable biomass index increased from 310,000 t in 1997 to a peak of nearly 670,000 t in 2006 then declined steeply to 295,000 t in 2010, increased to 409,000 t in 2011 before returning to 316,000 t by 2012. The trend in female spawning stock biomass (SSB) index reflected the trend in the fishable biomass index decreasing to 187,000 t in 2012, which is comparable to the beginning of the time series (late 1990s). The large vessel CPUE increased between 1989 and 1997 and oscillated at a high level until 2006/2007, thereafter it declined until 2009/2010 but has since been increasing. The small vessel CPUE showed a similar pattern.

As in SFA 5, recruitment prospects are uncertain because of a lack of relationship between pre-recruit indices and subsequent biomass.

The exploitation rate index has varied around 15 % from 1998 to recent years. The exploitation rate decreased from 2004/2005 to 2009/2010 and increased in the following two years to around 18%.

Spawning stock biomass was assessed to be within the cautious zone of the precautionary approach framework, for the third time in the four most recent years (Figure 6). The 2012/13 exploitation rate was expected to be about 15%. If the 60,245 t Total Allowable Catch (TAC) is maintained through 2013/2014 and taken the exploitation rate will increase to 19 %; the third highest level in the time series.

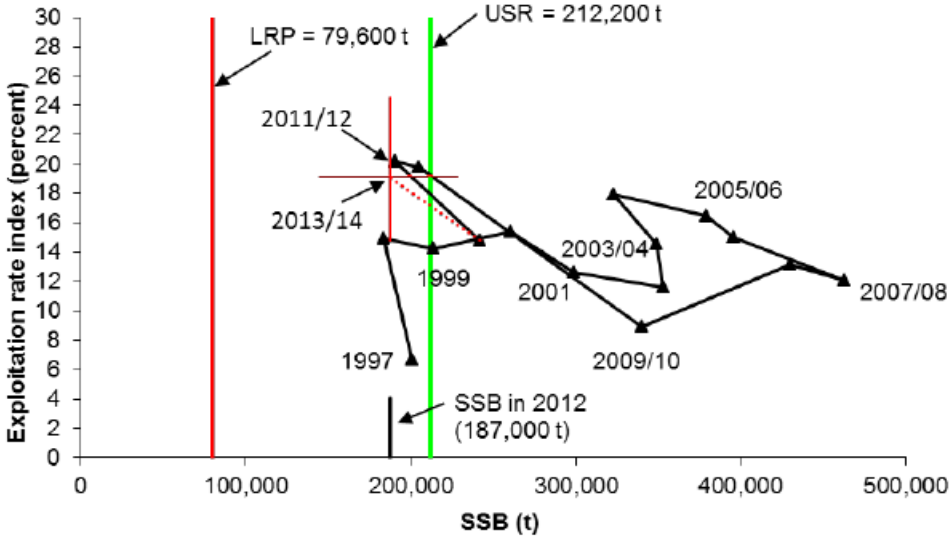

Figure 6. Northern shrimp, SFA 6. Error bars are 95% confidence intervals. (Source: DFO 2013b Fig. 9.)

Total Allowable Catch (TAC) in most recent fishing year	TAC for 2012-2013 fishing year for SFAs 5 and 6 is 83,545t.
Unit of Certification share of TAC	100%
Client share of TAC	The client share of the TAC is 100%
Green Weight[1] of catch taken by client group	Total green weight taken by client group during the 2012-2013 fishing year was 82,864t. See Table 3. Table 3: Catch of Northern Shrimp by area and species 2012-13 Species / SFA 2,3,4 / SFA1 / SFA 5,6 / SFA 7 / All areas P. montagui / 4,909 / / 312 / / 5,221 P. borealis / 20,447 / 5 / 82,864 / 8,019 / 111,335 Table 4: Catch of Northern Shrimp by area and species 2011-12 Species / SFA 2,3,4 / SFA1 / SFA 5,6 / SFA 7 / All areas P. montagui / 600 / / / / 600 P. borealis / 16,446 / 1,172 / 84,949 / 8,919 / 111,486

Condition 1 **PI 2.4.1 (60)**	The client is required to provide evidence by the fourth annual audit that the fishery is highly unlikely to disrupt benthic communities structure and function to a point where there would be a serious or irreversible harm.
Condition 2 **PI 2.4.2 (70)**	The client is required to provide evidence by the fourth annual audit that: A partial strategy is in place such that the fishery is expected to be highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved. There is some evidence that the partial strategy is being implemented successfully.
Condition 3 **PI 2.4.3 (70)**	The client is required to provide evidence by the fourth annual audit that: Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
Condition 4 **PI 2.5.1 (70)**	The client is required to provide evidence by the fourth annual audit that the fishery is highly unlikely to disrupt benthic communities structure and function to a point where there would be a serious or irreversible harm.

[1] The weight of a catch prior to processing

Condition 5 **PI 2.5.2 (70)**	The client is required to provide evidence by the fourth annual audit that: There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem – in particular the non-catch impacts on benthic communities - to achieve the Ecosystem Outcome 80 level of performance. The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems). There is some evidence that the measures comprising the partial strategy are being implemented successfully.
Condition 6 **PI 2.5.3 (70)**	The client is required to provide evidence by the fourth annual audit that: Sufficient information is available on the impacts of the fishery on benthic communities to allow some of the main consequences for the ecosystem to be inferred. Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
Client Action Plan	The client has set out their actions and expected outcomes for these performance indicators in a logical step wise approach in association with Conditions 1-6 , all of which relate to performance indicators for habitat and ecosystems: CAPP and NC will collaborate with other stakeholders and the Department of Fisheries & Oceans Canada (DFO), towards development of a program (a) to enhance the collection of information, and (b) to conduct an evaluation of the nature and distribution of habitat types, their vulnerability, and the related impact of otter trawl fishing for shrimp in this area. A "project team" will be assembled for this purpose, which more generally will also ensure implementation of DFO's Sustainable Fisheries Framework Policies, including with respect to Sensitive Benthic Areas as it applies to the conduct of shrimp fishing in this area. By the first annual audit there will documented evidence that a plan for the assembly of available information and a program for evaluation has been developed by the "project team", and data collection and assembly for this purpose has commenced. By the second annual audit there will documented evidence showing the information that has been assembled and the results of analysis to date. By the third annual audit there will be documented evidence showing that at least a provisional evaluation has been completed. By the fourth annual audit there will be documented evidence that at least a partial strategy is in place, and incremental mitigation measures have been identified and are being implemented as appropriate for this fishing activity.
Client Progress 2012	The Northern Shrimp Advisory Committee (NSAC) has formed an MSC Working Group, which functions as the "project team". The Project Team reviewed and generally endorsed a draft plan at its meeting held May 15/12 (draft minutes are attached) and subsequently reviewed/accepted minor adjustments that are reflected

	in the attached plan. Data collection has commenced.
Observations **2012**	The Audit Team reviewed the "Elements of a Strategy to evaluate, manage & monitor the impact of the Northern Shrimp Fishery on Habitats and Ecosystems within the respective certification units" discussed by the NSAC MSC Working Group on November 1, 2012. This outlines a stepwise approach to assembling information, assessing impacts, and putting in place additional measures to manage impact of the fishery on habitats and ecosystems, if necessary. The team sought clarification on several elements of the strategy. With respect to the Ecological Risk Assessment Framework (ERAF) to be used in assessing risk of serious or irreversible harm to coral and sponge areas, the team reviewed a draft of this Framework that is being developed by DFO (DFO 2012c. The approach is consistent with other ecological risk approaches including the SICO approach used by MSC and as such appears to be appropriate for use in this fishery. The team noted that the Framework applies to "significant benthic areas", and that limited guidance is provided on identifying these. The team noted that assessment and management actions for benthic habitats and ecosystems would be triggered if analyses of the fisheries footprint indicated that 10% of sensitive habitats or 30% of less sensitive habitats were affected by the fishery, and questioned the source of the 10%/30% thresholds. The client advised that the 30% threshold (assessment and management action would be triggered if analyses determined that the fishery impacts more than 30% of less sensitive habitats for more than 100 days) was based on the MSC guideline for determining whether it was "highly likely" that the fishery was not causing serious or irreversible to habitats and ecosystems (MSC Certification Requirements Table CB18 p. C88) – there should be no more than a 30% probability that the true status of the component is within the range where there is risk of serious or irreversible harm. While noting that the two contexts were different (probability of harm vs proportion of habitat impacted by the fishery) the team agreed that this was a reasonable threshold for the client strategy. The client advised that the 10% threshold for assessment and management action on sensitive habitats was a judgment based on the fact that a higher level of caution should be applied to sensitive than to non-sensitive habitats. The team agreed that this was reasonable; although not based on modeling or analysis, this threshold seems a reasonable judgment-based level to guide action. While concurring that the 10%/30% guidelines were appropriate thresholds for action, the team noted that it would be critical to clearly define "of what" 10% and 30% were being taken – these percentages should be applied to habitats within the depth range or general area of operation of the fishery, not, for example, to all continental shelf areas. The team was advised that data assembly had begun as indicated in the client action plan and in the "Elements of a Strategy". With respect to the footprint of the fishery, information on distribution of offshore fishing effort has been compiled, and information on distribution of effort by the inshore fleet will be compiled in the near future. Information on distribution of bottom habitats will be available from DFO and other sources. A consultant with prior experience on mapping fishery footprints has been engaged to do the data mapping. A template and analytical approach, which have been used by the client to assess habitat and ecosystem impacts in other fisheries, will be used in this analysis. The client has compiled a bibliography of studies on impacts of shrimp fisheries on habitats and

	ecosystems. DFO is not directly involved in implementing the Strategy but will be providing information (fishery distribution, habitat distribution) and will be contributing to oversight of the work through their participation on the NSAC. In addition to the Strategy to be implemented by the client, the team was advised of the continuing development of a strategy for protection of sponge-coral areas in Newfoundland-Labrador Region of DFO. This will be part of DFO's Coral and Sponge Conservation Strategy for Eastern Canadian Waters. In 2010/11 DFO's Newfoundland and Labrador and Central and Arctic Regions consulted with stakeholders (governments, Aboriginal, fishing industry, oil and gas, ENGOs) on elements to be included in the strategy. One outcome of these consultations was specific targets and actions to achieve conservation, management and research objectives. Subsequently development of the strategy was expanded to cover all Atlantic and eastern Arctic areas. Once consultations and definition of targets and actions in the remaining areas (Maritimes, Gulf, Québec Regions) have been completed, further consultations on a draft strategy will be undertaken. Consultations on the draft strategy are expected to be complete by March 31, 2013. The strategy will be finalized and implemented following this date. Development of this strategy follows from a series of policy and science initiatives related to impacts of fishing in benthic environments in recent years, including, for example: • Development of a Policy on Managing the Impacts of Fishing on Sensitive Benthic Areas (DFO 2009) • Mapping of coral and sponge areas, based on available information, in all Atlantic Canadian ocean areas, and establishing thresholds for protecting these areas (Kenchington et al 2010; DFO 2010a) • Development of science advice on encounter protocols for fishing gear which may impact corals and sponges (DFO 2011b) References DFO 2009, DFO 2010a, DFO 2011b, DFO 2012c, Kenchington, *et al* 2010
Conclusion 2012	The Audit Team concludes that progress is on track toward meeting the condition in Year 4 of the certification, and that milestones set for the first annual audit in the Client Action Plan have been met. In particular, a project team has been established to carry through work required, a draft strategy has been prepared to address the conditions, and data assembly has begun. The Team considers that the "Elements of a Strategy" outlined by the project provide an appropriate framework for meeting the Condition by Year 4 of the certification. We note that with respect to the 10% and 30% thresholds for action on sensitive and non-sensitive habitats, it would be important to clarify that these percentages apply to habitats within the general area where the fishery operates (for example within the depth range in which the fishery operates). The Team notes that the strategy will address both sensitive and less sensitive habitats and ecosystems, a broader scope than the recent DFO initiatives, which focus on protecting coral-sponge areas.

Client Progress 2013	With the help of contracted experts we have assembled information in relation to the elements and function of the habitat and ecosystems (Section A), and the fishery footprints of the inshore and offshore fleets in total and separately for both sensitive and less sensitive habitat/ecosystems (Sections B, C and F). Analyses have been provided in relation to the spatial and temporal profile of catch/effort as the case may be. Results of analysis indicates: The maximum theoretical footprint ranges from a low of 0.14% to 6.82 in the respective units of certification, with the actual footprint (due to overlapping tow tracked) likely to be about 2/3 of these values on average. The most intensive 1/3 of catch/effort occurs in about 4-6% of the cells that are actually fished, and 2/3 of the catch/effort occurs in <19% of the cells that are actually fished. 84-100% of the respective units of certification are fished for <10 days annually; only 2 units of certification have cells with fishing >50 days per year - 6 cells (0.1% of total cells) in SFAs 5-6 and 1 cell (0.06% of total cells) in SFA7); no cell in any SFA is fished >100 days. With respect to sensitive areas (high concentrations of corals and sponge), while the two data sets portray a similar profile, observer data has not yet been fully reconciled with logbook data. Based on observer data: Only 35 sets of 56,300 (0.06%) occurred within the designated sponge areas and no sponge bycatch was taken. There are two designated coral areas where significant fishing occurs. Over the period 2008-2012 there were 3247 sets in area C84 with only 2 (0.06%) of these sets containing coral bycatch; there were 1607 sets in area C70 of which 16 sets (1%) contained coral bycatch. Virtually all coral bycatch consisted of soft coral species (Gersemia *spp., Duva florida, Nephtheid).* This data has not yet been evaluated in relation to the risk of serious or irreversible harm (Sections D and G) The approach to fishing mortality and the question of mitigation measures (Section E) requires the yet-to-be completed evaluation referenced above. Changes to the fishery footprints (Section H) and to the main predator/prey species of shrimp (Section I) are not applicable at this time.
Observations 2013	The audit team was impressed with the work carried out since the year 1 audit. Comprehensive data compilation and analysis has been carried out on : • description of key ecosystem elements in the fishery area, focusing on benthic communities and trophic relationships, covering recent studies conducted since the certification report was finalised in 2011 • analysis of the fishery footprint in the various SFAs, and of the % of bottom habitat impacted by trawling • analysis of overlap of the fishery with sensitive habitats, as defined by presence of coral and sponge concentrations • analysis of overlap of the fishery with less sensitive habitats as determined

	by maps of bottom sediments In light of the work done on compiling and analysing relevant information, progress is consistent with the year 2 milestone for the habitat and ecosystem conditions. The analyses conducted to date should provide a good basis for doing the risk analyses which are required to meet the year 3 milestones. With respect to the percentage of bottom habitat impacted by the shrimp fishery, the team again notes (as in the year 1 audit) that this depends on how the « total potential habitat » is determined – the larger the potential habitat, the smaller the percentage of this represented by the habitat impacted. This is critical since the strategy for assessing impacts depends on the percentage of habitat affected – for example if more than 10% of sensitive habitats are impacted, an analysis of whether there is significant harm would be required. The analyses presented used all continental shelf habitat at depths less than 600m as the potential habitat, which appears to the team overly expansive. The team suggested that restricting the "potential habitat" to depths at which shrimp might occur (eg 100-600m) might be more appropriate. In any case, since the methods for calculating percentages of habitat impacted are clearly described it is possible to explore alternative analyses. Even if values for potential habitat lower by 50% were used to determine the percentages affected by the fishery, these would be very low. Also, because overlaps in tows cannot be incorporated in the analysis, the percentages of habitat impacted in the reports provided are probably overestimated by a fairly significant proportion. The general conclusion, that a low proportion of potential habitat is impacted by shrimp trawling, appears to be justified. The analyses of overlap with sensitive and non-sensitive habitats appear to be sound and show quite low overlap in most areas. In a few areas there appear to be overlaps with coral concentrations although bycatches in these areas have been very low. The audit team was informed of progress on ongoing initiatives in DFO to address impacts of trawling on benthic habitats and communities (several such initiatives were also noted in the year 1 audit report). • Newfoundland and Labrador Region of DFO has been developing a sponge-coral strategy which will be going out for consultation very soon; the goal is to complete consultations in January 2014 and to approve the strategy by March 2014. • The ERAF has been finalized and is available on-line (DFO 2013f) with corals and sponges being the first thing to which it will be applied. There was a national workshop in October 2013 (FAM, Oceans, P&E, Science) on implementing the ERAF. • DFO has recently reported on a series of ecosystem studies done over the past 4-5 years, including a study of benthic species and communities of the Grand Banks based on grab sampling during spring multispecies survey cruises (DFO 2013d; Gilkinson 2012). Although the latter study was mainly outside of the shrimp fishery area in SFA 7, given the relatively limited information available on benthic communities on the Newfoundland-Labrador shelf, this is a significant contribution. • DFO has also published a Science Advisory Report on Ecologically and

	Biologically Significant Areas (EBSAs) in the Newfoundland-Labrador shelf bioregion off Newfoundland and Labrador (DFO 2013e). While not directly relevant to assessing shrimp trawling impacts this is a contribution to assessing and managing ecosystem impacts of fishing and other marine activities generally.
Conclusions 2013	The team concludes that the year 2 milestone has been met for these conditions and that progress is on track to meet conditions 1-6 by year 4 as required.

Condition 7 **PI 3.2.1**	The client is required to present evidence by the first annual audit that short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
Client Action Plan	CAPP and NC will collaborate with other stakeholders and the Department of Fisheries & Oceans Canada (DFO), to amend the IFMP with explicit references to the precautionary approach being applicable to managing the impact of fishing on sensitive habitat, species and the ecosystem.
Client Progress 2012	"Fishery Objectives" are contained in section 1.1 of the Integrated Fishery Management Plan (IFMP) for shrimp fishing areas (SFAs) 0-7 and the Flemish Cap. This section of the IFMP has been amended to include umbrella references to the Precautionary Approach for the Strategies and Management Measures, and special reference to the precautionary approach when setting exploitation rates for the directed fishery. The revised "Fishery Objectives" may be viewed at the following link: http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/shrimp-crevette/shrimp-crevette-2007-eng.htm#n1.1
Observations 2012	The Audit Team confirmed that an expanded set of objectives, strategies and management measures has been added to section 1.1 of the IFMP at the request of the MSC Working Group of the Northern Shrimp Advisory Committee. Long-term objectives related to mitigating impacts on habitats, protecting biodiversity and ecosystem structure and function, and explicitly recognizing the role of shrimp as a forage species in setting TACs have been added, along with strategies and management measures related to these. As such, the suite of long-range objectives outlined in the IFMP now covers the range of P1 and P2 issues as required in the MSC assessment tree. Although the IFMP does not include a section entitled "short-term objectives", the Team considers that the strategies and management measures outlined in section 1.1 of the IFMP (along with the long-term objectives), constitute medium- and short-term objectives for management of the fishery consistent with the MSC requirements. The Team also noted that "Fisheries Management Decisions" are published annually at the start of the fishing year, outlining TACs for the year and any other management changes (DFO 2012d, DFO 2012e); these are considered to represent publication of short-term (annual) objectives for the fishery. The Team notes that although these new objectives were added to the IFMP during 2012, the date of the IFMP on the DFO internet site remains May 19, 2010. As such, the recommendation from the certification report that a version tracking system be added to the IFMP has not yet been addressed.
Conclusion 2012	The Audit Team concludes that this condition has been met. This PI has been re-scored to 80 and the condition has been closed out.

Condition 8 **PI 3.2.4**	The client is required to present a research plan by the fourth annual audit that assembles current activity, identifies gaps, and provides the management system with a strategic approach to research including reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
Client Action Plan	CAPP and NC will collaborate with other stakeholders and the Department of Fisheries & Oceans Canada (DFO), in assembling a working group to codify existing activity and develop a Research Plan for the short-to-mid term, that are linked to the objectives established for the fishery and for MSC Principles 1 and 2. By the first annual audit there will be documented evidence that a plan to conduct gap analysis has been developed by the working group. By the second annual audit there will be documented evidence that a gap analysis has been completed. By the fourth annual audit there will be documented evidence that a research plan is in place.
Client Progress 2012	The following "plan to conduct a gap analysis" has been developed for the working group. "DFO conducts an annual internal audit ("The Fishery Checklist") of various functions/activities within the Department, that also identifies gaps in research and stock assessment activities. The assembly of this checklist occurs annually during the October through March period, with a consolidated "checklist" being completed soon thereafter. In the late Spring of 2013, NSAC's MSC Working Group will review information from the updated checklist as it pertains to shrimp in SFAs 1-7, categorize research issues/activities into what may be "needed vs simply desirable", what may be cost-effective to achieve in the short-to-medium-to-long term, and prioritize these where possible. The result of this analysis will be vetted through the subsequent Regional Assessment Process (RAP), likely to occur in 2015. The final result of this process, i.e. the Research Plan, will be forwarded to NSAC and the Regional Director of Science."
Observations 2012	The Audit Team noted the Client Progress report and considers that the milestone outlined in the Action Plan has been met. The milestones in the Client Action Plan represent a rigorous approach to defining research priorities and should result in a sound research plan by Year 4 of the certification.
Conclusion 2012	The Audit team concludes that progress on the action plan is on track to meet the Condition by Year 4 of the certification period.
Client progress report 2013	At the May 2013 meeting of NSAC's MSC Working Group, it was agreed that scientists would review their respective input to DFO's internal Checklist process, and would forward appropriate research issues to B. Chapman, who in turn would assemble a consolidated draft Northern Shrimp Research Plan. The attached August 9/13 draft was produced and will be considered at the next meeting of the MSC Working Group.
Observations 2013	The client submitted a draft research plan being considered by the MSC working Group. The draft includes a gap analysis of ongoing research and potential future research to consider in development of the research plan.
Conclusions 2013	The Audit team concludes that the milestone for the second annual surveillance audit has been met and progress on the action plan is on track to meet the Condition by Year 4 of the certification period.

Any complaints against the certified operation; recorded, reviewed and actioned.

During the site visit DFO reported on some minor enforcement issues in the shrimp fishery dealing with the inshore area fishery. These were resolved administratively using a revised license condition and no legal action was taken.

Any relevant changes to management, legislation or regulation.

The Department of Fisheries and Oceans indicated in a letter dated October 7, 2013 to Bruce Chapman, that there had been no changes to the fisheries management regime other than modifications to the northern boundaries of some SFAs to be consistent with land claim settlement areas and to better match coverage of the research vessel surveys. The management framework and harvest control rules remain unchanged. What was SFA 3 is now the Western Assessment Zone and SFA 2 is now captured in the Eastern Assessment Zone and encompass the management units of Davis Strait East and Davis Strait West.

The team was informed that discussions are under way through the Northern Shrimp Advisory Committee to revise the harvest control rules in the Integrated Fishery Management Plan. The intent of the changes is to remove some sources of ambiguity in the HCRs. Changes being considered include :

- removing reference to Fmsy from the HCRs and implementing a maximum exploitation rate of 20% (since Fmsy cannot be determined with current knowledge)
- implementing a maximum exploitation rate of 10% in the critical zone
- specifying how harvest rate would decline as abundance declines through the cautious zone toward the limit reference point

These proposed changes were outlined by the Precautionary Approach Working Group of the NSAC at a meeting in May 2013. Following discussions in NSAC these changes could be adopted as early as 2015.

The team considers these changes positive as they remove sources of ambiguity in the current HCRs.

Any relevant changes to science regime.

The team was informed that work continues to develop an assessment model for Newfoundland shrimp. A Bayesian production model, such as is used for the SFA 1 stock, is being explored for SFAs 4, 5 and 6, and possibly SFA 7. Initial results have shown that the model appears to represent stock dynamics reasonably well but the model is not considered appropriate for formal assessments yet.

Environmental conditions and shrimp abundance

It has been recognised for many years that abundance of pandalid shrimp is determined to a large extent by environmental conditions. Stock-recruitment relationships are not apparent for northern shrimp in some stocks including Newfoundland shrimp stocks (e.g. DFO 2013b). Environmental conditions affect recruitment to stocks of other species, but because of the short life cycle the environmental influence seems particularly important for shrimp.

There has been increased interest in examining the relationships between physico-chemical conditions, predator-prey relationships, and spawning stock biomass in determining shrimp abundance. NAFO (2013a) notes for SFA 7 that environmental conditions and predator abundance are probably influencing shrimp abundance, although the mechanisms are not clear at present. Oceanographic monitoring programs (eg DFO 2013c) are providing long time series of a range of environmental factors which can be related to recruitment and abundance of shrimp and other species. Exploration of environmental factors affecting shrimp abundance is a priority topic in the draft research plan for this stock (see

Condition on PI 3.2.4 below). Work on incorporating environmental factors into precautionary frameworks is under way in NAFO for some finfish stocks (NAFO 2013c). During the site visit, the team was shown a number of analyses of predator-prey relationships in recent years for species in Newfoundland fisheries, which are to be presented to a meeting on this topic.

Results of studies on the specific relationships between environmental factors and shrimp abundance are probably some years in the future, but could ultimately influence precautionary frameworks for management of these stocks.

Overall Conclusions.

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 therefore continue with annual audits.

Annex 1

There were no written stakeholder submissions to the surveillance audit team.

Annex 2

Notification of surveillance audit

Canadian Northern and Striped Shrimp Fishery

MSC Certification
Certification Body: Intertek Moody Marine

Surveillance Audit

Following certification of this fishery, we are now continuing the process of annual surveillance audits of the fishery. These audits have two principal functions:

1. To review any changes in the management of the fishery, including regulations, key management or scientific staff, or stock evaluation
2. To evaluate the progress of the fishery against any Conditions of Certification raised during the Main Assessment

During the audit, or at separate meetings, we shall be speaking with representatives of the fishery and fishery management organisations. We expect to carry out meetings on **November 7-8, 2013.**

Meetings will be held at **St Johns, Newfoundland and Labrador** and attended by Audit Team members

Don Aldous	**Lead Auditor**	**On site**
Howard Powles	**P2**	**On site**

(See details of the team membership below)**.**

Should you have any information on this fishery that you feel should be considered in the assessment, please advise the undersigned by November 1, 2013. We may be available to meet with stakeholders as appropriate. If you would like to arrange a meeting, please advise us of:

a) Your name and contact details
b) Your association with the fishery
c) The issues you would like to discuss (in order for us to arrange appropriate representation)
d) Where and when you would like to meet

Don Aldous
Lead Assessor
Oct 5, 2013

E-mail: d.aldous@me.com

Audit Team Members:

Don Aldous
Don is considered a P3 expert for Marine Stewardship Council (MSC) assessments and has been involved with Intertek Moody Marine as an Associate Auditor since 2009 as an editor, project coordinator, P3 expert and team leader. Don was the coordinator of the original assessment of this fishery and led the first surveillance audit in 2012.

Howard Powles
Howard Powles has worked in fishery science, stock assessment, and conservation and management of fishery resources since the mid-1960's, as a working scientist, science manager, program manager, and consultant, with a recurrent focus on crustacean resources. With respect to Canada's Atlantic shrimp resources, he was a member of the NAFO Working Group on the shrimp resource in NAFO Areas 0 and 1 in 1996-2000, participating in annual assessment meetings with scientists from Canada, Denmark, Greenland and the USA to develop and peer review scientific advice. He also participated in Canadian assessment meetings on the shrimp resource in shrimp fishing areas off Labrador and eastern Newfoundland in the same period. As Director of Fisheries Science and of Biodiversity Science (1998-2004) at Department of Fisheries and Oceans (DFO) Headquarters he was active in developing ecosystem-based approaches to ocean management, in particular approaches based on defining ecosystem objectives and indicators. Howard was involved as a P2 expert in he original assessment of this fishery and was an author for the first surveillance audit in 2012.

Full CVs of the team members are available on request from IMM

Annex 3

Determination of surveillance level

A surveillance audit may be conducted as either an "on-site" or "offsite audit". This is determined by using criteria set out by the MSC:

Criteria	Surveillance Score	*Pandalus borealis* SFA 2,3,4,5,6
1. Default Assessment Tree		
Yes	0	0
No	2	0
2. Number of Conditions		
Zero Conditions	0	0
1-5 Conditions	1	1
>5 Conditions	2	0
3. Principle Level Scores		
≥ 85	0	0
<85	2	2
4. Conditions on outcome PIs?		
Yes	2	2
No	0	0
Total		5

The score for the fishery is used to determine the surveillance level appropriate to the fishery using the table below:

			Years after certification or re-certification			
Surveillance score	**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 visit
1	Remote surveillance	Option 1	Off-site surveillance audit	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit & recertification visit
		Option 2	On-site surveillance audit	Off-site surveillance audit	On-site surveillance audit	
0	Reduced surveillance		Review new information	On-site surveillance audit	Review new information	On-site surveillance audit & recertification visit

The *Pandalus borealis* SFA 5 & 6 Fishery scores 5 since 2 Conditions remain open and the Principle 2 score is <85, and so will require an on-site audit next year.