

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

<i>In re:</i>)	Administrative Law Judge
Proposed Waiver and Regulations Governing the Taking of Eastern North Pacific Gray Whales by the Makah Indian Tribe)	Hon. George J. Jordan
)	Docket No. 19-NMFS-0001
)	RINs: 0648-BI58; 0648-XG584
)	

DECLARATION OF BRIAN C. GRUBER

I, Brian C. Gruber, declare as follows:

1. I am co-counsel for the Makah Indian Tribe in this matter and submit this declaration based on personal knowledge.
2. Attached as Exhibit 1 is a true and correct copy of excerpts of the International Whaling Commission's (IWC's) Scientific Committee report from the 2018 meeting in Bled, Slovenia relevant to the Scientific Committee's review of the proposed Makah hunt plan. The full report is available at: <https://archive.iwc.int/pages/search.php?search=%21collection73&k=>.
3. Attached as Exhibit 2 is a true and correct copy of excerpts of Annex E of the 2018 Scientific Committee Report, Report of the Standing Working Group on Aboriginal Subsistence Whaling Management Procedures (IWC/67/Rep01(2018), Annex E 25/05/2018) relevant to the Standing Working Group's review of the proposed Makah hunt plan.
4. Attached as Exhibit 3 is a true and correct copy of a May 25, 2018, email from the IWC's Executive Secretary announcing the availability of the 2018 Scientific Committee Report.
5. Attached as Exhibit 4 is a true and correct copy of the current list of participants in the 2019 Scientific Committee meeting in Nairobi, Kenya, as of May 11, 2019.

I declare, under penalty of perjury under the laws of the United States, that the foregoing is true and correct to the best of my knowledge, information and belief.



Brian C. Gruber

Dated: 5/15/19

Report of the Scientific Committee

Bled, Slovenia, 24 April-6 May 2018

**This report is presented as it was at SC/67b.
There may be further editorial changes (e.g. updated references, tables, figures)
made before publication.**

**International Whaling Commission
Bled, Slovenia, 2018**

7.1.2.1 CANDIDATE SLAS

SC/67b/AWMP14 developed a candidate *SLA* for common minke whales off West Greenland similar to that used for fin whales in SC/67b/AWMP13. It operates on an inverse variance weighed average of the last three abundance estimates. The strike limit is calculated as a growth rate fraction of a lower percentile of the abundance measure, conditional on a ‘snap to need’ feature, and a protection level. It does not include a trend modifier.

It was tuned to have a 5th percentile of D10 of 0.80 for need envelope A for the most difficult *Evaluation Trial* (trial M04-1A – see Annex E, appendix 4), where there are two sub-stocks in the western North Atlantic in which the mixing between the Central and the Western stock, and mixing between the putative western sub-stocks, is minimal, and where the MSYR is 1%).

7.1.2.2 CONSIDERATION OF RESULTS

Conditioning of the *Evaluation Trials* was completed satisfactorily and a summary of the results of the is provided in Annex E (appendix 5⁵). Annex E, fig. 3 provides the bivariate plot.

In determining satisfactory conservation and need performance when evaluating *SLAs*, the Committee considers the full range of results across all the *Evaluation Trials*, not simply the worst-case scenarios. Conservation performance was satisfactory for all but the most extreme trial (trial M04-1A) where it was slightly below for the lower 5th percentile. This trial had low MSYR and two W-stocks; it had been originally considered in the context of investigating potential problems for the hunt to simulate possible local depletion in the hunting area rather than for conservation reasons. Genetic stock structure in the entire North Atlantic is subtle such that even an hypothesis of almost complete panmixia is not rejected by most of the analyses and thus differentiation among ‘C’ and ‘W’ is very low. This is even more true for substructure within the W stock (if, indeed, there is any). Given that trials are conservative in so far as they overrate isolation among stocks, and the very subtle differentiation among stocks and sub-stocks in the North Atlantic, a single trial (which implements two fully separate W sub-stocks, for which there is little evidence) not meeting the D1/D10 criteria is not of conservation concern.

The SWG (Annex E, item 2.2.3) had noted that given the unforeseen situation with Secretariat computing, there had been insufficient time for it to consider the results of the *Robustness Trials* during its meeting. Such trials are not needed to determine an *SLA* but are examined to ensure that the selected *SLA* has no unforeseen properties in extreme trials. These were subsequently run prior to the plenary discussions and the results showed no unexpected properties.

7.1.2.3 CONCLUSIONS AND RECOMMENDATIONS

The management advice developed using the *WG-common minke SLA* is provided under Item 8.5.

Attention: C-A, SC

*The Committee **draws attention** to the extensive work undertaken over recent years to develop an *SLA* for the West Greenland hunt for common minke whales. In concluding this work, the Committee:*

- (1) **agrees** that the tested *SLA* which performed satisfactorily in terms of conservation performance;*
- (2) **agrees** that this ‘WG-Common minke *SLA*’ be used to provide management advice to the Commission on the subsistence hunt for West Greenland common minke whales provided the need request falls within need scenario A (i.e. does not exceed 164 annually);*
- (3) **expresses** its great thanks to the developers, Brandão and Witting for the vast amount of work put into the development process and to Allison and Punt for their extensive work developing the operating models and running the trials; and*
- (4) **agrees** that one focus of the next Implementation Review will be to examine further stock structure in relation to the two hypotheses being considered at present, should be consideration of the results of analyses of genetic data using additional samples from Canada (as well as the additional samples that will become available from West Greenland and Iceland); and*
- (5) **agrees** to establish an intersessional advisory group (Annex Y) to facilitate issues relating to samples.*

7.1.3 North Pacific gray whales (Makah whaling)

7.1.3.1 MANAGEMENT PLAN PROPOSED BY THE U.S. FOR MAKAH WHALING

The Makah Indian Tribe has requested that the U.S. National Marine Fisheries Service (NMFS) authorise a tribal hunt for Eastern North Pacific (ENP) gray whales in the coastal portion of its ‘usual and accustomed fishing area’ in Washington State. The Tribe intends to hunt gray whales from the ENP population, which currently numbers approximately 27,000 animals (Durban *et al.*, 2017). However, at certain times of the year there is a possibility that the hunt may take animals from the PCFG (Pacific Coast Feeding Group) and/or the WNFG (Western North Pacific Feeding Group). In an updated management plan – known as the Makah Management Plan (the Committee had approved an earlier plan for this hunt in 2012 (IWC, 2013), NMFS has taken measures to restrict the number of PCFG whales that are struck or landed in a given 10-year period and to avoid, to the extent possible, striking or killing a WNFG gray whale. The Government of the USA requested the Committee to test this plan to ensure that it meets IWC conservation objectives.

⁵ Final validation and archiving of results will be undertaken by Allison in Cambridge.

This task was begun at the Fifth Rangewide Workshop on the Status of North Pacific Gray Whales (SC/67b/Rep07) from 28-31 March 2018. The major focus of the Workshop related to finalising the specifications for modelling, to enable results to be available for SC67b including incorporation of the Makah Management Plan (SC/67b/Rep07, Annex E, appendix 1) into the modelling framework. The factors taken into account in the trials are given in Table 6.

Table 6

Summary of the main factors considered in the Makah gray whale trials

Factor	
Model fitting related	Projection-related
Stock hypothesis	Additional catch off Sakhalin
MSYR	Catastrophic events
Mixing rate	Northern need in final year
Immigration into the PCFG	Struck and lost rate
Bycatches and ship strikes	Future effort
Pulse migrations into the PCFG	Factors related to obtaining and matching photographs

At the present meeting, the focus was on the conservation performance of the Makah Management Plan. Performance was evaluated in the same manner as described for the evaluation of the *SLAs* for West Greenland fin and common minke whales (see Items 6.1 and 6.2). The results can be found in Annex E (appendix 6). The only scenarios under which the plan might not perform adequately were considered to have low plausibility (e.g. a bycatch mortality of ~ 20 PCFG whales per year). Annex E, fig. 4 shows the bivariate plot.

7.1.3.2 CONCLUSIONS AND RECOMMENDATIONS

The management advice relating to the Makah Management Plan is provided under Item 8.2.

Attention: C-A, SC

The Committee reviewed a US Management Plan for a Makah hunt of gray whales off Washington State (the Committee had evaluated a previous plan in 2011 - IWC, 2011; 2012), using the modelling framework developed for its rangewide review of gray whales (SC/67b/Rep07). In conclusion, the Committee:

- (1) **agrees** that the performance of the Management Plan was adequate to meet the Commission's conservation objectives for the Pacific Coast Feeding Group, Western Feeding Group and Northern Feeding Group gray whales;*
- (2) **notes** that the proposed management plan is dependent on photo-identification studies to estimate PCFG abundance and the mixing proportions of PCFG whales available to the hunt (and to bycatch in its range);*
- (3) **stresses** that its conclusions are dependent on the assumption that these studies will continue in the future; and*
- (4) **expresses its great thanks** to Punt, Brandon and Allison for their excellent work in developing and validating the testing framework and running the trials.*

7.1.4 Conclusions on AWMP work

The Chair of the SWG on the AWMP, Donovan, noted that this meeting represented the end of a long journey – with the adoption of the two new *SLAs*, the SWG and the Committee has completed the development tasks it had been assigned by the Commission, originally in Resolution 1994-1. It was an immense task but a great pleasure to work with such dedicated and talented people. He thanked all of the scientists who have made such a wonderful contribution to this work over the years and especially Geof Givens, Kjartan Magnússon (sadly no longer with us), Eva Dereksdóttir, Lars Witting, Anabela Brandão, Doug Butterworth, Cherry Allison and André Punt – the SWG has, in his view, achieved ground-breaking work over the last two decades in a spirit of great collaboration and co-operation, even when there were disagreements, as inevitably there were. He also thanked the hunters and their representatives who had made major contributions in terms of not only data provision but also advice on the AWS (see Item 7.2). The Committee **concurred** that this was an excellent example of what the Scientific Committee could achieve with international collaboration. Finally, they **thanked** Donovan for his dedicated, good humoured and impartial leading of such a major piece of complex work over such a long period - this work has been central to the Committee's role in providing the best scientific advice to the Commission on aboriginal subsistence whaling hunts, bringing together conservation needs and the needs of the hunters.

7.2 Aboriginal Whaling Scheme (AWS)

7.2.1 Introduction

The Scientific Committee's Aboriginal Whaling Management Procedure (AWMP) applies stock-specific *Strike Limit Algorithms (SLAs)* to provide advice on aboriginal subsistence whaling (ASW) strike/catch limits.

ASW management (as part of an AWS, the aboriginal whaling scheme) incorporates several components, several of which have a scientific component:

- (1) *Strike Limit Algorithms* (case-specific) used to provide advice on safe catch/strike limits;

8.1 Eastern Canada/West Greenland bowhead whales

8.1.1 New abundance information

Last year, the Committee had recommended that Canadian scientists attend the Committee to present the results of their work on abundance. It was very pleased that Doniol-Valcroze from Department of Fisheries and Oceans Canada, and the primary author of the paper on the 2013 aerial survey abundance estimate, was present at the meeting.

The Committee accepted, for the provision of management advice and use in an *SLA* (see Annex Q for details), the fully corrected abundance estimate (Doniol-Valcroze *et al.*, 2015) from a 2013 aerial survey of 6,446 bowheads (CV=0.26, 95% CI 3,722-11,200). The survey covered the major summering area for the Eastern Canada/West Greenland (EC/WG) stock.

The Committee recalled that the *WG-Bowhead SLA* had been developed on the conservative assumption that the abundance estimates for the West Greenland area alone (1,274 whales in 2012 (CV=0.12)) represented the abundance of the whole stock, as it believed that it was not possible to assume that a non-member country would continue with regular surveys. Doniol-Valcroze advised the Committee that the present management strategy of Canada does involve obtaining regular abundance estimates. The Committee noted it would be pleased to receive such estimates from Canada being presented to the Committee in the future.

Attention: SC

The Committee greatly appreciated the presence of a Canadian scientist at its meeting. The Committee:

- (1) welcomes the provision of the abundance estimate for the Eastern Canada/West Greenland stock and (see Item 8.1.2) the regular provision of information on catch data by Canada;*
- (2) welcomes the attendance of Canadian scientists at its meetings;*
- (3) agrees that consideration of how to incorporate abundance estimates from Canada should be one focus of the next Implementation Review for this stock;*
- (4) notes the regular collaboration of Canadian and Greenlandic scientists on other matters such as genetic sampling (inter alia for mark-recapture abundance estimation); and*
- (5) encourages further collaboration between Canada, Greenland and the USA for the study of bowhead whales across their range and the presentation of these results at future Committee meetings.*

8.1.2 New catch information

SC/67B/AWMP/10 provided an update of recent Canadian takes made in the Inuit subsistence harvest of the EC-WG bowhead whale stock. In the eastern Canadian Arctic, the maximum allowed take is 7 bowhead whales per year according to domestic policy, with no carry-over of unused takes between years. Since 2015, 5 strikes were taken and 4 bowhead whales were successfully landed (1 in 2015, 2 in 2016 and 1 in 2017). Witting reported that West Greenland hunters struck no bowheads in 2017. There was one 14.7m whale that died from entanglement in crab gear.

The Committee notes that the reported number of strikes was within the parameter space that was tested for the *WG-Bowhead SLA*, and encourages the continued collection of genetic samples from harvested whales.

8.1.3 Management advice

Attention: C-A

SC/67b/AWMP19 reported Greenland's plans for requesting aboriginal whaling provisions at IWC67 and no changes were requested for bowhead whales. The Committee therefore:

- (1) agrees that the WG-Bowhead SLA remains the best available way to provide management advice for the Greenland hunt;*
- (2) notes that this SLA had been developed under the conservative assumption that the number of bowhead whales estimated off West Greenland represented the total abundance between West Greenland and Eastern Canada;*
- (3) based on the agreed 2012 estimate of abundance for West Greenland (1,274, CV=0.12), the catch of one whale in Canada in 2017, and using the agreed WG-Bowhead SLA, agrees that an annual strike limit of two whales will not harm the stock and meets the Commissions conservation objectives; and*
- (4) although the Committee has not yet had time to examine the request from the US/Denmark (SC/67b/Rep06, annex F, appendix) for the WG-Bowhead SLA, reiterates its advice, applicable for all SLAs, that interannual variation of 50% within a block with the same allowance from the last year of one block to the first year of the next, is acceptable.*

8.2 North Pacific gray whales

8.2.1 New information (including catch data)

The Committee received considerable new information on the hunt off Chukotka as discussed in Annex E (item 5.2). In 2017, a total of 119 gray whales were struck in 2017 (37 males and 82 females). No whales were struck and lost, and no stinky (inedible) gray whales were taken. Similar whaling methods were employed as in recent years and the overall efficiency of the hunt was almost same as in 2016.

In advance of the gray whale *Implementation Review* that is scheduled to begin in 2019, the Committee reviewed new information regarding the stock structure of gray whales in the North Pacific (SC67b/SDDNA02 and SC67b/SDDNA03) – for details see Annex I. The results were based on whole genome sequence data from three individuals (one sampled off Barrow, Alaska and two sampled off Sakhalin Island, Russia) and SNP genotype data generated from larger sample sets representing whales sampled off Sakhalin and in the Mexican lagoons.

Attention: SC

*In reviewing the results of new genetic analyses of gray whales in the North Pacific, the Committee **agrees** that the genetic and photographic data for this species be combined to better assess stock structure-related questions. Given the potential for genomic data to aid in better evaluating the stock structure hypotheses currently under consideration for North Pacific gray whales, the Committee **encourages** the continuation of work to produce additional genomic data from sampled gray whales.*

8.2.2 Management advice

Attention: C-A

The Russian Federation (SC/67b/AWMP/17) had requested advice on the following provision:

‘For the seven years 2019, 2020, 2021, 2022, 2023, 2024 and 2025, the number of gray whales taken in accordance with this subparagraph shall not exceed 980 (i.e. 140 per annum on average) provided that the number of gray whales taken in any one of the years 2019, 2020, 2021, 2022, 2023, 2024 and 2025 shall not exceed 140.’

The Committee therefore:

- (1) **agrees** that the Gray Whale SLA remains the best available way to provide management advice for the gray whale hunts;*
- (2) **advises** that an average annual strike limit of 140 whales will not harm the stock and meets the Commission’s conservation objectives;*
- (3) **notes** that its previous advice that the interannual variation of 50% within a block with the same allowance from the last year of one block to the first year of the next remains acceptable;*
- (4) **advises** that the Makah Management Plan (see Item 2.3) also is in accord with the Commission’s management objectives.*

8.3 Bering-Chukchi-Beaufort Seas bowhead whales

8.3.1 New information

New information (on abundance and catches) was considered as part of the *Implementation Review* discussed under Item 7.3.

The USA had indicated that it was proposing no changes to the present catch/strike limits although it may suggest changes to its carryover request in light of the advice received by the Committee as discussed at the intersessional workshop (SC/67b/Rep06).

The Committee noted that there are now two independent estimates of abundance for this stock in 2011 (see Item 7.3.1). Recognising the need to formally consider the general question of how best to combine estimates in such cases as part of the workplan in the next biennium, the Committee noted that if they are combined as a weighted average by the inverse of their variances, there is little difference (it is slightly higher) between the combined estimate and that from the ice-based census estimate; the ice-based approach has been the method used for the other estimates used in the *SLA*. Therefore, the ice-based census estimate for 2011 (16,820, CV=0.052; 95% CI 15,176 to 18,643) is considered the most recent estimate of abundance for use in the *Bowhead SLA* this year.

8.3.2 Management advice

Attention: C-A

The USA indicated that it requested advice on the existing catch/strike limits. The Committee therefore:

- (1) **agrees** that the Bowhead Whale SLA remains the best available way to provide management advice for this stock;*
- (2) **advises** that a continuation of the present average annual strike limit of 67 whales will not harm the stock and meets the Commission’s conservation objectives; and*
- (3) **advises** that provisions allowing for the carry forward of unused strikes from the previous three blocks, subject to the limitation that the number of such carryover strikes used in any year does not exceed 50% of the annual strike limit, has no conservation implications (see SC/67b/Rep04).*

8.4 Common minke whales off East Greenland

8.4.1 New information on catches

In the 2017 season, nine common minke whales (3 males and 6 females) were landed in East Greenland, and one was struck and lost. Genetic samples were obtained from 8 of the landed whales. One common minke whale died from entanglement in fishing gear.

including the work described under Item 10.1.2.2, and Brazil (Annex O, appendix 2). Work in Brazil includes long-term monitoring via sightings and strandings networks, mitigation of entanglements and the development of a management plan for whalewatching (see Annex O, item 2.1.2.2).

Attention: SC, CC

The Committee reiterates the importance of the CMP for the conservation of the southwestern Atlantic population of southern right whales. The Committee therefore:

- (1) welcomes the progress being made in the implementation of the CMP reported by Argentina and Brazil and supports its continuation;*
- (2) encourages the continued co-operation and collaboration amongst range states towards implementing the CMP and addressing mortality evens in this population; and*
- (3) recognising the report of a ship-struck southwestern Atlantic southern right whale in the range of the southeastern Pacific (Estrecho de Magallanes), encourages co-operation with those involved in the southeastern Pacific CMP to facilitate a regional assessment; and*
- (4) encourages the research work identified under Item 10.1.2.1.*

10.1.3 North Pacific gray whales

10.1.3.1 RANGEWIDE ASSESSMENT

Donovan summarised the report of the Fifth Rangewide Workshop on the Status of North Pacific Gray Whales (SC/67b/Rep07) held at the Granite Canyon Laboratory, California of the Southwest Fisheries Science Center from 28-31 March 2018. The primary tasks of the workshop were to (a) review the results of the modelling work identified at the fourth rangewide workshop (IWC, 2018a) and the 2017 Scientific Committee meeting (IWC, 2018b), (b) examine the new proposed Makah Management Plan (submitted by the USA – given as Annex E, Appendix 1) for gray whaling off Washington state and (c) to update as possible, and develop a workplan for, updating the scientific components of the Conservation Management Plan (CMP) for western gray whales.

A full discussion of the workshop can be found in Annex O (item 2.1.3.1). The Workshop finalised its work on (a) prioritising stock structure hypotheses, (b) finalising inputs for the modelling work especially related to bycatch; and (c) incorporating the Makah Management Plan (SC/67b/Rep07, Annex E, Appendix 1) into the modelling framework.

Two stock structure hypotheses (3a and 5a) were given priority whilst others were used in sensitivity tests. In summary, Hypothesis 3a assumes that whilst two breeding stocks (Western and Eastern) may once have existed, the Western breeding stock is extirpated. Whales show matrilineal fidelity to feeding grounds, and the Eastern breeding stock includes three feeding aggregations: Pacific Coast Feeding Group (PCFG), Northern Feeding Group (NFG), and the Western Feeding Group. Hypothesis 5a assumes that both breeding stocks are extant and that the Western breeding stock feeds off both coasts of Japan and Korea and in the northern Okhotsk Sea west of the Kamchatka Peninsula. Whales feeding off Sakhalin include both whales that are part of the extant Western breeding stock and remain in the western North Pacific year-round, and whales that are part of the Eastern breeding stock and migrate between Sakhalin and the eastern North Pacific.

In discussion of the report and intersessional progress, the Committee thanked Donovan, Punt and the participants for the progress made, approved the conditioning results developed after the workshop, noted the preliminary results from the modelling and agreed a strategy for obtaining conservation advice (see recommendation below under Item 10.3). The management implications of the results for the Makah Management Plan are found under Item 7.1.3.

10.1.3.2 REGIONAL STUDIES

The Committee was pleased to receive recent information from long-term studies in the breeding lagoons of Mexico (SC/67b/CMP09) as discussed in Annex O (item 2.1.3.1.1).

The Committee received several updates on work undertaken in the Russian Federation (see Annex O, item 2.1.3.2). It welcomed the annual update of activities from the IUCN Western Gray Whale Advisory Panel (see Annex O, appendix 3) which highlighted work to develop a monitoring and mitigation plan for a 2018 seismic survey being undertaken near the feeding grounds off Sakhalin Island, Russia and issues related to fishing gear. SC/67b/CMP07 updated findings from the long-term monitoring programme carried out by the Russian Gray Whale Project off Sakhalin Island, Russia. The research programme run in the same area by two oil companies was presented in SC/67b/ASI04 and discussed in Annex S (item 4.2).

The recent status of conservation and research on gray whales in Japan was reported in SC/67b/CMP12. During May 2017-April 2018, no anthropogenic mortalities were reported from the adjacent waters off Japan, while two opportunistic sightings of gray whales were made near Aogashima Island in May 2017 and February 2018.

Finally, SC/67b/CMP11 reported on the possible occurrence of a gray whale off the east coast of Korea; work is continuing to try to confirm the species identification; if confirmed it will be the first record in these waters in over 40 years.

Report of the Scientific Committee

Bled, Slovenia, 24 April-6 May 2018

Annex E

Report of the Standing Working Group on Aboriginal Subsistence Whaling Management Procedures

**This report is presented as it was at SC/67b.
There may be further editorial changes (e.g. updated references, tables, figures)
made before publication.**

**International Whaling Commission
Bled, Slovenia, 2018**

2.3 North Pacific gray whales (Makah whaling)

2.3.1 Management plan proposed by the US for Makah whaling

The Makah Indian Tribe has requested that the US National Marine Fisheries Service (NMFS) authorises a tribal hunt for Eastern North Pacific gray whales in the coastal portion of its 'usual and accustomed fishing area'. The Tribe intends to hunt gray whales from the ENP population, which currently numbers approximately 27,000 animals (Durban *et al.*, 2017). In the management plan, NMFS has taken measures to restrict the number of PCFG whales that are struck or landed in a given 10-year period and to avoid, to the extent possible, striking or killing a Western North Pacific gray whale. The US government has requested that the Committee test this plan to ensure that it meets IWC conservation objectives. An overview of the hunt management plan and how it was operationalised in the coding of the SLA trials is provided in Appendix 1 of SC/67b/Rep/07.

2.3.2 Review intersessional progress including at the Rangewide Workshop - SC/67b/Rep07

Donovan summarised the report of the Fifth Rangewide Workshop on the Status of North Pacific Gray Whales (SC/67b/Rep07rev1). The Workshop was held at the Granite Canyon Laboratory, California of the Southwest Fisheries Science Center from 28-31 March 2018. The primary tasks of the Workshop were to: (a) review the results of the modelling work identified at the Fourth Workshop (IWC, 2018a) and SC/67a (IWC, 2018b); (b) examine the new proposed Makah Management Plan (submitted by the USA – described above and illustrated in the Workshop report under Annex E, Appendix 1) for gray whaling off Washington state; and (c) to update as possible (and develop a workplan for) the scientific components of the Conservation Management Plan (CMP) for western gray whales.

The major focus of the Workshop related to finalising the specifications for modelling to enable results to be available for SC/67b. A new component included the need to incorporate the recently developed Makah Management Plan (SC/67b/Rep07, Annex E, Appendix 1) into the modelling framework; the Plan is somewhat complex and the Workshop focus was on understanding the intended process and ensuring that it was parameterised in an appropriate way. A further key area was finalising the stock structure hypotheses to be given priority. After a review, the Workshop concluded that Hypotheses 3a and 5a would form the reference cases but that sensitivity trials would be conducted for Hypotheses 3b, 3c, 3e and 6b. The full specifications for these hypotheses are provided in SC/67b/Rep07 (Annex E, Appendix 1 and Annex F).

In summary, Hypothesis 3a assumes that whilst two breeding stocks (Western and Eastern) may once have existed, the Western breeding stock (WBS) is extirpated. Whales show matrilineal fidelity to feeding grounds, and the Eastern breeding stock includes three feeding aggregations: PCFG (Pacific Coast Feeding Group), NFG (Northern Feeding Group) and WFG (Western Feeding Group). Hypothesis 5a assumes that both breeding stocks are extant and that the WBS feeds off both coasts of Japan and Korea and in the northern Okhotsk Sea west of the Kamchatka Peninsula. Whales feeding off Sakhalin include both whales that are part of the extant WBS and remain in the western North Pacific year-round, and whales that are part of the Eastern breeding stock and migrate between Sakhalin and the eastern North Pacific (the WFG).

Another important component of the trials relates to bycatch. Considerable effort was put into capturing the uncertainty in past and future estimates of bycatch mortality based upon the available data. The base case for trials was that observed deaths due to bycatch account for only 25% of the true incidental human caused mortality. This fraction was based on a study of bottlenose dolphin stranding data off the coast of California (Carretta *et al.* 2016). Trials were also considered with higher rates of cryptic mortality, including scenarios where observations represent only 5% of true incidental human caused mortality.

Abundance estimates for the eastern North Pacific and the PCFG had been approved by the Committee last year (IWC, 2017). New estimates of abundance for western gray whales were provided by Cooke (SC/67B/ASI/02), and correspond with the various stock structure hypotheses for the western feeding group (WFG), WBS and WST (WFG + WBS). These estimates were reviewed and adopted by the SWG on ASI (Annex Q). Modifications were also made to the mixing matrices in the rangewide model based on the new estimates.

Each stock structure hypothesis was combined with multiple assumptions about other factors (e.g. bycatch rates) and this led to the development of 53 'trials' (see Table 6 of SC/67b/Rep07). Each trial was based on 100 simulations that reflect uncertainty in the estimated parameters of the model. Projections thus lead to a very large amount of model output that needed to be distilled to address questions such as the conservation performance of the new management plan for Makah whaling with respect to the stocks in question (in particular, the PCFG and the WFG). The Rangewide Workshop identified several plots and 'performance statistics' to summarise results from each trial (see Section 4.4.5 of SC/67b/Rep07 and Appendix 4).

Brandon presented an update on the code validation for the model. The first phase of code validation was completed prior to Fifth Rangewide Workshop. That effort focused on the code implementing the operating model and the conditioning process. A summary, including a brief overview of the code and input files was provided to the Workshop (SC/M18/CMP03). Like the first phase, the second phase of code validation involved checking the code against the mathematical and statistical model specifications. The focus of this validation phase was on three aspects of the code: (1) future projections and the updated US management plan concerning strike and landing limits for Makah whaling; (2) input files for the factors considered across conditioning trials and; (3) processing results across simulations into relevant

performance statistics. Code validation was completed prior to the presentation of model results to the SWG.

The sub-committee on CMP reviewed and approved the conditioning results in the context of the full rangewide review. The SWG reviewed the model results with a focus on conservation performance of the management plan for Makah whaling. To aid in this evaluation, bivariate plots were generated for the lower 5th percentiles of the D1 and D10 performance statistics. Trials for which the D1 statistic is less than 0.6 after 100 years (i.e. the stock is not above its MSYL) and the D10 statistic after 100 years is not larger than 1 (i.e. the stock is not increasing towards MSYL) represent a scenario under which the management plan would not be expected to meet the conservation objectives for ASW (this is denoted by the gray quadrant in Fig X of Appendix 6). Several trials were identified in this category, but they corresponded with scenarios that were considered to have the low plausibility (e.g. bycatch mortality of ~ 20 PCFG whales per year). The SWG **agreed** that the performance of the management plan for Makah whaling was adequate to meet the Commission's conservation objectives for the PCFG, WFG and northern feeding group gray whales in the context of the proposed Makah hunt.

2.3.3. Conclusions and recommendations

The SWG **agreed** that the newly proposed hunt management plan for the Makah Tribe's gray whale hunt meets the IWC conservation objectives for PCFG, WFG, and ENP gray whales (see Appendix 6). Similar to its recommendations regarding the hunt plan evaluated during the last *Implementation Review* (IWC, 2012; 2013), the new hunt management plan is dependent on photo-identification studies to estimate PCFG abundance and the mixing proportions of PCFG whales available to the hunt (and bycatch in its range). The SWG's conclusions are dependent on the assumption that these studies will continue in the future.

Attention: C-A, SC

The Committee was asked by the USA to review a US Management Plan for a Makah hunt of gray whales off Washington State (the Committee had evaluated a previous plan in 2011 - IWC, 2011; 2012). The Committee conducted this work using the modelling framework developed for its rangewide review of gray whales (SC/67b/Rep07). In conclusion, the Committee:

- (1) **agrees** that the performance of the Management Plan was adequate to meet the Commission's conservation objectives for the Pacific Coast Feeding Group, Western Feeding Group and Northern Feeding Group gray whales;*
 - (2) **notes** that the proposed management plan is dependent on photo-identification studies to estimate PCFG abundance and the mixing proportions of PCFG whales available to the hunt (and to bycatch in its range);*
 - (3) **stresses** that its conclusions are dependent on the assumption that these studies will continue in the future; and*
 - (4) **expresses** its great thanks to Punt, Brandon and Allison for their excellent work in developing and validating the testing framework and running the trials.*
-

2.4 West Greenland bowhead whales

2.4.1 Review results using 400 replicates

Following a previous examination of the precision with which estimates of the 5th percentiles of the performance statistics could be obtained as the number of replicates was increased; an agreement was made that 400 simulations should be used to determine the performance of the selected *SLA* for West Greenland bowhead whales. SC/O17/AWMP03 had showed projection plots for the 5th percentile and the median of the 1+ population for the baseline evaluation trials for this *SLA* based on 400 simulations. For comparison purposes, the projections for the *SLA* under 100 simulations were also shown. These show substantial variability between estimates of the 5th percentile of the distribution of population size.

Wilberg presented an analysis (Appendix 7) based on bootstrapping that was used to determine the effect of the number of simulations on the precision of the estimates of the 5th percentile of several performance measures. Projections for the selected *SLA* for West Greenland bowhead whales showed substantial differences in estimates of the 5th percentile of abundance based on 100 and 400 simulations. With only 100 simulations, the confidence intervals of the 5th percentile were quite wide, but 400 simulations led to a substantial improvement in precision. The investigation concluded that continuing to use 400 trials for the simulations appears to be sufficient to estimate the lower 5th percentile with a reasonable amount of precision.

2.4.2 Testing the Interim Allowance strategy

The SWG noted that the interim relief strategy (see Item 3) has not been examined for this *SLA* yet and **agreed** that this should be added to the workplan.

2.4.3 Conclusions and recommendations

It was agreed that continuing to use 400 replicates for the simulations is sufficient to estimate the lower 5th percentile with adequate precision.

3. ABORIGINAL WHALING MANAGEMENT SCHEME (AWS)

The Scientific Committee's Aboriginal Whaling Management Procedure (AWMP) applies stock-specific *Strike Limit Algorithms (SLAs)* to provide advice on aboriginal subsistence whaling (ASW) strike/catch limits.

strikes remain for 2018 under the current block quota, while the average annual take in recent years is 123 whales. The SLA trials performed in 2017 at the request of the Government of the Russian Federation (IWC, 2018) showed that a take of up to 136 whales per year by indigenous people of Chukotka will not harm the population. He noted that a possible overrun of 2013-18 quota by Chukotka native whalers was within this catch level and believed that such needs should be taken into account in the near future.

SC/67b/AWMP17 presented proposed text by the Russian Federation for amendments to Paragraph 13(b)(2) of the Schedule for gray whales. It was noted that a specific native diet has been documented. The consumption of relatively high amounts of proteins and fats is a necessary component of health and longevity in the native population of Chukotka. The importance of aboriginal whaling to the social, cultural and economic structure of Chukotka's coastal villages was also noted. Under the current block quota, the annual strike limit is 140 per year (including any strikes allocated to the Makah tribe). The proposed amendments would extend the duration of this block quota from six to seven years. Under the proposed seven-year block quota, the total number of strikes would be increased to 980 (140x7yrs). This provision would continue to be reviewed biannually by the Commission in light of the annual advice of the Scientific Committee.

5.2.2 Management advice

The SWG **agreed** that the *Gray Whale SLA* remains the best available way for management advice for this stock. It **advised** that an average annual strike limit of 140 whales will not harm the stock and meets the Commission's conservation objectives. It also noted that its previous advice that the interannual variation of 50% within a block with the same allowance from the last year of one block to the first year of the next was acceptable. It also **advised** that the Makah Management Plan (Item 2.3) is in accord with the Commission's management objectives.

Attention: SC

*In reviewing the results of new genetic analyses of gray whales in the North Pacific, the Committee **agrees** that the genetic and photographic data for this species be combined to better assess stock structure-related questions. Given the potential for genomic data to aid in better evaluating the stock structure hypotheses currently under consideration for North Pacific gray whales, the Committee **encourages** the continuation of work to produce additional genomic data from sampled gray whales.*

Attention: C-A

The Russian Federation (SC/67b/AWMP/17) had requested advice on the following provision:

'For the seven years 2019, 2020, 2021, 2022, 2023, 2024 and 2025, the number of gray whales taken in accordance with this subparagraph shall not exceed 980 (i.e. 140 per annum on average) provided that the number of gray whales taken in any one of the years 2019, 2020, 2021, 2022, 2023, 2024 and 2025 shall not exceed 140.'

The Committee therefore:

- (1) **agrees** that the Gray Whale SLA remains the best available way to provide management advice for the gray whale hunts;
 - (2) **advises** that an average annual strike limit of 140 whales will not harm the stock and meets the Commission's conservation objectives;
 - (3) **notes** that its previous advice that the interannual variation of 50% within a block with the same allowance from the last year of one block to the first year of the next remains acceptable;
 - (4) **advises** that the Makah Management Plan (see Item 2.3) also is in accord with the Commission's management objectives.
-

5.3 Bering-Chukchi-Beaufort Seas bowhead whale

5.3.1 New information

New information was considered as part of the *Implementation Review* discussed under Item 4.

The USA had indicated that it was proposing no changes to the present catch/strike limits although it may suggest changes to its carryover request in light of the advice received by the Committee as discussed at the intersessional Workshop (SC/67b/Rep06).

The SWG noted that there are now two independent estimates of abundance for this stock in 2011 (see Item 4). Recognising the need to formally consider the general question of how best to combine estimates in such cases as part of the workplan in the next biennium, the SWG noted that if they are combined as a weighted average by the inverse of their variances, there is little difference (it is slightly higher) between the combined estimate and that from the ice-based census estimate that is the approach used to obtain the other estimates used in the SLA. It therefore **agreed** to use the ice-based census estimate for 2011 survey (Givens *et al.*, 2016; 16,820, CV=0.052, 95% CI 15,176 to 18,643) as the most recent estimate of abundance for use in the *Bowhead SLA* this year.

Brian Gruber

From: Int. Whaling Commission <noreply@iwc.int>
Sent: Friday, May 25, 2018 8:43 AM
To: bgruber@
Subject: Report of the Scientific Committee 2018 - IWC.ALL.327

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RJL/JAC/32444

25 May 2018

Circular Communication to Commissioners. Contracting Governments and
Members of the Scientific Committee

IWC.ALL.327

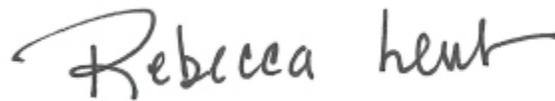
Report of the Scientific Committee 2018

I am pleased to draw attention to the report of the Scientific Committee meeting held from 24 April – 6 May 2018 in Bled, Slovenia. The report and its annexes are available at:

The meeting was attended by more than 200 cetacean scientists from all over the world. Fifteen sub-groups considered over 300 research and working papers during two weeks of parallel sessions and plenaries. This report contains a comprehensive account of their discussions, conclusions and recommendations.

I would like to thank all convenors, rapporteurs, participants and members of the Secretariat on the completion of a well-attended and highly productive meeting.

c.c. Accredited observers to the IWC

A handwritten signature in black ink that reads "Rebecca Lent". The signature is written in a cursive, flowing style.

Dr Rebecca Lent
Executive Secretary

Chair: Dr Joji Morishita (Japan)
Vice-Chair: Mr Andrej Bibic (Slovenia)
Executive Secretary: Dr Rebecca Lent

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SC/68A/GEN/03 Rev1

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(I)=Interpreter
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