What's the catch? Validity of whaling data for Japanese catches of sperm whales in the North Pacific

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Is the manuscript scientifically sound in its present form?
Yes

Are the interpretations and conclusions justified by the results?
Yes

Is the language acceptable?
Yes

Is it clear how to access all supporting data?
Yes

Do you have any ethical concerns with this paper?
No

Have you any concerns about statistical analyses in this paper?
No
Recommendation?
Accept with minor revision (please list in comments)

Comments to the Author(s)
Comments
This paper presents Japan’s reported catch statistics in light of the newly available ‘true’ catch information from Soviet fleets often operating in the same areas at the same time. This contrast highlights the unreliable length data reported by Japan to the IWC and hence the likely high proportion of infractions within the total catch.
I have two main comments that should be addressed by the authors:
1) The authors state ‘to date there has been no investigation of the reliability of catch statistics for Japanese pelagic whaling operations’ (line 16). This overstates the novelty of their analysis somewhat as previously both coastal and pelagic catch data have been examined by the IWC and indeed specifically sperm whale length data from the North Pacific (Cooke et al. 1983). However given the opacity and availability of the aged grey literature of the IWC the authors should not be criticised for this omission. That said the analyses by Cooke and colleagues are pertinent, should be referenced and the statement above qualified.
2) The paper should also state clearly that the practice of ‘whale stretching’ was by no means limited to Japan or the USSR. Indeed Cooke et al. (1983) states that stretching was a ‘common phenomenon in whaling operations’ and cites IWC reports from 1964 and 1965.

Other more minor comments
1) The ‘legal-sized females’ (LSF; >11.6m) category is awkward given animals between 9.2 and 11.6m became legal after 1972. Thus the information presented in Table 2 can easily be misinterpreted because the LSF column does not in fact report the proportion of reported ‘legal-sized female’ whales (i.e. females >9.2m after 1972). I suggest you change the category to ‘large-sized females’ to sidestep the difficulty of reporting legality consistently.
2) Bring the compelling catch percentages as reported on lines 104 and 106 through to the abstract.
3) Line 54. The following statement is a little confusing ‘the Soviets...misreported illegal-sized females as larger males’. Why would they report small females as larger males? Perhaps it would be clearer to write ‘the Soviets falsified the length and sometimes also the sex; ...’. The motivation to falsify sex data is not explained well - see comment 8 below.
4) Line 65. “Japanese pelagic catch numbers are correct”. Perhaps context is important here, were the Japanese scientists clearly stating all catch data are correct or simply the number of whales caught?
5) Line 94. Here it states the number of catchers for all Soviet fleets was 14 but in Line 175 it states ‘some [Soviet] operations deployed more than 20 catcher boats per fleet’.
6) Line 95. I think CWD should be CD.
7) Line 194. Typo indicates/suggests.
8) Line 194. Here the authors suggest the evidence provides clear evidence for the falsification of both sex and length data, however, the evidence for manipulation of sex receives less attention. The authors could highlight the disparity in the sex ratios between the Soviet (40-50% M) and Japanese catches (70-80% M) and that the ratios within countries are broadly consistent across all years. More generally, however, the motivation to manipulate sex by both the USSR and Japan should be explained more clearly if known.

Review form: Reviewer 2 (Andrew Brierley)

Is the manuscript scientifically sound in its present form?
Yes

Are the interpretations and conclusions justified by the results?
Yes

Is the language acceptable?
Yes

Is it clear how to access all supporting data?
Yes, but I would like to see the Soviet data deposited in the IWC database (this is not a condition for m/s acceptance!)

Do you have any ethical concerns with this paper?
No

Have you any concerns about statistical analyses in this paper?
Yes

Recommendation?
Accept with minor revision (please list in comments)

Comments to the Author(s)
This is a provocative manuscript, but worthy of publication. See comments in attached. docx (Appendix A). Re my tick of 'yes' re 'statistical analyses', I do not so much have a 'concern' as a wish for the analysis to be extended (KS tests) and for histograms of length/freq to be presented. I imagine this will be a straightforward task for the authors, and believe that it will improve the m/s.

Decision letter (RSOS-150177)

29-May-2015

Dear Dr Clapham,

The Subject Editor assigned to your paper ("What’s the catch? Validity of whaling data for Japanese catches of sperm whales in the North Pacific.") has now received comments from reviewers. We would like you to revise your paper in accordance with the referee and Subject Editor suggestions which can be found below (not including confidential reports to the Editor). Please note this decision does not guarantee eventual acceptance.

We feel that the most pressing concern raised by either reviewer is is regarding the validity of the Russian catch data. I understand that you have already agreed to provide a translation of this, translated by the first author as supplementary material, thank you. However given the importance of these data we ask that you provide an independently certified translation of the Russian data from a recognised translation service and upload this, along with the original data, as supplementary material. This is in line with the journal's open data policy. Please also consider submitting the data to the IWC database as suggested by the reviewer.

Please also clarify in your revised manuscript how you came about the declassified Russian catch data.
As this is a controversial area it is particularly important that you carefully proofread your article to ensure that none of your results are overstated or sensationalised.

The reviewers also have several other concerns which we invite you to address in your revision.

Please submit a copy of your revised paper within three weeks (i.e. by the 21-Jun-2015). If we do not hear from you within this time then it will be assumed that the paper has been withdrawn. In exceptional circumstances, extensions may be possible if agreed with the Editorial Office in advance. We do not allow multiple rounds of revision so we urge you to make every effort to fully address all of the comments at this stage. If deemed necessary by the Editors, your manuscript will be sent back to one or more of the original reviewers for assessment. If the original reviewers are not available we may invite new reviewers.

To revise your manuscript, log into http://mc.manuscriptcentral.com/rsos and enter your Author Centre, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. Revise your manuscript and upload a new version through your Author Centre.

When submitting your revised manuscript, you must respond to the comments made by the referees and upload a file "Response to Referees" in "Section 6 - File Upload". Please use this to document how you have responded to the comments, and the adjustments you have made. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response.

In addition to addressing all of the reviewers' and editor's comments please also ensure that your revised manuscript contains the following sections before the reference list:

- Ethics statement
  If your study uses humans or animals please include details of the ethical approval received, including the name of the committee that granted approval. For human studies please also detail whether informed consent was obtained. For field studies on animals please include details of all permissions, licences and/or approvals granted to carry out the fieldwork.

- Data accessibility
  It is a condition of publication that all supporting data are made available either as supplementary information or preferably in a suitable permanent repository. The data accessibility section should state where the article's supporting data can be accessed. This section should also include details, where possible of where to access other relevant research materials such as statistical tools, protocols, software etc can be accessed. If the data has been deposited in an external repository this section should list the database, accession number and link to the DOI for all data from the article that has been made publicly available. Data sets that have been deposited in an external repository and have a DOI should also be appropriately cited in the manuscript and included in the reference list.

- Competing interests
  Please declare any financial or non-financial competing interests, or state that you have no competing interests.

- Authors' contributions
  All submissions, other than those with a single author, must include an Authors’ Contributions section which individually lists the specific contribution of each author. The list of Authors should meet all of the following criteria; 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published.
All contributors who do not meet all of these criteria should be included in the acknowledgements.

We suggest the following format:
AB carried out the molecular lab work, participated in data analysis, carried out sequence alignments, participated in the design of the study and drafted the manuscript; CD carried out the statistical analyses; EF collected field data; GH conceived of the study, designed the study, coordinated the study and helped draft the manuscript. All authors gave final approval for publication.

• Acknowledgements
Please acknowledge anyone who contributed to the study but did not meet the authorship criteria.

• Funding statement
Please list the source of funding for each author.

Once again, thank you for submitting your manuscript to Royal Society Open Science and I look forward to receiving your revision. If you have any questions at all, please do not hesitate to get in touch.

Yours sincerely,
Emilie Aime
Senior Publishing Editor, Royal Society Open Science
openscience@royalsociety.org

Author's Response to Decision Letter for (RSOS-150177)

See Appendix B.
Appendix A

This is a provocative manuscript that suggests a systematic miss-reporting of sperm-whale size by Japanese whalers. The case made is that sizes reported by Japan are larger than sizes measured by Russia in the same area/time, and that since Russian data are known to be reliable then the Japanese data must be false. The argument depends absolutely on the validity of Russian data, yet it is well known that the Russian whaling activity was illegal and hence went unreported at the time. The authors claim that catch data (including length) were recorded by the Russian fleet, yet kept secret until declassification, and that those data are ‘of known reliability’. The authors of the present work make up 2/3rds of the authors of the study cited [7] affirming the validity of Russian previously-secret data.

The present manuscript considers data from 1968/69 and 1973/74. The IWC introduced a mandatory observer scheme in 1972, so it would perhaps to be expected that the potential for miss-reporting / falsification would be less in the latter period.

In 1988/69 the Japanese catch apparently contained a proportion of legally-sized whales that was highly-significantly greater (c. 15 times greater) than the proportion in the Russian catch. It appears as though individual whale lengths are known, and I suggest histograms of lengths are given for Japanese and Russian catches, and that Kolomogorov-Smirnov tests be performed to examine differences in length distributions rather than just X^2 tests on proportions. This KS approach might be particularly instructive for the August 1969 period (described from line122 onwards) and might strengthen the authors’ case (notwithstanding the issue of Russian data validity outlined in my para 1).

The differences in numbers of legal/illegal length whales caught in 1973/74 by Japanese/Russian whalers was reduced (from 15 to 3.5 times), but Japan still apparently caught more large whales. Presentation of length-frequency histograms / KS tests would be helpful for these data too.

In the Discussion (line 159) there is consideration of Southern Hemisphere whaling activity by Japan and Russia. The authors make the statement that “Although comparisons between oceans are not strictly appropriate” – and I agree. There is no need to make this point as part of a para in Pacific whaling, but I would be supportive of its inclusion as a self-contained para because it provides some evidence of widespread (geographically) practice.

Line 194 – cut either ‘suggests’ or ‘indicates’

Re data accessibility, are there any efforts afoot to put the ‘reliable’ Soviet data in to the IWC data base?

REVIEW END

Andrew Brierley, May 2015
EDITOR COMMENTS

Reliability of the Soviet data: please see response number 1 to Referee 1, below.

Translation: We have provided a certified translation of the key Soviet data for this paper.

Acquisition of records: The formerly secret reports which form the basis of our analyses and which were declassified after the break-up of the USSR were found and copied in the State Archive of the Primorskiy Region in Vladivostok, Russia. We have now noted this in the revised text. They remain publically available in that archive, and copies of key documents are also available from the authors.

> As this is a controversial area it is particularly important that you carefully proofread your article to ensure that none of your results are overstated or sensationalised.

Understood, but we do not overstate or sensationalize anything. The data clearly indicate extensive and systematic falsification of catch data - well beyond the occasional “stretching” problem mentioned by Referee 2 - which is something that a) has already been demonstrated for Japanese coastal whaling operations, and b) was predicted by former Soviet scientists with whom we worked on the illegal Soviet data. We would note that the material in this paper was presented to the IWC’s Scientific Committee at its annual meeting last month, and despite weak objections from the Government of Japan, was generally accepted as correct; the discussion then focused not on whether the misreporting was real, but on how to deal with the resulting falsified Japanese data in the IWC’s catch database. Incidentally, both referees were present during these discussions.

REFEREE COMMENTS

The comments were very helpful in improving the manuscript; responses and relevant changes are described below.

Referee 1: Andy Brierley

1. Reliability of Soviet records. We recognize that this is critical to the analysis presented in this paper. There is no doubt about the reliability of the Soviet data used here, but in support of this we have added a footnote to the Methods section noting that the North Pacific data are identical in nature to the more extensive data from Soviet illegal whaling in the Southern Hemisphere, which were formally accepted by the IWC’s Scientific Committee in 1997. Furthermore, at the Scientific Committee meeting that just took place (after we had submitted the manuscript), the Committee acknowledged the veracity of the North Pacific “true” data collected by us, and officially recommended “that the revised data for all species be entered into the IWC catch database as a matter of priority and that the false data originally submitted to BIWS for these expeditions be removed.” This has been noted in the text, with the relevant citation.

2. Use of a K-S test on the length frequency data: done (although we have also retained the original Chi-square test, since it tests something different).

3. Display length frequency data using histograms: done (new Figure 2).

4. Use of the Southern Hemisphere data for comparison. The referee makes a good point about the lack of a need to compare the Japanese catch data with Soviet data from the Southern Hemisphere, and suggests that this information be retained in its own paragraph as evidence of the geographically widespread nature of misreporting. We agree with the former, but don’t think it’s worth keeping the comparison generally, because it says nothing about the extent of
falsification by Japan outside the North Pacific (only that by the Soviets, which is already well known). Accordingly, we have removed this text completely.

5. Line 194: remove either “suggests” or “indicates”. Done (inevitably, we’d caught this typo right after we’d hit “Submit” on the original manuscript!)

6. Efforts to put the Soviet data into the IWC database: yes, this will be done now that the IWC has officially accepted the true data as the official record, and we have included this in the revision (see note above).

Referee 2: Mike Double

Major comments

1) Previous questioning of the Japanese data. This is a reasonable comment, though we did include reference to the previous suggestion of the unreliability of the Japanese data (however, we cited the wrong reference - now fixed). We have added text to better highlight the 1983 Cooke et al. paper, and brought it forward into the Introduction.

2) Whale stretching was common: this is certainly true, and well known; but it is important to distinguish between the falsified increase in length for occasional individual catches that were inadvertently below the minimum size limit for the species concerned (i.e. “Whoops, we got a small one - let’s add a couple of feet to the length to avoid an infraction”) and what the USSR and Japan were doing, which was to actively and knowingly kill many whales below the limit, in a systematic fashion and on a large scale. We have added text to Discussion in this regard.

Minor comments

1) Use of “Legal-sized females” - change to “large-sized females”. We recognize that the change in minimum length in 1972 makes this potentially confusing, but we don’t believe that changing the term is helpful because the loss of the word “legal” would remove a key component of this term. The point is the legality of the length, not that the whales concerned were “large”; in addition, we use the term “large females” to refer to particularly sizeable animals, and changing the LSF term as the referee suggests would further confuse this. Instead, we have added to the relevant footnote, which now reads as follows:

The minimum length was reduced by IWC to 9.2 m in 1972; thus, smaller females were legal to catch after this date. However, because we wanted to investigate potentially illegal catches prior to implementation of the IOS, our analysis focused on the occurrence of 11.6+ m females before and after the introduction of inspection. Consequently, the term “legal-sized females” here refers to the legal minimum length prior to 1972.

We believe that this adequately clarifies the term, the change in minimum length, and the reason we continued to use 11.6 m in the post-IOS analyses.

2) Bring forward to the Abstract percentage figures from lines 104-106: done.

3. Why was size changed etc? We have clarified why the Soviets often reported undersized females as larger males, as follows:

In official reports to the IWC, the Soviets falsified female lengths, or misreported illegal-sized females as larger males in order to make the catch figures consistent with reported oil production (because adult male sperm whales are much larger than females, and thus yielded more oil, it was more believable to report as a male an undersized whale whose length had been intentionally increased).
4. “Japanese pelagic catch numbers are correct” - does this mean total catches, or all catch data? We assume this refers only to the catch numbers, not the associated length data (although that might be implied). The report concerned is brief and does not give further detail.

5. Number of Soviet catchers: confusion between 14 and 20. Good point, and we have clarified that the latter did not occur in the North Pacific by adding the word “Antarctic”: “...and in some Antarctic operations deployed more than 20 catcher boats per fleet.”

6. CWD should read CD: good catch, thanks.


8. Falsification of sex data: thinking about this, we realize that our statement that the results indicate “systematic falsification of associated sex and length data” is, for sex, not well supported. It is clear lengths were falsified, but we really can’t say from these data that sex was (indeed, the occurrence in the catch statistics of so many improbably large females might well suggest that only length was changed, not sex). Consequently, we have removed the reference to sex in the statement. That the Soviets changed the sex of animals is well known, and the motive for this is explained earlier (see response to minor comment 3 above).