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Update on the ICG for the establishment of a Visual Health Assessment Protocol for SRWs

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INTERNATIONAL
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Update on the ICG for the establishment of a Visual Health Assessment Protocol for SRWs

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In 2020, the IWC Scientific Committee (SC) encouraged the development of a global, standardized IWC-endorsed visual health assessment protocol for southern right whales (IWCSC SH68B Report). The work builds on the visual health assessment completed by Pettis et al. (2004) for North Atlantic right whales, and Hörbst et al. 2018 (SC/68A/SH/13). Subsequently, a first draft of a standardized protocol for VHA for SRW was developed and presented to IWC SC at SC68C/SH/21 (Charlton et al. 2020). Five visual health indices and scoring criteria were adopted (1) Body condition: indication of subcutaneous fat, (2) Skin lesions, (3) Skin condition, (4) skin sloughing, (5) Presence of *Cyamus erraticus* (orange in color) on body/soft tissue between the callosities. A scoring framework, and analysis for weighting scores and assessing scorer agreement was presented. During SC68C (2021), an intersessional Correspondence Group was formed to enhance information sharing and collaboration for an improved standardized protocol. This report provides an update on the work of the ICG to date.

Progress update

To date, the following progress has been made:

- **2021/2022** Protocol updates: the protocol has been distributed for 3 rounds of comments from the ICG. Significant effort was undertaken to validate and ground truth the method protocol using the South African and Australian datasets. Statistically testing observer bias and reaching moderate to good scorer agreement remains a key challenge for undertaking qualitative VHAs.
- **2022:** Honour student Sarah McAlary from Deakin University (Victoria Australia) undertook a visual health assessment using SRW data for the eastern population in Australia. Training was provided by Charlton, Gregory, and Watson in alignment with the IWC draft protocol for VHA for SRW. Scorer agreement was not tested, although recommended. From a total of 3,500 images of 500 individuals, 306 individuals passed the image quality selection criteria, of these, 73 were accompanied and 233 were unaccompanied adults. Individuals with multiple sightings for July and August, which is the most common months for sightings, were assessed and showed little variation in body condition within season. The findings of this study showed that a visual measurement tool, such as the IWC's protocol, is a sensitive enough measure to detect inter-annual variability as well as being sensitive enough to detect broad scale environmental indices.
- **2023:**
    - An MSc student with the University of Cape Town, South Africa completed a VHA for the south African photo ID dataset for 78 adult SRWs for which photogrammetry data (and thus quantitative assessment of body condition) was available (Moles 2022) under supervision of Vermeulen. The results of ANOVA showed an association between the qualitative and quantitative body condition (BC) scores ($F = 19.78$, $p = 1.775e-07$), with individuals ranked as "Good" having a higher quantitative BC score, on average. This suggests that visual assessments of body condition are consistent with those done quantitatively. However, when differentiating between the visual assessment of body condition scores for groups 2 and 3, the difference was less pronounced.

- Progress was made towards completing VHA using Australian data by researchers from Curtin University, Western Australia with funding support through the Minderoo Foundation. Data was curated to support the training of an undergraduate researcher internship. Pre-data processing was undertaken identifying suitable images and sorting into health folders for 98 reproductive females. The intern went through extensive training and guidance to provide consistent and reliable assistance in VHA qualitative scoring processes, and data analyses. Issues arose in gaining scorer agreement among the research team, highlighting the limitations in the protocol and challenges associated with achieving moderate to high scorer agreement, and possible limitation to the scoring framework with scoring options 1-3 having low statistical power. Therefore, as a proof of concept, this highlighted red flags for functionality of the protocol. It's essential to understand the significance of power and agreement (Kappa) values and to investigate categories with low power or poor agreement for potential improvements or further data collection. The process highlighted the importance of maintaining photogrammetry datasets to qualitatively assess body condition, and the need to consider revisions yet again to the protocol for qualitative VHA. With increasing marine based industries and overlap with threats and stressors and recognized biologically important areas for critical behaviours including breeding, mating, and migrating, there is a need to document he baseline health conditions of SRW in Australia. Therefore, it is recommended that the work continues, and publication of results are encouraged to document existing and historical records of health indices including skin lesions, evidence of human induced injury i.e., ship strike and entanglements, presence of lice.

- **2024**: In February 2024, a revised VHA protocol was written up considered previous comments and edits and submitted to the ICG for a new round of comments. These comments and suggested edits have been received and are currently being incorporated into a revised version.

Next Steps

It is envisioned that prior to the incorporation of newly received comments, a decision will need to be made on the ultimate aim of the VHA protocol; whether it is meant to document individual SRW health from a veterinary perspective or provide an overview of SRW condition in the larger population (e.g., proportion of animals with entanglement scars, gull wounds, predation marks, poor body condition, etc.). Subsequently it is envisioned that the protocol will be adjusted accordingly, with more emphasis on the incorporation of aerial as well as side-on photographs. With this, it is aimed to finalize the protocol and test it using various available datasets across calving grounds for presentation at SC 2026.