# Report of the Scientific Committee

**Bled, Slovenia, 24 April-6 May 2018**

# Annex N
# Report of the Sub-Committee on Whale Watching

**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**

# Annex N

# Report of the Sub-Committee on Whale Watching

**Members**: Suydam (Chair), New (Co-Chair), al-Jabri, Avila, Bell, Castro, Coscarella, Cosentino, Elwen, Gallego, George, Ferriss, Fortuna, Forestell, Frey, Holm, Hubbell, Iñiguez, Jacob, Kato, Kim, Lent, Lundquist, Luna, Marcondes, Minton, Noren, Parsons, Pierce, Rendell, Reyes, Ritter, Rodriguez Fonseca, Rojas-Bracho, Rose, Ryeng, Santos, Sequeira, Simmonds, Slooten, Stachowitsch, Stack, Strasser, Suarez, Trejos, Urbán, Wambiji, Weinrich, Williams, Willson

## 1. INTRODUCTORY ITEMS

### 1.1 Convenor's opening remarks

Suydam welcomed members of the sub-committee. He noted the recent and unexpected passing of our long-time colleague Greg Kaufman and encouraged the sharing of reminiscences after the sub-committee observed a moment of silence in his memory. Greg will be greatly missed.

### 1.2 Election of Chair

Suydam was elected Chair and New was elected co-Chair.

### 1.3 Appointment of rapporteurs

Rose was appointed rapporteur.

### 1.4 Adoption of Agenda

The adopted Agenda is given as Appendix 1.

### 1.5 Review of available documents

The documents available to the sub-committee were identified as: SC/67b/WW01-09, SC/67b/Rep03, Avila *et al*. (2018), CMS (2017a), CMS (2017b), Gleason and Parsons (in review-a), Gleason and Parsons (in review-b), Irvine and Kent (2017), Ritter *et al*. (2018) and Sprogis *et al*. (2017).

## 2. ASSESS THE IMPACTS OF WHALE WATCHING ON CETACEANS

### 2.1 Review progress on Modelling and Assessment of Whale Watching Impact (MAWI)

SC/67b/WW09 and SC/67b/Rep03 reported on intersessional progress on the Modelling and Assessment of Whale Watching Impacts (MAWI) initiative. SC/67b/Rep03 presented the conclusions of a workshop held in Italy, 5-6 April 2018, which was intended to identify the key research questions for understanding the potential impacts of whale watching on cetaceans. A number of issues were highlighted, including: (a) the need to better understand the impact of recreational whale watching vessels as compared to commercial vessels; (b) the importance of looking at the potential impact of whale watching at short-term (e.g. behaviour change), mid-term (e.g. shift in habitat use) and long-term (e.g. population dynamics) time scales; (c) the use of existing and new data to explore the mid- and long-term impacts, as opposed to replicating short-term studies; and (d) the importance of building scientific capacity in the locations where the research would take place. The workshop's main recommendations were (1) the incorporation of both social and natural sciences to better understand whale watching impacts; (2) the development of a Strategic Framework, supported by a Decision Tree, to aid in the prioritisation of policy and research choices; (3) the development of toolkits and resources that can be accessed globally; and (4) the standardisation of data collection. In addition, while the workshop met the majority of its objectives, it was not able to fully discuss the links between data collection and modelling approaches, or identify specific locations best suited to answering the questions identified in the workshop. As result, the workshop participants also recommended that (5) a third workshop be held to address these issues.

The sub-committee expressed thanks for this concise and informative update of the MAWI initiative. It **drew attention** to the reference in SC/67b/Rep03 to Papastavrou *et al*. (2017) and the use of welfare indicators as proxies for population health, noting that this reference was consistent with recent discussions in the Committee and Commission on welfare assessment tools. In response to a question about the ability to distinguish whale watching impacts from the impacts of other environmental threats in cetacean habitats, it was noted that the workshop addressed these concerns extensively. The difficulty in distinguishing whale watching from major environmental perturbations such as El Niño, for example, was the motivation for the workshop recommending that whale watching research projects be designed and funded for longer time frames (5-30 years versus 2-3 years).

It was also noted that the workshop appeared to focus primarily on researchers cooperating and collaborating with local stakeholders and management, but regional cooperative efforts should be equally emphasised, particularly between neighbouring countries. While the workshop did not include this excellent point in its discussions, it was noted that a

manuscript based on the workshop's discussions and outputs was being prepared for publication and this point could be included there.

It was noted that the first four recommendations of the workshop were tasks that can be accomplished by the sub-committee or the MAWI intersessional steering group (Table 3). After a consideration of the pros (e.g., bringing in experts on appropriate modelling approaches and relevant socioeconomic issues) and cons (e.g., competing for limited Commission resources), the sub-committee **endorsed** the workshop's final recommendation, to hold a third MAWI workshop, and **agreed** to request associated funding (Table 5). This workshop, to be held during the next intersessional (see below), would have three goals: (1) to determine in detail which data should be collected to best answer the natural and social science research questions developed in SC/67b/Rep03; (2) to identify the best locations for conducting research projects that address these questions; and (3) to continue to develop modelling approaches for assessing the long-term impacts of whale watching on cetacean populations (using data on short- and mid-term impacts).

It was suggested that the workshop could maximise the probability of securing the needed expertise and minimise costs by being scheduled immediately before or after the upcoming 2nd World Marine Mammal Science Conference (a joint conference of the Society for Marine Mammalogy and the European Cetacean Society) in Barcelona, Spain, in autumn 2019. This would capitalise on the presence of experts already attending this conference and costs could be further reduced by seeking meeting space at a local university.

The sub-committee **agreed** that the MAWI steering group should continue, with slightly revised terms of reference to reflect that some tasks have been completed (e.g., the list of research questions), while others remain to be completed (e.g. identify specific locations to conduct research) (see Table 3).

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*Attention: SC, C-R*
*The Modelling and Assessment of Whale Watching Impacts (MAWI) initiative held a workshop in Italy in April 2018, in conjunction with the 32nd European Cetacean Society conference. The sub-committee **endorsed** four recommendations from this workshop: (1) The incorporation of both social and natural sciences to better understand whale watching impacts; (2) the development of a Strategic Framework, supported by a Decision Tree, to aid in the prioritisation of policy and research choices; (3) the development of toolkits and resources that can be accessed globally; and (4) the standardisation of data collection.*

*The sub-committee also **recommended** that a third MAWI workshop be held intersessionally, ideally just before or after the 2nd World Marine Mammal Science Conference in 2019, in Barcelona. This workshop would have three goals: (1) to determine in detail which data should be collected to best answer the natural and social science research questions developed in SC/67b/Rep03; (2) to identify the best locations for conducting research projects that address these questions; and (3) to continue to develop modelling approaches for assessing the long-term impacts of whale watching on cetacean populations (using data on short- and mid-term impacts).*

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**2.2 Review specific papers addressing impacts**

SC/67b/CMP04 reported preliminary results of a project testing the hypothesis that stress from injuries due to kelp gull attacks negatively affects the physiological homeostasis of southern right whale (*Eubalaena australis*) calves at Península Valdés, Argentina. The technique to measure stress hormones (glucocorticoids – GC) in baleen of southern right whales could be used to evaluate the effect of whale watching on the whales' stress levels. Baleen GC levels in the whales that die in and near the hub of the region's whale watching activity (Puerto Pirámides in Golfo Nuevo) could be compared to those in whales that die in Golfo San José, which has little or no boat traffic.

In discussion, it was noted that it can be difficult to distinguish impacts of whale watching from those of other anthropogenic activities and other threats in the environment (see Item 2.1). Apportioning the cause of varying stress hormone levels in baleen will be difficult, particularly for adult whales. It was clarified that only calves, of which a number strand in this location, are being tested for stress hormone levels in baleen. It can be assumed that these calves have spent most or all of their brief lives in the waters surrounding Península Valdés. This should minimise the potential for confounding stress levels acquired elsewhere from those acquired in this calving ground. The possibility of replicating this study in the gray whale (*Eschrichtius robustus*) breeding lagoons in Mexico, a location where whale watching can also be intensive, was raised, but it is uncertain how replicable this work might be in Mexico, as few calves strand. However, it was noted that studies on hormone levels measured from the blow of gray whales have been undertaken.

It was noted that caution should be exercised in how the baleen hormone data are interpreted, as there could be a number of confounding variables. Data on small-scale habitat use would be especially valuable to understand how the whales used the area before death and current studies based on satellite tracking (SC/67b/CMP17) and on behavioural observations from cliff-top vantage points are ongoing. The tagging data could elucidate mother-calf patterns of movement, which would give additional insight on the amount of time calves spend in areas with high numbers of whale watching vessels. In addition, research on habitat use, noting the movement of the whales between Golfo Nuevo and Golfo San José, is underway in the area, which will also help clarify how much time the whales spend in the presence of whale watching vessels.

In 2004, recognising the difficulties of keeping up to date on the wealth of research on whale watching activities, in particular the impacts of these activities on cetaceans, a paper summarising recent whale watching research was presented to the sub-committee (Parsons *et al.*, 2004) at SC/56. This was deemed to be a useful review of recently published articles, so similar digests were requested in following years. SC/67b/WW07 is the 15th in this series of reviews, detailing a summary of whale watching research published since SC/67a. Those studies related to impacts of whale watching on cetaceans and compliance with whale watching regulations are summarised in Table 1. The sub-committee again welcomed this paper and thanked Parsons for presenting the information in table form, which will make the information more accessible. Minton noted that the digests were extremely useful during development of the IWC Whale Watching Handbook.

SC/67b/WW06 was an updated table of known 'solitary-sociable' cetaceans. This is a work in progress but approximately 28 solitary sociable cetaceans could be identified in the years from 2008 to spring 2018 and are reported from Europe, the USA, Australia and elsewhere. Most such animals are bottlenose dolphins (*Tursiops* spp.), as was the case in earlier reviews, but other species are also recorded exhibiting this behaviour. The authors would welcome information relating to other solitary sociable cetaceans and noted that they are working on further consideration of how these animals are classified, noting for example that not all solitary cetaceans become 'sociable'.

In discussion, solitary sociable cetaceans were reported in two areas where they had never been observed before – the German Baltic (bottlenose, *T. truncatus*) and Namibia (rough-toothed, *Steno bredanensis*); the latter will be added to the database. In the former case, the dolphin attracted considerable human attention and, given the proximity to a major shipping lane, raised substantial management concern. A coalition of groups, including animal NGOs and managers, are developing guidelines in an effort to avoid negative interactions amongst nearby vessels, the dolphin and the public. It was noted that in at least one case in the UK, a whale watching operator aggressively pursuing a solitary sociable dolphin appeared to cause aversive reactions in the animal. When the operator was approached with guidelines and actually applied them, the aversive behaviour ceased, suggesting early management intervention can be beneficial to both animals and operators when solitary sociable animals appear in an area.

It was noted that solitary sociable cetaceans should be seen in the context of human actions that induce changes in dolphin behaviour. The phenomenon is wide-spread and leads to difficult human management situations. A suggested way forward for the sub-committee to address the scientific aspects of this phenomenon was to focus on social science approaches, to examine how and why humans react to encountering these animals, with a goal of offering science-based recommendations for managing these situations. In addition, efforts could be made to develop approaches to identify from which populations they come and to describe the phases of sociability (see, e.g., Wilke *et al*., 2005) in an effort to better understand the phenomenon. It was also noted that, as solitary sociable cetaceans are often found close to the coast and human habitation, they can be accessible not only to the public but to researchers, who can scientifically monitor the impacts of human interactions with these cetaceans (e.g., land-based surveys, social surveys).

The sub-committee drew attention to the fact that these animals may be exposed to a level of disturbance and human interaction in excess of many populations affected by whale watching. The potential for injury to both humans and cetaceans due to these interactions is also increased. It was also noted that these interactions are typically not via commercial whale watching vessels (which often operate under a code of conduct), but via recreational whale watching (see definition in Parsons *et al*., 2006) and members of the general public. Therefore, the application of specific regulations or management infrastructure to address and mitigate impacts of these interactions is more difficult.

Consequently, the sub-committee **agreed** to continue intersessionally to monitor the phenomenon of solitary sociable cetaceans as part of its work in the context of human-induced behavioural changes (Table 3) and **encouraged** the authors of SC/67b/WW06 to continue work on their inventory.

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*Attention: SC, CG-A*

*The term 'solitary sociable dolphin' or cetacean is usually taken to apply to cetaceans that have little or no contact with conspecifics and who regularly closely approach humans, often including touch, social, sexual, and play behaviours (Wilke* et al*., 2005). Given that solitary sociable cetaceans often end up in circumstances where they are harmed and killed and that they may come to present a threat to human swimmers, the sub-committee* ***recommended*** *that, where these animals occur, research be conducted to determine whether the emergence of harmful behaviours either to the animal or to people can be reversed. In addition, the sub-committee* ***advised*** *local authorities and other concerned parties to keep people away from them in order not to encourage behaviour that may prove harmful to the animal or swimmers.*

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Ritter *et al*. (2018) reported on the situation in La Gomera (Canary Islands), where 23 cetacean species have been documented, yet few operators offer whale watching trips to date. In 2017, the first permanent platform for the observation of cetaceans from land was established by the NGO MEER. It is designed and equipped for scientific research but also serves as an aid for whale watching operators when cetacean sightings from land are communicated to research vessels. From April to October 2017, on 40 observation days, 69 cetacean sightings were documented, comprising six species. Various behavioural states and responses to vessels were documented, as well as boat presence. Observations from the platform are available for all current operators, and hence fulfil a variety of tasks, apart from research: (a) helping increase the sighting success of vessels; (b) acting as a mediator between operators competing for the same resource; and (c) helping create a sense of community amongst operators. The platform will also help reduce potential disturbances by

dispersing boats within the area covered by operators. Thus, the new platform represents an essential part of a long-term conservation strategy to collect data on impacts from vessels on cetaceans, mitigate those potential impacts and further develop whale watching as a sustainable use of cetaceans off La Gomera. It is hoped that similar platforms will be established on other Canary Islands and elsewhere.

Sub-committee members noted that the ability of platform observers to 'call over' whale watching operators to a group of whales could allow experimental designs for impact studies, i.e., before/during/after treatments. Such studies were conducted in Colombia, where significant differences in behaviour were found between treatments and are also being conducted in Hawaii. Results from the Hawaiian studies have been reported to the sub-committee previously (e.g., McCordic *et al*., 2017) and additional results will be reported at future sub-committee meetings. Similar studies were also conducted in British Columbia with killer whales (*Orcinus orca*), with treatments ranging from one vessel to 17. There was a critical number of vessels after which the whales ceased to respond, suggesting a scenario of 'learned helplessness' (when an animal perceives it cannot avoid a stimulus and 'gives up' trying to evade or mitigate it). This was helpful in later meta-analyses, to distinguish between 'no effect' and 'learned helplessness'. Ritter intends to model future research on these killer whale studies.

During the Committee Plenary at the beginning of SC/67b, there was a short presentation on the development of a Whale Welfare Assessment Tool and interested parties also met subsequently with the developer of the assessment tool. The objective is to scientifically assess the health and welfare significance of non-hunting threats to wild cetaceans. Simmonds presented to the sub-committee the hypothetical whale watching case study that had been used in the first trial of the assessment tool. The information used in the trial was compiled in a case study document that was provided to a panel of (non-cetacean) welfare experts. The case study document included a definition of the issue under consideration, an introduction to reported effects, including an assessment of the published literature, and then a description of a hypothetical population exposed to whale watching pressure. One aspiration of the project is to develop a tool that will allow science-based comparisons between different scenarios; as such, it may also allow a ranking or prioritisation of the most serious impacts to mitigate. Simmonds solicited comments from the sub-committee on the validity of the hypothetical case and requested suggestions for real-world situations where the assessment tool might be tested in the next phase, where both cetacean and welfare experts will be part of the assessment panel.

In discussion, the sub-committee had no comment on the hypothetical case, but offered two suggestions for populations where this approach might be applied – the southern resident killer whales in Washington, USA and the bottlenose dolphins of Bocas del Toro, Panama, both of which (the former in particular) have a growing body of empirical data to inform such an approach. It was noted that there may be linkages between this project and the MAWI initiative Item 2.1), as this approach addresses impacts on health, and these linkages could be explored at the proposed third workshop. It was also suggested that this approach might inform the threats mapping project reported in Avila *et al*. (2018) (Item 2.3), adding a dimension of intensity of risk rather than just presence/absence. Finally, it was noted that a focus on welfare can resonate more than population-level impacts with some policy-makers.

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*Attention: SC*
*The sub-committee **recommended** that the Whale Welfare Assessment Tool (currently being developed at the Royal Veterinary College, University of London, in the context of the IWC Whale Killing Methods and Welfare Issues Action Plan), for which a hypothetical whale watching case study was trialled (Annex X, item 2.2), be applied to real-world whale watching situations. The southern resident killer whales in Washington, USA and the bottlenose dolphins in Bocas del Toro, Panama were proposed. These two populations are subject to intense whale watching pressure and may be suffering welfare and health impacts related to this pressure. Both locations have data relevant to the assessment tool and therefore seem ideal as pilot projects for its application.*

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**2.3 Consider documented emerging areas of concern (e.g. habituation, new areas/species, new technologies, in-water interactions) and how to assess them**

Simmonds reported on the work of the intersessional correspondence group on habituation (Table 3, now 'human-induced behavioural changes of concern'). The group had considered how to define habituation and sensitisation and also the range of problems that could arise from human-induced changes to cetacean behaviour. The group noted that behavioural and nutritional state may affect how individual animals react. For example, animals that are resting may show a greater response to disturbance than animals that are highly motivated to remain in the area for feeding purposes. This latter lack of response may be elevated in animals that may be nutritionally stressed. Therefore, lack of a visible change of behaviour does not necessarily mean that disturbance has not occurred. For example, an animal may not have an energy surplus to enact aversive behaviour. Moreover, certain life stages may be more or less sensitive to disturbance. For example, females with calves may display heightened sensitivity to disturbance compared to juvenile males, and may have less ability to remove themselves from the vicinity of the disturbance. There are also individual differences in responses.

The group noted that human-induced behavioural changes encompassed several areas of concern, including:

(1) Directed feeding of cetacean by people;
(2) Inadvertent provisioning via cetaceans removing caught fish or bait from a fishing line (depredation);

(3) Opportunistic feeding near commercial fisheries, including gear that attracts fish (FADS) and discards of bycatch or bait;
(4) Discards of catch during recreational fishing; and
(5) The generation of 'solitary sociable' cetaceans.

In discussion, the sub-committee **agreed** that the intersessional correspondence group should continue, with a broadened mandate to consider human-induced behavioural changes that cause concern. Its terms of reference were updated as follows: (1) continue to monitor the relevant literature; (2) seek to produce a new review of information for the Committee across the whole range of interactions; (3) review the appropriate terminology; and (4) continue to consider the relevance of this topic to the work of the sub-committee, including how this topic might best be studied (see Table 3). The sub-committee **agreed** that, while dolphins do not always exhibit behavioural change when exposed to various human activities, there may still be an impact. Regardless, as habituation occurs when an initial behavioural change is extinguished with time, the change in the intersessional group's name and focus was deemed appropriate. Rather than add a standing agenda item at this time, this topic can be covered under item 2.3 (emerging issues of concern) for the near future.

The question of distinguishing between 'learned helplessness' and habituation was raised; it was **agreed** that the group would consider experimental or observational ways of distinguishing these two phenomena (see the group's new Terms of Reference in Table 3). In general, the sub-committee **encouraged** the group to focus its intersessional discussions on how researchers can study these phenomena in order to improve our understanding of them.

SC/67b/WW03 presented information on an in-depth report (CMS, 2017a) prepared by the Convention on Migratory Species (CMS) Aquatic Mammals Working Group (AMWG) on the impacts of recreational in-water interaction with aquatic mammals (aka 'swim-with' activities). The AMWG also made recommendations to the 12th Meeting of the Conference of the Parties (CoP) on how CMS could address this growing concern. The AMWG report represented a global review of in-water interactions with aquatic mammals and contains a detailed overview of known locations and species subject to 'swim-with' operations. Based on the findings in the report, the CMS CoP adopted a resolution (12.16) and decisions (12.50-52), available at *http://www.cms.int/en/cop12docs*. Resolution 12.16 urges countries to adopt appropriate measures, such as national guidelines, codes of conduct, and if necessary, national legislation or binding regulations, to manage all in-water interactions. It encourages Parties to ensure that these activities do not have negative effects on the long-term survival of populations and habitats and have minimal impact on the behaviour of animals. The Resolution further encourages Parties to facilitate research allowing an assessment of the long-term effects and biological significance of disturbances, including the development and use of suitable modelling techniques. The Resolution encourages Parties to periodically review new information so that impacts can be appropriately mitigated. Decision 12.50 requests Parties to provide the CMS Secretariat with national measures they have adopted regarding in-water interactions with aquatic mammals. The CMS Secretariat will issue a call for such submissions to CMS Parties during its intersessional period. Decision 12.51 requests the Scientific Council to develop guidelines on in-water interactions with CMS-listed species. The preparation of the guidelines and other related documents is to be done in consultation with the IWC. The resulting guidelines and recommended code of conduct for operators concerning in-water interactions will be presented to the 13th Meeting of the CoP to CMS in 2020 for formal consideration.

The sub-committee thanked the CMS AMWG for its hard work on this topic and for submitting this information. The topic of swimming with cetaceans was also addressed in Item 7.1 and additional recommendations were made during discussion of that agenda item.

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*Attention: SC, CC, S*

*Given the substantial effort the Convention on Migratory Species (CMS) Secretariat has made in preparing several documents for the Committee to consider this year, the sub-committee* ***recommended*** *a continuation and an expansion of this exemplary collaboration between the IWC and CMS Secretariats and their various committees. The sub-committee* ***endorsed*** *the intention of CMS to work with the IWC Scientific Committee on guidelines for in-water interactions with aquatic mammals and notes the sub-committee can provide the scientific underpinning for these guidelines. It* ***recommended*** *that the sub-committee's intersessional correspondence group on swim-with-whales work intersessionally with the CMS Aquatic Mammals Working Group and that the former present the draft guidelines to the sub-committee for comment at a future Committee meeting, whenever the draft guidelines are ready for review. These guidelines would be a joint product of the IWC and CMS and hosted by both websites as a global resource.*

*See also Item 7.1 for additional recommendations related to swimming with cetaceans.*

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Sprogis *et al*. (2017) and Irvine and Kent (2017) were reports commissioned and presented to Western Australia management authorities as part of an effort to assess the impacts of trial 'swim-with-whale' commercial operations focused on humpback whales in Ningaloo Marine Park. Sprogis *et al*. (2017) evaluated short-term behavioural responses of the whales to swimmers and also compliance with the guidelines established for the trials. Regarding compliance, the report authors made reference to the IWC's guiding principles, which discourage 'in-path' approaches to whale groups ('in-path' approaches, to place swimmers in the water in front of a whale group, comprised 89.8% of vessel approaches during the Ningaloo trials). Irvine and Kent (2017) reported on calf distribution in the area of the trials, concluding that a

majority of vessels would encounter mother-calf groups (which the guidelines discouraged swimming with) within 1 km of the reef edge of Ningaloo Marine Park, while very few would do so beyond 1 km of the reef edge.

In discussion, it was noted that this situation was raised by Kaufman at SC/67a. The authors of these two reports were unable to attend SC/67b; therefore, the reports were presented simply to serve as examples of a model precautionary approach to developing swim-with commercial operations. Stack noted that the permitted experimental study, described by Kaufman last year, would go forward as planned in Hervey Bay with her as lead researcher. She will be reporting its results as soon as possible, hopefully at SC/68a.

As part of an effort to identify areas of emerging risk for marine mammals, Avila *et al*. (2018) geo-referenced and encoded available information from more than 1,780 papers on marine mammal threats in a database. A series of risk maps were developed from this database, linking information about species-specific vulnerabilities to large-scale species distributions, thus providing an assessment of how threat levels for marine mammals vary in space. Risk areas were produced based on binary (presence/absence) range maps using the core habitat. Direct human activities, including tourism activities (affecting 64 species), were the major source of threats. Tourism activities were defined as recreational activities, including whale watching from vessels, but also sport fishing, diving, recreational vessels and aircraft and live capture for public display. Higher risk areas for tourism activities, where more than 75% of the species presented were potentially exposed, were in the coastal area of the Mediterranean Sea, in the north of Russia, north of Canada, around the Antarctica Peninsula and also several small areas around South America, southern Africa and Australia. However, risk areas differed by taxa. For odontocetes, southeast Asia, southeast Africa and northeast Australia had a greater number of higher risk areas, while for mysticetes, these were mainly in northeast Australia.

The sub-committee praised this work's impressive effort, which will assist educators, naturalists and students, as well as managers and policy-makers, in understanding potential global threats to marine mammals and cumulative impacts. Avila noted that these maps do not assess actual impacts, only the presence or absence of threats, and that her work had also identified geographical areas where there are gaps in the scientific literature regarding impacts on cetaceans. It is therefore a starting point for assessing impacts, not a study of impacts per se. The sub-committee **drew attention to** Figure 1, noting that tourism that may affect marine mammals is almost everywhere on earth and data on impacts are lacking from many of these locations.

## 3. CONSIDER INFORMATION FROM PLATFORMS OF OPPORTUNITY OF POTENTIAL VALUE TO THE SCIENTIFIC COMMITTEE

### 3.1 Review new information

SC/67b/WW04 reported preliminary findings resulting from a collaboration between photographers on board whale watching vessels and researchers from Instituto de Conservación de Ballenas and Ocean Alliance in Península Valdés, Argentina. A photographic catalogue of 3,200 individually identified southern right whales has been created through annual aerial surveys in this calving ground since 1971. In order to increase the sample size and to improve population estimates, photographs taken by professional photographers on whale watching vessels are being incorporated into the catalogue through a cooperative agreement. The photographers contributed 460,000 images taken almost daily during tours between June and December 2003-2016. A first set of 1,180 photographs (0.25% of the photos received) taken between 2003 and 2007 were compared to the aerial survey catalogue using 'Big Fish', a software programme developed by the Australian government. Researchers found 151 identifiable whales, of which 105 (86 adults and 19 calves) were incorporated into the database as new individuals and 46 were previously known whales. This emphasises the relevance of images from whale watching operations. This initial analysis has provided new information on (1) age of known individuals; (2) mother-calf relationships; (3) calving intervals of known females; and (4) individuals over broader time periods. Further analyses will inform understanding of residency times of different age and sex classes, social bonds and health condition based on skin lesions and scars. The resulting expanded database will help to improve conservation strategies and boost 'citizen science' and community work in Península Valdés, and highlights the value of whale watching vessels as platforms of opportunity for cetacean research.

The sub-committee welcomed this development, noting it is an excellent example of the use of platforms of opportunity to advance the science on a species, and expressed appreciation for the wealth of data these images provide researchers. However, it was noted that, after suffering through a deficiency of data, the researchers now must sort through a surfeit of data, which will take considerable time and money to review and process. Minton noted that the topic of citizen science is included in the Handbook.

The sub-committee discussed several options for increasing the efficiency with which these images are filtered and processed, including: (1) training multiple students (graduate and undergraduate) to filter the images, at least to the degree of identifying 'suitable' images for matching to the catalogue (actual matching may require more expertise); (2) developing computer algorithms that can filter the images, at least to the degree of 'shows appropriate head profile with callosities: yes/no'; (3) using members of the public, as citizen scientists, through online platforms to filter the images, similar to the algorithm – this is often done for terrestrial and astronomical studies, essentially 'crowd-sourcing' image filtering and applying methodologies to take account of the lack of expertise inherent in this option (a subset of this option is to train people to filter the images); and (4) adapting more sophisticated software, such as 'Fluke Book' (see, e.g., SC/67b/PH03), to conduct actual matching of images to the right whale catalogue.

There was discussion about the pros and cons of all these options. The project to date has mostly employed option 1, but may use some or all of the other options as the project proceeds. A few other related points were made, including training photographers to take 'suitable' photographs in the first instance, as a means of pre-filtering images; developing novel algorithms that are species specific; and keeping sight of the need to offer constructive feedback to the public on the results of their efforts when employing citizen scientists. Sironi expressed gratitude for the many constructive suggestions. The sub-committee **encouraged** the researchers to network with other researchers around the world, particularly humpback whale researchers dealing with similarly large numbers of photographs and multiple catalogues, to improve the processing time for this large number of images.

SC/67b/WW07 summarised two papers on platforms of opportunity. de Boer *et al*. (2018) provided an example where effort-corrected data on marine megafauna was collected by a wildlife tour operator (over a 5-year period). Those data could be used to analyse cetacean habitat use off the coast of Cornwall, UK (especially common bottlenose dolphins, *Tursiops truncatus*, short-beaked common dolphins, *Delphinus delphis*, harbour porpoises, *Phocoena phocoena* and Risso's dolphins, *Grampus griseus*). The data showed that coastal Cornish waters appeared to be an important nursing area for harbour porpoises and Risso's dolphins, suggesting these locations might benefit from marine protected area status. The authors also highlighted that the protocols they used allowed the efficient collection of data and might be applied by others using platforms of opportunity.

In brief discussion, it was noted that this was another example where data gathered from whale watching vessels was able to inform cetacean management and conservation efforts. It was also noted that the paper cross-referenced earlier recommendations from the sub-committee, which had encouraged the development of such protocols (see Item 8).

Brown *et al*. (2018) provided information on humpback whale (*Megaptera novaeangliae*) sightings from whale watching vessels within the New York-New Jersey Harbour Estuary, an extremely busy waterway. There has been a rapid increase in numbers of whale sightings in the harbour area in recent years (one in 2012, six in 2014, eight in 2015 and 31 in 2016), with sightings generally occurring in the summer and even more so in the autumn. Historical whaling records do not report humpback whales from this region, so it is possible this may be a new use of this habitat. Animals were generally believed to be juveniles based upon size. During half of the sightings, lunge feeding on Atlantic menhaden (*Brevoortia tyrannus*) was observed, in the cases where prey species could be identified (19.6%). The authors expressed concern that observations of whales overlap with major shipping channels and this presents a potential risk to both whales and vessels. Whale watching-gathered data is being used to assess the potential ship strike threat in this region.

The sub-committee again thanked Parsons for preparing the annual whale watching research digest and presenting this information. It reiterated its suggestion that the digest be used to identify potential invited participants for future meetings (IWC, 2018b).

## 4. WHALE WATCHING IN EAST AFRICA AND WIDER INDIAN OCEAN

CMS (2017b) presents the proposal for Concerted Action for Arabian Sea humpback whales. This proposal was passed with strong support from Arabian Sea humpback whale range states. The proposal notes that humpback whales are the target of one emerging whale watching operation in the south of Oman, and highlights the likelihood that the population could become the target of future whale watching activities if more becomes known about its distribution and potential hot spots are identified. There is an emphasis on the need for regulators and scientists to work with the industry to ensure that whale watching does not add to the many other pressures on this small, isolated, non-migratory and endangered population. Details of the whale watching operation in Oman were presented to the sub-committee last year in Baldwin *et al*. (2017).

In discussion, it was suggested that, rather than develop a novel smartphone app (see CMS, 2017b, p.15), an existing app, such as Whale and Dolphin Tracker (Currie *et al*., 2016, 2017), could be translated for use by operators and the public in Oman; this suggestion was welcomed by the Omani researchers. The researchers noted that the whale watching operator in the south of Oman is still adhering to the best practice guidelines in his interactions with humpback whales, a credit to the training that was provided by sub-committee members Kaufman and Carlson with support from the IWC. At the same time, however, there are still concerns about the dolphin watching industry in Oman, with some operators sliding back into poor habits despite training workshops conducted in past years. This appears primarily due to the high turnover of vessel operators/captains. Another training workshop in Oman would be welcome, and Pacific Whale Foundation offered to assist in organising and conducting one if requested.

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*Attention: S, SC, CC, CG-R Oman*
*The sub-committee **recommended** that building capacity to conduct needed research and to ensure consistent training of whale watching operators be a high priority for Omani authorities and other parties working on the recovery of the endangered Arabian Sea humpback whale population. Boat operators for cetacean watching operations appear to turn over at a high rate in this area and therefore training workshops should be regularly offered and conducted.*

*The sub-committee welcomed the offer from the Pacific Whale Foundation to help organise and conduct another training workshop, and **recommended** a more comprehensive plan be implemented by the Omani authorities, working with the IWC and other interested parties, to build local capacity for such training.*

*The sub-committee **agreed** to retain a review of whale watching in east Africa and the wider Indian Ocean region in its work plan (see Annex X, Table 4) and will conduct an intersessional review of whale watching in these areas, to be presented at SC/68a, regardless of the venue for the meeting.*

## 5. REVIEW WHALE WATCHING STRATEGIC PLAN (2018-2024) AND JOINT WORK WITH THE CONSERVATION COMMITTEE

### 5.1 Review and provide recommendations on the draft Strategic Plan

SC/67b/WW02, a draft of the next iteration of the IWC Strategic Plan (2018-2024) on Whale Watching, was provided to the sub-committee for its review and comment. This was accomplished primarily during a SC/67b pre-meeting (held 21 April 2018), attended by several members of the sub-committee, one of whom is also a member of the Conservation Committee's Standing Working Group on Whale Watching (SWG). The sub-committee's **agreed** comments that are attached as Appendix 2.

*Attention: CC*

*The sub-committee **draws the attention** of the Conservation Committee's Standing Working Group on Whale Watching (SWG) to Annex N, Appendix 2. This appendix is the sub-committee's full set of comments on the draft Strategic Plan (2018-2024) on Whale Watching. The most important comments and recommendations from the appendix are the following:*

*The addition of an Action 1.5: Develop a communications strategy to actively promote IWC whale watching resources (e.g., the Handbook, reports and training opportunities), with approaches tailored to target key audiences. These audiences include the public and whale watching managers, researchers, operators, and on-board naturalists. Communication actions could include preparing publicly accessible summaries of IWC whale watching reports, improving the whale watching pages on the IWC website (which will happen soon with the new Whale Watching Handbook), and promoting resources on social media, at key meetings and via press releases to industry bodies and trade publications. The implementation of this action could be coordinated intersessionally via the Secretariat. A joint intersessional working group, which includes key Secretariat staff, could develop a communications strategy for consideration at IWC/67 (the Brazil Plenary meeting) and/or the joint session of the CC/SC at SC/68a.*

*(1) The replacement of the actions of Objective 2 in the draft Strategic Plan with the following:*

- *(a) **Action 2.1** – Continue the Modelling and Assessment of Whale Watching Impacts (MAWI) initiative, to develop tools and methodologies to assist researchers and managers in their efforts to assess potential impacts of whale watching on cetaceans and to mitigate them. This initiative is ongoing and could focus on:*
  - *(i) Investigating modelling methods to link short- (e.g., behavioural reactions) and medium-term (e.g., changes in population distribution) responses with potential impacts from whale watching to long-term (i.e., >10 to 20 years) consequences (e.g., vital rates).*
  - *(ii) Establishing standard data collection methodologies, including from platforms of opportunity.*
  - *(iii) Identifying key locations for whale watching research projects and programmes, taking into consideration logistics, capacity and management urgency;*
- *(b) **Action 2.2** – Develop a long-term integrated research programme to better understand the potential impacts of whale watching on the demographic parameters of cetacean populations. Seek to:*
  - *(i) Investigate whether there is a causal relationship between whale watching exposure and the survival and vital rates of exposed cetacean individuals and populations;*
  - *(ii) Understand the mechanisms involved in causal effects, if they exist, in order to define a framework for improved management;*
- *(c) **Action 2.3** – Develop processes and mechanisms for whale watching activities to collect and provide scientifically robust and useful data to researchers and research programmes; and*
- *(d) **Action 2.4** – Develop an approach (e.g., hold an intersessional workshop; establish a joint intersessional working group) to integrate social and ecological scientific research within the IWC to inform whale watching management and promote potential benefits. This is a coordinated action between the SWG and the sub-committee.*

*In particular, Action 2.2 will require a dedicated person to guide and coordinate the development and implementation of a research programme or plan. The best option would be for the SWG to contract with someone, full- or part-time, to carry out this task. The sub-committee is aware there are budgetary concerns. Therefore, it **recommended** that the search for funding for this and all other actions in the Strategic Plan be focused, broad-ranging, and innovative. An alternative if budgetary issues are prohibitive is to have the research programme developed intersessionally by an intersessional correspondence group or the sub-committee convenor and co-convenor.*

*Lastly, the sub-committee **reiterated** its previous recommendation to improve the coordination between the SWG and the sub-committee in the development and implementation of a Strategic Plan on Whale Watching. This year's 21 April pre-meeting to review the draft Strategic Plan was intended to improve coordination. It did provide the sub-committee with an opportunity to contribute to the draft Strategic Plan but it did not completely achieve the goal of coordination, as a limited number of SWG members were able to attend the pre-meeting.*

Regarding the reiteration of a previous recommendation to improve coordination between the Conservation Committee's SWG and the sub-committee, it was suggested that the Secretariat could facilitate an intersessional meeting, perhaps conducted via Skype or other video conferencing, with members of the intersessional correspondence group on communications with the Conservation Committee (which the sub-committee **agreed** should continue; see Table 3) and key members of the SWG. One suggestion was to plan a pre- or post-meeting associated with IWC/67 in Brazil this autumn. The sub-committee's emphasis on improving communications between the SWG and the sub-committee is directly relevant to developing and implementing the Strategic Plan (2018-2024).

**5.2 Develop procedures to provide scientific advice as requested in the plan (including the online handbook) and make the SC more effective at providing information to the Commission**

See Item 5.1. The sub-committee redrafted Actions 2.1 through 2.4 of Objective 2 in the draft Strategic Plan, which essentially outline how the sub-committee will collect the information to inform scientific advice to the Conservation Committee on whale watching. Procedures for providing this advice will be discussed and determined cooperatively with the Conservation Committee, during the joint meeting immediately after SC/67b and intersessionally through the intersessional correspondence group (Table 3)

## 6. WHALE WATCHING HANDBOOK

**6.1 Review and provide comments on the IWC's Whale Watching Handbook**

SC/67b/WW08 provided an update on progress with the development of the Whale Watching Handbook (Handbook) and an overview of the content that has been drafted. In 2017 funding was made available for the development of the online Handbook through contributions to the Voluntary Conservation Fund from the UK and the USA. Developing a Handbook was been a longstanding recommendation of the sub-committee, as well as the Conservation Committee's Standing Working Group on Whale Watching (SWG). The Convention on Migratory Species agreed to fund the translation of the Handbook into French and Spanish.

After a consultation process, web designers built the architecture of the site and, over several months, content was drafted and compiled with contributions and support from SWG and sub-committee members, as well as subject matter experts. An overview of all the content developed for the site in various tables was presented. The five main categories of content include:

(1) Original content drafted for the Responsible Management, Preparing for a Trip, and Industry Support sections of the Handbook: drafted after consulting a wide body of whale-watching literature, including published articles and workshop reports.
(2) 20 Case Studies highlighting aspects of management of whale watching around the world: drafted in consultation with at least one stakeholder involved in the whale watching industry in each relevant location.
(3) 20 Species Accounts for the species most frequently targeted by whale watching: produced in two formats; a longer illustrated online format, and an A4 factsheet format available for download as a resource to be used by whale watchers or guides during tours.
(4) Country Profiles: either compiled or reviewed by the relevant country's Commissioner or delegation member. (To date, 25 have been drafted and 12 have been reviewed and thus uploaded to the provisional Handbook site.)
(5) Downloadable content: including a searchable table of over 300 peer- reviewed/scientific articles on whale watching, tables with links to guidelines and regulations from almost all of the featured countries on the website, tables with links to region-specific species guides, and tables with (internal and external) links to content of specific interest to managers (e.g., workshop reports, global reports on whale watching) or industry (e.g. certification schemes, sustainable eco-tourism resources).

During presentation of SC/67b/WW08, the structure and user-interface of the site was demonstrated with a brief online presentation, as it is still housed on a provisional site and is not yet publically accessible.

Both the content and web infrastructure as specified under the Terms of Reference and contracts for the Handbook are nearing completion. Content needs to be completed and finalised by the beginning of June in order to allow translation of the original English language content into French and Spanish to commence.

While Scientific Committee input is invited on all aspects of the Handbook, sections of particular relevance to, and on which the Scientific Committee is specifically invited to provide input, include the table of studies documenting impacts of whale watching and the list of scientific literature included in the site's searchable literature database. It is hoped that the sub-committee will be able to review these on an annual basis and suggest updates as appropriate, as well as pass on information about updated guidelines, case studies or species information as and when appropriate.

The sub-committee expressed thanks to Minton for this excellent presentation and offered hearty congratulations for the near-completion and tremendous quality of the Handbook. The product is comprehensive, scientifically substantive, user-friendly and well-designed. In discussion, it was clarified that the Handbook is a living resource and will be updated and revised as needed. The Handbook will be presented to the Commission at IWC/67 for its consideration, along with a plan to update it with additional case studies, country profiles and other content.

Several suggestions for fine-tuning and improving the already-admirable Handbook were offered, starting with a request to add a case study on watching, provisioning and swimming with river dolphins in the Amazon (see item 9). Ecuador could be another country profile. It was noted that input from small-capacity operators in developing countries is as necessary as input from larger-capacity operators from developed areas – this resource needs to be useful and applicable to all. It was suggested that a periodic review process, perhaps every three years, where a set of criteria would be applied to content to determine what needs updating and what could even be removed, be developed. An annual review, given the breadth of content, could prove an overwhelming task. A clearly outlined periodic review process could also facilitate requests for funding the ongoing maintenance of the Handbook. A final suggestion was to also translate the Handbook into Chinese, Japanese and Arabic.

*Attention: CG-R*
*To ensure the IWC Whale Watching Handbook comes to the attention of the international whale watching community, including managers, operators and the public, the sub-committee* ***recommended*** *that all Contracting Governments provide a link to the Handbook on the relevant agency pages of their own government websites once the Handbook goes 'live'.*

Various fund-raising options to maintain the Handbook (e.g. maintaining Minton's contract at a level adequate for periodic reviews) were also discussed, including investigating possible funding sources in new regions developing whale watching networks, such as the Indian Ocean. Also, NGOs and others could sponsor the Handbook, but it would be essential to apply ethical criteria when considering potential sponsors using this fund-raising method. Contacting entities that use this method, such as National Public Radio in the USA, who have clearly addressed conflict issues, could be a useful first step in pursuing this option. The intersessional correspondence group on strengthening IWC finance and the Secretariat is investigating this and other types of fund-raising methods, which must be considered carefully from a governance viewpoint, and this includes the consideration of ethical guidelines.

*Attention: SC, S, CC, C-R*
*The sub-committee* ***recommended*** *that the Conservation Committee and the Commission develop a plan for identifying and securing long-term funding for the further development (e.g., translations into additional languages) and the ongoing maintenance (e.g., periodic reviews of content) of the IWC Whale Watching Handbook. The Handbook must be updated regularly to remain a vibrant, living document.*

## 7. REVIEW REPORTS FROM INTERSESSIONAL WORKING GROUPS

### 7.1 Swim-with-whale operations

SC/67b/WW01 reported on the intersessional activities of the swim-with-whales intersessional correspondence group. The group was tasked to pursue: (1) efforts to increase the response to the IWC questionnaire survey reported on at SC/66b (Gero *et al*., 2016); (2) further information on a global survey of whale watching operations to be conducted by the World Cetacean Alliance (WCA); and (3) progress on field research on the impacts of swim-with-whale activities on large whales, specifically at sites in Hervey Bay, Australia (IWC, 2018b). With regard to the first point, at SC/67a the sub-committee recommended working with the Conservation Committee and the IWC Secretariat to contact ministries of tourism or environment of each IWC Contracting Government directly. It also recommended that the intersessional group collaborate with CMS, IORA and ACCOBAMS to improve distribution of the questionnaire. Initial outreach was made to CMS, which was undertaking its own review of in-water interactions with aquatic mammals. The subsequent email exchange resulted in the preparation and submission of SC/67b/WW03 and CMS (2017a). The IWC Secretariat suggested waiting to contact other secretariats until the CMS outputs were discussed at this meeting. The CMS Secretariat will soon be requesting Parties to submit national in-water interaction guidelines and/or regulations. CMS has agreed to distribute the IWC questionnaire with this request; the intersessional group will follow up on this and report any progress at SC/68a. Regarding the second point, the WCA was contacted by email in March 2018; its global survey is complete, but data are not yet analysed. The intersessional group will report on the results at SC/68a. Regarding the third point, see Item 2.3 and the update on research in Hervey Bay from Stack.

The sub-committee **agreed** that the intersessional correspondence group on swim-with-whale operations should continue (Table 3). It was noted that in some locations, the guidelines the sub-committee will be developing in collaboration with the CMS Aquatic Mammal Working Group (Item 2.3), on in-water interactions with marine mammals, are needed as a matter of urgency. For example, in Japan, operators are beginning to target humpback whales with swim-with excursions. These operators are inexperienced at traditional whale watching; trying to safely manage customers swimming with these whales may be beyond their abilities. It was noted that managing these situations may be more a matter of decreasing human motivation to swim with these mammals with appropriate marketing, messaging or framing, rather than prohibiting the activity outright, which may not be possible politically. The MAWI initiative (Item 2.1) is addressing swim-with-whale operations as well, and social science research may be a way forward for the sub-committee to address these issues.

*Attention: CG-R*
*The sub-committee* ***recommended*** *that, in jurisdictions where swim-with-cetacean activities have not been occurring or are just starting, this practice be prohibited until there is scientific evidence that supports allowing it. The risks to both humans and cetaceans are substantial if operators are inexperienced and not following any relevant guidelines. Guiding*

*principles for whale watching, including in-water interactions, are being or have been developed by various regional bodies, such as the Convention on Migratory Species and UNEP in the Wider Caribbean (see Annex X, item 2.3 and UNEP-CEP, 2012), which advise that swimming with cetaceans be discouraged where it is not already established.*

**7.2 Communication with the Indian Ocean Rim Association (IORA)**

SC/67b/WW05 offered an update on progress to establish the Indian Ocean Rim Association Sustainable Whale and Dolphin Watching Tourism Network. A concept note for the Network was circulated to IORA member states in February 2018, inviting nominations to the Network from these countries. Australia will convene the Network in its first year of operation and will produce a biannual newsletter. Members of the sub-committee were invited to contribute content for the Network's newsletter.

In discussion, the sub-committee **agreed** that the intersessional correspondence group on communication with IORA should continue (Table 3). It was suggested that the intersessional group be tasked with providing input and content for the newsletter. A first suggestion was to write about the IWC whale watching guidelines and principles and the Handbook, when it is publicly released.

*Attention: S, SC, CC, CG-A*

*The sub-committee **encouraged** greater engagement between the IWC and IORA on whale watching, beyond the exchanges amongst the intersessional correspondence group (Annex X, Table 3). In the first year of this two-year work plan period, email correspondence should be continued and expanded. In the second year, the sub-committee **recommended** holding an intersessional meeting between Secretariats of the IWC and IORA and appropriate experts, to develop a communications and cooperation strategy.*

## 8. REVIEW PROGRESS ON SCIENTIFIC RECOMMENDATIONS

**8.1 Global influence of recommendations**

Gleason and Parsons (in review a, b) were the result of previous recommendations to highlight threatened cetacean species that might be at particular risk from exposure to whale watching, and to document cases of whale watching management where sub-committee advice had been influential in management actions around the world. Information in these documents was sought from the MARMAM listserve and sub-committee members.

In discussion, Parsons requested updated information, as both papers are still in review at the *Journal of Cetacean Research and Management* and could be revised, and suggested that sub-committee members seek updates from their respective country delegations and national agencies as soon as possible for inclusion. One member noted that he summarised the sub-committee's recommendations each year and shared them with whale watching stakeholders in his country. It was suggested that all sub-committee members, especially national delegates, might do the same.

**8.2 Tracking progress on previous recommendations**

A compilation of sub-committee recommendations and agreements from the past two years (SC/67a and SC/66b) and their outcomes are presented in Table 2. In viewing these recommendations and agreements in this overarching format, it was more easily noted that for some recommendations, progress would be difficult to determine. Per the directive from the Chair and Commission, the sub-committee will make every effort in future to identify who will carry a recommendation forward and how progress will be measured.

It was also noted that the sub-committee did not complete updating its Terms of Reference (ToR, see agreement in Table 2). Historic and draft updated ToR were discussed at SC/67a (IWC, 2018b, p. 340 and p. 342), but this draft was not reviewed and accepted by the Conservation Committee or Commission. The sub-committee **agreed** that the Convenor and Co-Convenor of the sub-committee would complete this process at the joint session of the Conservation Committee and the sub-committee immediately after SC/67b and intersessionally. The draft ToR should be presented by the Chair and Co-Chair at IWC/67, so they can be finalised for SC/68a.

**8.3 Update on dolphin watching in Bocas del Toro, Panama**

Trejos reported that nine dolphins were found dead in 2016 and 2017 in Dolphin Bay, Bocas del Toro, Panama. Five of these dolphins were recovered and necropsied; cause of death was propeller injuries, most likely from dolphin watching vessels. One of these dolphins was a photo-identified male who was first added to the Dolphin Bay catalogue in 2004. Given the small size of this population (possibly fewer than 100 animals), this mortality is clearly unsustainable. She also described a regulations update, released in October 2017 with the support of the Ministry of Environment, which is intended to lead to stronger management of dolphin watching in Bocas del Toro.

In discussion, it was noted that the neighbouring community of Manzanillo, Costa Rica, also has dolphin watching, but operators there appear to adhere more readily to national regulations. It was suggested that an effort be made to connect these two communities and start an operator-to-operator dialogue. Parsons reported that the research team led by Laura May-Collado has recently published a paper demonstrating that the dolphins in Dolphin Bay are genetically unique (and do not cross the border into Costa Rica) (Barragán-Barrera *et al*., 2017). As reported last year, the team is measuring stress hormones through biopsy and results may be available for SC/68a. The team has also deployed three hydrophones

to measure Dolphin Bay's soundscape in an effort to study noise impacts on the dolphins. The intention is to present the results of all ongoing studies in Dolphin Bay at a future Scientific Committee meeting. The research team would welcome the application of the welfare assessment tool (Item 2.3), but funding is an (ongoing) issue.

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*Attention: SC, C, CG Panama*
*The sub-committee **reiterated** its grave concern regarding the intense and uncontrolled dolphin watching in Bocas del Toro, Panama. This concern has been expressed and reiterated for several years due to continuing mortalities, including from vessel strikes, in this small population (probably fewer than 100 animals). The sub-committee welcomes the ongoing research to monitor this dolphin population and the impacts it is facing from dolphin watching.*

*Nine deaths in 2016 and 2017 are known to have occurred, five of them confirmed boat strikes; these losses are unsustainable. The sub-committee **recommended** action from the Government of Panama as a matter of urgency. The sub-committee **reiterates** its welcome of Panama's increased responsiveness to protect the local dolphin population by minimising negative impacts from dolphin watching (IWC, 2018a) and welcomes the news that a new action plan has been proposed, with support by the Ministry of Environment, to regulate dolphin watching in Bocas del Toro. However, given the unsustainable mortalities in this population, the sub-committee **recommends** immediate and committed implementation of this action plan.*

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## 9. WORK PLAN AND BUDGET REQUESTS FOR 2019-2020

### 9.1. Work plan for 2019-2020

It was noted that work on updating the IWC whale watching guiding principles (see, e.g. Carlson *et al*., 2014) has not progressed since SC/65b. The whale watching guidelines and principles (i.e. guiding principles) currently posted to the IWC website are from 1996 and urgently need updating (e.g. they do not speak to swim-with-cetacean operations or emerging technologies such as drones). Updated guiding principles are also needed for the Handbook. It was suggested that any updated guiding principles should explicitly refer to land-based whale watching with low environmental impact, as an option due to its near complete lack of impact on the whales (the current draft guiding principles do not refer at all to land-based whale watching). The sub-committee **agreed** to add "update of the whale watching guiding principles" back into the work plan. The draft guiding principles can be submitted again for discussion at SC/68a, approved by the full Committee and then forwarded to the Conservation Committee for inclusion in the Handbook and posting to the website (to replace the existing guidelines and principles).

The sub-committee also discussed maintaining emerging concerns on the work plan, such as swim-with-whale operations, new technologies such as drones, interacting with river dolphins (see below) and human-induced behavioural changes (which includes habituation and sensitisation). The standing work plan item on impacts should also endeavour to include discussion on all types of vessels employed for whale watching, including non-motorised vessels such as kayaks.

The IWC has long had an interest in, and concern about, the impacts on wild cetaceans of provisioning (feeding by members of the public) (e.g., IWC, 1999, 2001, 2002, 2003). The Committee concluded that feeding wild cetaceans is 'ecologically intrusive' (Parsons *et al*., 2006), counter to the aim to reduce impacts of tourism activities on cetaceans (IWC, 2002). Moreover, the IWC recommended that Contracting Parties 'phase out existing [provisioning] programmes and not allow for the development of new ones' (IWC, 2002, p.345). In finalising its two-year work plan and after some discussion about an increasing number of commercial operators offering feeding and swimming with river dolphins in the Amazon, the sub-committee **agreed** to conduct an intersessional review of watching, provisioning and swimming with river dolphins, in the Americas and Asia, to be reported on at least preliminarily at SC/68a and then developed further at SC/68b (Table 4). At SC/68a, a joint session with the Sub-Committee on Small Cetaceans might be appropriate, as it will continue its review of river dolphins. The sub-committee **agreed** to convene an intersessional correspondence group on river dolphins, with Trujillo as convenor, to conduct this review, with the following Terms of Reference: Monitor, assess and report on commercial interactions, including watching, provisioning and swimming with, river dolphins in the Amazon and Asia (Table 3). This may link to the work of the South Asian River Dolphin Task Team (see Annex SM, item xx).

The sub-committee also **agreed** to plan a joint workshop or meeting with the Conservation Committee's Standing Working Group on Whale Watching to discuss the incorporation of social science in the work streams of the two groups (see Table 2). This joint session can occur immediately before or after SC/68b (the second year of the two-year work plan) (Table 4). The sub-committee should seek advice from the Conservation Committee on funding this meeting, including through the Voluntary Conservation Fund and outside sources.

Other items from the 2018 work plan remain the same for 2019 and 2020. The sub-committee's two-year work plan is outlined in Table 4.

### 9.2. Budget requests for 2019-2020

The sub-committee's budget requests related to the proposed third MAWI workshop (Item 2.1) are summarised in Table 5.

## 10. ADOPTION OF REPORT

The report was adopted at 16:33hrs on 02 May 2018. The sub-committee thanked Suydam and New for their helpful guidance during the discussions and Rose for her exemplary rapporteuring.

Table 1

Summary of studies on the impacts of whale watching on cetaceans and compliance with whale watching regulations (SC/67b/WW07). Note that inclusion in this table does not imply endorsement of the findings or recommendations of the various studies by the sub-committee.

| Species | Location | Methodology | Key Findings | Reference |
|---|---|---|---|---|
| *Impacts of whale watching on cetaceans* | | | | |
| Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) | Kisite-Mpunguti Marine Protected Area, Kenya | Boat-based, Markov chain analysis | 30% of time, vessels within 400m of dolphins (n=1-10 vessels)<br>Behavioural impacts of vessels began at a distance of 400m<br>Behavioural states significantly changed in response to vessel presence – travelling decreased and diving increased | Pérez-Jorge *et al*. (2017) |
| Burrunan dolphin (*Tursiops australis*) | Port Phillip Bay, Australia | Boat-based, Markov chain analysis | Swim-with dolphin tourism vessels significantly affected dolphin behavioural states and budgets<br>Foraging significantly decreased, with feeding bout duration declining by 13.6%<br>Time to resume foraging increased by 47.6% in presence of vessels<br>Dolphins spent more time milling and socialising in the presence of vessels<br>However, annual behavioural budget minimally affected by vessel presence | Filby *et al*. (2017) |
| Humpback whale (*Megaptera novaeangliae*) | Glacier Bay National Park and Preserve, Alaska, USA | Acoustic modelling | In a modelling exercise, fast cruise ships (20 knots) produced more sound than slower cruise ships (13 knots)<br>Cumulative sound exposure levels were 3 times lower in slower vessels<br>Arrival synchronicity of vessels affected the cumulative sound exposure levels<br>Speed limits and coordination of vessel arrival could reduce sound production from cruise ships | Frankel and Gabriele (2017) |
| Multiple species | Cambodia, India, Indonesia, Malaysia, Philippines, Thailand | Driver-Pressure-State-Impact-Response framework, Risk factor calculation | A whale watching risk indicator was calculated using 'Pressure' (fleet size), 'State' (IUCN status of the species), 'Response' (compliance to management schemes) and 'Driver' (industry capacity)<br>All sites (except Cambodia and Malaysia) have reached or nearly reached industry capacity<br>Most sites project industry expansion, although India and Thailand may contract due to overcapacity<br>Cetaceans at sites in India and Indonesia were at high risk of suffering impacts from whale watching activities<br>Cambodian cetacean species were at intermediate risk<br>Species at sites in Thailand, the Philippines, and Malaysia likely at low risk<br>This method may be useful to rapidly assess the risk of whale watching activities, particularly when the impact is uncertain due to data deficiencies | Mustika *et al*. (2017) |
| *Code of conduct/regulation compliance and effectiveness* | | | | |
| Multiple species (esp. minke whales, *Balaenoptera acutorostrata*) | Western Scotland | Questionnaire survey | Only 9% of whale watching operators referred to/used a code of conduct produced by the Scottish Government<br>41% stated that they did not refer to any code of conduct<br>Between 2000 and 2015, there was a decline in the use of codes of conduct from 89% to 54% of operators | Ryan *et al*. (2018) |
| Gray whales (*Eschrichtius robustus*) | Pacific coast, USA and Canada | Anonymous observer, questionnaire survey | Observations of whale watching operations found that out of 16 separate whale watching guidelines, only 3 were fully complied with<br>Guidelines complied with were 'don't get between whales travelling together'; 'don't feed whales'; and 'don't touch whales'<br>Non-compliance with guidelines was greatest for: turning off engines; restrict viewing times to 30 minutes or less; and remain more than 100 yards away from a whale<br>Operators stated most important guidelines were: 'do not feed whales'; 'avoid disturbing natural behaviour'; and 'do not get in between whales traveling together'<br>The guideline they considered to be least important was restricting encounters to a 'viewing time of 30 min or less' | Amerson and Parsons (2018) |
| Southern resident killer whales (*Orcinus orca*) | San Juan Islands, Washington State, USA | Acoustic tags | The effect of a change in regulations was investigated – prohibiting vessels from approaching closer than 400 yards (366m) to killer whales' paths of travel, or closer than 200 yards (183m) in all scenarios<br>Received noise levels (1-40 kHz) ranged from 96 to 127 dB re 1 µPa<br>The number of vessels near whales ranged from 1 to 14 (median: 3)<br>Average vessel distance from whales ranged from 21 to 914 m (median: 314 m)<br>The amount of received noise was affected by the number of vessels in the area and the speed of vessels<br>There was no significant effect of the introduction of regulations on received noise levels<br>The new regulations appear to have been ineffective as a means for reducing noise exposure | Holt *et al*. (2017) |

Table 2

Progress on Previous Recommendations of the Sub-Committee

| | Recommendation/Agreement | Accomplished y/n/ongoing | Supplement page |
|---|---|---|---|
| | The sub-committee **strongly recommended** the continuation of modelling work on the importance of population characteristics in assessing the effects of disturbance from whale watching within the context of its work plan. | Y | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.388 |
| | The sub-committee ***encouraged*** the continuation of the research into the emerging whale watching industry in San Matías Gulf, Argentina, and ***agreed*** that this area might be considered as a possible focus of the MAWI initiative. | First Y<br>Second ongoing: to be followed up with MAWI | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.388 |
| | The sub-committee welcomed this assessment of masking…The sub-committee ***encouraged*** further work to articulate where this potential loss of acoustic habitat imposes itself on the life functions of…small dolphin species…The sub-committee **agreed** that the workshop on Ship Noise and Acoustic Masking held before SC/66b was relevant to its work and to consider the recommendations and conclusions of SC/66b/REP10 in the context of whale watching impacts. | The workshop report will be submitted to *JCRM* for publication; the manuscript's discussion could include a reference to how this workshop had results relevant to whale watching | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.388-389 |
| | After comprehensive discussion, the sub-committee ***agreed*** that a small working group would prepare a pro forma proposal for a [MAWI] workshop…In addition, it ***agreed*** that the MAWI intersessional working group…would work to identify and contact whale watching researchers to request their input on what they consider the most pressing research questions regarding impacts on large whales from whale watching. | Y | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 389-390 |
| 2016 | The sub-committee ***agreed***, based on the results of the survey and direct observation, that the IWC guiding principles pertaining to [swim-with-whale operations] are generally being violated by swim-with-whale tourism. It would therefore be helpful for the guiding principles to be included in the whale watching handbook and referenced by the sub-committee or the Conservation Committee's Standing Working Group on Whale Watching in all relevant forums …The sub-committee **strongly recommended** that the Standing Working Group on Whale Watching work with the Commission and the Secretariat to collect information from Member States as to the extent of swim-with-whale programmes within their jurisdictions. | Ongoing | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 390 |
| | The sub-committee **recommended** that the Conservation Committee consider including template data collection forms for platforms of opportunity, or links to examples of forms in published papers, when finalising the guiding principles in the whale watching handbook. | N – will consider including a data sheet in the guiding principles, which will be included in the Handbook and posted to the IWC website | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.390 |
| | Concerns were expressed about the interface between the sub-committee and the Conservation Committee. The sub-committee ***agreed*** that there was a need to improve involvement, coordination and definition of roles between the sub-committee and the Commission and Conservation Committee. | Ongoing | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.390 |
| | Many Member States of IORA are not Members of the Commission; therefore, the sub-committee **recommended** that the Secretariat remain in contact with IORA to facilitate communication and outreach with these countries…The sub-committee also ***agreed*** to make the Indian Ocean the focus of next year's regional review…The sub-committee ***agreed*** to set up an intersessional working group to help provide advice to IORA if appropriate and to facilitate communication between IORA and the sub-committee. | Ongoing | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017<br>p. 391 |
| | The sub-committee ***agreed*** that, when the beta version [of the whale watching handbook] is ready for review, its members should review it and offer comment and input to the Chair of the Standing Working Group on Whale Watching…The sub-committee also ***agreed*** that industry representatives should be approached to review and offer input on the beta version when it is ready for review…The sub-committee **recommended** that the Secretariat work to secure funding for a dedicated individual to shepherd the whale-watching handbook to completion. The sub-committee ***agreed*** that dissemination of the handbook will require active promotion through, inter alia, social media efforts to ensure its success, an effort this dedicated individual can also undertake. | Y | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 391 |
| | The sub-committee **reiterated** its previous recommendation about the utility of platforms of opportunity generally…the sub-committee ***agreed*** that platforms of opportunity have the potential to make valuable contributions to the understanding of cetacean populations, especially in areas where data are lacking. | Ongoing | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.392 |
| | The sub-committee **recommended** that the Conservation Committee's Standing Working Group on Whale Watching address the issue of standardising whale watching regulatory schemes, where best practise would inform final, unified regulations, in areas where they currently differ for transboundary populations of whales. | Ongoing, through the Handbook | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p.394 |
| 2016 | [The survey results from Gleason and Parsons (in review)]…clarified the sub-committee's value to the wider whale-watching community…The sub-committee ***agreed*** that future surveys of the sub-committee's effectiveness would be useful and **recommended** that future surveys on the effectiveness of the sub-committee's activities make every effort to expand their scope and reach a broader sample of sectors, particularly government representatives, and regions…It also ***agreed*** that, while clearly the sub-committee's work was known among some elements of the whale watching community, greater effort to communicate the conclusions, results, and recommendations of the sub-committee to the community is needed. It was noted that the whale watching handbook could play a central role in this effort. | Y | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 394 |

| | | |
|---|---|---|
| The sub-committee **recommended** additional research be carried out to confirm any progress made in Bocas del Toro, Panama, with results brought to a future meeting. | Ongoing | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 394 |
| The sub-committee ***agreed*** it would seek to enhance its capacity to address scientific and technical aspects of whale watching and closely coordinate and cooperate with the Conservation Committee and its Standing Working Group on Whale Watching, including through the joint Conservation Committee/Scientific Committee Working Group…The sub-committee will develop its agenda accordingly and ***agreed*** to establish an intersessional working group to refine the work programme and agenda as appropriate. | Y (ongoing) | *J. Cetacean Res. Manage.* 18 (Suppl.), 2017, p. 395 |
| The sub-committee subsequently **recommended** a list compiled at SC/65b (Gleason and Parsons, 2015) of IUCN endangered and critically endangered cetaceans subjected to whale watching should be included in the Whale Watching Handbook and forwarded promptly to the Conservation Committee for that purpose. | Y | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 336 |
| The sub-committee ***agreed*** that its SC/57 definition of 'high speed' in relation to whale watching vessels should be used when referring to high speed vessels within the framework of MAWI and subsequent sub-committee discussions. | Ongoing | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 337 |
| Because of the impacts and the potential management implications, the sub-committee **recommended** that Vail (2016) [a comprehensive compendium of negative interactions, occurring within the past 15 years, between people and bottlenose dolphins around the Florida panhandle region (USA) of the Gulf of Mexico] be brought to the attention of the Conservation Committee and that the Standing Working Group on Whale Watching should include the potential for these types of injurious and fatal interactions in its discussion about management actions. Given the welfare implications, this paper should also be brought to the attention of the Working Group on Whale Killing Methods and Welfare Issues. | Y | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 338 |
| The sub-committee ***agreed*** that cetacean habituation to humans, given its potential to lead to fatal negative interactions such as described in Vail (2016), was a conservation concern for whale watching activities and a better understanding of habituation was relevant to its work. The sub-committee therefore agreed to form an intersessional correspondence group to assess the issue of cetacean habituation (and sensitisation, a related condition), especially as it relates to whale watching, and report back to the sub-committee next year at SC/67b. Simmonds was appointed Convenor. | Y | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 338 |
| The sub-committee welcomed this update on the whale watching activities in Oman targeting endangered Arabian Sea humpback whales and noted the substantial progress...The sub-committee ***agreed*** that the update was highly relevant to the work of the Conservation Committee and **recommended** that it be forwarded to the Standing Working Group on Whale Watching. The sub-committee also **strongly endorsed** the authors' key recommendations and ***agreed*** that this area and species should be included in the upcoming MAWI workshop. | N – requires follow up with Conservation Committee Standing Working Group on Whale Watching and the planned third MAWI workshop | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 338 |
| Some issues and studies addressing management and mitigation of impacts of whale watching will be solidly within the realm of social science because whale watching involves people. Therefore, the sub-committee **recommended** pursuing periodic joint intersessional workshops with the Conservation Committee Standing Working Group on Whale Watching, to which social scientists would be invited to participate in discussions about relevant topics. The sub-committee ***agreed*** to begin planning and pursuing an initial workshop of this nature within two years. | Ongoing – requires follow-up | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 340 |
| The sub-committee **recommended** that a joint intersessional meeting [with the Conservation Committee SWG on Whale Watching] be organised and funded well in advance of SC/67b, with the participants drawn from the sub-committee and the SWG, to discuss and draft structured and specific recommendations and advice on any revisions for the 2018-2024 Five Year Strategic Plan for Whale Watching. These draft recommendations would then be presented at SC/67b and approved by the sub-committee and Scientific Committee, and submitted to the Joint Meeting of the Conservation and Scientific Committees to be held directly after SC/67b. | Y, but only partially | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 341 |
| In memory [of the late Carole Carlson], to help enshrine her legacy and in recognition of Carole's long and important association with whale watching work at the IWC, the sub-committee **strongly recommended** the establishment of the 'Carole Carlson Memorial Whale Watching Fund'. The fund would be used to support research, education and outreach in the context of whale watching activities and aimed at ensuring that whale watching is sustainable, educational and humane. | Y | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 341 |
| The sub-committee ***agreed*** to seek comment from the Scientific Committee and the Joint Meeting of the Conservation and Scientific Committees on its draft Terms of Reference. | Y for Scientific Committee; N for Joint Meeting - requires follow-up | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 342 |
| The sub-committee ***agreed*** to elevate the topic of swimming with large whales to an agenda item for SC/67b. It also ***agreed*** to continue the intersessional correspondence group…The sub-committee **recommended** that funding be made available from the Voluntary Conservation Fund for pursuing well-designed impact studies by qualified researchers on swim-with-whale programmes. Finally, the sub-committee ***agreed*** to work closely with Gianna Minton, who has been contracted to work on the IWC's online Whale Watching Handbook, to ensure all IWC outreach efforts to whale watching operators and other parties regarding the questionnaire survey or other swim-with inquiries are coordinated. | Y – requires follow-up regarding the Voluntary Conservation Fund | *J. Cetacean Res. Manage.* 19 (Suppl.), 2018, p. 343 |

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|---|---|---|
| The sub-committee ***agreed*** that it should receive regular updates, at a minimum biennially, on the progress of previous recommendations and the utility of the IWC Guiding Principles on Whale Watching. Parsons volunteered to bring such an update to SC/67b. | Y | *J. Cetacean Res. Manage*. 19 (Suppl.), 2018, p. 345 |
| The Compilation of Worldwide Whale Watching Guidelines and Regulations also needs regular updating. The sub-committee ***agreed*** to ask the Secretariat about the best way forward for this undertaking. | N – requires follow-up | *J. Cetacean Res. Manage*. 19 (Suppl.), 2018, p. 345 |
| The sub-committee ***agreed*** that it should form a joint intersessional correspondence group with the Conservation Committee to discuss and develop better methods for disseminating recommendations and advice on whale watching. | Y, but requires follow-up | *J. Cetacean Res. Manage*. 19 (Suppl.), 2018, p. 345 |

Table 3

E-mail Intersessional Correspondence, Advisory and Steering Groups and Terms of Reference.

| Group | | Terms of Reference | Membership |
|---|---|---|---|
| (1) | Swim-with-whale operations | Assess the extent and potential impact of swim-with-whale operations. | Rose (Convenor), Frey, Forestell, Gero, Jimenez-Assmus, Minton, Parsons, Ritter, Rodriguez-Fonseca, Simmonds, Sironi, C. Smith, Stack, Urban, Weinrich |
| (2) | Modelling and Assessment of Whale Watching Impacts (MAWI) Steering Group | Identify those whale watching locations that would be most suitable and amenable for targeted studies addressing these questions; summarise and assess the current modelling tools available to analyse the data that will be collected; develop a Strategic Framework, supported by a Decision Tree, to aid in the prioritisation of policy and research choices; develop toolkits and resources for whale watching research that can be accessed globally; and consider how to standardise data collection. | New (Convenor), Baldwin, Cook, Cosentino, Forestell, Frey, Jimenez-Assmus, Leaper, Minton, Noren, Parsons, Robbins, Rose, C. Smith, Weinrich |
| (3) | Human-induced behavioural changes of concern | Continue to monitor the relevant literature; seek to produce a new review of information for the Committee across the whole range of interactions; review the appropriate terminology; and continue to consider the relevance of this topic to the work of the sub-committee, including how this topic might best be studied in future. | Simmonds (Convenor), Cosentino, Forestell, Minton, Parsons, Rodriguez Fonseca, Vail, Wells |
| (4) | Communication with the Conservation Committee | Discuss development of better methods for disseminating recommendations and advice on whale watching to the Conservation Committee (joint with Conservation Committee) | Parsons (Convenor), Rendell (Co-Convenor), Cosentino, Ferriss, Minton, Ritter, Rose, Simmonds, S. Smith, Weinrich |
| (5) | Communication with the Indian Ocean Rim Association (IORA) Advisory Group | Help provide advice to IORA when appropriate and facilitate communication between IORA and the sub-committee | Ferriss (Convenor), Baldwin, Iñiguez, New, Parsons, Simmonds, C. Smith, S. Smith, Weinrich |
| (6) | River dolphin interactions | Monitor, assess and report on commercial interactions, including watching, provisioning and swimming, with river dolphins, in the Amazon and elsewhere | Trujillo (Convenor), Luna, Marmontel, Parsons, Rojas-Bracho |

Table 4

Summary of the work plan for the sub-committee on whale watching. Many of these items have intersessional correspondence groups (ICG) or intersessional advisory groups (IAG). Those groups will work intersessionally and provide updates at SC/68a (see Annex X).

| Topic | Intersessional 2018/19 | 2019 Annual Meeting (SC/68a) | Intersessional 2019/20 | 2020 Annual meeting |
|---|---|---|---|---|
| Assess the impacts of whale watching on cetaceans – PRIORITY<br>(i) Short-term impacts<br>(ii) Mid- and long-term impacts<br>(iii) Swim-with operations<br>(iv) Emerging issues of concern | - | Papers to be presented | - | Papers to be presented |
| Third MAWI workshop | Workshop planning | Receive update on planning | Workshop (convenor New) | Report |
| Update IWC whale watching guidelines and principles (*https://iwc.int/wwguidelines)* | Revise guidelines and principles (guiding principles) | Papers to be presented | Additional modifications, inclusion in Handbook | Receive update |
| Review whale watching in the Indian Ocean | Intersessional correspondence group to contact IORA | Papers to be presented | - | - |
| Review whale watching in East Africa | Work to prepare review | Paper to be presented | - | - |
| Intersessional correspondence groups (see Table 3) | Email correspondence and work | Receive reports | Email correspondence and work | Receive reports |
| Review progress on previous recommendations | - | - | - | Papers to be presented |
| Plan joint meeting with Conservation Committee Standing Working Group on Whale Watching (SWG) to discuss incorporation of social science in joint work streams | Meeting planning | Receive update | Meeting planning | Joint meeting with SWG |
| IWC Whale Watching Handbook | - | Receive updates | - | Receive updates |

Table 5

Summary of the 2-year budget request for WW.

| RP no. | Title | 2019 (£) | 2020 (£) |
|---|---|---|---|
| **Meetings/Workshop** | | | |
| | Third MAWI workshop | | £20,000 |
| **Modelling/Computing** | | | |
| **Research** | | | |
| **Database/Catalogues** | | | |
| **Total request** | | | £20,000 |

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**Appendix 1**

**AGENDA**

1. INTRODUCTORY ITEMS
1.1 Convenor's opening remarks
1.2 Election of Chair
1.3 Appointment of rapporteurs
1.4 Adoption of Agenda
1.5 Review of available documents

2. ASSESS THE IMPACTS OF WHALE WATCHING ON CETACEANS
2.1 Review progress on Modelling and Assessment of Whale watching Impact (MAWI)
2.2 Review specific papers addressing impacts
2.3 Consider documented emerging areas of concern (e.g. habituation, new areas/species, new technologies, in-water interactions) and how to assess them

3. CONSIDER INFORMATION FROM PLATFORMS OF OPPORTUNITY OF POTENTIAL VALUE TO THE SCIENTIFIC COMMITTEE
3.1 Review new information

4. WHALE WATCHING IN EAST AFRICA AND WIDER INDIAN OCEAN
4.1 Review new information

5. REVIEW WHALE WATCHING STRATEGIC PLAN (2018-2024) AND JOINT WORK WITH THE CONSERVATION COMMITTEE
5.1 Review and provide recommendations on the draft Strategic Plan
5.2 Develop procedures to provide scientific advice as requested in the plan (including the online handbook) and make the SC more effective at providing information to the Commission

6. WHALE WATCHING HANDBOOK
6.1 Review and provide comments on the IWC's Whale Watching Handbook

7. REVIEW REPORTS FROM INTERSESSIONAL WORKING GROUPS
7.1 Swim-with-whale operations
7.2 Communication with the Indian Ocean Rim Association (IORA)

8. REVIEW PROGRESS ON SCIENTIFIC RECOMMENDATIONS
8.1 Global influence of recommendations
8.2 Tracking progress on previous recommendations
8.3 Update on dolphin watching in Bocas del Toro, Panama

9. WORK PLAN AND BUDGET REQUESTS FOR 2019-2020
9.1 Work plan for 2019-2020
9.2 Budget requests for 2019-2020

10. ADOPTION OF REPORT

**Appendix 2**

## COMMENTS AND RECOMMENDATIONS FROM THE SUB-COMMITTEE ON WHALE WATCHING TO THE CONSERVATION COMMITTEE'S STANDING WORKING GROUP ON WHALE WATCHING, ON A DRAFT OF THE STRATEGIC PLAN (2018-2024) FOR WHALE WATCHING

At SC/67a, Wulff informed the Scientific Committee's Sub-Committee on Whale Watching (WW) that the current Strategic Plan (2011-2016) for Whale Watching was going to be revised and asked WW to review and comment on the new draft during SC/67b. On 22 April 2018, WW held a pre-meeting to review a draft of the Strategic Plan (2018-2024) for Whale Watching (presented in WW as SC/67b/WW02). Below are comments and recommendations from the pre-meeting. These comments and recommendations are organised by each of the sections of the Strategic Plan. Comments and recommendations are provided on many of the sections of the plan but most are focused on topics directly related to the expertise of WW and the Scientific Committee. Most of the comments and recommendations relate to 'Objective 2' and 'Implementation'.

IWC STRATEGIC PLAN (2018-2024) FOR WHALE WATCHING

### Introduction

- The Introduction should be written in a way that clarifies the Strategic Plan (2018-2024) for Whale Watching is a product of the Commission, not specifically of either the Conservation Committee's Standing Working Group on Whale Watching (SWG) or WW. Both groups (i.e. SWG and WW) are reflected in the plan and the plan is a product of both; therefore, the Introduction should describe the establishment of the SWG, just as it does the establishment of WW. Currently, this description is in the next section (the Issue) but should be moved up to the Introduction.
- The Introduction should also clarify the distinctions between the two groups; it was suggested to add an organizational chart and also the terms of reference for each group as appendices. Perhaps language can be pulled from previous SC reports regarding coordination between the SWG and WW. It may be useful for WW to prepare a draft of new Introduction language to this effect, for the SWG's consideration.
- The Vision notes the potential benefits of whale watching, but the Introduction focuses only on assessing impacts (in the final sentence). The Introduction should have an added sentence on assessing and promoting potential benefits from whale watching.
- The Introduction should also refer to the IWC's communication with other bodies, such as IORA or CMS, regarding whale watching.
- It would also be helpful to add a paragraph on what the first Five Year Strategic Plan accomplished (e.g., the Handbook, the portal).

### The Issue

- A final paragraph should be added noting that there are scientific and management concerns regarding whale watching impacts on cetacean individuals and populations, particularly for populations whose conservation status is of concern, as well as on local communities.

### Legal and International Framework

- The pre-meeting did not consider this section, as WW does not have the expertise to offer input on this topic.

### Scope and Structure

- No comments.

### Vision

A paragraph should be added on the benefits of whale watching (the current paragraph below the Vision statement only discusses maintenance of healthy whale populations). For example, the paragraph could mention that whale watching can inform people of whale conservation issues. This added paragraph can also mention that there is increasing social science on the potential benefits of whale watching (e.g., research seeking to assess how best to present information to effect a permanent change in people's behaviour).

### Objectives

<u>Introductory paragraphs</u>

- The last sentence of the first paragraph needs revision/clarification. The Handbook is the mechanism; the SWG and WW have produced the Handbook, thus the three are not equivalent. The sentence could be revised into two sentences. The first could discuss the Handbook as an important mechanism for accomplishing some of the objectives and the second could discuss the roles of the SWG and WW in preparing the Handbook and accomplishing some of the objectives.
- Actions achieved within two years are characterized as 'short-term', but those achieved within five years are referred to as 'medium-term'. However, the pre-meeting participants felt the two 'long-term' actions were actions that could be achieved during a five-year time horizon. So it was difficult to distinguish medium- from long-term. Perhaps there

are only short- and medium-term actions, as these are Strategic Plans that are applicable for 5 or 6 years. The long-term action may be the achievement of the Vision.

- The term 'integrated research plan' (the second long-term action in the current draft), needs clarification. What is the plan integrated with? For example, is it integrating social with natural sciences? Integrating all stakeholders? Integrating the work of the SWG and WW? Integrating management and research? The term is further developed and defined in Action 2.1, but the meaning of 'integrated' is still not clarified.

Objective 1

- Add a paragraph to the introductory section about the benefits of whale watching (e.g., teaching people about climate change, having a smaller carbon footprint). (See also the comment above regarding the sentence that equates the Handbook, the SWG and the WW as "mechanisms".)
- Action 1.1 – The Secretariat should be added (so this Action will refer to the SWG, the WW and the Secretariat). In addition, the efforts of these three groups are primarily to improve the information, and secondarily to improve access to that information. See below regarding a new Action 1.5 (a communications and outreach strategy/plan).
- Actions 1.2 and 1.3 seem to belong more under Objective 3 than Objective 1. They are essentially descriptions of the portal, which belongs under Objective 3. While they reference information access and transfer, they are primarily about capacity building.
- We recommend adding a new Action 1.5 and provide some draft language to consider below:

  *Action 1.5 – Develop a communications strategy to actively promote IWC whale watching resources (e.g., the Handbook, reports and training opportunities), with approaches tailored to target key audiences. These audiences include the public and whale watching managers, researchers, operators, and on-board naturalists. Communication actions could include preparing publicly accessible summaries of IWC whale watching reports, improving the whale watching pages on the IWC website (which will happen soon with the new Whale Watching Handbook), and promoting resources on social media, at key meetings and via press releases to industry bodies and trade publications.*
- A flow diagram to show how IWC whale watching information is currently being disseminated might be a useful addition to the plan. The multiplicity of IWC information sources may be hurting rather than helping the IWC in its progress toward becoming a premiere resource for whale watching guidance and advice. The communication strategy (see new Action 1.5 above) can help in the effort to summarize and organize this information to make it more accessible to key audiences; people can go to original sources for more detail if desired.
- The International *Whaling* Commission's website is not intuitively a place where the public, the media, and others will go for whale watching information or advice/guidance. The communications strategy should include how to address this point; for example, can the Handbook have its own URL that is more intuitive and inviting for the layperson?
- The pre-meeting participants agreed that a small intersessional working group could be formed to prepare a communications strategy for consideration of the SWG and Commission.

Objective 2

- Objective 2 is under the purview of the WW because the focus is on *Research and Data Collection*. The following is a redrafting of this objective, as a discussion starting point (for the SWG and also the full WW). Here and several times above, the potential benefits were directly referenced; the Vision refers specifically to whale watching benefits, so they should be referenced throughout the Plan's text (currently only Objective 3 consistently addresses this aspect of the Vision).

  ***Objective 2 - Research and Data Collection***
  *Continue to develop the necessary research principles and tools to assist the collection of data important to ensuring that whale watching (1) does not significantly and adversely affect the behaviours and fitness of individual cetaceans or populations or their habitats and (2) realizes its potential benefits, e.g., educating the public, positively affecting attitudes toward conservation, improving local economies. These tasks and the actions below are for the SC WW Sub-Committee, which should coordinate closely with the CC SWG on WW.*

  ***Action 2.1** – Continue the Modelling and Assessment of Whale Watching Impacts (MAWI) initiative, to develop tools and methodologies to assist researchers and managers in their efforts to assess potential impacts of whale watching on cetaceans and to mitigate them. This initiative is ongoing and could focus on:*

  - *Investigating modelling methods to link short- (e.g., behavioural reactions) and medium-term (e.g., changes in population distribution) responses with potential impacts from whale watching to long-term (i.e., >10 to 20 years) consequences (e.g., vital rates).*
  - *Establishing standard data collection methodologies, including from platforms of opportunity.*
  - *Identifying key locations for whale watching research projects and programmes, taking into consideration logistics, capacity and management urgency;*

***Action 2.2** – Develop a long-term integrated research programme to better understand the potential impacts of whale watching on the demographic parameters of cetacean populations. Seek to:*

- *Investigate whether there is a causal relationship between whale watching exposure and the survival and vital rates of exposed cetacean individuals and populations;*
- *Understand the mechanisms involved in causal effects, if they exist, in order to define a framework for improved management;*

***Action 2.3** – Develop processes and mechanisms for whale watching activities to collect and provide scientifically robust and useful data to researchers and research programmes; and*

***Action 2.4** – Develop an approach (e.g., hold an intersessional workshop; establish a joint intersessional working group) to integrate social and ecological scientific research within the IWC to inform whale watching management and promote potential benefits. This is a coordinated action between the CC SWG on WW and the WW Sub-Committee.*

Objective 3

- This section should include a reference to building capacity for research as well. The Plan could perhaps add an Action 3.5 to this effect.
- Action 3.3 – This should refer not only to international bodies but also to industry associations.
- Action 3.4 – It might be helpful to clarify (or reword) the directive to 'Develop advice' – for example, 'Investigate and promote best practice'.

**Implementation**

Objective 1

- Action 1.5 – The implementation of this action could be coordinated intersessionally (before 2019) via the Secretariat. A joint intersessional working group, which includes key Secretariat staff, could develop a draft communications strategy for consideration at the Brazil Plenary meeting and/or the joint session of the CC/SC at SC/68a.

Objective 2

- For all Actions – Funding sources for these actions must be identified. Contracting governments or whale watching industry are several possible sources, as is the IWC Voluntary Conservation Fund. WW urges the SWG to 'think outside the box' and identify other diverse sources, such as Volkswagen (which offers environmental grants).
- Action 2.2 – A dedicated person is needed to spearhead and coordinate the development and implementation of a research programme or plan. The best option would be for the IWC to contract with someone (understanding there are budgetary issues). The contract could be full- or part-time. Interested Contracting Governments could be approached for funding for this contract. Alternatively, if the first option is not possible or is too costly, this coordination could be done via an intersessional working group. A final option would be for the WW convenor and co-convenor to work intersessionally to coordinate the research programme (understanding intersessional availability maybe be limited).
- For the actual preparation of a proposed research programme (Action 2.2), a small intersessional workshop, with only 3-4 participants, could produce this product for consideration at an upcoming SC (timing dependent on funding). This workshop could be held successively with the next MAWI workshop (see MAWI workshop report), to reduce costs (the proposal workshop participants should also attend the MAWI workshop, as one task there is to identify specific locations to carry out research projects using experimental/useful modelling approaches).
- Action 2.4 – Funding for IPs who are experts in relevant social science disciplines to IWC meetings or workshops should be secured. These experts should participate either in the SWG or the WW – we recommend the latter, as there is more infrastructural support at this time for the SC and its sub-committees.
- In summary, short-term funding needs to be secured for social science IPs, a small-group workshop to develop specific research proposals, and a third MAWI workshop. A plan for meeting these financial needs should be developed, including identifying extra-IWC funding sources – without funding, these actions cannot be implemented.

**CONCLUSION**

Finally, and generally, we once again recommend improving the coordination between the SWG and the WW in the development and implementation of a Strategic Plan on Whale Watching. We understand this coordination has been difficult logistically and financially and that the Secretariat and the Commission are seeking to address this ongoing issue. We note that this pre-meeting was intended to improve coordination. It did provide the WW with an opportunity to contribute to the Strategic Plan but it did not completely achieve the goal of coordination, as a limited number of SWG members were able to attend the pre-meeting.

## Appendix 3

## TERMS OF REFERENCE FOR THE SUB-COMMITTEE ON WHALE WATCHING

The Whale Watching (WW) sub-committee reviewed its historical Terms of Reference (ToR) in 2017 (SC/67a) and compared them with the 2011-2016 Strategic Plan of the Conservation Committee's (CC) Whale Watching Standing Working Group (SWG). As such, the following ToR for WW align with the CC SWG's Strategic Plan.

(1) Review and suggest scientific studies and methods of research on the effects of whale watching on target species and their habitats:

   (a) population-level effects including impacts on demographic parameters
   (b) whale watching vessel strikes that may cause injury or mortality (with HIM)
   (c) underwater noise (with E)
   (d) behavioural responses that have potential biological significance
   (e) impacts on fitness, health and stress (with E)
   (f) impacts on cetacean habitats

(2) Review and suggest research on the effectiveness of whale watching management regimes (i.e., mitigation measures) aimed at protecting cetaceans, such as whale watching guidelines or marine protected areas

(3) Develop scientific monitoring protocols that maximise the identification of adverse impacts to cetaceans including:

   (a) Data collection by whale watching operators or other platforms of opportunity that could be used to monitor possible impacts from whale watching activities on cetaceans
   (b) Science-based metrics for impact assessments that could be used to monitor or assess the sustainability of the whale watching industry in a location
   (c) Monitoring plans that are cost effective and meet the needs of specific areas

(4) Review and identify suitable areas, to support the development and implementation of research protocols for long-term studies on the effects of whale watching on cetaceans.

(5) Support the use of quantitative approaches (e.g. modelling) to help achieve items (1), (2) and (3) of the ToR. This is a major component of the existing MAWI project.

(6) Review whale watching industries and identify areas, emerging issues or cetacean populations of concern and/or highlight examples of demonstrated best practices.

(7) Identify research and issues of interest to the Conservation Committee. Assist and provide advice to the Conservation Committee with its work on whale watching when requested.

These ToR create a substantial workload for WW. One way to focus discussions at annual meetings would be to only deal with a subset of the terms in each year.