

Report of the Scientific Committee

Nairobi, Kenya, 10-23 May 2019

Annex N Report of the Sub-Committee on Whale Watching

**This report is presented as it was at SC/68A.
There may be further editorial changes (e.g. updated references, tables, figures)
made before publication.**

**International Whaling Commission
Nairobi, Kenya, 2019**

Annex N

Report of the Sub-Committee on Whale Watching

Members: New (Chair), Braulik, Castro, Charlton, Diallo, Fernandez, Ferriss, Fiogbe, Frisch-Nwakanma, Gallego, Genov, Haug, Iñiguez, Jimenez, Lee, Lent, Mwabili, Marcondes, Minton, Naylor, Parsons, Reyes, Reyes, Ridoux, Ritter, Rojas-Bracho, Rose, Santos, Seakamela, Seyboth, Simmonds, Smith, Stachowitsch, Stack, Stockin, Suydam, Svoboda, Trejos Lasso, Porter, Slooten, Trujillo, Urbán, van der Water, van Waerebeek, Vermeulen, Weinrich, Willson.

1. INTRODUCTORY ITEMS

1.1 Convenor's opening remarks

New welcomed members of the sub-committee. She noted this was her first year as chair and requested the forbearance of the sub-committee members.

1.2 Election of Chair

New was elected Chair.

1.3 Appointment of Rapporteur

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/68A/WW01-04; SC/68A/CMP15 and 18; Arabian Sea Whale Network (2018); Braulik and Stern (2019); Nature Tropicale NGO (2018); Nunny and Simmonds (2019); and Sitar Soller and Parsons (2019).

2. ASSESS THE IMPACTS OF WHALE WATCHING ON CETACEANS

2.1 Review progress of Modelling and Assessment of Whale Watching Impacts (MAWI)

At SC/67b, the sub-committee recommended that a third MAWI workshop be held intersessionally, ideally just before or after the 2nd World Marine Mammal Science Conference (WMMSC) in Barcelona in 2019. The planning for this workshop is ongoing, and any advice from sub-committee members regarding the locations, time and proposed participants was welcomed.

New felt a workshop not associated with the conference framework was still possible, and hoped that attendees of the WMMSC with the appropriate statistical expertise might be available the afternoon and evening before the conference-related workshops officially begin. New will prepare a list of people who could usefully participate and send out invitations as soon as possible.

2.2 Swim-with-whale operations

SC/68A/WW02 reported that commercial whale watching operators in Hervey Bay, Australia, have recently been permitted by the local government to conduct swim-with-whale tours (SWW). Although the whale watching fleet has developed a voluntary Code of Conduct for the activity, the effects of SWW in this region are unknown. The Committee has previously encouraged further research into the impacts from SWW be conducted (IWC, 2003, p. 387) and recommended that SWW not be allowed until impacts are further understood (IWC, 2019, p. 357). In response to these recommendations, Pacific Whale Foundation began field research to determine whether SWW affects the behaviour of humpback whales (*Megaptera novaeangliae*) in Hervey Bay. Using a dedicated researcher to collect data aboard a commercial SWW vessel, whale behaviour was observed 'Before', 'During' and 'After' swimmers were in the water. Among other results, whales spent more time traveling and less time resting or interacting with the vessel after swimmers exited the water. These results are preliminary, and incorporating additional seasons of data will help increase confidence in results. This study is intended to provide a scientific basis for future recommendations for managing SWW in Hervey Bay.

The sub-committee welcomed this paper and looked forward to updates on this research project at future meetings. It reiterated its **encouragement** for bringing empirical studies on swim-with-whale impacts to the sub-committee for consideration. In response to a question, it was noted that the primary concern of the local government when considering its approval of this activity was human rather than cetacean safety. During discussion, it was noted that a key advantage to conducting this research in Hervey Bay is that there is a long-

term dataset on these whales, giving a solid baseline for behaviour and reproductive parameters, making any changes due to swim-with activities more likely to be detected. It was noted that more females are giving birth before arriving in Hervey Bay (historically it was a resting area before the females arrived on the nursery grounds further north). This may be a factor in how swim-with activities are conducted and in the sensitivity of the whales to this activity. It was suggested that body condition, assessed via drones or other means, is another parameter that might be considered by researchers.

In a discussion of control samples, it was noted that standard whale watching is conducted in the area, making any data collected on whale watching impacts from those vessels a natural control for impacts from swim-with activities. However, controls from the swim-with vessels themselves would be difficult, as these are commercial excursions where the passengers expect to swim with the whales. In addition, it might be difficult to distinguish which elements of the swim-with activity are causing any changes observed; the mermaid line itself might be a causal factor, independent of the swimmers, for example.

Questions raised with regards to the statistical analysis in SC/68A/WW02 were addressed by the authors during the meeting, and the sub-committee thanked the authors for their willingness to revise their work in accordance with the feedback received.

Compliance with voluntary codes of conduct has not yet been studied in this area. Examining impacts of swim-with activities is being given priority for the near future.

2.3 Review specific papers addressing impacts

SC/68A/CMP15 reported that, in the Península Valdés area where whale watching has been conducted since the early 1970s, only short-term behavioural reactions to boats had been evaluated. The whale watching in Puerto Pirámides can be considered as a social-biological system, and the biological sub-system is changing due to the increase in the abundance of whales, potentially rendering some regulations (social sub-system) obsolete. Whale movement indices and breathing rate as proxies for energy expenditure were used to assess impacts of whale watching. Data were collected from a land-based fixed vantage point. No significant effect was detected for any of the movement indices examined. Breathing rate increased significantly when boats were close to the whales; this was thought to be related to the whales remaining motionless near the boat. Given these results and those of previous research, whales breeding at Península Valdés may be habituating to whale watching boats, and authorities should perhaps now give higher priority to the social sub-system.

In discussion, it was noted that whale watching has been occurring in this area since 1973; it was first regulated 20 years later and those regulations were last updated in 2008. The sub-committee **recommends** the continuation of this research, the inclusion of social sciences, and also the collection of control data on whales in areas not subject to whale watching (whale watching is allowed only in Puerto Pirámides). It was noted that this site is a case study in the IWC's Whale Watching Handbook and updates are welcomed.

At SC/56, 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). This was deemed to be a useful review of recently published articles, so similar digests were requested in following years. SC/68A/WW03 is the 16th in this series of reviews, detailing a summary of whale watching research published since SC/67b. Those studies related to Item 2.3 are summarised in Table 1.

The sub-committee once again thanked Parsons for undertaking this work on an annual basis. Minton noted that these annual digests have proven, and will continue to prove, very valuable for the Handbook, which has a searchable literature database that needs to be updated every year.

2.4 Emerging concerns

Simmonds presented on Nunny and Simmonds (2019). He noted that the phenomenon of 'solitary-sociable dolphins' has been described by various authors and cases have been reported from all over the world and across many decades. There are a number of stages that an individual solitary sociable cetacean may pass through (Nunny and Simmonds, 2019, figure 1) as the animal changes behaviour from being simply 'solitary' to being a 'friendly solitary'. The vast majority of such animals are bottlenose dolphins (*Tursiops truncatus* and *aduncus*). Solitaries have also been reported in belugas (*Delphinapterus leucas*), narwhals (*Monodon monoceros*), orcas (*Orcinus orca*), and other dolphin species (see also Nunny and Simmonds, 2018).

Since 2008, 32 solitary dolphins have been recorded, most of which were bottlenose dolphins. There are some ten solitary dolphins and one beluga known at the present time. Nunny and Simmonds (2019) also provide some details of the recorded interactions between these animals and people, which can be intense. Harm can be accidental or intentional and also that there can be risk to humans from these animals. The paper details

recommendations, which includes the implementation of a management plan that makes clear which human behaviours are acceptable. In brief, it is typically not in the best interests of the health and survival of the animal for it to move along the stages described. The management of a 'late-stage' solitary is problematic.

Simmonds provided additional information on the increased probability of solitary sociable bottlenose dolphins being the victims of vessel strikes. Since the 1950s, 79 bottlenose dolphins have been recorded. Sixteen (20%) of these have been reported as injured or killed by boats. However, the actual number injured by boats could be far higher, as many solitary cetaceans simply disappear and it is possible that they were struck by boats or injured by propellers. For comparison, this strike rate is far higher than that found for dolphins in similar habitats, e.g. Sarasota, Florida (3%). Thus solitary sociable behaviour does appear to increase vulnerability to vessel strikes.

In discussion, it was noted that solitary sociable cetaceans create significant management issues for authorities. Therefore, while only one animal is typically involved, expert recommendations are undoubtedly very useful to management. It was noted that a solitary sociable dolphin in the German Baltic triggered the development of the very first code of conduct in the region, an example of how one animal can catalyse stronger oversight for all whale watching activities.

The sub-committee **agreed** to continue the intersessional correspondence group on Human-Induced Behavioural Changes of Concern (Table 3), which encompasses the solitary sociable phenomenon, as well as activities such as provisioning, where human behaviour causes cetacean behaviour to change and thereby increases the risk of impacts to the animals' welfare and survival.

3. PLATFORMS OF OPPORTUNITY AND CITIZEN SCIENCE

The SM sub-committee is often asked how citizen science can contribute to the sub-committee's work. A joint session with WW was held, as an opportunity to strengthen collaboration between sub-committees. The chairs of the two sub-committees felt that WW, which has a standing agenda item on platforms of opportunity and citizen science, can provide guidance to SM on how best to incorporate citizen science in its work stream.

3.1 Review new information

SC/68A/WW01 described SEAFARI, a free software application (app) developed in South Africa for 'whale watching', where users can obtain real time information on their phones on 'who has been seeing what, where and when'. The app currently lists 34 marine mammal species, and while somewhat South African-centric at the moment, the use of the app in other parts of the world is possible and encouraged by the designers. The addition of new species is still in progress, with the ultimate goal to represent all marine mammal species with full background information and availability from a simple scroll-down menu.

The app's uniqueness is its open and easy access to the collected data, making the app not only useful as a whale watching app for local use or to keep records of local sightings, but also as a valuable source of citizen science data for relevant research projects. The aim of its global use would be to generate extensive datasets on the spatial and temporal distribution of marine mammal species. The app designers anticipate that the widespread use of mobile technology will aid significantly in marine mammal data collection, especially of rarely-observed species and in remote locations (e.g. offshore, remote islands).

In discussion, it was noted that, while researchers do review the data uploaded by users, there is no guarantee of data accuracy or quality. If the number of users of the app increases in future, the number of qualified scientists evaluating the data could (and should) also be increased. Users may upload data at the time of a sighting or after returning to port; if uploaded once back on land, a map rather than the GPS function can be used to note location. It was noted that the Whale Watching Handbook has a section on sighting apps of this nature; the sub-committee **encouraged** app designers to contact the Secretariat so their app can be included in future editions of the Handbook.

SC/68A/CMP18 noted that, based on the 2016 agreement developed between Instituto de Conservación de Ballenas (ICB) and the Association of Whale Watch Guides (AGB) of Puerto Pirámides, Argentina, whale watching captains, guides and photographers have contributed 460,000 photographs of whales to ICB researchers (see also Vilches *et al.*, 2018). ICB has catalogued photographs of the callosity patterns from both sides of the whales' heads of all individuals identified since aerial surveys began in 1971 (Hiby and Lovell, 2001). Analysis of 1,310 photographs taken between 2003 and 2007 were compared to this aerial survey catalogue using the software programme 'Big Fish' (Pirzl *et al.*, 2006). Researchers found 161 identifiable whales, of which 111 (92 adults and 19 calves) were incorporated into the database as new individuals and 50 were previously known whales. Thirty-one animals were not identified during the aerial survey of the year their photograph was taken. Some of these individuals had not been re-sighted for 23 years. For more information

about the value of these photographs, see IWC (2019, p. 354). The analysis of this large archive of photographs is ongoing and updates will be provided to the sub-committee.

The Tanzania Whale Network (TWN) was formed in June 2018, and is an informal group of people who are frequently on the ocean and report sightings of humpback whales in Tanzanian waters. The group generally has about 100 members, communicates via WhatsApp on their mobile phones, and members share information and photos about whale sightings. Sightings have been compiled in a database and a short report was presented on the temporal and spatial distribution of sighting records (Braulik and Stern, 2019). A total of 199 whale sightings in 2018 comprised a total of 467 whales, including 49 calves. The first reported sighting was on June 9, and the last confirmed sighting was on December 30. The peak number of individuals sighted was in August. This informal and cost-effective group has generated basic scientific data on whale occurrence in Tanzania where data were previously lacking, has fostered relationships among marine life enthusiasts along the entire coast and has generated great enthusiasm for whales.

The sub-committee thanked Braulik for this report. It noted that this initiative serves as another model of how useful data can be generated in resource-poor areas and inform researchers when designing systematic studies in the future. In response to a question as to whether there is currently a need to work to avoid harassment of small numbers of whales in Tanzania, it was noted that there are no whale hotspots so far identified along the coast and weather is often poor, so to date there is no significant boat-based whale watching here.

The sub-committee has agreed that whale watching vessels can be important platforms of opportunity to collect scientific data (e.g. IWC, 2017, p. 392). SC/68A/WW03 presented published studies on whale watching-related research, including a study in Peru, utilising data from whale watching platforms to investigate species diversity (Pacheco *et al.*, 2019). The study recorded 13 cetacean species (four mysticete and nine odontocete species). In addition to sightings of live individuals of species that had previously only been reported from strandings (such as beaked whales), there were several records of new species in the region, including dusky dolphins (*Lagenorhynchus obscurus*) and fin whales (*Balaenoptera physalus*), which were previously believed not to range so close to the equator. The study also provided evidence of killer whales (*Orcinus orca*) in nearshore waters.

It was reiterated during discussion that many different platforms of opportunity exist, not just whale watching vessels. As an example, in Liberia, only one cetacean species, from a report in the 19th century, was known, but after one seismic survey vessel outing with observers, 10 species were sighted. Platforms of opportunity of this nature are especially important in areas with very low historic observer effort; however, private platforms such as seismic survey vessels may only allow sightings data to be released publicly after some time has passed and the location of their survey effort is no longer proprietary. It was noted that regulations in some jurisdictions require the release of marine mammal sightings data before seismic surveys are permitted. In addition, surveys not designed for marine mammal sightings have characteristics that must be taken into account when analysing data, as these characteristics introduce bias. For example, when seismic air guns are operating, sightings of any marine mammals in an area are less likely.

Attention: SC, R

Given the many caveats that must be taken into account when using platforms of opportunity and citizen science data for marine mammal sightings analyses, even when such platforms travel in systematic line transects and have qualified data collectors on board to ground-truth citizen science data, the sub-committee agreed:

- (a) that it would be appropriate for the sub-committee to engage with other sub-committees, such as EM, IA, and ASI, to identify the types of analyses that would be acceptable when using data from platforms of opportunity and especially citizen science data from the growing number of available mobile phone apps;*
 - (b) that it would be beneficial if the designers of cetacean sighting apps could incorporate the ability to measure observer effort in the app design (some may already do so), as it is important for analysis; and*
 - (c) that it should develop a comprehensive list of functions a cetacean sighting app could have and a basic list of functions that one should have as an output of the discussion with other sub-committees, which can be incorporated into the Whale Watching Handbook.*
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If the specific ways in which citizen science data can be useful to larger research programmes can be determined, there may be potential for requesting whale watching vessel operators to modify their behaviour to improve data quality. New will liaise with the EM, IA, and ASI convenors intersessionally to discuss how the sub-committees might engage in the future on this topic. It may also be possible to bring invited participants with the relevant expertise to Committee meetings in the future to pursue this discussion. Given that SC/68b will be in Cambridge, it may be relatively easy to identify such experts and relatively economical to bring them to that meeting. It was noted that while the presence-only data often collected via citizen science can be biased, it

is possible to improve estimation using inferred absences when data are available across multiple species. The sub-committee **encouraged** the submission of papers relevant to this on-going research.

4. WHALE WATCHING LOCATIONS OF INTEREST

4.1 Communication with the Indian Ocean Rim Association (IORA)

Ferriss gave an update on engagement with the Indian Ocean Rim Association (IORA) Sustainable Whale and Dolphin Watching Tourism Network. The first Network Newsletter has been prepared and is with the IORA Secretariat for circulation. The newsletter is intended to be the primary mechanism for sharing information between network members and the first issue features an article on the Whale Watching Handbook. Australia is leading the Network for the first year, and would appreciate any content for the second newsletter. This could include case studies of whale and dolphin watching tourism, details of upcoming training and workshops, and examples of guidelines and research. In the longer term, it is hoped that the network can lead initiatives such as training and other capacity building efforts, and help to facilitate partnerships to improve whale and dolphin watching practices in the region. The sub-committee was invited to give its views on opportunities for the IWC to engage in the Network, including through training and capacity building.

The sub-committee wished to express its thanks to Australia for taking the lead in the Network's first year. As noted in previous sub-committee discussions (e.g., IWC, 2019, p. 358; 2018, p. 343), given that whale watching is generally in the early stages of development in this region, it is important for the sub-committee to support training for operators and guides, as part of the effort to ensure that whale watching develops responsibly.

Attention: IGO, SC, S, CC

*Given the developing whale watching industry in the Indian Ocean region and the previous engagement between the IWC and the Indian Ocean Rim Association, the sub-committee **recommended** that the dialog between the IWC (both the Conservation Committee and the sub-committee) and IORA continue, including through the intersessional correspondence group established at SC/66b.*

It was noted that two workshops were scheduled in the Indian Ocean region within a few months of each other; one on Important Marine Mammal Areas in March 2019 and the other by the Indian Ocean Network of Cetacean Research (IndoCet), which will be in July 2019. The Important Marine Mammal Areas established in the region have expressed interest in coordinating with IORA on whale watching developments and training workshops. It was **agreed** that the intersessional correspondence group on Communication with the Indian Ocean Rim Association (IORA) Advisory Group (Table 3) should incorporate consideration of ways to promote appropriate training workshops in its terms of reference.

4.2 River dolphins in the Amazon and Asia

Trujillo gave a brief review of tourism focused on Amazon river dolphins (*Inia geoffrensis*). He noted that the species was recently categorised as Endangered by the IUCN. During the past year, there have been two technical meetings of the South American River Dolphin Initiative (SARDI), with representation from organisations and researchers in all countries where this species occurs. Within the framework of responsible dolphin watching and with government support, eight training and capacity building workshops were conducted, involving at least 500 people from local communities. Among other issues, economic alternatives that stimulate the conservation of aquatic ecosystems were addressed. Colombia, Brazil, Bolivia and Ecuador have shown the most initiative in working to manage dolphin watching. For example, in Colombia, along 40 km of the Amazon River, approximately US\$8.3million annually is generated by dolphin watching tourism. This tourism was a primary motivation in designating more than 2 million hectares as Ramsar sites. In addition, at least three responsible wildlife viewing guides have been published in the region, featuring specific guidelines for dolphin watching.

The sub-committee welcomed this information and looked forward to updates on SARDI activities at SC/68b.

4.3 Africa

At the SC/68A pre-meeting on Poorly Documented Takes of Small Cetaceans: West Africa, mention was made of the on-going development of whale watching in Benin, focused on humpback whales, as an alternative to the utilisation of cetaceans for wildmeat. Nature Tropicals NGO (2018) is a technical report on whale watching in Benin, outlining the country's growing interest in cetaceans, the partnership with the Benin navy for the purpose of whale watching, and the recommendation for increased scientific research on Benin's marine resources and increased international collaboration, including with the IWC.

In response to a question regarding what percentage of time navy ships were already present in the area and their size, it was noted that the use of this platform has been ongoing since 2001 and that navy ships are typically on the water, suggesting there is no additional pressure on the animals due to the presence of these ships for

tourism purposes. The ships are the size of coast guard patrol vessels. Van Waerebeek noted that 860 tourists went whale watching this past year in Benin; an increasing number of these are domestic rather than international tourists. Fuel costs are high, but the increasing frequency of trips (16 in the past year) has reduced costs. Ghana is considering a similar use of navy ships for whale watching.

Attention: G, CG, SC, R

*Discussions at the SC/68A pre-meeting on Poorly Documented Takes of Small Cetaceans: West Africa noted that some countries, such as Benin, have begun or are considering a transition from exploiting cetaceans as wild meat to utilising them nonlethally for whale watching tourism (see Nature Tropicale, 2019). The sub-committee **draws attention to** this transition and:*

- (a) **encouraged** countries in regions where cetaceans are exploited as wild meat to consider responsible whale watching tourism as a nonlethal alternative; and*
- (b) **recommended consideration of** such areas, where whale watching is in its infancy, as potential sites for the MAWI initiative (see Item 2.1).*

Naylor presented information on whale watching operations on the east and west coasts of Africa. Table 2 represents information gathered by web searches and personal experience, summarising the known whale watching operations and areas on the east coast of Africa (Red Sea, Gulf of Aden, and Indian Ocean) and the west coast (North Atlantic, South Atlantic, and the Gulf of Guinea). The countries of Djibouti, Eritrea, Sudan, Somalia, Somaliland (east coast), Angola, Cameroon, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Guinea, Guinea-Bissau, Liberia, Mauritania, Morocco (whale watching trips for Straight of Gibraltar originate from Spain), Nigeria, Republic of Congo, Senegal, Togo, and Western Sahara (west coast) did not have official reported whale watching activities; however, opportunistic whale watching in these countries may be happening. Several tour operators for countries without official whale watching operations do advertise whale/dolphin watching as a possibility when booking boat-based excursions or fishing trips.

Of the countries with identified whale watching operations, guides are required when booking with tour operators. If there is demand (high volume of tourists), local boat owners conduct informal (unregulated) whale watching trips. Several research projects do exist; however, most of these projects focus on the biology of cetacean populations rather than impacts from whale watching. Humpback whales (*Megaptera novaeangliae*) are the main target of whale watching operations on both coasts.

The sub-committee thanked Naylor for providing this information. It was noted that this type of review can be useful in identifying areas that are not well-known for whale watching but where whale watching may occur, with or without regulation. The Whale Watching Handbook could use these regional reviews to identify additional countries for country profiles. For example, Madagascar and Tanzania (Zanzibar) might be good candidates for addition to the Handbook (see Table 2).

Attention: CG, G, CC

*Many countries in certain regions have fledgling whale watching industries. The sub-committee periodically conducts basic reviews of the whale watching operations active in various regions. These reviews at times identify countries where whale watching is just starting or may already be at high levels, but without regulations or guidelines. If such areas are identified during a review, the sub-committee **recommended**:*

- (a) **that Governments work to put regulations or guidelines in place as soon as possible, before their whale watching industries develop further;***
- (b) **that the Conservation Committee look at recent regional reviews and determine which countries do not have regulations or guidelines listed. If further investigation determines this lack is accurate, the CC should encourage these countries to develop guidelines for, or regulate, their industries.***

4.4 Additional locations

4.4.1 Bocas del Toro, Panama

At SC/66b, 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 (IWC, 2017, p. 394). Moreover, at SC/67b, the sub-committee reiterated its grave concern regarding the intense and uncontrolled dolphin watching in this location (IWC, 2019, p. 358). This concern has been expressed and reiterated for several years due to continuing mortalities, including unsustainable mortalities from vessel strikes, in this small population (probably fewer than 100 animals).

Panama has whale watching regulations (via Resolution ADM/ARAPNO.01,20072). However, observations of boat operator behaviour from several years ago indicated a high level of non-compliance (Sitar *et al.*, 2016). Sitar Soller and Parsons (2019) provide additional evidence that boat operators in Bocas del Toro were not complying with whale watching regulations at this time, using qualitative data. Independent of training, all boat

operators claimed compliance with Panama's whale watching regulations. However, all boat operators also said that they periodically approached dolphins closer than Panama's regulations allowed. These distances agreed with the in-field observations (Sitar *et al.*, 2016) and were grossly in violation of regulations. Although 53% of the operators said they had received whale watching training, only 27% were aware that Panama had whale watching regulations. In contrast, 40% did not know if there were regulations and 33% stated emphatically that there were no regulations.

Despite the high and unsustainable mortality rates in this dolphin population, 67% of operators believed the dolphin population was 'stable' and 13% said it was 'increasing', with only 20% thinking it was 'decreasing'. However, 93% of operators stated that dolphin conservation was 'very important'. Finally, 100% of boat operators wanted training available locally; currently they must travel to Panama City at their own cost. At the time of this study, improvements in Bocas del Toro were seen as possible, as boat operators were open to whale watching training, cared for the resident bottlenose dolphins and supported conservation. It was suggested that local trainings be conducted in the community, rather than expecting operators to travel to Panama City unsubsidised.

Trejos presented first estimations of bottlenose dolphin calf mortality in Bocas del Toro, within the first two years of life, and female calving interval information, using data collected from 2004 to 2014. Thirty-five females were followed, 23 of which were regular inhabitants of Dolphin Bay, where most boat-dolphin interactions occur. Females in this population had between one and three calves during the study period, with an average inter-birth interval of 62 months. Calf mortality was estimated to be 0.46. These values of calf survivorship are lower than for other bottlenose dolphin populations where this parameter has been calculated. This was a period during which boat activity significantly interrupted dolphins while they were foraging. Such interruptions could have a high energetic cost, especially to nursing mothers and their calves. It is important to highlight that there are no data that directly link boat activity with calf mortality, but May-Collado and Lasso (2015) reported that, between 2010 and 2012, a high number of dolphins were killed by boat strikes. The diet of Bocas dolphins is largely based on low calorie prey that may require these dolphins to eat more often (Barragán-Barrera *et al.*, in press). More recently analysed data suggest an overall increase in cortisol levels in Bocas dolphins during the high season. Previous work indicated that only three boats caused a negative behavioural response (May-Collado *et al.*, 2014). All of these factors undoubtedly have an impact on recruitment in this small population.

Trejos also noted that these results do not reflect the current impact of boat activity or compliance with regulations. A concentrated effort was made between 2014 and 2018 to train 100+ boat operators in Bocas del Toro. Data are now being analysed to determine if this effort has translated into higher calf survivorship, decreased interruption of key biological behaviours and increased compliance with regulations.

The sub-committee welcomed this update and the news that the Panamanian government has responded positively to IWC recommendations regarding Dolphin Bay whale watching management. The government also cooperated with the case study on this location in the Whale Watching Handbook. It was noted that the long-term research in this area has generated one of the most complete and valuable datasets available from a whale watching area. Trejos confirmed that training would continue into the future, in an effort to maximise the number of operators who participate. She reported that new permit requirements are in development that will require training to receive a permit.

The sub-committee **encouraged** the continuation of the current research in Bocas del Toro and looked forward to the presentation of this work at future meetings of the sub-committee.

4.4.2 Sri Lanka

SC/68A/WW03 summarised a recent study, Prakash *et al.* (2019), which looked at whale-watcher satisfaction in Sri Lanka. Whale watching began in Sri Lanka in 1983, with a small number of operators departing from the town of Trincomalee. However, the number of whale watchers expanded rapidly, to nearly 80,000 by 2014. To investigate levels of tourist satisfaction in Marissa, the authors investigated entries on the tourism review website TripAdvisor (n=131). In terms of the sustainability and conservation aspects of their trip, 41% were not satisfied, which is a relatively high level of dissatisfaction. Also, 62% noted that many vessels were chasing whales and considered this unacceptable, and only 38% believed that their captain kept a safe distance from whales. The relatively high level of dissatisfaction over the sustainability of the trips and the high proportion of customers concerned with crowding, chasing and getting too close to whales suggests there is cause for concern here, at least based on the perceptions of passengers. The main target species for these trips is the endangered blue whale (*Balaenoptera musculus*), another reason to be concerned.

In discussion, it was noted that TripAdvisor, while not necessarily a reliable source of social science or other data, can be used as a tool to identify problem areas based on passenger perceptions. It could also be a metric for operators, who may be persuaded to change certain behaviours based on passenger reactions online. The sub-

committee's attention was drawn to Moorhouse *et al.* (2015), a paper assessing TripAdvisor feedback from tourists versus objective evaluation of tourism impacts. Tourism feedback on this site is often positive even when conservation or welfare impacts are negative (Moorhouse *et al.*, 2015), suggesting that when reviews are predominantly negative, the tourism activity is likely to be problematic. Cornejo-Ortega *et al.* (2018), a paper reviewed in SC/68A/WW03, assessed tourism expectations and noted that tourists did want whale watching to be done in a manner "respectful" to the animals and their environment. The sub-committee **agreed** that Sri Lanka should remain an area of interest and funding should be secured if possible, to bring researchers working on whale watching and capacity-building in the region to SC/68b.

5. WHALE WATCHING HANDBOOK

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

SC/68A/WW04 provided an update on the Whale Watching Handbook, an online tool/website intended to support responsible whale watching (<https://wwhandbook.iwc.int/en/>). The Handbook was endorsed by the Commission at IWC/67 and launched in October 2018. As part of the launch, the Handbook was publicised via the IWC website, IWC news bulletin and new Twitter feed, and via press releases issued jointly with CMS. The Secretariat approached other IGOs and NGOs, including various travel and tourism organisations. In addition, it was presented at various international meetings. In the first four months after launch, the Handbook received over 10,000 separate page visits, from 160 countries.

The Handbook will be updated annually. At IWC/67, the Commission agreed that an application should be submitted to the Voluntary Conservation Fund to support the updating of the Handbook in 2019 and 2020. This will fund a small contract for Gianna Minton, who was previously identified through an open and competitive tendering process and will allow for the development of new content, respond to comments received and incorporate Committee feedback. The sub-committee was asked for suggestions on updates to the current content of the Handbook, including potential new case studies and country profiles, updates to the literature on whale watching and suggestions for additional content specifically useful to industry stakeholders using the Handbook.

The success of the Handbook was warmly welcomed by the sub-committee and thanks were offered once again to Minton and Ferriss for their hard work in producing, promoting, and updating it. Suggestions were offered on additional ways to promote the Handbook in various fora and media, including being the focus of social media posts (personal and institutional) and science and tourism-related podcasts, being mentioned at other international treaty meetings such as the Convention on Migratory Species, and being referenced during presentations at various international conferences, meetings, and workshops.

Minton reported that she presented on the Handbook at the International Conference on Marine Mammal Protected Areas (ICMMPA). Feedback from attendees was generally positive, and included the following suggestions: Promote the Handbook more within the Marine Protected Areas community; include more case studies and country profiles; and update the literature list (with older, overlooked publications, as well as new literature) and guidelines/regulations as they become available. Regarding case studies, ICMMPA attendees felt more case studies on poorly managed whale watching should be included. It was felt too many Handbook case studies were positive situations, offering an unbalanced presentation of whale watching globally. Iñiguez also reported that he presented on the Handbook at a multi-stakeholder dialogue/capacity-building partnership event carried out at UN Headquarters in New York in late January 2019. This audience felt the Handbook has good value as a global tool for capacity building. Finally, the Secretariat has submitted an abstract to the 2nd World Marine Mammal Conference, which will be held in December 2019 in Barcelona, Spain, for a poster that will report on various accomplishments of the Commission and the Committee in the recent past, including the launch of the Handbook.

Attention: S, SC, CG

*The sub-committee **recommended** that the promotion of the IWC's Whale Watching Handbook continue and that Contracting Governments and Scientific Committee members promote its use and continue to provide relevant and up-to-date information.*

*The sub-committee **agreed**:*

- (a) that an appropriate balance between positive and negative case studies is needed for future updates to the Handbook and further discussion intersessionally with the Secretariat and the Conservation Committee on how to strike this balance should take place; and*
 - (b) to retain the Whale Watching Handbook intersessional correspondence group (Table 3) to pursue these discussions.*
-

It was suggested that one way to identify potentially negative whale watching situations internationally is to monitor tourism websites and apps such as TripAdvisor for consistently negative reviews. Some usable data may also be gleaned from such sites (although there is considerable ‘noise’ as well)—it was noted that a review of tourism websites for social science information was done for a study in Sri Lanka (see Item 4.4.2).

It was noted that whale watching locations of concern have been evaluated in depth by the sub-committee, and the sub-committee **agreed** that all such locations should eventually be included in future editions of the Handbook. These locations have the benefit of sub-committee review, sometimes very extensively, and this sub-committee evaluation should help mitigate political sensitivities, especially when improvements in identified problems through, e.g., adaptive management, is evident (see item 7.2). It was also noted that the inclusion of the case studies should have a clear purpose; the case studies should be organised in a way that maximises their utility to whale watching areas of emerging concern. Finally, it was noted that locations of concern that are described and evaluated in the scientific literature may also be included in the Handbook, absent or prior to sub-committee review.

Additional ideas for updating and adding to the Handbook were discussed, including the possibility of archiving previous sub-committee annexes and the digests prepared by Parsons (see, e.g., Item 2.3), which are published annually in the journal *Tourism in the Marine Environment*, with direct links to the Handbook online. New will explore the process for establishing such links with the Secretariat and the Conservation Committee intersessionally.

Attention: S, SC, CC

The Whale Watching Handbook will be updated annually. There are guidelines on the IWC website (<https://wwhandbook.iwc.int/en/about/an-evolving-online-resource>) for updating content. The Conservation Committee and the Secretariat will be establishing protocols for managing content of the Handbook, which will be presented to the sub-committee at SC/68b. Ultimately the Handbook is a Commission tool to promote responsible whale watching and requires Commissioner sign-off for country profiles and case studies, coordinating with their own relevant agencies and experts. This is a key aspect of CG and G acceptance and to help ensure that those who would benefit from the Handbook actually use it.

*Therefore, the sub-committee **agreed**:*

- (a) to include consideration of the questions addressed to the sub-committee by the Secretariat in its update on the Handbook and to submit suggestions for the 2020 update for the sub-committee’s consideration at SC/68b;*
- (b) that Minton will contact sub-committee members intersessionally and request individual (and immediate) input to specific needs for the 2019 update; and*
- (c) to retain Agenda Item 5, to allow the sub-committee to continue to contribute to the process of updating the Handbook on an ongoing basis.*

*With regard to feedback from Commissioners on aspects of the Handbook into which sub-committee members had significant input, the sub-committee **recommended**:*

- (a) that the protocols on managing Handbook content, to be established by the Conservation Committee and the Secretariat, include provisions to contact the sub-committee members who worked on particular case studies and country profiles to discuss Commissioner feedback on those case studies and profiles; and*
 - (b) that these sub-committee members should also approach the Secretariat for clarification at any time should revisions be noted on which they have comments or concerns.*
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6. UPDATE OF THE WHALE WATCHING GUIDING PRINCIPLES

6.1 Review draft guiding principles

The sub-committee considered draft revisions of the Commission’s General Principles for Whale Watching (currently available at <https://iwc.int/wwguidelines>). The draft revisions are given in Appendix 2. The sub-committee seeks to finalise these revised general principles, have them approved by the Committee and the Commission and uploaded to the IWC website at the earliest opportunity. The primary changes were to incorporate issues (e.g. swimming with whales, the emergence of new technologies) that have arisen within the whale watching industry over the past 20+ years.

Attention: C, CC, S, SC

*The sub-committee **draws the attention** of the Commission, the Conservation Committee, the Secretariat and the Committee to the need to update the IWC General Principles for Whale Watching, as they have not been*

updated since 1996. The sub-committee **recommended** the approval and adoption of the revised general principles, as given in Appendix 2, at the earliest opportunity.

7. REVIEW PROGRESS ON SCIENTIFIC RECOMMENDATIONS

7.1 Global influence of recommendations

Castro reported that recent whale watching training events in Ecuador were attended by 102 whale tourism guides in four provinces (Esmeraldas, Manabi, Santa Elena, and El Oro). Ecuador's Ministry of Tourism, along with the Pacific Whale Foundation, established a programme to promote and implement responsible marine tourism practises, to help minimise the impact of whale watching on target populations. The programme consisted of workshops, seminars, and conferences, and included the publication of the First Whale Watching Manual of Ecuador (<https://drive.google.com/file/d/1L3eb8HFS5zPXJK2p8zFgpYP7nNutFbOE/view>), as well as audiovisual materials and booklets for whale watching tourists.

The sub-committee recalled the many recommendations it has made in the past regarding conducting training events for operators and other whale watching stakeholders (e.g. regulatory enforcement officers) in countries with early-stage whale watching industries. It welcomed this presentation and thanked Castro for bringing this update forward—it offered its congratulations to the Government of Ecuador and its Ministry of Tourism for being pro-active regarding its developing whale watching industry. Minton suggested including Ecuador's guidelines and its Whale Watching Manual in the IWC's Whale Watching Handbook's list of guidelines and regulations and as a resource, respectively.

Minton presented information from Arabian Sea Whale Network (2018). In August 2018, Oman's Ministry of Environment and Climate Affairs (MECA), the Environment Society of Oman (ESO), Five Oceans Environmental Services (SOES) and the Pacific Whale Foundation (PWF) collaborated to organise a two-day workshop on responsible whale and dolphin watching. The workshop was held in Muscat, Oman, and was hosted by MECA. The 26 invited participants included representatives of the ESO, SOES, MECA, the Royal Oman Police Coastal Guards, the Ministry of Agriculture and Fisheries Wealth, the Ministry of Tourism, the Ministry of Transport and Communication, the Port of Duqm, and Sultan Qaboos University, Marine Science and Fisheries Course. This workshop was in direct response to a recommendation from the sub-committee (IWC, 2019, p. 355).

The sub-committee welcomed this information and thanked MECA, the ESO, SOES and especially PWF for their cooperation and collaboration in organising this important workshop. It was gratifying to learn that the sub-committee's 2018 recommendation was a strong influence in the realisation of this multi-stakeholder event. Minton noted that the workshop was positively received and the sub-committee welcomed future updates on Oman's pursuit of a responsible whale watching industry.

7.2 Progress on previous recommendations

The sub-committee **agreed** to disband the intersessional correspondence group on Swim-With-Whale Operations and in its place to create a standing agenda item on swim-with-whale operations, where updates on research on impacts and trends in these operations can be reported.

The task of updating the IWC General Principles for Whale Watching is complete; they now must be approved by the Commission. Once this occurs and the principles are finalised, the sub-committee requests that the Secretariat promote them, *inter alia*, on the website, through social media and via circulars. The new draft General Principles are comprehensive and address many new and emerging issues and should be finalised and posted at the earliest opportunity (see Item 6.1).

The sub-committee **agreed** to suspend the intersessional correspondence group on Communication with the Conservation Committee until the Secretariat and the CC determine the protocols for managing the content of the Whale Watching Handbook and the July 19 CC planning meeting results are available (see Item 8.1). It will be reinstated when needed. At the July meeting, Iñiguez will also bring forward the sub-committee's previous recommendation of using the Voluntary Conservation Fund as a source of funding for well-designed impact studies by qualified researchers on swim-with-whale operations (IWC, 2018, p. 355).

Minton noted that the sub-committee's previous recommendation to compile the most up-to-date global regulations and guidelines in the IWC's Whale Watching Handbook has been substantially addressed through the table of guidelines and regulations in the Handbook (<https://wwhandbook.iwc.int/en/responsible-management/guidelines-and-regulations>). Updating the list of global regulations and guidelines is an ongoing process, of course, but the current list is believed to be quite comprehensive.

Regarding the recommendation to continue the collaboration between the Secretariats of the IWC and the Convention on Migratory Species (CMS) and to cooperatively work on guidelines for in-water interactions with

aquatic mammals (e.g. swim-with-whale operations), Frisch-Nwakanma noted that substantial progress has been made. Close collaboration between the Secretariats continues. In addition to the joint preparation and translation of the Whale Watching Handbook (Item 5), CMS has now contracted a consultant to prepare a review of existing guidelines, and good practise-based and scientific evidence for the issues of concern related to recreational in-water interactions with aquatic mammals (cetaceans, sirenians, pinnipeds) and other aquatic species, including sharks, rays and turtles. The results of this review may lead, at a later date, to the development of guidelines for selected CMS listed taxa. The CMS Secretariat intends to share the draft review with the intersessional group on Human-Induced Behavioural Changes of Concern (Table 3), and involve the group further if and when any guidelines are developed. Further, the CMS Aquatic Mammals Working Group welcomes any information on additional sites offering recreational in-water interaction with aquatic mammals to be included in their compilation contained in CMS/COP12/Inf.13.

New will follow up intersessionally with the Secretariat on the establishment of the Carole Carlson Memorial Whale Watching Fund (IWC, 2018, p. 341).

The sub-committee wished to thank the Secretariat for its hard work on the recommendations database. It has always found reviewing progress on previous recommendations to be a rewarding and helpful task, to keep the sub-committee's work plan focused and moving forward. The sub-committee looked forward to being an early adopter of the database.

8. OTHER MATTERS

8.1 Communication with the Conservation Committee

Discussions continued on ways to improve communication and collaboration with the Conservation Committee (CC). One suggestion was that, whenever a joint meeting of the CC Standing Working Group on Whale Watching (SWG) and the Whale Watching Sub-Committee (sub-committee) occurs, the report of that meeting should be sent to the sub-committee as soon as it is finished, to allow the sub-committee to review it well before its next meeting. It was emphasised that the recommendations database will be particularly useful for purposes of improving inter-committee communication. Database outputs could go to convenors soon after the Committee meeting is over and those of relevance to other IWC committees could be highlighted by convenors early in the intersessional period. It was noted that the Secretariat can assist with inter-committee communication. For example, there may be other documents, not just a joint meeting's final report, that could be of assistance to sub-committees; the Secretariat can help identify those and circulate them to convenors or compile them in a website subfolder. It was noted that the July 19 meeting of the Conservation Committee Planning Group will also discuss communication issues.

Attention: S, CC, SC

*Given the need to improve communication and collaboration between the Scientific Committee's Sub-Committee on Whale Watching and the Conservation Committee, the sub-committee **recommended** that it serve as an early adopter of the recommendations database, to assess and determine its maximum utility with regard to facilitating communication between and among various IWC committees.*

*In addition, the sub-committee **agreed** that the ongoing effort by the Secretariat to archive Committee reports and documents on the website is consistent with its suggestion to circulate or otherwise make Conservation Committee reports and documents relevant to the work plan of the sub-committee available to the sub-committee as soon as they are ready for distribution. The sub-committee also **agreed** to add a standing agenda item to review such reports and documents from (in particular) the Standing Working Group on Whale Watching as they are produced.*

9. WORK PLAN

The sub-committee discussed potential issues (and invited participants) to prioritise for SC/68b and **agreed** to focus on whale watching in Sri Lanka (see Item 4.4.2); emerging technologies such as drones, both in the context of impacts and as platforms of opportunity; and Latin American cetacean watching (marine and river) (see Item 4.2). It was noted that a group of researchers throughout Latin America, from Mexico to Argentina/Chile, will be conferring intersessionally to prepare papers on regional whale watching for SC/68b. The sub-committee welcomed this update and looked forward to the consideration and discussion of these papers next year.

The sub-committee **agreed** to add a standing item for the 'Conservation Committee' with sub-items, e.g. receiving relevant documents and reports, communication and collaboration (see Item 8.1).

See Table 4 for the work plan.

10. ADOPTION OF REPORT

The report was adopted at 11:03hrs on 18 May 2019. The sub-committee thanked New for succeeding so well in her first year as chair and for her helpful guidance during the discussions and offered its sincere thanks to Rose for her exemplary rapporteuring.

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Table 1

Summary of studies on the impacts of whale watching on cetaceans and compliance with whale watching regulations (SC/68A/WW03). 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	Key Findings	Reference
<i>Impacts of whale watching on cetaceans</i>			
Southern right white (<i>Eubalaena australis</i>)	San Matías Gulf, Patagonia, Argentina.*	Whales reacted to vessels as they came closer (50 meters). Reactions were dependent upon how the vessel approached and whether engines were on or off. Active boat maneuvers, or vessels with their engines on, elicited the most substantive reactions from whales. Mothers and calves evaded vessel approaches most, whereas solitary and non-social active groups were the least reactive.	Arias <i>et al.</i> (2018)
Guiana dolphin (<i>Sotalia guianensis</i>)	Pontel Bay, Brazil	Dolphins stayed shorter time periods in the bay per observation when boats with inboard motors were present, while they stayed longer time periods when boats with no motor were present. There were more negative behavioural responses than neutral responses to boats with outboard motor. Surfacing rates were higher with no boats present. Vessels often changed course to intersect dolphins, after which dolphins changed direction or left the area entirely. After boat encounters, travelling behaviour increased while foraging and resting behaviour decreased.	Marega-Immura <i>et al.</i> (2018)
Spinner dolphin (<i>Stenella longirostris</i>)	Hawaii	Dolphins were exposed to human activities within 100m for 83% of the day, with a median duration of only 10 min between exposure events. Dolphins spent 62% of the day resting; despite high levels of exposure to humans, no significant effect was seen on dolphin resting behaviour. Although resting was observed, it might nevertheless reflect greater vigilance, i.e. resting while remaining wary, due to the almost continuous nature of human-caused disturbance.	Tyne <i>et al.</i> (2018)
Spinner dolphin (<i>Stenella longirostris</i>)	Samadai, Satayah and Qubbat'Isa Reefs, Red Sea	Focal dolphin groups were exposed to boats and/or swimmers during 26%, 42% and 53% of their follows at Qubbat'Isa ('control'), Samadai (regulated) and Satayah (unregulated) Reefs, respectively. Dolphins' rest was disturbed (with a noticeable reduction of tight, inactive and single groups—which indicate resting behaviour—compared to the control site), especially during mid-day. This disturbance was exacerbated at Satayah, where dolphin tourism was unregulated.	Fumagalli <i>et al.</i> (2018)

*The sub-committee encouraged research on the emerging whale watching industry in the San Matías Gulf, Patagonia, Argentina (IWC, 2016, p. 388).

Table 2

Whale watching in Africa and related information.

WW areas/major operations	Platform	Main targeted species	Regulations/codes of conduct
Comoros Indian Ocean	Boat	<i>Megaptera novaeangliae</i>	Whale Watching and Swimming Act 2008
Egypt Egyptian Red Sea; Sataya/Dolphin Reef	Boat; Swim-with	<i>Stenella longirostris</i> ; <i>Tursiops aduncus</i>	Hurghada Environmental Protection and Conservation Association (HEPCA); Code of Conduct Hurghada
Kenya Watamu	Boat	<i>Megaptera novaeangliae</i>	Watamu Marine Association (WMA)
Madagascar Ile Ste Marie; Nosy be	Boat	<i>Megaptera novaeangliae</i>	Megaptera
Mauritius Indian Ocean	Boat	<i>Megaptera novaeangliae</i> ; <i>Physeter microcephalus</i>	Tourism Authority (Dolphin and Whale Watching) Regulations 2012 (GN No. 154 of 2012)
	Swim-with	<i>Tursiops truncatus</i> ; <i>Tursiops aduncus</i> ; <i>Stenella longirostris</i>	
Mayotte (France) Indian Ocean	Boat	<i>Megaptera novaeangliae</i>	France-tour operators charter for marine mammal watching in Mayotte; France-Charter for marine mammal watching in Mayotte

Mozambique Indian Ocean	Boat	<i>Megaptera novaeangliae</i> ; <i>Eubalaena australis</i>	
Ponta do Ouro; Ponta Malongane; Ponta Mamoli	Swim-with	<i>Sousa chinensis</i> ; <i>Stenella longirostris</i> ; <i>Tursiops truncatus</i>	
Reunion (France)	Boat	<i>Megaptera novaeangliae</i>	Reunion charter for responsible viewing of marine mammals and turtles
	Swim-with	<i>Tursiops aduncus</i> ; <i>Stenella longirostris</i>	
Seychelles Aldabra Atoll; Outer Islands	Boat	<i>Megaptera novaeangliae</i> ; <i>Physeter microcephalus</i> ; <i>Tursiops aduncus</i> ; <i>Tursiops truncatus</i> ; <i>Stenella longirostris</i>	
South Africa	Boat; Land-based	<i>Megaptera novaeangliae</i> ; <i>Eubalaena australis</i> ; <i>Balaenoptera edeni</i> ; <i>Tursiops aduncus</i> ; <i>Tursiops truncatus</i>	Whale Time; South Africa 2017 TOPS Marine Species Regulations; South Africa Standards for Whale Watching Vessels
Tanzania Zanzibar	Boat Swim-with (Snorkelling/diving)	<i>Megaptera novaeangliae</i>	
Benin Cotonou	Boat	<i>Megaptera novaeangliae</i>	
Canary Islands (Spain) Tenerife	Boat; Kayak	<i>Globicephala macrorhynchus</i> ; <i>Physeter microcephalus</i> ; <i>Megaptera novaeangliae</i> ; <i>Tursiops truncatus</i>	Decree 178/2000; Royal Decree 1727/2007; Whale Watching Quality Charter; Atlantic Whale Foundation (AWF) Code of Conduct
Cape Verde Boa Vista	Boat	<i>Megaptera novaeangliae</i>	
Gabon Libreville; Port Gentile	Boat	<i>Megaptera novaeangliae</i>	WCS guidelines for responsible observation of cetaceans endorsed by ANPN (Gabon National Parks Agency)
Ghana	Boat	<i>Megaptera novaeangliae</i>	Exploring Tourism Ghana; Kedas Lodge
Namibia Walvis Bay; Pelican Point; Swakopmund	Boat; Kayak	<i>Megaptera novaeangliae</i> ; <i>Eubalaena australis</i> ; <i>Cephalorhynchus heavisidii</i>	MarWiSe (Marine Wildlife Safe)-voluntary responsible tourism regulations
Sao Tome and Principe Sao Tome to Islet of Rolas	Boat; Canoe/Kayak; Land-based (from coastal resorts)	<i>Megaptera novaeangliae</i>	
Sierra Leone Banana Island	Boat	<i>Megaptera novaeangliae</i>	
South Africa	Boat; Land-based	<i>Megaptera novaeangliae</i> ; <i>Eubalaena australis</i> ; <i>Balaenoptera edeni</i> ; <i>Tursiops aduncus</i> ; <i>Tursiops truncatus</i>	Whale Time; South Africa 2017 TOPS Marine Species Regulations; South Africa Standards for Whale Watching Vessels
The Gambia Bijol Islands; River Gambia (mouth and up river)	Boat	<i>Sousa teuszii</i> ; <i>Tursiops truncatus</i>	

No identified WW operations for the countries of: Djibouti; Eritrea; Sudan; Somalia; Somaliland; Angola; Cameroon; Cote d'Ivoire; Democratic Republic of Congo; Equatorial Guinea; Guinea; Guinea-Bissau; Liberia; Mauritania; Morocco; Nigeria; Republic of Congo; Senegal; Togo; and Western Sahara.

Table 3
E-mail Intersessional Correspondence, Advisory and Steering Groups and Terms of Reference.

Group	Terms of Reference	Membership
(1) 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, Vermeulen, Weinrich mawi@dist.iwc.int
(2) 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
(3) Communication with the Indian Ocean Rim Association (IORA) Advisory Group	Help provide advice to IORA when appropriate; facilitate communication between IORA and the sub-committee; and consider ways to promote appropriate training workshops.	Ferriss (Convenor), Baldwin, Iñiguez, New, Parsons, Simmonds, C. Smith, S. Smith, Weinrich iora@dist.iwc.int
(4) 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. Several of these items have intersessional correspondence groups (ICG) or intersessional advisory groups (IAG). Those groups will work intersessionally and provide updates at SC/68B (see Annex T).

Topic	Intersessional 2019/20	2020 Annual Meeting (SC/68b)
Assess the impacts of whale watching on cetaceans – PRIORITY ¹ _{SEP} (i) Short-term impacts (ii) Mid- and long-term impacts (iii) Swim-with operations (iv) Emerging issues of concern, e.g. drones and other emerging technology in the context of whale watching	Prepare papers	Papers to be presented
Third MAWI workshop	Workshop (convenor New) at World Marine Mammal Science Conference	Report
Finalise IWC's General Principles for Whale Watching (https://iwc.int/wwguidelines)	-	Receive update
Review whale watching in Sri Lanka	Intersessional correspondence group to confer w IORA	Papers to be presented
Review whale watching in Latin America	Work to prepare review	Papers to be presented
Intersessional correspondence groups (see Table 3)	Email correspondence and work	Receive reports
Review progress on previous recommendations	-	Papers to be presented
Conservation Committee Standing Working Group on Whale Watching (SWG); review documents, communication and intersessional collaboration	Email correspondence, esp. regarding July 19 planning meeting	Receive update
IWC Whale Watching Handbook	Email correspondence w Minton	Receive updates
Increased collaboration with other sub-committees regarding platforms of opportunity and citizen science data	Email correspondence and work	Receive updates

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 Swim-with-whale operations
 - 2.3 Review specific papers addressing impacts
 - 2.4 Emerging concerns
3. Platforms of opportunity and citizen science
 - 3.1 Review new information
4. Whale watching locations of interest
 - 4.1 Communication with the Indian Ocean Rim Association (IORA)
 - 4.2 River dolphins in the Amazon and Asia
 - 4.3 West Africa
 - 4.4 Additional locations
 - 4.4.1 Bocas del Toro, Panama
 - 4.4.2 Sri Lanka
5. Whale Watching Handbook
 - 5.1 Review and provide comments on the IWC's Whale Watching Handbook
6. Update of the Whale Watching Guiding Principles
 - 6.1 Review draft guiding principles
7. Review progress on scientific recommendations
 - 7.1 Global influence of recommendations
 - 7.2 Progress on previous recommendations
8. Other matters
 - 8.1 Communication with the Conservation Committee
9. Work plan
10. Adoption of report

Appendix 2

DRAFT REVISIONS OF GENERAL PRINCIPLES FOR WHALE WATCHING

(major additions given in *italics*; major deletions in ~~strikeout~~)

(1) MANAGE¹ THE DEVELOPMENT OF WHALE WATCHING TO MINIMISE THE RISK OF ADVERSE IMPACTS:

- i. *land-based whale watching minimises adverse impacts on cetaceans and the marine environment and should be developed where possible;*
- ii. implement, as appropriate, measures to regulate platform² numbers and size, activity, frequency and length of exposure in encounters with individuals and groups of whales;
 - management measures may include closed seasons or areas where required to provide additional protection;
 - ideally, undertake an early assessment of the numbers, distribution and other characteristics of the target population/s in an area;*avoid the development of operations that include direct interactions between humans and cetaceans, such as swimming with or provisioning (feeding) the target species;*
 - *where such operations are currently in existence, they should be strictly regulated, to minimise the potential impacts on both humans and cetaceans**monitor the effectiveness of management provisions and modify them as required to accommodate new information;**where new whale watching operations are evolving, start cautiously, moderating activity until sufficient information is available on which to base any further development;*
 - *where possible, begin with land-based whale watching in conjunction with research, to minimise adverse impacts and to improve understanding of population/s being targeted;*
 - *support the development of Codes of Conduct, either voluntary or as regulations, to define approach guidelines and the conduct of passengers and operators, so as to minimise adverse impacts;**as new and evolving technology becomes available (e.g., drones), start cautiously and limit their use until sufficient information on their potential impacts is available on which to base any further development;**implement scientific research, using all possible platforms, population monitoring and collection of information on operations target cetaceans and possible impacts, including those on the acoustic environment, as an early and integral component of management, including;*
 - *the acoustic environment;*
 - *habitat quality;*
 - *emerging technology; and*
 - *existing activities in the region;**develop training programs for operators, local guides and crew on the biology, behaviour and conservation status of target species, interpretation of these aspects, whale watching operation best practises and the management provisions in effect;**encourage the provision of accurate and informative material information to whale watchers through various methods (e.g., written materials, lectures, films), to:*
 - *develop an informed and supportive public;*
 - *encourage development of realistic expectations of encounters and avoid disappointment and pressure for increasingly risky behaviour.**encourage the use of whale watching operations as platforms of opportunity for research.*

(2) DESIGN, MAINTAIN AND OPERATE PLATFORMS TO MINIMISE THE RISK OF ADVERSE EFFECTS ON CETACEANS, INCLUDING DISTURBANCE FROM NOISE:

- i. vessels, engines and other equipment should be designed, maintained, and operated during whale watching to reduce, as far as practicable, the adverse impacts on target species and their environment;
- ii. cetacean species may respond differently to ~~low and high frequency sounds~~ *the presence of platforms and the sounds they produce, as well as relative sound intensity or rapid changes in sound; therefore, vessel operators should be aware of;*

¹ Wherever 'manage' and 'management' are used, we are referring to adaptive management, which we define as "an iterative process in which practitioners test hypotheses and adjust behavior, decisions, and actions based on experience and actual changes" in the environment and human and animal behavior (see Stankey et al., 2005).

² Any vessel (with or without engine), aircraft or person in the water.

- ~~vessel operators should be aware of~~ the acoustic characteristics of the target species and of their vessel under operating conditions; particularly of the need to reduce as far as possible production of potentially disturbing sound;
- *other potential sources of sound in the environment, such as aircraft, large ships moving through the area, drones, fishing vessels, recreational vessels and jet-skis;*
- *how targeted individuals may respond to the cumulative sound in the environment;*
- *the number of other vessels in proximity to the individual being observed, including non-commercial and non-motorised vessels, and the need to keep these numbers as small as possible; and*
- *the need to reduce a whale watching vessel's contribution to the overall noise and other potential negative impacts in the environment.*

vessel design and operation should minimise the risk of injury to cetaceans should contact occur; for example, shrouding of propellers can reduce both noise and risk of injury; operators should be able to keep track of whales during an encounter.

(3) ALLOW THE CETACEANS TO CONTROL THE NATURE AND DURATION OF 'INTERACTIONS':

- i. operators should have a sound understanding of *species- and location-specific* behaviour of the cetaceans and be aware of behavioural changes that may indicate disturbance;
 - ii. *avoid high speed³ within areas of known cetacean presence;*
 - iii. in approaching or accompanying cetaceans, maximum platform speed should be determined relative to that of the cetacean, and should not exceed it once on station⁴;
 - iv. use appropriate angles and distances of approach; species may react differently, and most existing guidelines preclude head-on approaches;
 - v. ~~friendly whale behaviour should be welcomed but not cultivated~~ do not instigate *or encourage* direct contact interaction with a platform;
 - vi. avoid sudden changes in speed, direction or noise;
 - vii. do not alter platform speed or direction to counteract avoidance behaviour by cetaceans;
 - viii. do not pursue⁵, head off, or encircle cetaceans or cause groups to separate *or split apart*;
 - ix. approaches to mother/calf pairs and solitary calves and juveniles should be undertaken with special care;
 - there may be an increased risk of disturbance to these animals, or risk of injury if vessels are approached by calves;
- cetaceans should be able to detect a platform at all times;
- while quiet operations are desirable, attempts to eliminate all noise may result in cetaceans being startled by a platform that has approached undetected;
 - rough seas may elevate background noise to levels at which vessels are less detectable.

REFERENCES

- International Whaling Commission. 2005. Report of the Scientific Committee. Annex M. Report of the Sub-Committee on Whalewatching. Journal of Cetacean Research and Management (Supplement) 7:327-32.
- Stankey, G.H., Clark, R.N. and Bormann, B.T. 2005. Adaptive Management of Natural Resources: Theory, Concepts, and Management Institutions. Gen. Tech. Rep. PNW-GTR-654. U.S. Department of Agriculture, Pacific Northwest Research Station, Portland. 80pp.

³ 'High speed' is defined as "travelling at more than 13 knots" (IWC, 2005).

⁴ Once the platform is actively 'watching' cetaceans.

⁵ Chase (as opposed to follow), causing the whale to change its course or speed.