Annex M

Report of the Sub-Committee on Whalewatching

Members: Kato (Chair), Al Kiyumi, Behel, Berggren, Birtles, Borsani, Brager, Brandao, Brownell, Childerhouse, Deimer, Drake, Diaz, Fortuna, Fukui, Funahashi, Gales, Gidding, Groch, Haug, Iniguez, Jeglinski, Kell, Kim, Lauriano, Lawrence, Lee, Lima, Magloire, Minton, Murase, Nakatsuka, Nishiwaki, Ohsumi, Oosthuizen, Palazzo, Pantoja, Parsons, Paulus, Perry, Rambally, Reijnders, Rennie, Ridoux, Ritter, Robbins, Rogan, Rojas-Bracho, Rose, Sadler, Simmonds, M., Sohn, Stachowitsch, Tsidulko, Urban, Urquiola, Walters, Weinrich, Weller, Williams, Wilson, Yoshida.

1. OPENING REMARKS AND TERMS OF REFERENCE

Kato welcomed the participants and noted the priority items identified by the Scientific Committee: whalewatching data collection; the Whalewatching Management Workshop; national whalewatching guidelines and regulations; and whale and dolphin 'swim-with' programmes.

The convenor (Kato) noted that the sub-committee would deal with the scientific aspects of whalewatching, and the effects of whalewatching on cetaceans, as in previous meetings.

2. ELECTION OF CHAIR AND APPOINTMENT OF RAPPORTEURS

Kato was elected Chair, and appointed Weinrich, with assistance from Rose, as rapporteur.

3. ADOPTION OF AGENDA

The adopted agenda is given in Appendix 1.

Nakatsuka stated that the Government of Japan's position is that whalewatching is outside the competence of the IWC. Further, the IWC has limited financial and human resources and should focus its efforts on important matters such as stock assessments.

Weinrich pointed out that numerous published studies incorporating data collected by whalewatching vessels, many of which are referenced in the annex to SC/55/WW6, clearly demonstrate the contribution of significant data obtained from whalewatching vessels in providing information to stock management of numerous cetacean species.

Oosthuizen stated that whalewatching is of the utmost importance for South Africa, as it has been identified as one aspect that could help alleviate poverty and help with capacity building in the poor coastal communities through tourism. As it is the policy of South Africa that the activity must be environmentally sensitive, the government recognises the important and vital role that the Whalewatching sub-committee plays in insuring this.

Parsons stated that in many parts of northern Europe, particularly in coastal communities that have faced financial impoverishment due to a decline in fishing and other traditional industries, whalewatching has become an essential economic resource. Minton stated that whalewatching is likewise very important in the South Pacific.

Iniguez stated that in Argentina, whalewatching is one of the most important economic activities in the country. Urquiola asserted the importance of whalewatching as an economic activity for Spain. Fortuna stated that Italy fully supports the work of the Whalewatching sub-committee.

Birtles stated that whalewatching is a substantial economic activity in Australia. The research conducted on dwarf minke whales on the Great Barrier Reef, done in conjunction with the whalewatching and whale swim-with operations there, is highly valuable to understanding poorly understood and relatively inaccessible stocks of balaenopterids. He also mentioned that minke whales in his study area have been seen with harpoon scarring, which is a cause for concern for their welfare in the 9-10 months they are not present, given their value to the region as living resources.

4. REVIEW OF AVAILABLE DOCUMENTS

The following documents available to the sub-committee were identified: SC/55/WW1-7, SC/55/WW9-12; Ritter (2003); Diaz *et al.* (2003); Scarpaci *et al.* (2003); Birtles and Arnold (2002); Birtles *et al.* (2002) and Birtles *et al.* (2002). Progress Reports from Argentina, Australia, Iceland, Ireland, New Zealand, Norway, South Africa and the UK.

5. WHALEWATCHING DATA COLLECTION

In recent years, the Scientific Committee has considered the relationship between whalewatching and research, including the possible impacts of whalewatching itself on cetaceans. At the 52nd meeting of the Scientific Committee, the sub-committee concluded that standardisation of data collection from whalewatchers would be helpful and, in

response to this, a preliminary Data Recording System (DRS) for data collection from whalewatching platforms was presented in 2001 (Simmonds *et al.*, 2001). The DRS (a series of data collection fields) was intended to act as a comprehensive template for data recording that researchers and whalewatching operators could download from a website, CD, or other form of access, and modify to suit their own circumstances.

Last year, the DRS was developed further to take into account published work and existing data collection forms provided by whalewatching operators. In addition, a simple prototype computer program version of the DRS was also presented to that sub-committee meeting. The programme allowed researchers to identify the types of data that they wished to collect (or had been advised to collect) and produce a 'daughter form' that could be printed out and used in the field (IWC, 2003). The potential of the DRS to be further developed as an interactive web-based or laptop/palmtop system (with the potential for collecting data in real time in a manner similar to the LOGGER program) was also noted.

Last year, the sub-committee decided to further develop the DRS. At the same meeting it was also recommended that anyone interested in using the DRS in the field should take the following steps:

(1) Consider what is likely to be practical to collect according to the circumstances in which the whalewatching platform is operating.
(2) Choose from the DRS those data fields that are identified as appropriate and modify this into a 'daughter form' (always including the critical information highlighted for each data field).
(3) Test the 'daughter form' in the field – i.e. in the conditions in which it is intended to be used to ensure that in practice it can be filled in with reasonable ease and accuracy.

The need to consult wherever possible with scientific experts was also highlighted.

SC/55/WW1 presented the results of intersessional work on the DRS in a manner that prioritised data fields based on the type of study being conducted. Using the categories of study types determined by Robbins (2000) in a review of published studies using whalewatching data, each data field in the DRS was ranked in priority from 1 (essential) to 3 (minimally important). Further, several study categories were broken down into those that required photo-identification data and those that could be done without such data. Photo-identification was found to be at least helpful in all study types, and essential for many. Study categories included distribution and habitat use; stock identity and composition; calf return, survivorship and recruitment; abundance; age-length relationships; behaviour; and human-related risks. This refinement would be important in making the DRS most useful for data collectors to consider both the goals of their data collection and to make the data most useful in resolving management questions for whales in the area in which the operation is taking place. It was further noted that some users of the DRS may not be in the position to narrow their scope of interest into one of the study categories; a further refinement might be to rank data fields for general archival data collection. For such cases, it was noted that collecting photo-identification information during sightings, along with an associated date and positions, should be considered as a minimal ideal. The data field ranking by study types is attached as Appendix 2.

Murase raised the concern that data collected aboard whalewatching boats were limited in their utility due to the commercial nature of the operations. In such operations, search effort is biased towards where whales are concentrated rather than randomly. Scientists using the data have to be aware of the limitations of the data collected from this platform. The sub-committee noted that this issue had been discussed previously. While there was agreement that whalewatching vessels may not be an appropriate platform for systematic transect surveys, there were many cases in which the data were important and useful and, in some cases, were the only data that existed in a region. Further, a substantial number of published papers in peer-reviewed journals indicated that other scientists had the chance to determine whether there was undue bias, and had not found this to be the case.

Kato reiterated the purpose of developing the DRS – to collect the best available information from whalewatching vessels.

There was discussion about the possibility of using the prioritised DRS to record information on the effects of whalewatching vessels on whale behaviour. It was noted that the 'human risk' section of the study categories was not intended to look at vessel impacts, but rather risk from entanglement, ship strike, or other anthropogenic impacts.

The sub-committee noted that SC/55/WW1 was a useful addition to the DRS development effort. It was further noted that the DRS computer program to develop data forms had been made available on a private web site to members of the intersessional group.

SC/55/WW3 described field tests of forms derived from the DRS conducted intersessionally in West Scotland. Data recording forms were sent to 33 whalewatching companies, of which 23% returned completed forms. In addition a further 23% of companies pledged to record sightings and return forms in the forthcoming year, i.e. almost half of operators agreed to record sightings using the DRS derived form. A total of 609 sightings of cetaceans were recorded on the forms given to whalewatching tour operators. Two-thirds of the sightings were recorded on the simplest of the three forms designed for whalewatching boats. Scientific data fields on all of the returned forms were completed fully.

Those operators that did not return forms were asked why they did not do so. Comments included that the forms were received too late in the season (due to the lateness of the 2002 meeting, DRS trial forms were not produced and circulated until well into the whalewatching season) and a fear of making competitors aware of where the operator was sighting whales (which was partially relieved when these reluctant operators saw the openness with which other operators were providing information, and the positive publicity and credit these latter operators received when the results of the data collected were publicised in local newspapers). The other main reason cited was that most of the operators were one-man operations who believed that they would have difficulty in navigating their vessel, caring for their customers, whilst also completing data forms. These one-man operations were therefore asked what could be done to modify the forms to make them easier for the operators to complete. The operators suggested a simpler layout, a map (to plot boat route and sighting position), and double-sided forms (possibly waterproof), or forms compiled in a logbook. Subsequently another DRS 'daughter form' incorporating these suggestions was designed. This new form was very favourably received by the operators.

Nakatsuka wondered how even simpler forms could be useful in terms of data collected. Parsons clarified that the

term 'simpler' referred to the layout of the form – it did not refer to the data collected.

One experience gained from collecting cetacean sightings data from whalewatching operators was that the process of initially filling in simple data forms (and subsequent feedback of the results to the operators) led to operators becoming more interested and enthusiastic about collecting additional and more complex data.

In addition to collecting data from whalewatching vessels during the West Scotland field tests, DRS 'daughter forms' were also distributed to members of the public and the fishing industry. A further 332 cetacean sightings were reported via these forms, thus indicating that the DRS forms can be applied to other marine user-groups, in addition to whalewatching operations.

It was noted that three fish-farming companies (27%) of those given forms returned them. In some cases, fish-farming companies were reluctant to communicate with environmentalists due to adversarial relationships between them and some environmental groups. More amenable companies realised the benefits of working in cooperation with environmentalists, and their return was higher. Some employees liked making the effort to report cetacean sightings, as it occupied time when they would otherwise have nothing to do.

Different numbers of cetaceans were sighted by different whalewatching companies, as reported in SC/55/WW3. These differences appeared to be largely due to operational factors, including the vessel's destination. Those with lower numbers of cetacean sightings operated close to shore, where much of their effort was devoted to seal haul-outs, while some boats worked primarily further from shore looking for larger whales.

Questions arose about the level of confidence for species identification by whalewatching operators. The availability of many readily accessible sources of information for identification was noted, including field guides, field keys and the web. Simmonds showed the meeting a new field guide to the cetaceans of the Northeast Atlantic that allows the accuracy of identifications to be high. The confidence level in species identification can also be a field included on the DRS form. Parsons clarified that species identifications in West Scotland have also been confirmed in the field by having researchers accompany the operators and having the operators submit photos. These would be further aided by the preparation of an instruction guide to the DRS.

The sub-committee discussed a draft written guide to the DRS, submitted by Parsons, and designed for operators. The text is designed to encourage operators to use the DRS, and to enable them to contact local researchers who might be interested in the data through an on-line list. These guidance notes will be further developed intersessionally.

Ritter noted that in the Canary Islands, operators have collected data from thousands of sightings over many years. He noted that simplicity in the data form was very important, as operators had many other demands. Although he and a cooperating operator had not previously used the DRS to design forms, they are now testing DRS-derived forms in the Canary Islands.

Finally, it was **agreed** that feedback to the data collectors, whether operators or otherwise, is essential in order to encourage their cooperation. In West Scotland, data contributors are presented with regular sighting summaries with their contributions acknowledged; these can be shown to and used by potential passengers. For eight years on the Great Barrier Reef, operators have received pre-season briefings, post-season recaps and contact throughout the season. This has produced a substantial base of information. As a side benefit, photo-identification data gathered by operators showed that they were sharing a resource (individual whales) over time, and generated a cooperative spirit where a competitive one had existed previously. Importantly, it made them aware of their mutual responsibility to the sustainable use of the shared resource.

SC/55/WW7 provided comments received on the DRS at the European Cetacean Society (ECS) meeting held in the Canaries in March 2003. The DRS was presented to the 'Maximising Ships of Opportunity for Cetacean Research Workshop' and the 'Whale Watching Workshop'. Participants at both were interested in the DRS and made a number of recommendations, including that data fields should be added for photo-identification and environmental datasets. Another suggestion was that the DRS could be connected to other software systems that might: (1) allow data to be entered directly into the system; (2) provide an explanation of certain types of behaviour; (3) include a mapping program, to make data analysis easier and also make the recording (e.g. via sketches) of routes and sightings easier; and (4) in some way facilitate the development of a collaborative database, where people can submit data compiled in a standardised format for further analysis by appropriate experts. Some participants felt it would also be useful to edit the form after the computer had generated it; for example to enlarge, reduce or introduce the data fields. The provision of the DRS in different languages was also recommended.

Several issues were identified that ECS participants felt might usefully be further considered in the development of the DRS. These included problems related to observation of mixed species associations and large, active groups of dolphins. Issues relating to behaviour sampling methodology were identified and it may be helpful to develop ethograms to ensure that the observers define and record behaviour and group composition systematically wherever they occur. This could be of particular importance when analysing data over time and when comparing data from different sources.

Consulting at this conference of interested and experienced scientists was fruitful. In addition to those who were already working in this way, it was apparent that a number of individuals planned to start collecting data from platforms of opportunity in the near future. There was a perceived need for the kind of data collection forms that the DRS may produce and there were also offers to test DRS forms in the field.

There is considerable interest in obtaining data from ships of opportunity. Of the 43 participants of 11 nations attending the Ships of Opportunity Workshop, 8 used ferries, 7 used recreational craft, 6 used (non-cetacean) research vessels, 1 used a barge and 2 used whalewatching vessels. Nineteen people stated that they recorded effort and 16 used fixed routes. The workshop organisers are now developing a 'Good Practice Guide' for the collection of data from platforms of opportunity. This development overlaps with the development of the DRS and consultation is recommended between the two initiatives.

Urquiola noted that there were many times that, despite interest and best intentions, the operator or guide may not have the time or training to collect data on each trip. Parsons mentioned that there have been times when researchers working with whalewatching operations have trained operators to collect data when they could not be there. The sub-committee reiterated the importance of having experts working in consultation with data collectors, and noted their

recommendation in the past that, where possible, a space be made available for a dedicated data collector. Urquiola noted that in Tenerife it can be hard to find data collectors to go out on boats three times a day with over 30 boats in the area all year round. Ritter suggested that an extra person may not be needed.

Yoshida noted that in Japan, whalewatching is most prosperous in the Bonin Islands. However, data collection there is not running successfully. Some of the whalewatching companies are not helping the Bonin Islands Whalewatching Association collect the data voluntarily. In some cases, the whalewatching association chartered the whalewatching vessels as research vessels and collected data. The situation is similar in other areas in Japan. However, it was noted that some volunteers out of Kochi collect data on Bryde's whales, through cooperation between whalewatching operations and the Research Institute.

SC/55/WW11 presented information on data acquisition from dwarf minke whales on the Great Barrier Reef in Australia. The Minke Whale Project currently asks the industry to assist in the collection of whalewatching data under five main categories.

(1) Whale Sighting Sheet.
(2) Encounter Log Book.
(3) Minke Whale Passenger Questionnaire.
(4) Industry Effort Data (derived from trip logs).
(5) Photos and videos with full data on time and place they were taken, etc.

With the 2003 granting by the Great Barrier Reef Marine Park Authority (GBRMPA) of 'Swimming with dwarf minke whale permits', the use of the Whale Sighting Sheet (WSS2003) has become a permit condition. The Encounter Log Book is an experimental attempt to see what behavioural data can be collected by passengers and crew during the course of minke whale encounters. It is likely to be particularly useful in documenting some of the rarer behaviours and the more exuberant ones, which may be of concern. Eleven behaviours were of particular interest, recorded simply as presence/absence data by the crew. The Encounter Log Book is an attempt to gather frequency of these behaviours and a record of the context in which they occur.

It was noted that this was an informative work on swim-with-whale programmes, and could perhaps act as a model for other areas where their impact has yet to be studied. Weinrich noted that it was important not to rely too heavily on data on whales collected by passengers who had minimal experience observing whales previously, although the use of passenger photographs or video may be helpful. Ohsumi expressed concern about the possibility of disrupting breeding on a winter calving/breeding ground. Birtles noted that only 1-2 cow-calf pairs are sighted each season (Birtles *et al.*, 2002), so this area is unlikely to be a calving ground, and to date they have not observed breeding behaviour (acoustic data suggest mating does occur here, however). Further, since the activity takes place over a large area and relatively far offshore (these are live-aboard vessels) where there is little enforcement capability, and because the whales approach the swimmers, banning the activity is not an option; instead they need to make it sustainable with minimal impact on the animals.

SC/55/WW12 examined the feasibility of using a commercial whalewatching vessel as a platform of opportunity to look at the distribution and habitat use of fin and minke whales in the Bay of Fundy, Canada during the summer months. A single observer maintained a lookout for whales during each trip and recorded the position of each sighting, the number of whales encountered and surface activity. During all trips the vessel track was recorded using a hand-held GPS unit, which automatically recorded a position every five minutes. Effort was controlled for biased search effort by dividing the area into a grid, consisting of 2′ latitude by 2′ longitude cells and calculating a sightings rate, based on the number of whales sighted in each cell and the number of times each cell was searched.

Data were collected during 325 hours on 100 trips conducted between 17 July and 18 September 2002. These trips resulted in 151 encounters with a total of 344 whales, including 228 fin whales and 104 minke whales. Both these species exhibited a non-uniform distribution and appeared to use different parts of the study area. Minke whale sighting rates were highest in relatively shallow waters and steep sloping areas; sightings were concentrated in areas subject to strong tidal eddies near the northern tips of Grand Manan and Campobello Island. Fin whales were also found off the northern tip of Grand Manan and sighting rates for this species were highest in areas with flat benthic topography adjacent to the relatively deep Owen Basin. Foraging behaviours were recorded during 87% of all whale encounters and results indicate that whale distribution in this area is likely influenced by the interaction of strong tidal flows, coastlines and variable bottom topography that facilitates foraging. This study demonstrates that whalewatching vessels represent useful platforms of opportunity for collecting ecological data.

The sub-committee welcomed this paper as a good example of how data collected during whalewatching operations can be used and analysed to provide new and important information on whale distribution. Williams emphasised that systematic data collection can compensate in many ways for the biases introduced by non-random sampling, especially when unwarranted extrapolation is avoided. The authors were encouraged to expand their analysis to include parameters such as sea surface temperature and prey abundance, which may not be possible from the data collected. Nakatsuka also thought the paper would be more valuable with a longer time series of data (multi-year), and questioned how the authors could make a conclusion about the importance of the habitat to whales without across-area comparisons. Rogan responded that the sighting frequency was much higher than off Ireland, where she had also worked. Haug suggested that the data were limited by the availability of whales to whalewatching boats; small movements away from the area could bias results. Parsons noted that a paper has been submitted for publication (originally presented as Macleod *et al.*, 2001) that uses relative abundance data collected by whalewatching vessels to investigate changes in minke whale foraging throughout the season.

Fukui expressed concern about the bias introduced by directed searches leading to an inability to provide reliable population estimates. In the following discussion, it was pointed out that while whalewatching boats cannot generally be used to estimate population numbers following IWC sanctioned protocols, there are few other types of data the platform cannot generate. Parsons noted that he was aware of transect surveys being conducted (using rigorous methodologies with scientific observers) where paying passengers were aboard the survey vessel. The passengers were aware that surveys were the purpose of the trips and paid for the experience of accompanying researchers. Several members noted that it is clear that whalewatching operations were not designed as transect surveys, but

nevertheless important data on whale biology, ecology and in particular distribution can be and is gathered by the use of these platforms of opportunity. Ritter noted that whalewatching vessels in the Canary Islands have observed rare species, rare behaviours and dead animals.

Haug noted that the area examined in SC/55/WW12 was too small to get any information on abundance. Ritter replied that relative abundance has been measured in some whalewatching situations. Parsons noted that this is especially valuable when whalewatching data are compared to fisheries data – together, the two datasets can generate information on feeding ecology.

The sub-committee noted that National Progress Reports submitted by Argentina, Australia, Iceland, Ireland, New Zealand, Norway, South Africa and the UK all referred to work conducted on whalewatching platforms. It was noted that, given the current form of the Progress Reports (see Section 2.1.2 of the National Progress Reports), there is some confusion as to when platforms of opportunity refer to whalewatching vessels. Further, it was pointed out that there was a need to clarify when scientists were using whalewatching boats as data collection platforms, and when the operators themselves were completing sighting records and providing them to researchers. Nakatsuka expressed his concern about the possibility of collecting such data and its reliability even if it is collected. Ways to clarify this were discussed; Kato noted that in Japan, it would be difficult to assess as some operators are not part of local whalewatching associations.

The sub-committee **agreed** that the following request be presented to Contracting Governments, in regards to providing information in Section 2.1.2 of National Progress Reports on data from platforms of opportunity:

> 'A priority for the Whalewatching sub-committee is to assess and monitor scientific data collected from whalewatching vessels. Therefore, the Whalewatching sub-committee **recommends** that Contracting Governments, when possible, report and clearly identify the data obtained from whalewatching vessels in their Progress Reports under Section 2.1.2 (Opportunistic, Platforms of Opportunity). In addition, clarification of whether data are collected by scientist(s) on whalewatching platforms or whalewatching operators/crews and methodology would be useful'.

6. WHALEWATCHING MANAGEMENT WORKSHOP

Kato reminded the sub-committee that an intersessional group was to report back on progress, although this is not an IWC workshop. Oosthuizen reported that funding has been obtained from outside of the IWC to hold the whalewatching management workshop later this year or early next year in Cape Town, South Africa. He encouraged members of the sub-committee who wished to attend to contact him. Palazzo thanked Oosthuizen for his hard work, and noted that the results of the workshop will be critical and should be made widely available. The report of the workshop will be submitted to the Whalewatching sub-committee next year.

An *ad hoc* group of interested members of the sub-committee met with Oosthuizen to discuss the plans for the workshop. This group recommended that the best date for the meeting would be early in 2004. The rationale for this was that additional time was needed to identify and approach potential participants and for them to prepare papers and obtain permission, and in some cases funding, to attend the meeting. However, the final date of the workshop may depend on funding constraints. There was a brief discussion on the terms of reference and agenda of the planned workshop and agreement was reached that some emphasis should also be given to socio-economic issues, indigenous rights, sustainable tourism and best practices. The rationale was that these aspects are vital components of any whalewatching management régime and therefore must be included in the agenda. However, as these topics fall outside the competence of the Whalewatching sub-committee, this will be clearly noted in the workshop report submitted next year.

The sub-committee **recommended** that workshop participants should be geographically representative and must include scientists, managers, conservation organisations, whalewatching operators and representatives from other disciplines, such as economics and social sciences. It was **recommended** that a steering committee and a scientific advisory group (intersessional correspondence group) be established to assist with the organisation of the workshop (see Annex U). The scientific advisory group will continue its work intersessionally.

7. NATIONAL WHALEWATCHING GUIDELINES AND REGULATIONS

7.1 National guidelines and regulations for whalewatching

SC/55/WW4 presented the national guidelines for Tonga's swim-with-whales programme, which originated as a consensus between operators, the government and researchers. Whilst boats require a permit to operate, the guidelines are voluntary and the level of compliance is unknown, but some violations take place. It was noted that these are very similar to the Great Barrier Reef (GBR) guidelines. A question was asked about whether human injuries had taken place; one recent accident where a swimmer was bitten by a shark was reported. However, the sub-committee agreed that consideration of human risks from swim-with-whale activities was outside the jurisdiction of the sub-committee, and would not be considered further.

SC/55/WW11 presented the Australian Code of Practice for Dwarf Minke Whale Interactions. Guidelines were developed after the Minke Whale Project's initial three years of field work (1996-98) on minke whale-human interactions and published in Arnold and Birtles (1999). They were then formally evaluated over the 1999–2001 seasons and a revised version was formally adopted by the industry association (CHARROA – the Cod Hole and Ribbon Reef Operators Association) for use starting in the 2002 minke season. With the 2003 granting by the GBRMPA of 'Swimming with dwarf minke whale permits', the use of the Code of Practice has become a permit condition. The permittees 'must ensure that swimming with dwarf minke whales is conducted at all times in accordance with the *Code of Practice for Dwarf Minke Whale Interactions* as amended from time to time'. Birtles showed the sub-committee abbreviated versions of the Code and Briefing Guidelines, which are printed on brightly coloured paper, laminated and designed to be displayed prominently on the vessels to ensure passengers and crew are fully aware of the Code.

Passenger surveys have been conducted each year since 1999. They are one of a number of ways in which the effectiveness of the minke whale swim-with guidelines has been examined. These surveys are voluntary, and the return rate varies between vessels, but over 1,500 responses have been received. Given the size of the GBR and the remoteness of most of the locations where these encounters are taking place, surveillance and monitoring by the management agencies is very limited. The passengers therefore represent

a valuable source of information about the management of their encounters. This year, for the first time, boats are licensed and the industry was capped at a maximum of nine permitted vessels. Some sub-committee members suggested that passengers were likely to fill out surveys, especially on return voyages, as it allows them to occupy what would otherwise be idle time.

It was suggested that the guidelines presented in SC/55/WW11 contained contradictory information; at one point they suggest no approaches closer than 300m but later they state that one cannot enter the water when a whale is within 30m. Birtles explained that the 300m rule is for the state of Queensland, and applies to waters out to 3 n.miles. This effectively prohibits swimming with humpback whales in Queensland waters when the whales come closer to shore. The Dwarf minke whales live beyond the state limits, in federal waters, where the same rules do not apply. Since visibility in the minke whale areas is usually 25-30m, the guidelines effectively do not allow one to enter the water when in visual range of the whale and it is usually illegal to move towards a whale that is visible underwater. However, it is permitted to stay in the water if the whale approaches swimmers.

Ritter presented a report on interactions between cetaceans and whalewatching boats in the Canary Islands (Ritter, 2003). Through the collaboration between the German NGO M.E.E.R. and a local operator, sighting and behavioural data were collected during regular whalewatching trips year round off La Gomera (Canary Islands).

The responsiveness of different species was quantified by measuring the occurrence of boat-related behaviours (e.g. bowriding, approaches). Sightings were classified into four categories reflecting the general reaction of cetaceans to boats. Results so far (1995-2001) revealed a significant difference in the responsiveness of the six most abundant odontocete species. In the bottlenose dolphin and the Atlantic spotted dolphin, a significant difference in responsiveness according to behavioural states was found.

On this basis, species- and behaviour-specific whalewatching guidelines have been proposed. Furthermore, a model of a marine protected area (MPA) especially designed for the sustainable use of cetaceans is outlined. Specific recommendations are made for the design of the MPA, as for example the implementation of species- and behaviour-specific guidelines, a maximum number of licensed boats, a general speed limit, good-quality public education, user group regulation, a levy for funding research, monitoring, enforcement and others. Examples of boat-related behaviours, a guide to behaviours by species and species-specific guidelines described by Ritter is attached (Appendix 3).

Concern was expressed that 'top down' management, done without consultation with the industry, may lead to a lack of compliance or difficulties in the future, especially from fishermen. Such consultation is now taking place in La Gomera. Ritter noted that much of the MPA would be pro-active, as the number of boats affected is small at this point. Urquiola agreed that it is generally good to involve everyone, but rules sometimes need to be imposed despite other wishes at times. She also noted that the rules in place in the MPA need to be simple for enforcement, although there can be exceptions or modifications in particular circumstances.

The sub-committee felt that Ritter's work was a good example of how a multi-year study could be used to produce species-specific guidelines. Nakatsuka noted that the usefulness of the document depended upon how it was used. In the discussion that followed, Palazzo noted that the most important reason why the sub-committee discusses whalewatching is that it is an attempt to provide the best scientific advice for the legitimate use of whale resources. This is regarded as highly relevant by many member States, and therefore he sees no reason why scientific advice related to management aspects should not be discussed by the sub-committee.

Last year the sub-committee identified behaviours commonly seen in conjunction with boats that demonstrate a possible negative effect of whalewatching, therefore the consideration of such behaviours would be helpful. The sub-committee discussed encouraging further work like this, and **encouraged** the submission of papers that describe ethograms (catalogues of behaviour) as a potential expansion of the DRS. This would be a significant step towards furthering the sub-committee's ability to give scientific advice on the management of whalewatching. The DRS intersessional group, convened by Simmonds, was tasked with incorporating this into its intersessional work. The terms of reference of the DRS intersessional group will be revised accordingly.

SC/55/WW5 reported that whalewatching activities have been conducted in the southern coast of Santa Catarina State, Southern Brazil, since 1999 and boats have operated in agreement with the national legislation. For the proper development of the whalewatching industry and to ensure the conservation and management of this right whale population, the surface behavioural responses of right whales to the whalewatching activities have been monitored since 2000. Observations are carried out from shore-based stations along 100km of coast. The whalewatching cruises are conducted by two authorised boats, from the same operator, according to whale frequency and distribution, weather conditions and tourist demand. In 2002 observations were conducted using a surveyor theodolite. Stationary approaches were conducted by the whalewatching boats during all monitored cruises. The approaches were directed mostly at mother/calf pairs. Whale reactions before, during and after encounters with boats were monitored; focal observations were made during no-whalewatching days, as a control. Directional speed, linearity and reorientation rates as well as the movements and orientation of whales in relation to the approaching boats were calculated and compared.

The results obtained from the 2002 season showed that most of the whales appeared to have ignored the presence of the boat and didn't change their behaviour. Minor changes in their behaviour were observed on a few occasions when whales were observed swimming towards the boats but after a period of apparent interest they moved away, resuming their former activities. Whales were never seen leaving the bays after being approached by the whalewatching boats. It is notable that in the 'no-reaction' instances, whales were not necessarily unaware of the approaching boat, but may have simply been indifferent to its presence. Whale reactions also varied according to the distance maintained by the boat. Whales were observed moving towards or away both at shorter and greater distances from the boat, depending on the bay and individual whales' behaviour. Although long-term impacts are difficult to assess, this work, like the data the authors obtained in their previous studies, showed no clear evidence of immediate disturbance to this right whale population, suggesting that whalewatching activities can be continued in the study area if conducted in agreement with the national legislation.

The sub-committee acknowledged the study as a fine example where a proper experimental design, with experimental controls, was used to determine if there was an impact of whalewatching activity and **encouraged** more studies of a similar design. Yoshida questioned the accuracy of the theodolite tracks (10 seconds) and whether they had been adjusted at all (they had not). The paper also noted the presence of a local fishing community; Birtles asked whether it would be possible to monitor entanglements from their study site. Groch responded that no entanglements had occurred during the study, but several minor ones had been seen in the past. The authors were encouraged to expand their work to experimentally observe the effect of approaches by boats at different speeds and the effects of different vessel types.

Following a request to review SC/55/WW10 (the ACCOBAMS whalewatching guidelines), a small *ad hoc* group of interested parties met. Simmonds (chair of the relevant working group of the ACCOBAMS Scientific Committee, ASC) offered to report comments back to the ASC. The group agreed a number of general observations (reproduced below) and group members offered some more detailed suggestions, which will also be passed on to the ASC.

(1) The group welcomed the development of a template for guidelines in the ACCOBAMS region and broadly supported the existing guidelines (SC/55/WW10).
(2) The group felt that 'commercial whalewatching' should be taken to include all whalewatching with a commercial component (including, for example, 'dolphin therapy' and whalewatching where there is also a research component).
(3) Research using whalewatching platforms should be encouraged and this might be specifically identified in the guidelines.
(4) Whalewatching opportunities in the ACCOBAMS region will vary with respect to:
    (i) the species concerned;
    (ii) the nature of whalewatching (and other locally active) vessels and other factors that may be impacting the whales;
    (iii) the oceanography where it is being conducted (e.g. enclosed bay compared to open water).

The group felt that some latitude should be expected with respect to how these guidelines are interpreted (e.g. into national law) on a local basis. For example, limitation on distances from animals to boats might vary with circumstances.

(5) It might be useful to develop some definition of unacceptable 'disturbance' or harassment. Last year the sub-committee had suggested that attention might be paid to 'persistent changes in cetacean behaviour associated with whalewatching'.

7.2 Review of guideline effectiveness

Parsons brought to the sub-committee's attention that SC/55/WW2 noted that in the specific study area (West Scotland), whalewatching tourists have a relatively high level of interest in, and awareness of, environmental issues. It was suggested that this could be used in terms of whalewatching customers monitoring guideline adherence and persuading non-complying operators to follow whalewatching guidelines.

Berggren brought to the sub-committee's attention an update on Englund and Berggren (2002), a study that examined behavioural responses of bottlenose dolphins in respect to compliance with guidelines in Zanzibar. The studies had shown that when guidelines were violated, dolphins were more likely to change their group activity and stress-related behaviours were significantly more frequent. The Department of Fisheries and Marine Products in Zanzibar have now officially issued the guidelines, although in a revised form with fewer restrictions. The researchers plan follow-up studies to see if compliance increases now that the guidelines are official. Berggren added that the sub-committee's comments and endorsement of the study last year had a positive impact on the guidelines becoming official.

Birtles indicated that the full review of the effectiveness of the Code of Practice for Dwarf Minke Whale Interactions outlined under Item 7.1 had been reported to the Australian Government (Birtles *et al.*, 2001). This included information derived from passengers, which is included in Birtles *et al.* (2002). The latter report details the responses of 527 passengers who showed strong support for most of the provisions in the Code of Practice. One of the main detracting experiences noted by passengers was when whales were chased or people went swimming after the whales and this had been used to convince both passengers and crews that improved compliance with the Code was in both of their interests as well as that of the whales. Birtles *et al.* (2001) also included additional information derived from interviews with the crews of the vessels and the observations of the researchers themselves. These data form the basis of a paper in preparation, some of the results of which could be presented at the upcoming whalewatching management workshop in South Africa.

8. WHALE AND DOLPHIN 'SWIM-WITH' PROGRAMMES

SC/55/WW4 represented a first step toward conducting a larger, in-depth review of the practice and impact of swimming with large whales. A review of commercial operations offering opportunities to swim with whales worldwide was conducted. Several web searches were conducted and a general request for information was sent to an international e-mail list and to colleagues in areas where swim-with-whale tours were suspected of operating. Twenty-nine commercial operations offering formal swims with whales and a smaller number of opportunistic swims were identified worldwide, for a total of 38 operations. Swims with humpback and minke whales were found most frequently, although other baleen whales were also targeted; a small number of operators offered swims with toothed whales. Silver Bank in the Dominican Republic (humpbacks) had at least six companies operating tours; Tonga (humpbacks) had at least eight operators; and the Great Barrier Reef (minkes) had at least six operators. The web sites of several of the operations contained text addressing precautionary elements such as following swim and approach guidelines, human safety and conservation; however, most did not or they emphasised human safety only. Areas with the greatest number of operations featured warm, clear water (i.e. good visibility); baleen whale mating and calving grounds were thus most often targeted. Swim-with-whale operations occurred both in the presence and absence of domestic legislation prohibiting whale disturbance and even, in at least two cases (Argentina and the

Azores) specifically prohibiting swimming with whales. The situation in the Great Barrier Reef represented a model for other areas, combining research, regulation, guidelines and operator cooperation to maximise mitigation and contributions to science.

Birtles noted the value of this work, and commented that there were several Australian operations listed of which he had been unaware. He pointed out that CRC Reef Centre was not an operator, but a research organisation that managed the Minke Whale Project website. In noting the authors' definition of formal operations as 'organised and advertised' he highlighted the difficulty CRC had experienced in Australia with overseas tour leaders advertising un-permitted vessels and/or incidental minke swim operations on their own websites. He indicated that his group's recommendations to cap the industry until ecological sustainability had been demonstrated had been followed and in future only the 8 or 9 permittees would be legally allowed to advertise minke swims. However, this did nothing to control incidental and private use.

The sub-committee welcomed the review in SC/55/WW4, nonetheless noting that it was incomplete. Further, the sub-committee noted that swim-with-whale programmes are becoming widespread, and were identified in areas under the legal jurisdiction of Argentina, Australia, Canada, Costa Rica, The Dominican Republic, Ecuador, Kenya, the Kingdom of Tonga, Maldives, Mexico, Portugal (Azores), Spain (Canary Islands), Togo, UK (Turks and Caicos Islands) and the USA.

SC/55/WW9 presented a preliminary review of swim-with-cetacean programmes in Latin America. Activities were recorded in Argentina, Brazil, Costa Rica, Ecuador and Mexico, despite being illegal in the Peninsula Valdez region of Argentina, Brazil (for large whales) and Mexico. The most common species involved were bottlenose dolphins, pantropical spotted dolphins and humpback whales. Diving tours are very important at the moment in evaluating this activity and future review should include diving companies that include or promote swimming with cetaceans. This paper also expressed concern for the lack of research to evaluate the impacts of these programmes and encouraged this kind of research.

Iniguez also noted that a new group of researchers was examining inter-species differences in responses to swimmers in ongoing work. Oosthuizen questioned whether there had been any scientific analyses of whales' responses; Iniguez noted that swim-with-whale programmes are illegal in Argentina, and this makes it difficult to obtain such data. The information he obtained was from interviewing divers. The sub-committee expressed thanks to Iniguez for bringing this important information to the sub-committee, and **encouraged** similar submissions and continued work.

The sub-committee noted the speed with which word of new cetacean experiences spread among divers and whalewatchers and the problems associated with photographers and film crews being at the leading edge of such expansions. This highlights the urgent need for the scientific research that could ensure sustainable use. The group then discussed the problem of media crews and professional photographers aggressively taking advantage of swim-with opportunities, and it was noted that in several areas (e.g. Australia, the Canary Islands, the USA), there were licensing provisions that allowed this. They may be accessing remote (and therefore unmonitored) areas as well. Spectacular footage from such sources may then lead to unrealistic expectations and pressure on operators to violate conservation-based guidelines.

SC/55/WW11 reported that over the period 1991-2002 during June and July, dwarf minke whales have continued to approach vessels and swimmers in one of the most heavily dived sections of the Great Barrier Reef Marine Park. This suggests that banning the activity is not an option. A Code of Practice has been developed by researchers, management agencies and the industry. Evaluation of this management strategy needs to assess compliance with the Code and relevant Australian legislation, as well as whether the Code is achieving its goal: the ecologically sustainable management of whale-swimmer interactions. The first can be measured by a set of Performance Indicators of Encounter Management, derived directly from the Code and legislation; the latter requires additional information on the behaviour and biology of the whales ('Sustainability Indicators'). Examples are given of potential indicators and the questions they address. Behaviour of the whales during the interactions may provide additional information. Behavioural observations on minke whales suggest the need to establish context, recognising that a particular action (e.g. jaw gape, bubble blast) may have several functions. Comparisons with swim programmes based on other cetacean species are instructive but caution is needed in extrapolating results from other species, especially small odontocetes, and other styles of operation.

The Sustainability Indicators are designed to address some of the major concerns that have been identified by both the Whale and Dolphin Conservation Society and the IWC SC including disruption of normal behaviour, displacement from normal habitat and long-term cumulative effects of swim programmes. Birtles drew the sub-committee's attention to the risk analyses of these and other issues contained in Birtles *et al.* (2002).

There was discussion about whether photo-identification from this study could be used to determine impacts on the species. Dedicated photo-identification work had started in 1999 and continued each season with many hours of video and over 10,000 images catalogued, but these data were awaiting funding for a full analysis. A concern was expressed that the animals photographed would be unduly biased, since the only whales that could be photographed would have to approach the vessel; it was suggested that a study should also try to photo-identify whales that do not approach boats. Others emphasised that much valuable information could be obtained on the cumulative impacts of whalewatching, such as the amount of time that some individual whales spent in this activity. Further, Birtles noted that this would be difficult to do and that his colleagues regularly photograph all whales known to be anywhere in the vicinity of the vessels. They also try to identify animals that stay only briefly, and try to count above the surface the number of whales that do not approach boats, although this behaviour is rare (Birtles and Arnold, 2002; Birtles *et al.*, 2002). They are also trying to get information on rare behaviours, such as jaw clapping or gaping, to determine if they could be boat related.

Nakatsuka questioned whether reliable life history information could be obtained from this study. Birtles noted that they had seen what was probably an adult female return to the Reef for three years over a four-year period without a calf. The sub-committee **encouraged** submission of the photo-identification study results when they become available.

It was noted that this type of work on swim-with-minke whales was among the first to determine impacts of this industry on whales, and could serve as a model for other studies. It was also noted that many swim-with-whale

operations take place on calving grounds, with young calves as the object of the swims. Calves may often be particularly sensitive to long-term effects from disturbance. The sub-committee **agreed** and noted that there was a lack of good quality information about the potential impacts of swim-with-whale operations. This lack has elicited a statement of concern from scientists.

The sub-committee **encouraged** that studies on the effects of swim-with-whale programmes be extended to other areas, especially those where calves were subject to such activities.

9. OTHER

9.1 Directory of relevant researchers

SC/55/WW6, a Worldwide Directory of Whalewatching Research, noted that the listings of scientists and references presented were preliminary and incomplete; nevertheless, 50 researchers involved either in monitoring whalewatching operations or using whalewatching boats as platforms of opportunity replied to a request for information. More than 200 references of peer-reviewed papers, symposia presentations and research reports were found, with more than 90 main authors of these identified. Palazzo noted that in his view, this extensive array of scientific effort answers the recurring debate on whether whalewatching is relevant to scientific research or not. He agreed to continue to compile these lists for future meetings.

9.2 Other

As a prelude to more substantive discussion on high-speed whalewatching at next year's meeting, SC/55/WW2 presented information on high-speed whalewatching operations in West Scotland, an area with a rapidly growing whalewatching industry. Seven high-speed whalewatching operations were identified in the region. These companies will be operating 10 vessels by the end of 2003. Five of the companies were available for interview about characteristics of the vessels and their operation. Most of the high-speed whalewatching vessels were relatively small (< 9m) rigid inflatable boats carrying no more than 12 passengers. Each operation took up to 21 trips per week, with each trip being 1-3 hours in duration. Two high-speed whalewatching vessels were powered by waterjets rather than propellers. Four of the interviewed operations referred to a whalewatching code of conduct. All interviewed operations stated that they significantly slowed down or stopped in the vicinity of marine mammals, although this very much assumes that they are able to spot cetaceans in time; typical vessel cruising speeds were 22-30 knots, with maximum speeds of 34-50 knots.

SC/55/WW2 also noted that the majority of reported ship-strikes causing serious or lethal injuries to whales, when ship speed was known, occurred when the vessels were travelling at a speed of 13 knots or greater (Laist *et al.*, 2001). However, collisions do occur at speeds as low as 6 knots. Therefore, SC/55/WW2 strongly suggested that for cetacean conservation and management (in addition to adhering to codes of conduct for whalewatching), speed is considered as a factor for management of whalewatching.

Some members noted that the paper was very useful, especially the review provided in the introduction, which highlighted the alarming issue of growth in number, speed and capacity of whalewatching vessels and some of their impacts. Birtles requested comments from sub-committee members about (a) the reduced opportunities for adequate briefing of passengers on short trips on high-speed vessels and (b) the increased pressure on skippers of such boats to deliver cetacean experiences and the resultant likelihood of greater harassment. It was noted that the increase in number of high-speed vessels had two primary driving forces: decreasing the transit time to whales, and the 'extreme' thrill factor. The latter aspect makes interpretive components of the whalewatching experience difficult.

10. WORK PLAN

The following work plan was identified:

(1) DRS: continue intersessional work on field testing and development, review data forms used on whalewatching boats throughout the world, and explore the role of behavioural studies in whalewatching research.
(2) Whale Management Workshop: receive and consider the relevant aspects of the report and designate an intersessional correspondence group to provide scientific advice to the workshop.
(3) Review of whalewatching guidelines and regulations.
(4) Review of risk to cetaceans from high-speed whalewatching boats, e.g. from collisions.
(5) Continue relevant assessment of swim-with-whale programmes.

No order of priority was given; all items were felt to be of equal priority.

The sub-committee discussed its future and goals. The work of this sub-committee, including consideration of the long-term impacts of whalewatching activities on whale populations and related scientific aspects, is being progressed by its work plan. The plan also reflects the rapid worldwide expansion of highly varied whalewatching operations conducted under many different circumstances. It was noted that this year, for the first time, representatives from Australia, Spain and Germany attended the sub-committee, and allowed it to consider regions that had not previously been discussed. Finally, it was also noted that the Scientific Committee of the IWC is a unique international forum in which such information can be considered on a global basis.

The sub-committee discussed the work plan, and gave advice as to how to move it forward. It was suggested that researchers from areas where swim-with-whale programmes were developing should be identified and encouraged to submit papers next year. The sub-committee **agreed** that high-speed whalewatching boats represented a unique risk for collisions with whales, and suggested a joint session with the Bycatch sub-committee to review this issue.

Palazzo noted that the Brazilian scientific delegation was concerned that the sub-committee had been given low priority in having funded Invited Participants attend the meeting. There was discussion on the issue, and the sub-committee **agreed** to raise this issue in the plenary session.

11. ADOPTION OF REPORT

The report was adopted at 12:30 on 2 June 2003. The sub-committee expressed its thanks to Kato for chairing the meeting, to the rapporteurs, particularly Weinrich, for their hard work, and wished Rose a happy birthday!

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Appendix 1

AGENDA

1. Opening remarks and terms of reference
2. Election of Chair and Rapporteurs
3. Adoption of Agenda
4. Review of available documents
5. Whalewatching data collection
6. Whalewatching Management Workshop
7. National whalewatching guidelines and regulations
   - 7.1 National guidelines and regulations for whalewatching
   - 7.2 Review of guideline effectiveness
8. Whale and dolphin ‘swim-with’ programmes
9. Other
   - 9.1 Directory of relevant whalewatching researchers
   - 9.2 Other
10. Work plan
11. Adoption of report

Appendix 2
DATA FIELD RANKINGS FOR THE DRS

Table 1
Data field rankings for the DRS (from SC/55/WW1)

	Distribution/ habitat use		Stock identity	Calf return/ survival	Abundance		Age/ length	Behaviour		Human-related risk	
	No photo	Photo-ID	Photo-ID	Photo-ID	No photo	Photo-ID	Photo required	No photo	Photo	No photo	Photo
Date	1	1	1	1	1	1	1	1	1	1	1
Trip time	1	1	2	2	1	1	2	1	1	2	2
Trip location	1	1	1	1	1	1	1	1	1	1	1
Sea state	1	2	2	2	1	1	1	1	1	2	2
Wind speed	2	2	3	3	2	2	2	3	3	2	2
Wind direction	2	2	3	3	2	2	2	3	3	2	2
Precipitation	1	2	2	2	1	2	2	3	3	2	2
Swell height	1	2	2	2	1	1	1	1	1	2	2
Cloud cover	2	3	3	3	2	3	3	3	3	3	3
Water depth	1	2	2	3	2	2	3	2	2	2	2
Water temperature	2+	2+	3	3	2	2	3	2	2	3	3
Salinity	2	2	3	3	3	3	3	3	3	3	3
Visibility	1	1	1	1	1	1	1	1	1	1	1
Other observations	2	2	3	2	2	2	3	2+	2+	2+	2+
Sighting record no.								e.g. unusual behaviour		e.g. presence of military vessels, amount of marine debris etc.	
Start time	1	1	2	2	1	2	2	1	1	2	2
End time	2	2	2	2	1	2	3	1	1	2	2
Species	1	1	1	1	1	1	1	1	1	1	1
Certainty of species ID	1	2	2	2	1	2	2	1	2	2	2
Number	1	1	1	3	1	2	3	1	2	2	2
No of adults, calves, juveniles*	1	1	2	2	2	1	1	2	2	1	1
Lat/long - start of trip	1	1	1	2	2	2	2	1	1	2	2
Lat/long - end of trip	2	2	2	3	2	2	3	1	1	2	2
Photos?	3	1	1	1	3	1	1	3	1	3	1
Boat speed	2	2	3	3	2	3	3	3	3	1	1
Boat course	1	2	3	3	1	2	3	2	2	2+	2+
Sighting distance from vessel*	2+	2+	3	3	1	3	3	2	2	2	2
Sighting bearing from vessel*	2+	2+	3	3	1	3	3	2	2	2	2
Other wildlife	2	2	3	3	2	2	3	2	2	2	2
Sighting no.	2	2	2	2	2	2	2	2	2	2	2
Date	1	1	1	1	1	1	1	1	1	1	1
Species ID factors	1	2	2	2	1	2	2	1	2	2	2
Wounds present?	3	2	2	2	2	2	3	2	2	1	1
Dive times	2	2	3	3	2	2	3	1	1	2+	2+
Trip route	1	1	2	2	1	1	3	2	2	2	2

Key: 1 = necessary for study; 2 = good to have, esp. if 2 or more observers available; 3 = minimal importance; *indicates a new data field not present in Simmonds *et al.*, 2002.

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Appendix 3

EXAMPLES OF BOAT-RELATED BEHAVIOURS AND SPECIES GUIDELINES

F. Ritter, MEER eV

Table 1

Boat-related behaviours of cetaceans off La Gomera (Canary Islands)

Behaviour	Definition
1. Approach (APP)	Reduction of the distance between animals and boat, the latter maintaining a constant direction or being motionless (animals within 100m from the boat).
2. Scouting (SCO)	Brief approach toward the boat up to a few metres and then moving away.
3. Bowriding (BOR)	Swimming in the pressure wave in front of the boat.
4. Wake riding (WKR)	Swimming in the wake produced by (and behind) the boat.
5. Spyhop (SPY)	Lifting the eyes above water while in an upright position.
6. Orientation toward the boat (ORI)	Animal(s) floating or swimming slowly at the surface turning the head toward the boat.
7. Accommodation of speed (ACS)	Change of the speed of animal(s) in accordance to changes in boat speed (while animal(s) close to the boat).
8. Accommodation of direction (ACD)	Change of direction of animal(s) in accordance to changes in boat direction (while animal(s) close to the boat).

Table 2

Sighting categories for cetaceans encountered off La Gomera

1. Avoidance	Movement away from the boat or disappearing by diving.
2. No response	No apparent response to the approach by the boat. Animal(s) keep(s) a certain distance without disappearing. Boat-related behaviours rare or missing.
3. Proximity	Movement of animal(s) towards the boat occurring. Short distances (<10m) between animals and boat possible. Boat-related behaviours possible, but not frequent.
4. Interaction	Movement of animal(s) towards the boat occurring frequently. Boat-related behaviours frequent, i.e. during ≥50% of samples. Long sightings of one hour or longer possible.

Table 3

Likelihood of occurrence of boat-related behaviour in different cetacean species (organised according to decreasing likelihood of interactions in each species).

Species	Interactions to be expected	Likelihood of occurrence
Atlantic spotted dolphin	Interactions in general	Very likely
	Close distance	Likely
	Approach	Very likely
	Bowriding	Very likely
	Scouting	Likely
	Accommodation of speed	Possible
	Accommodation of direction	Possible
Common dolphin	Interactions in general	Likely
	Close distance	Likely
	Scouting	Likely
	Approach	Likely
	Bowriding	Likely
Bottlenose dolphin	Interactions in general	Strongly depending on behaviour
	Close distance	Possible, but depends on behaviour
	Scouting	Possible
	Approach	Possible
	Bowriding	Possible
Pilot whale	Interactions in general	Less likely
	Close distance	Possible
	Orientation towards boat	Possible
	Approach	Possible
	Scouting	Less likely
Rough-toothed dolphins	Interactions in general	Less likely
	Close distance	Less likely
	Approach	Likely
	Scouting	Possible
	Bowriding	Less likely
Striped dolphin	Interactions in general	Unlikely
	Close distance	Unlikely
	Bowriding	Less likely

Table 4

Relation of interactions and behavioural states in four cetacean species off La Gomera with proposals for the ‘best conduct’.

If you observe one of the following behaviours in the named species, please act according to the ‘best conduct’

Species	Behaviour	Best conduct
Atlantic spotted dolphin	SOCIAL – High activity on the surface, many splashes, animals are clumped together and touch each other.	Keep your observation to a minimum of time. Do not approach animals closer than 100m.
	Close distance	Possible
	Interactions with boat	Less likely
	SURFACE FEEDING – High activity on the surface, many splashes, dolphins rush in different directions, highly active birds present.	Keep your observation to a minimum of time. Do not approach animals closer than 100m.
	Close distance	Possible
	Interactions with boat	Less likely
Bottlenose dolphin	DIVE/DIVE TRAVEL – Animals/groups repeatedly dive for periods longer than 30 sec.	Keep your observation to a minimum of time. Do not approach animals closer than 100m.
	Close distance	Not possible
	Interactions with boat	Unlikely
Pilot whale	REST – Animals lie on the surface side by side, little activity, group (almost) stationary.	Leave the animals after 15 minutes at the latest. Inform other boaters that the group should not be approached.
	Close distance	Possible
	Interactions with boat	Possible
Rough-toothed dolphins		In general: very careful conduct. The type of approach will influence the responsiveness of the dolphins.