



**PROPOSED GUIDELINES FOR MONITORING PROGRAMS AIMED AT
MAXIMIZING THE CHANCE OF DETECTING POTENTIAL ADVERSE IMPACTS
OF WHALE WATCHING ACTIVITIES ON INDIVIDUAL CETACEANS AND
ON POPULATIONS**



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Introduction:

The ACCOBAMS region is an important area for a great number of cetacean species, whether as a permanent habitat, a breeding or feeding ground or a migratory corridor. The presence of such a diversity of cetaceans has led to the development of whale watching activities, both on a commercial and recreational basis, which until present still maintains a steady and regular growth within the region.

Whale watching is an important economic activity in many areas of the ACCOBAMS area. Although several countries in the region have already implemented specific codes of conduct and national legislation aimed at regulating and monitoring the activity, this particular tourism activity is not necessary benign.

Management considerations:

In an effort to minimize the risk of adverse impacts of cetacean watching and to ensure the sustainable development of such activities, effective management strategies need to be implemented. Several tools and approaches should be considered:

- 1) National / regional licensing or permitting schemes to regulate:
 - i) the number, size, type and speed of vessels;
 - ii) standards of operation;
 - iii) capacity building;
 - iv) site specific and species specific requirements;
 - v) permitted research and media;
 - vi) training of operators;
 - vii) sanctions for non-compliance.
- 2) National / regional measures to regulate approaches, frequency, length and type of exposure in encounters with cetaceans;
- 3) Development of management provisions through cooperation amongst stakeholders, such as government agencies, NGO's and operators wherever appropriate. Such provisions are subject to adaptive management (as new information becomes available regulations may change to incorporate this new information);
- 4) National / regional management measures to include closed seasons, exclusion zones, speed limits and "no approach times", to provide additional protection to habitats, populations and individuals;

- 5) Assessment of the numbers, distribution and other characteristics of the target population(s) before the implementation of tourism operations to establish the feasibility of the industry and a baseline for future monitoring;
- 6) Where new cetacean watching operations are evolving, start cautiously, moderating activity and adapting management until sufficient information on populations and species is available to guide further development;
- 7) Monitoring compliance with and the effectiveness of management provisions and modifying them as required to reflect new information and circumstances, with the consultation of stakeholders, such as operators and NGO's;
- 8) Establishment of an enforcement framework to ensure compliance with regulations;
- 9) Scientific and socio-economic research and monitoring of potential impacts on cetaceans, and collection and sharing of information by all stakeholders, such as scientists, operators and NGO's;
- 10) Dissemination of information on best practice and research to improve public awareness, including all stakeholders;
- 11) On-going operator, naturalist and industry training and accreditation programmes on the biology and behavior of target species, local ecosystems, navigation, culture, best practice of cetacean watching operations, and the management provisions in effect;
- 12) Development of on-board research protocols to collect data on sighting effort, sighting data and other relevant documentation (e.g. about injuries, entanglements, highly identifiable individuals, vessel-cetacean interactions...) (see SC10/2015/Doc15);
- 13) Supporting and empowering communities' participation and ownership of the cetacean watching industry;
- 14) Development of educational standards for the provision of accurate and informative material to cetacean watching participants, to:
 - i) develop an informed and environmentally responsible public (locals and tourists);
 - ii) encourage development of realistic expectations during encounters;
 - iii) encourage the provision of naturalist guides on all boats;
 - iv) encourage public participation in on-board research and education programmes (e.g. docent and intern training, opportunistic data collection, species identification...);
 - v) encourage awareness of species protection measures and enforcement;
 - vi) assess and evaluate on an on-going basis on-board education programmes.

Cetacean species may respond differently to sound frequencies, relative sound intensity or rapid changes in sound. Such responses may not only be species specific but also differ between individuals and / or age classes. Therefore:

- 1) Vessels, engines and other associated equipment should be designed, maintained and operated during cetacean watching to reduce as far as practicable adverse acoustic and physical impacts on the target species and their environment;
- 2) Vessel design and operation should minimize the risk of injury to cetaceans should contact occur (for example, shrouding of propellers can reduce the risk of injury);
- 3) In order to avoid ship strikes, operators should keep track of cetaceans during an encounter and not engage engines until all cetaceans being watched are on the surface and at safe distance from the vessel.

Swimming with cetaceans may increase the potential for disturbance and displacement and puts cetaceans at additional risk. There are existing swim-with-cetacean programmes but the further development of these programmes is discouraged. For those countries where swim-with activities are currently being undertaken, it is recommended that the following standards be applied to these operations:

- 1) Scientific studies should be initiated to assess:
 - a) the associated risk to the safety of the people and the cetaceans involved in swim-with activities;
 - b) the current and potential future impacts of these activities on the target species. Any accidents should be documented and reported to the relevant authorities;
 - c) Particularly sensitive animals (e.g. mothers with calves) and sensitive habitats (e.g. calving and/or feeding areas) should be provided with additional protection (see “Management Considerations”);
 - d) Sub-surface swimming by participants should not be allowed, including the use of underwater breathing apparatus and scooters;
 - e) Underwater flash photography or lighted filming should not be allowed;
 - f) A precautionary adaptive management approach should be taken when reviewing swim-with operating procedures. Consideration should be given to:
 - Regular review of operational standards as credible scientific information on the impacts of swim-with programmes becomes available;
 - All persons in the water with cetaceans should be accompanied by an appropriately trained naturalist or scientist;
 - Limiting the number of vessels permitted to undertake swim-with activities in a region;
 - Limiting the number of swimmers allowed in the water at any one time;



- Limiting the maximum duration of in-water time allowed, including maximum swim time for each interaction, time required between successive swims with each cetacean and maximum cumulative interaction time with each cetacean per day;
- Appropriate drop-off distance for swimmers and minimum swimmer distance from cetaceans;
- Entering the water with cetaceans during behaviorally sensitive situations (e.g. feeding / foraging) should be discouraged;
- Prohibit leap-frogging of cetaceans.

Relevant bibliography

IWC 1996 – Guiding Principles for Whalewatching. (downloaded from <https://iwc.int/wwguidelines>).

Mayol, P.; Beaubrun, P. 2005 – Le Whale Watching en Méditerranée française: État des lieux et perspectives: 101.pp.

IWC 2011 – Five Strategic Plan for Whalewatching 2011-2016: 20 pp.

UNEP-CEP 2011 – Overarching principles and best practice guidelines for marine mammal watching in the Wider Caribbean region (WCR). Regional Workshop on Marine Mammal Watching in the Wider Caribbean region. Panama City, Panama, 19-22 October 2011: 6 pp + x annexes.

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Carlson, C.; Kaufman, G.; Riter, F.; Rose, N. 2014 – Report on the intersessional working group on guiding principles development. Paper presented at the IWC 2014 sub-committee meeting on Whalewatching (SC/65b/WW04): 6 pp.



PROPOSED COMMON PROCEDURE (DATA COLLECTION SYSTEM) FOR WHALE WATCHING VESSELS TO BE IMPLEMENTED IN THE ACCOBAMS AREA

Introduction

At the last meeting of the IWC scientific committee (2014) the sub-committee on whale watching discussed a proposal for data collection from commercial whale watching vessels. Guiding principles for data collection from platforms of opportunity were proposed which would help ensure a higher standard of data collected from whale watching vessels. Although a final version of a data sheet could not be approved and the sub-committee agreed that the submitted proposal could be further refined, this could also be a working document upon which the ACCOBAMS Scientific Committee could work on, bearing in mind the specific characteristics of the agreement area.

Whale watching vessels constitute platforms of opportunity for the collection of data on target cetaceans and have been widely used in data deficient areas, particularly in developing countries. However data collected from whale watching vessels are subject to several types of bias:

1. The purpose of whale watching vessels is to find cetaceans and focus on fulfilling the clients' expectations to encounter the animals. Collecting research data is not their primary purpose and they do not follow scientific line transects. The behavior of whale watching vessels influences the search effort, which is often restricted to localized high abundance areas, sometimes seasonally dependent and species specific. In order to correct for the spatial and seasonal effort of the whale watching vessels, it is crucial that spatial and sighting effort data are collected as well.
2. Because guides and skippers have to perform many tasks on the boat and registering data and takings photographs are sometimes least priority, the quality of acquisition of data is a potential source of bias. However the use of qualified guides has great potential for improving collection of valuable but fairly inexpensive data, particularly in areas where funding is scarce.
3. The whale watching vessels will only spend time with a limited number of animals and not always approach and identify all individuals and groups in the area. There may also be a tendency to approach calm and easily approachable animals, which will lead to non-representative sampling.

Despite it being compulsory in many countries for whale watching vessels to register and report information to a central authority on the activity of the vessel, as well as observations and opportunistic sightings, such information is not collected according to international guidelines and it may be difficult to assess the significance of bias. To enable a reliable scientific outcome and support a high standard of data, the IWC sub-committee on whale watching has been working on a basic data collection protocol and data sheet that, ideally, would be applicable world-wide.



Proposed guidelines for data collection protocol and data sheet for whale watching vessels

From a research point of view, the data collected must be valid and consistent to be useful. Since the focus of whale watching vessels is on the passengers and not always on the data, it is important to simplify the data sheets as well as prioritize the required information.

Table 1 presents a proposal for a basic data collection sheet.

Content of the data sheet

The data sheet should at a minimum include the following parameters (see Table 1):

- Trip information:
 - 1) Date
 - 2) Trip number
 - 3) Departure time from harbor
 - 4) Return time to harbor
 - 5) GPS track of the route taken (if possible) or a tick box with the main "Areas visited"
 - 6) Name(s) of the person responsible for data collection
 - 7) Name of the skipper
 - 8) Weather information: wind direction and wind speed (No whitecaps, Some whitecaps or Many whitecaps or Beaufort scale)
 - 9) Sighting of animals: Yes / No

- Sighting information:
 - 10) Time of encounter
 - 11) Latitude position
 - 12) Longitude position
 - 13) Species
 - 14) Number of adults
 - 15) Number of calves
 - 16) Information about photo documentation
 - 17) Behavior comments
 - 18) Small comment box



Protocol

The protocol explains why the different data parameters are included in the data sheet.

1) Date

2) Trip number

Information about trip number and date is important when analyzing the data. Each trip will be given an ID-number before data can be analyzed and it is important to distinguish the different trips from each other. Some operators have more than 1 trip per day and the trips should have consecutive numbers reflecting the date and time they were conducted.

3) Departure time from harbor/ Start of searching effort

4) Return time to harbor / End of searching effort

The total time spent at sea is necessary to calculate sighting effort.

5) GPS track of route taken

It is crucial to be able to account for the effort spend at sea searching for cetaceans. Time and spatial effort is important reference data when calculating the spatial distribution of a species. Simple notation of start and end time of the trip can increase the quality and usefulness of the data collected. The optimal way to determine effort is to collect GPS tracks of the boat's location, which will also give precise data of the spatial route. Of crucial importance is the collection of information about trips where no cetaceans were sighted. The effort of the boat can be biased towards areas with cetaceans and where cetaceans would have been observed previously. On days with more than 1 trip, animals in the area have a high chance of being sighted consecutive times. If observers are experienced, they can make notes from trip to trip of individual re-sightings.

6) Name(s) of the person(s) responsible for data collection

The quality of the obtained data is dependent on an observer's skills. The quality of observations can be subject to bias when many different observers are involved in data collection.

7) Name of the skipper

8) Wind category (No whitecaps, Some whitecaps or Many whitecaps)

Sighting probability is reduced as weather becomes increasingly rough. To be able to adjust for this in data analysis, it is important for weather conditions to be noted. A suitable cut-off at, say Beaufort 2 (all data collected at or below sea state 2 are included in the analysis), can be applied to the dataset before conducting the analysis (Table 2).

9) Sightings of animals: Yes / No



To be able to account for effort, it is important to have a reference for the number of trips with no sightings, since even with no sightings, effort has been expended searching for animals. Weather data on trips where no animals are sighted are also important.

10) Time of encounter

It is important to distinguish between search and sighting time. By logging the time at each sighting, it will be possible to calculate search effort and sighting effort.

11) Latitude and Longitude positions

It is crucial to obtain location positions of the animals sighted to determine if animals have preferred habitat.

12) Water temperature (if possible)

13) Water depth (if possible)

Water temperature and depth are important factors to record, particularly in data deficient areas since bathymetric data often do not exist in such areas. In order to analyze data in relation to spatial and physical factors, it is important to record such parameters.

14) Species

Simple codes should be used for the relevant species (Table 3).

15) Number of adults

16) Number of calves

The number of adults and calves is important, as it may reveal whether there are specific areas used, for example, as nursery grounds.

17) Information about photo documentation

For photographic material to be useful it should be catalogued the same day and the frame of the photographs should be noted for each sighting where photographic evidence is collected. Setting date and time stamps on the camera is crucial as well. Photos of sightings should be divided with blanks between observations (e.g. a photo of the vessel). A GPS linked to the camera can be a great help during later analysis.

18) Behavioral categories

To enable an efficient and consistent analysis of behavioral data, the data sheet should consist of restricted and simple tick boxes with 4-5 main behavior types (e.g. matting, feeding, travelling and resting) and a comment box for further qualitative details (Table 4).

19) Small comment box

Comments should be minimized. Subjective comments can be very difficult to categorize and analyze.



The data sheet must be filled in at sea *in situ* and should ideally be digitized the same day by the observer. Photographs should be sorted the same day as well and linked to the relevant observations. The process of linking photos to specific observations is time consuming and almost impossible if done retrospectively by more than a few days.

Quality control

In order to ensure the quality of whale watching vessels data, a systematic control effort is necessary. Such a system should ideally be multi-layered, with the first layer being a well-structured data sheet that is easy to fill in.

The second layer should be an online submission system for data collected in the field, where each operator is assigned an ID-number and can log in to their account and enter the data and upload photos from each trip. Each operator's data should be then available to download either as an Excel sheet or Access database.

A third level is the systematic evaluation of the reported data by a qualified researcher with feedback to the reporting vessels.

Relevant bibliography

Vinding, K.; Christiansen, M.; Rose, N. 2014 – Data collection from commercial whale watching vessels: the need for international guidelines and systematic quality control. Paper presented at the IWC 2014 sub-committee meeting on Whalewatching (SC/65b/WW07): 6 pp



Table 1 – Proposed WW data sheet

Boat Based Whale Watching Trip Information													
Operator:			Passenger nrs.:			Areas visited:							
Date:													
Trip nr.:			Trip time:	(start)	(end)								
Vessel:													
Skipper:			Wind:	(direction)	(knots)	Sea state:		no whitecaps					
Data collector:						(circle one)		some whitecaps					
								consistent whitecaps					
Were cetaceans sighted on this trip?			YES	NO									
OBSERVATIONS													
Time	GPS Coord		Species	Nr of adults	Nr of calves	Behavior						Photos	Comments
	LAT	LONG		<i>min / best / max</i>		<i>T</i>	<i>R/L</i>	<i>S</i>	<i>F</i>	<i>M</i>	<i>O</i>		





Table 2 – Weather information

MPH	Beaufort	Knots	Km/h	Code
> 1 mph	0	> 1 kn	> 1 km/h	no whitecaps
1 - 3 mph	1	1 - 2 kn	1.1 - 5.5 km/h	
4 - 7 mph	2	3 - 6 kn	5.6 - 11 km/h	some whitecaps
8 - 12 mph	3	7 - 10 kn	12 - 19 km/h	
13 - 17 mph				consistent whitecaps
18 - 24 mph	4	11 - 15 kn	20 - 28 km/h	
25 - 30 mph	5	16 - 20 kn	29 - 38 km/h	
31 - 38 mph	6	21 - 26 kn	39 - 49 km/h	
39 - 46 mph	7	17 - 33 kn	50 - 61 km/h	
	8	14 - 40 kn	62 - 74 km/h	

Table 3 –Species codes

Scientific name	Code
<i>Eubalaena glacialis</i>	EGL
<i>Balaenoptera acutorostrata</i>	BAC
<i>Balaenoptera physalus</i>	BPH
<i>Blaenoptera boralis</i>	BBO
<i>Balaenoptera musculus</i>	BMU
<i>Megaptera novaeangliae</i>	MNO
<i>Physeter macrocephalus</i>	PMA
<i>Kogia sima</i>	KSI
<i>Kogia breviceps</i>	KBR
<i>Mesoplodon bidens</i>	MBI
<i>Mesoplodon densirostris</i>	MDE
<i>Mesoplodon europaeus</i>	MEU
<i>Mesoplodon mirus</i>	MMI
<i>Ziphius cavirostris</i>	ZCV
<i>Delphinus delphis</i>	DDE
<i>Tursiops truncatus</i>	TTR
<i>Stenella coeruleoalba</i>	SCO
<i>Globicephala melas</i>	GME
<i>Globicephala macrohynchus</i>	GMA
<i>Grampus griseus</i>	GGR
<i>Steno bredanensis</i>	SBR
<i>Orcinus orca</i>	OOR



<i>Phocoena phocoena</i>

PPH

Table 4 – Behavioral categories

Behavior	Description	Code
Travelling	Swimming in one direction for an extended period of time. Moving more quickly than idle speed of the vessel.	T
Resting / Logging	Motionless in same spot except to breath. If moving, then moving more slowly than the idle speed of the vessel.	R
Socializing	Diverse interactive behavior such a body contact, flipper caressing, tail swipes, genital inspections. Dive intervals may vary.	S
Feeding	May be surface apparent in some species (mouth open, baleen rattle). Otherwise indicated by long-term group synchronous diving. Arched backs may indicate deep dives.	F
Milling	Non-directional swimming. Individuals are surfacing in different directions. No net movement.	M
Other	Make a note in the Comments. Examples include spy hopping, breaching, pectoral slapping, tail, slapping and sailing.	O