

		The Regional Training Program on Cetacean Information Gathering and Research Methodology on Cetacean Stock Assessment 23 rd -25 th November 2010, Chachoengsao Province, Thailand	
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Data form instructions for Cetacean Sighting Survey

Operational strategy

1. The research vessel follows the predetermined track lines at 10.0 knots. Primary searching is conducted when the research vessel runs on the line under good weather conditions as mentioned below. Sightings obtained during the primary searching are primary sightings, only which can be used for estimation of animal density. When the primary sighting is obtained, the vessel attempts to approach the object for species identification, school size counting, and other data collection, e.g., photographs. After confirming the sighting, the vessel returns to track line perpendicularly to the line under secondary searching mode and then starts the survey again.
2. Secondary searching mode is carried out during the vessel departs from the track line for observation of animals or runs on the line under bad weather conditions. Speed of research vessel is changeable during the secondary searching mode (it is not necessary for the vessel to be fixed at 10 knots). Sightings obtained during the secondary searching mode and drifting are secondary sightings. For these sightings, research vessel does not attempt to approach. However, if necessary, e.g., for species identification, the vessel can approach the sighting.
3. Acceptable weather condition for the primary searching are i) 3 or less in Beaufort wind scale and ii) greater than 2 nautical miles in visibility. When weather conditions turn bad, the vessel stops and drifts until weather recovers, the vessel runs on the line under the secondary searching mode, or survey in the day is discontinued.
4. During the primary searching, two or more researchers should be on duty on upper deck (or top of tower) of the research vessel. They search the sea surface around the vessel, especially on course of the vessel. Searching is conducted with naked eyes and, if available, binoculars. When the secondary searching mode applies, researchers search on an opportunistic basis. Researchers must rotate role of recorder. The role of the recorder is to write down various information on sighting, searching. Data recording instructions are mentioned below. The recorder, captain, and crews also can search the sea surface for cetaceans.
5. When a person detects cetaceans, she/he must report the following data to others, especially to the recorder: estimated radial distance, sighting angle, and cue. Detailed descriptions on the information are mentioned below. After the reporting, the recorder writes down the data and time/position when/where the sighting is obtained and then, the vessel approaches the object.

Data definitions and recording instructions

Data forms: In the survey, two types of data forms are used.

1. Action and Weather Form

This form is recorded *every hour (weather condition only) and when major changes occur* in weather conditions and searching action. The data are:

Vessel: Vessel name

Date: year-month-day

Page: Numbered sequentially from 1, every day.

Time: Time when code of action and weather is recorded, using 24-hours and minutes (local time).

Position: Position of vessel from GPS system

Action:

(a) *Codes* are:

BC = beginning of primary searching in closing mode.

BP = beginning of primary searching in passing mode. Probably, this cord will not be used.

TD = beginning of top down transit, e.g., vessel begins to run on track line under bad weather conditions.

ED = end of the survey for the day.

DR = beginning of drifting, e.g., in order to avoid bad weather.

CO = primary sighting obtained and beginning of approach to the object.

SO = secondary sighting obtained and beginning of approach, if vessel attempts to approach. If not approach, this code is not recorded.

CH = beginning of observation and data collection, e.g. photographs and sound.

KT = end of observation.

TB = beginning of return to the track line (or start point/harbor) after observation.

SC = speed change during primary searching, e.g., in order to avoid another vessel.

CC = course change during primary searching, including in order to avoid another vessel and sand bank.

(b) *Course:* in degree

(c) *Speed:* in knots with one decimal.

Weather:

(d) *Codes* are:

Code	Condition	Description
b	Clear	Cloud coverage 0-20 %
bc	Fair	Cloud coverage 21-80 %
c	Cloudy	Cloud coverage 81-99 %
o	Overcast	Cloud coverage 100 %
r	Rain	
m	Mist	
f	Fog	
d	Drizzling rain	
q	Squalls	
t	Thunder	

These conditions are recorded on the basis of observation within 2 n.miles in front of the vessel. If several conditions are observed simultaneously, the most severe one for searching is recorded.

(e) *Wind:* If possible, wind speed in m/s and direction in degree are recorded.

(f) *Beaufort wind scale*: the scale is

Beaufort Scale	Wind speed Knots	Description	Sea Condition
0	0	Calm	Sea like a mirror
1	1-3	Light Air	Ripples but without foam crests
2	4-6	Light Breeze	Small wavelets. Crests do not break
3	7-10	Gentle Breeze	Large wavelets. Perhaps scattered white horses
4	11-16	Moderate Breeze	Small waves, Fairly frequent white horses
5	17-21	Fresh Breeze	Moderate waves, Many white horses
6	22-27	Strong Breeze	Large waves begin to form; White foam crests, probably spray

Scale of 7 or more is omitted. When scale of 7 or more is observed, record as '7+'

(g) *Visibility*: Visibility is given as nautical miles with two decimals. Maximum is the distance from the vessel to the horizontal line.

(h) *Temperature*: Sea surface (water) and air temperature in °C.

(i) *Glare*: Position of severe glare observed is recorded as A = observed dead head, R = at right side, L = at left side, and N = no severe glare. If possible, glare position relative to the vessel is recorded as a sector using compass. For example, when glare appears in right side of the vessel heading north, the sector is recorded as from 0° to 180°.

2. Sighting Record Form

When a person detects cetaceans, she/he must tell the event to others, especially to the recorder. Then, the recorder writes down 'Time', 'Type', 'Position', and sighting information (angle, distance, cue, etc.). Other information, e.g., species name and pod size, is recorded at the time that the vessel approaches closest the object. For secondary sightings, the information is also recorded. If identification of species and school size cannot be conducted surely because of no approaching action, the situation is noted in 'Comments'.

The information is:

Vessel: Vessel Name

Date: year-month-day.

Time: 24-hours and minutes (local time), when cetaceans are detected.

Sighting no: Numbered sequentially from No. 1 every day.

Type: This is the description of the sighting type in relation to search effort. 1 = primary sighting, 2 = secondary sighting, 9 = other (when this code is used, the situation must be recorded in the sighting record).

Recorder: Initials of recorder.

R/L: Relative position of object detected to the vessel: right (recorded as R), Left (L), dead ahead (A), or dead astern (B)

Angle: Sighting angle between course of the vessel and the object, measured using an angle board set on the deck. The angle is recorded as degrees, e.g., 28° and not rounded (for example, from 28° to 30°).

Distance: Radial distance from the vessel to the object, estimated as accurately as possible in nautical miles. Other units can be also used (e.g., mile). When other unit is adopted, it must be mentioned in ‘*Unit of distance*’.

Cue: Indicator which led to the sighting. Codes are

- 1 = blow
- 2 = jump; splash
- 3 = body of animal, e.g., fin, tale, neck, and carapace
- 4 = ring, i.e., sea surface raised by stroke of tale and fin of animal swimming under water
- 5 = color, i.e., silhouette of animal swimming under water
- 7 = associated wildlife, e.g., many birds flying above cetaceans
- 9 = other (when this code is used, the situation must be recorded in the sighting record).

Seen at: Place where sighting is conducted; 1 = top of tower, 2 = upper bridge, 3 = bridge, 4 = deck, 9 = other (when this code is used, the place must be noted in the sighting record).

Seen by: Initial of the person who detected the object.

Swimming direction: Swimming direction estimated at the moment the sighting is made. The direction should be read from the gyrocompass.

Position of vessel: Position of vessel when the object is detected. This position is the same with ones recorded with ‘*action codes CO and SO* in ‘Action and Weather Form’.

Event: Record the activity associated with this sighting. Record as 1 = immediate closure completed, 2 = sighting passed and no closure attempted, 3 = closure attempted but was not successful, 4 = closure completed after delay, and 9 = none of the above is appropriate.

Course: Course of vessel, when the object is detected.

C/T: C = If a simultaneous compass reading was taken, T = If a simultaneous reading was not taken and the compass bearing being steered was recorded.

Closest distance: Distance from the vessel to the object when the vessel approaches closest the object. Unit must be recorded in ‘*Unit of distance*’.

Time left: Time when approaching action is finished.

Species: Species name in English. Code is shown in Appendix 1. If species identification is uncertain, it is mentioned.

Pod size: Counted (or estimated) number of animals in the school detected. A school is defined as a tight concentration of animals, which dive and swim synchronously when they are detected. Cetaceans surfacing independently from each other are considered as separate schools, even if they constitute a part of a high density aggregation. For small cetaceans making high density aggregation, e.g., dolphins, it may be appropriate that ‘minimum’ and ‘maximum’ estimates are also recorded.

No. of calves: Number of calves swimming with their mothers.

No. of Photos: Number of photographs taken.

Comments: Record estimated body carapace) length, remarkable pigmentation, external morphology, behavior, etc.