

Agenda Item 14.4.2

Implementation of the ASCOBANS Triennial
Work Plan (2007-2009)

Review of New Information on Population
Distribution, Sizes and Structures

SCANS II Results, CODA Project and TNASS

Document 39

Progress Report on the CODA Project

Action Requested

- take note of the information submitted
- comment

Submitted by

Secretariat



NOTE:
**IN THE INTERESTS OF ECONOMY, DELEGATES ARE KINDLY REMINDED TO BRING THEIR OWN
COPIES OF DOCUMENTS TO THE MEETING**

Progress report on the CODA project

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1 Introduction

In 2005, the SCANS-II (Macleod *et al.*, 2006) project followed up on the SCANS 1994 (Hammond *et al.*, 2002) project to survey the North Sea and wider continental shelf waters of the European Atlantic to generate estimates of cetacean abundance, primarily for harbour porpoise. The survey area included the original ASCOBANS Agreement Area. Information from a current project, Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA), is relevant to the newly agreed extended ASCOBANS Agreement Area.

The principal objective of CODA is to estimate cetacean abundance in offshore European Atlantic waters; focal species are common dolphin, bottlenose dolphin, fin whale and deep diving species. The project will also develop further the management framework developed under SCANS-II to assess the impact of bycatch and to determine safe bycatch limits for common dolphin. Other objectives are to investigate habitat preferences for common dolphins and other species as data allow and to obtain information on distribution and abundance of sperm whales and other deep diving species to contribute to our understanding of the impact of industrial and military seismic and sonar activities. Surveys were carried out during summer 2007 and information on sightings distribution is presented. The data are currently being analysed to generate abundance estimates.

2 CODA surveys: July 2005

In July 2007, the CODA surveys were carried out to generate new estimates of cetacean abundance in European Atlantic offshore waters, beyond the continental shelf. The survey area extended from approximately 61° - 42°N and 1° - 18°W. The survey methods used were the same as those used for the SCANS-II surveys in 2005. Double platform line transect surveys were carried out on all ships, requiring two teams of observers, a primary and tracker, on each. This method allows the analyses to account for the probability of detection on the transect line to be less than one and for responsive movement of animals to the ship, eliminating these sources of bias in the abundance estimates.

2.1 Visual survey

Five ships covered 11 417km (Figure 1) of transects in an area of 967 538km². All survey ships covered at least 75% of the designed transects in Beaufort seastates 1-4. Sightings amounted to almost 1 500 encounters of seventeen species from all ships combined (Table 1). All sightings recorded on the primary platform are shown in Figure 2. Fin whale encounters were greatest and centred in the western Bay of Biscay (Figure 3). Sightings of large whales were frequent but observers detected them as blows some distance from the vessel, which proved difficult to identify to species. Common dolphins occurred mainly in the southern part of the survey area (Figure 3), particularly in the Bay of Biscay. Other species, such as sperm whales, were seen throughout the area. Three Ziphiid species were recorded; Cuvier's beaked whale, Sowerby's beaked whale and the northern bottlenose whale.

2.2 Acoustic survey

High frequency (harbour porpoise) data were collected from all CODA ships and from within all four CODA survey blocks. A total of 36137.18 minutes (602 hours / 771 files) of HF acoustic data was collected (Figure 4). Dolphin click trains were detected within all four blocks and a single harbour porpoise click train was detected in CODA block 2. Medium frequency recordings were also collected from all CODA ships throughout the area. A total of 38658.76 minutes (644 hours / 5459 files) of MF recordings was collected, and these are currently being post processed with sperm whale and beaked whale detection parameters.

3 Abundance estimation

A workshop took place in January 2007 to progress the analysis of the visual survey data. The data will be analysed to estimate abundance using two methods; 1) Mark Recapture Distance Sampling (MRDS) and 2) Density Surface Modelling (DSM). Abundance will not be estimated for all species because the numbers of sightings, particularly duplicates, were too small for some. Abundance will be estimated by these methods for common dolphins, striped dolphins and fin whales. Abundance will also be generated

for pilot whales, sperm whales and bottlenose dolphins but conventional distance sampling methods might be used if sample sizes do not allow a good fit of the detection function using MRDS. The estimates of abundance from the MRDS analysis will be completed by mid-May 2008. The DSM analysis will be completed by August 2008.

The DSM will also identify important environmental characteristics that influence the distribution and density of cetaceans. Geostatistical methods will be used to investigate habitat preferences of cetaceans as an alternative and comparative approach to the DSM.

Table 1: Summary of sightings from all ships by platform.

| Species | Primary Sightings | Tracker Sightings | Duplicates | | | Total Duplicates |
|-------------------------------|-------------------|-------------------|------------|-----------|----------|------------------|
| | | | Definite | Possible | Remote | |
| Big cetacean | 1 | 3 | 0 | 0 | 0 | 0 |
| Bottlenose dolphin | 23 | 28 | 10 | 0 | 2 | 12 |
| Blue whale | 1 | 0 | 0 | 0 | 0 | 0 |
| Cuvier's beaked whale | 6 | 11 | 2 | 0 | 0 | 2 |
| Common dolphin | 106 | 86 | 40 | 3 | 0 | 43 |
| Common/striped dolphin | 30 | 59 | 13 | 2 | 0 | 15 |
| False killer whale | 0 | 1 | 0 | 0 | 0 | 0 |
| Fin/Sei whale | 5 | 7 | 1 | 1 | 0 | 2 |
| Fin whale | 195 | 241 | 80 | 9 | 1 | 90 |
| Harbour porpoise | 2 | 1 | 0 | 0 | 0 | 0 |
| Killer whale | 0 | 3 | 0 | 0 | 0 | 0 |
| <i>Lagenorhynchus</i> sp. | 0 | 1 | 0 | 0 | 0 | 0 |
| Long-finned pilot whale | 46 | 61 | 16 | 2 | 1 | 19 |
| Long/short-finned pilot whale | 3 | 3 | 2 | 0 | 0 | 2 |
| Medium cetacean | 13 | 13 | 0 | 0 | 1 | 1 |
| Minke whale | 15 | 11 | 2 | 1 | 0 | 3 |
| Northern Bottlenose whale | 1 | 2 | 0 | 0 | 0 | 0 |
| Patterned dolphin | 2 | 5 | 0 | 0 | 0 | 0 |
| Risso's dolphin | 2 | 1 | 0 | 0 | 0 | 0 |
| Small cetacean | 4 | 0 | 0 | 0 | 0 | 0 |
| Sowerby's beaked whale | 5 | 4 | 2 | 0 | 0 | 2 |
| Striped dolphin | 33 | 38 | 16 | 1 | 0 | 17 |
| Sperm whale | 34 | 48 | 17 | 0 | 0 | 17 |
| Sei whale | 12 | 13 | 7 | 0 | 0 | 7 |
| Unidentified dolphin | 14 | 36 | 3 | 1 | 0 | 4 |
| Unidentified beaked whale | 11 | 13 | 2 | 1 | 0 | 3 |
| Unidentified whale | 107 | 88 | 15 | 9 | 0 | 24 |
| Whitesided dolphin | 14 | 8 | 2 | 0 | 0 | 2 |
| Total | 685 | 785 | 230 | 30 | 5 | 265 |

Table 2. Number of high frequency acoustic detections. Key: MC – Mars Chaser; RA – Rari; GE – Germinal; IN – Investigator; CS – Cornide de Saavedra

| CODA Blocks | Ship | Delphinid click trains ¹ | Single track harbour porpoise click trains |
|-------------|--------|-------------------------------------|--|
| 1 | MC | 79 | 0 |
| 2 | RA /GE | 65 | 1 |
| 3 & 4 | IN /CS | 170 | 0 |

1 Click trains can represent one animal or more than one animal.

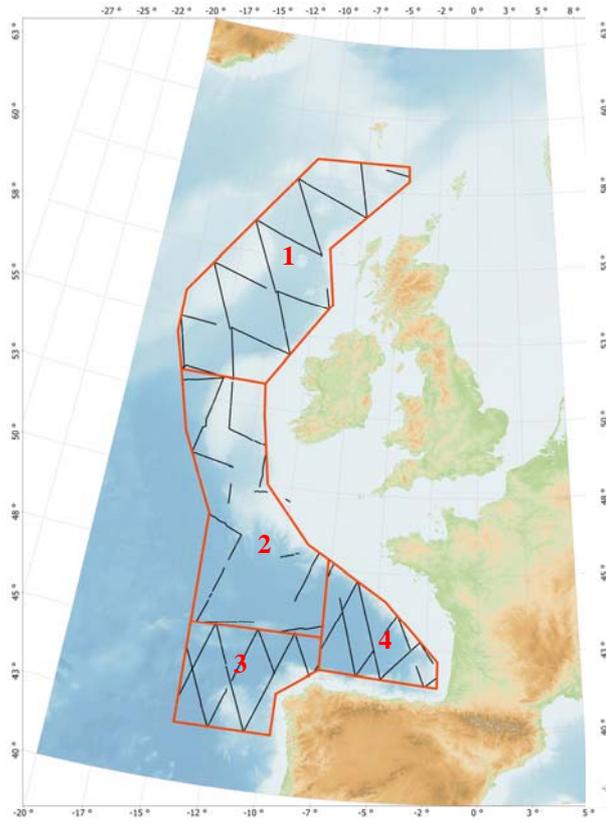


Figure 1: CODA survey area and effort, July 2007

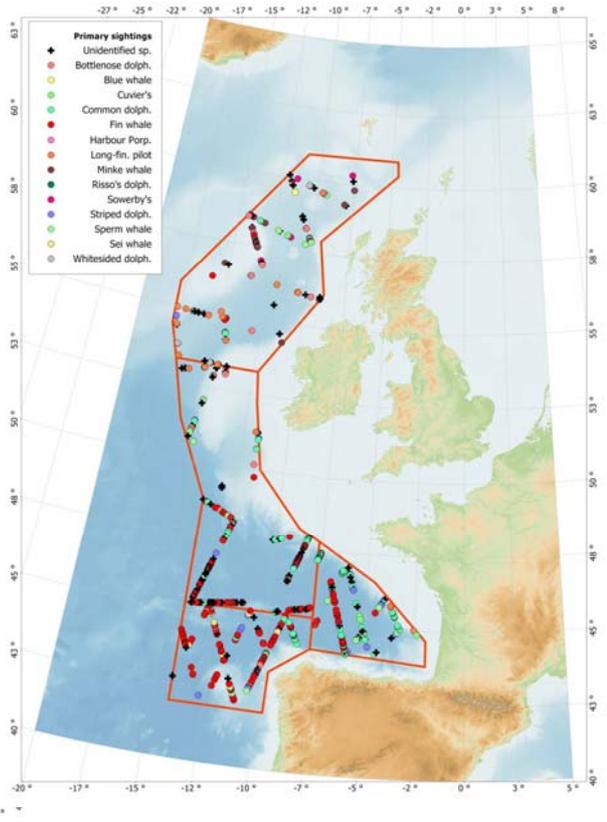


Figure 2: Sightings by primary platform observers on all ships

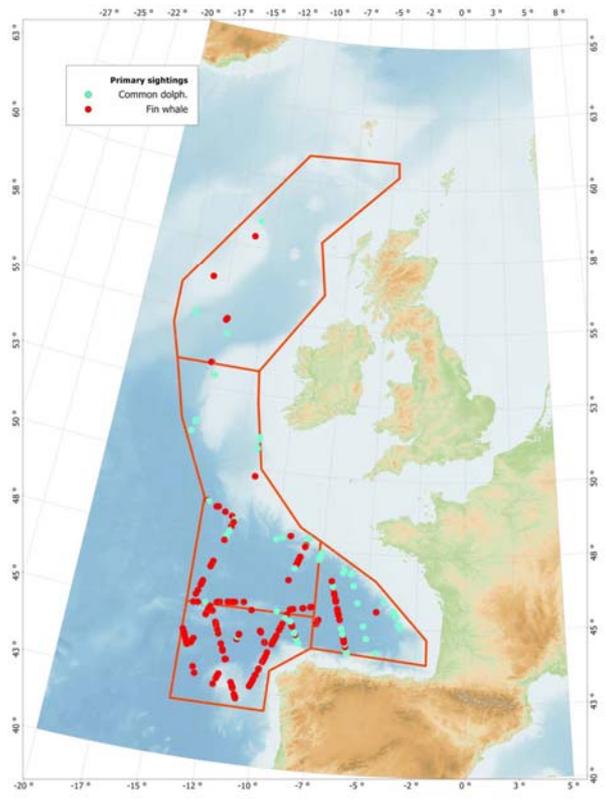


Figure 3: Distribution of common dolphins and fin whales.

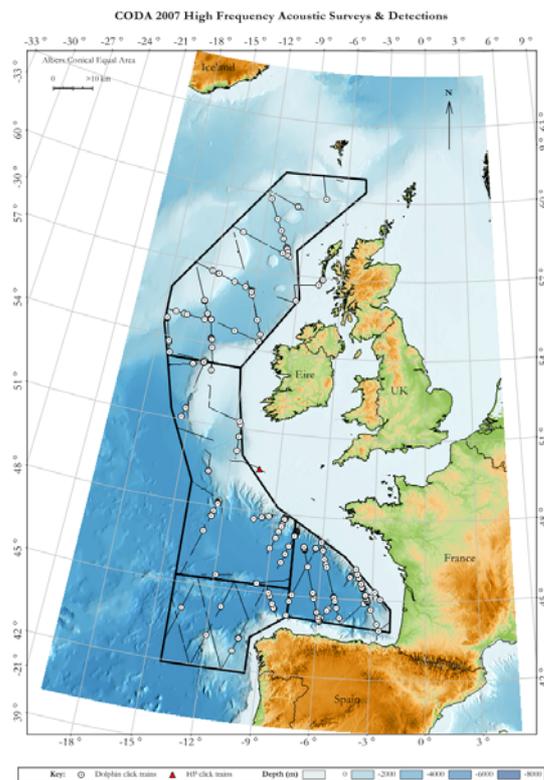


Figure 4: Acoustic survey effort and high frequency acoustic detections.

4 Literature Cited

Hammond, P.S., Berggren, P., Benke, H., Borchers, D.L., Collet, A., Heide-Jørgensen, M.P., Heimlich, S., Hiby, A.R., Leopold, M.F. and Øien, N. 2002. Abundance of harbour porpoises and other cetaceans in the North Sea and adjacent waters. *Journal of Applied Ecology* 39: 361-376.

Macleod, K., Scheidat, M and Hammond, P. S. 2006. Taking stock of European Cetaceans: the SCANS-II surveys. Presentation to the 20TH Annual European Cetacean Society, Poland, April 2006.

5 Acknowledgements

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