

**R.V. Celtic Explorer – MeBo Survey**

**Cetacean Distribution & Relative  
Abundance Survey**

15<sup>th</sup> July – 25<sup>th</sup> July 2006

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## **Introduction**

The waters of Ireland's Exclusive Economic Zone (EEZ) represent one of the most important cetacean (whales, dolphins and porpoise) habitats in Europe. To date 24 species of cetacean have been recorded in Irish waters (see appendix I).

All cetacean species in Irish waters are protected by the 1976 wildlife act (and wildlife amendment act 2000) and Irish waters, including the EEZ were declared a whale and dolphin sanctuary in 1991. All cetacean species are protected under the EU habitats directive and the harbour porpoise and bottlenose dolphin are listed under annexe II of the habitats directive, requiring the designation of special areas of conservation (SACs) for their protection.

As part of the 2006 MeBo Survey conducted by the Marine Institute and the Petroleum Affairs Division, the Irish Whale and Dolphin Group (IWDG) conducted an ancillary survey of cetacean distribution and relative abundance on board the R.V. Celtic Explorer in the region of the Porcupine Bank. This work forms part of the IWDG's ongoing surveys into the distribution and abundance of cetacean species in Ireland's offshore marine habitats.

## **Methods**

This survey was conducted from the observation platform located above the bridge and 18m above the waterline.

During this survey cetacean observations were for between twelve and fourteen hours per day, weather permitting (Beaufort sea state 6 or less). Watch effort was focused on an area dead ahead of the vessel and 45° to either side. Sightings in an area up to 90° either side of the vessel were recorded. The area was constantly scanned during these hours by eye and with binoculars.

Ships position, course and speed were continuously recorded on a laptop using a Fortuna USB GPS. Environmental conditions were recorded every 15 minutes using the IFAW Logger 2000™ program and later transferred to a Microsoft Excel spreadsheet. Environmental data gathered were: sea state; visibility; cloud cover; swell height; precipitation; wind speed & wind direction.

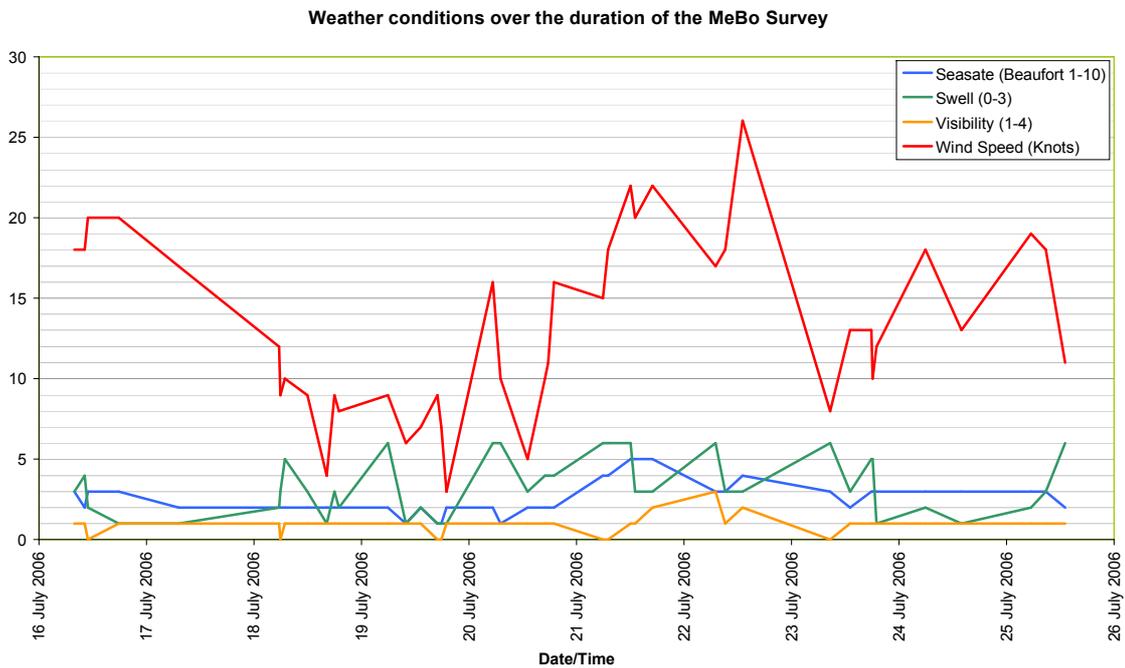
Sightings were also logged using the IFAW Logger 2000™ program. For each sighting the following data were recorded: time; location; species; distance; bearing; heading; number of animals (adults, juveniles and calves) and behaviour.

Relative abundance (RA) of cetaceans were to be calculated in terms of number of animals sighted per hour surveyed (aph). RA calculations were made using data collected in ≤ Beaufort sea state 3 and visibility in excess of 1km.

## Results

### *Environmental Conditions*

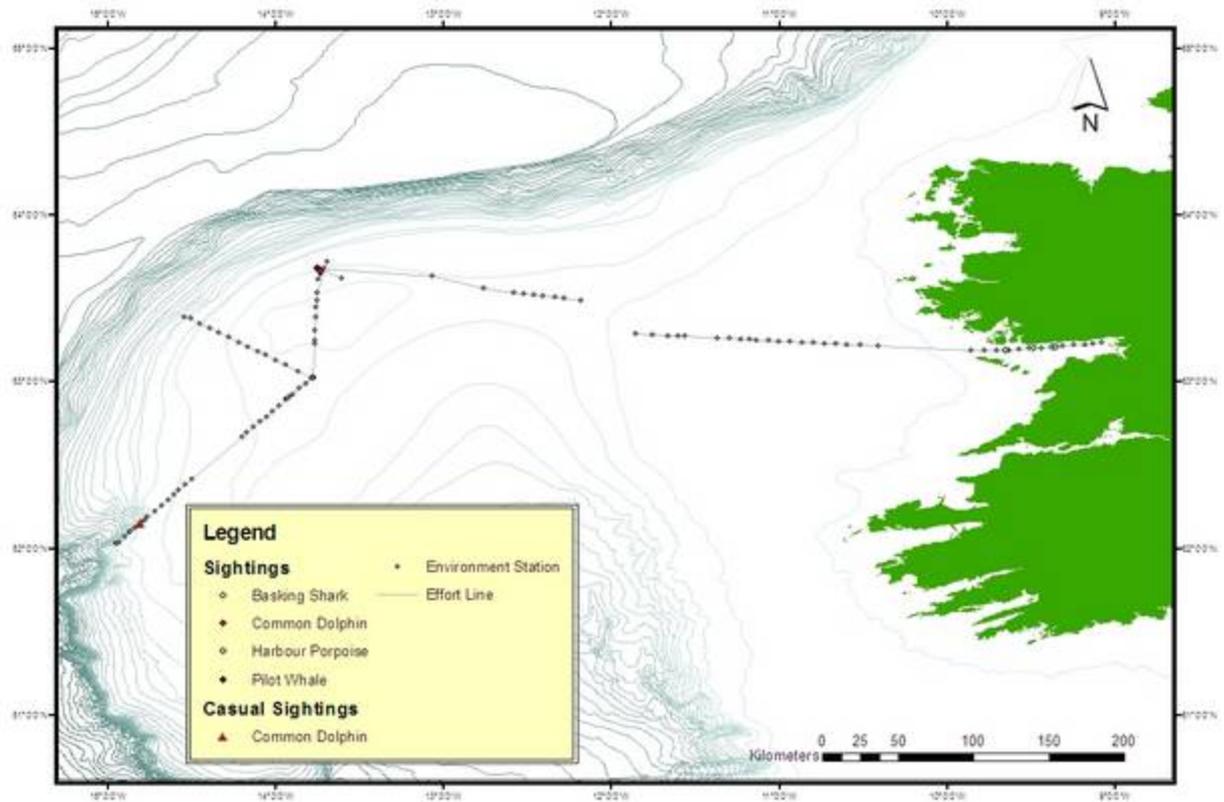
Environmental data was collected at 339 stations. Weather conditions during the survey period were generally good with sea state  $\leq 3$  at 82.9% of the environmental stations, while three half days were lost to very heavy fog. Visibility was good ( $>6\text{km}$ ) at 65.8% of stations, moderate (1–5km) at 13.3% of stations and poor ( $<1\text{km}$ ) at 20.9% of stations. Weather was generally calm and dry but visibility was often poor with fog/mist recorded at 33.6% of stations and rainfall recorded at 4.4% of stations and (fig. 1).



**Fig. 1:** Sea state, swell conditions and wind speed recorded twice daily during the survey.

## Cetacean Data

87 hours of survey time were logged with 85% of this at  $\leq$  Beaufort sea state three. Four sightings of three cetacean species, totalling 19 individuals were recorded (fig. 2). One sighting of a basking shark and two sightings of sunfish were also recorded.



**Fig. 2** Distribution of cetacean species recorded during the current survey.

The three cetacean species of cetacean identified were; harbour porpoise (*Phocoena phocoena*), common dolphin (*Delphinus delphis*), pilot whale (*Globicephala melas*) (figure 3).

The number of sightings of any cetacean species was insufficient to calculate relative abundance.



**Fig 3.** Pilot whales seen from the observation platform. (© Damien Guihen 2006)

A group of 11 pilot whales was recorded over the shelf, 300km west of the Ireland. This species is commonly associated with deeper waters over the shelf edge and around offshore banks (Ó Cadhla *et al.* 2004).

A group of five common dolphins were recorded close to the same location.

Three porpoises were recorded close in Galway Bay.

A basking shark was recorded close to the Aran Islands.

Two sunfish were recorded at different times 300km west of Ireland.

A casual sighting of approximately 30 common dolphins was recorded from the bridge. The dolphins swam with the vessel while in transit from one site to another. The dolphins were observed for over an hour until it became too dark to see them.

## References

**Ó Cadhla, O., Mackey, M., Aguilar de Soto, N., Rogan, E. & Connolly, N. (2004).** Cetaceans and Seabirds of Ireland's Atlantic Margin. Volume II – Cetacean distribution and abundance. Report on research carried out under the Irish Infrastructure Programme (PIP): Rockall Studies Group (RSG) projects 98/6 and 00/13, Porcupine Studies Group project P00/15 and Offshore Support Group (OSG) project 99/38. 89pp.

**Wilson, J & Berrow, S (2006).** A Guide to the Identification of the Whales and Dolphins of Ireland. *Irish Whale and Dolphin Group, Kilrush, Co. Clare*

**Appendix A: List of cetacean species recorded in Irish waters.**

|                              |                                   |                           |
|------------------------------|-----------------------------------|---------------------------|
| Atlantic White-Sided Dolphin | <i>Lagenorhynchus actus</i>       | co / os / br              |
| Beluga                       | <i>Delphinapterus leucas</i>      | va / arc /                |
| Blue Whale                   | <i>Balaenoptera musculus</i>      | uc / os / se              |
| Bottlenose Dolphin           | <i>Tursiops truncatus</i>         | co / br                   |
| Common Dolphin               | <i>Delphis delphis</i>            | co / br                   |
| Cuvier's Beaked Whale        | <i>Ziphius cavirostris</i>        | uc / os                   |
| False Killer Whale           | <i>Pseudorca crassidens</i>       | uc / os                   |
| Fin Whale                    | <i>Balaenoptera physalus</i>      | co / se                   |
| Gervais' Beaked Whale        | <i>Mesplodon europaeus</i>        | va / st                   |
| Harbour Porpoise             | <i>Phocoena phocoena</i>          | co / is / br              |
| Humpback Whale               | <i>Megaptera novaeangliae</i>     | ra / se                   |
| Killer Whale                 | <i>Orcinus orca</i>               | sp / br <sup>2</sup>      |
| Minke Whale                  | <i>Balaenoptera acutorostrata</i> | co / br <sup>2</sup>      |
| Northern Bottlenose Whale    | <i>Hyperoodon ampullatus</i>      | uc / os                   |
| Northern Right Whale         | <i>Eubalaena glacialis</i>        | va / os                   |
| Pilot Whale (long-finned)    | <i>Globicephala melas</i>         | co / os / br              |
| Pygmy Sperm Whale            | <i>Kogia breviceps</i>            | uc / os                   |
| Risso's Dolphin              | <i>Grampus griseus</i>            | co / br                   |
| Sei Whale                    | <i>Balaenoptera borealis</i>      | uc                        |
| Sowerby's Beaked Whale       | <i>Mesplodon bidens</i>           | uc / os                   |
| Sperm Whale                  | <i>Physeter macrocephalus</i>     | co / os / br <sup>2</sup> |
| Striped Dolphin              | <i>Stenella coeruleoalba</i>      | uc / os                   |
| True's Beaked Whale          | <i>Mesplodon mirus</i>            | uc / os                   |
| White-Beaked Dolphin         | <i>Lagenorhynchus albirostris</i> | uc / os                   |

co – common; os – offshore species; br – breeds in Irish waters; va – vagrant; arc – arctic species; uc – uncommon; se – seasonal; st – known only from strandings; is – inshore species; sp – sporadic.

**Appendix B: List of all recorded on-effort cetacean species sightings**

| <i>Date</i>           | <i>Time</i> | <i>Vessel</i> | <i>Latitude</i> | <i>Longitude</i> | <i>Species</i>   | <i>Number</i> |
|-----------------------|-------------|---------------|-----------------|------------------|------------------|---------------|
| 19th July             | 07:11       | C. Explorer   | 53.68444        | -13.7549         | Pilot Whale      | 11            |
| 20th July             | 08:14       | C. Explorer   | 53.6656         | -13.735          | Common Dolphin   | 5             |
| 25th July             | 13:43       | C. Explorer   | 53.19232        | -9.65016         | Harbour Porpoise | 1             |
| 25th July             | 14:46       | C. Explorer   | 53.21245        | -9.36975         | Harbour Porpoise | 1             |
| 25 <sup>th</sup> July | 14:51       | C. Explorer   | 53.21384        | -9.34874         | Harbour Porpoise | 2             |