

Cetacean surveys in the Atlantic Frontier

The Joint Nature Conservation Committee (JNCC) has been carrying out seabird surveys in the waters around Britain and Ireland since 1979. Surveys funded by the Atlantic Frontier Environmental Network (AFEN), a consortium of oil companies and governmental bodies, have been conducted to the north and west of Scotland since 1997, concentrating particularly in the license blocks granted to oil companies in the

17th round. The blocks are distributed from 210 km north of Shetland, along the continental shelf edge to 160 km south-west of Barra in the Outer Hebrides (Figure 1). This includes areas of water over 2,300 metres in depth, which is influenced by both warm water moving north from the Gulf Stream and currents of deeper, colder water moving south through the Faroe-Shetland channel.

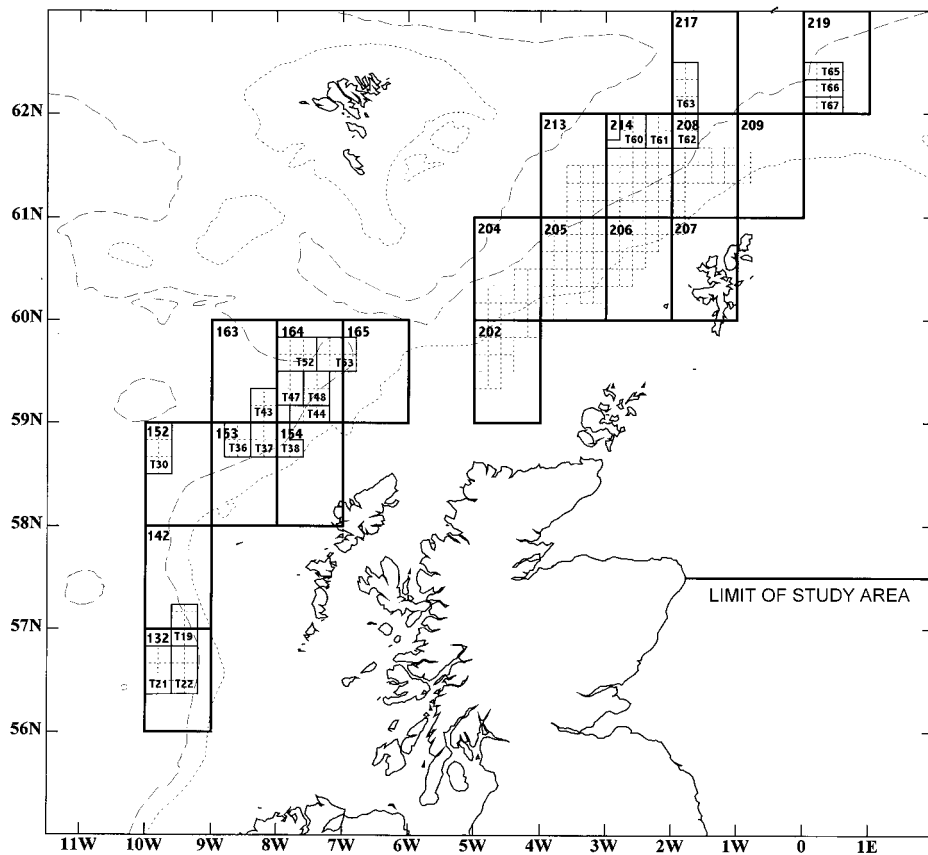


Figure 1 Map of Atlantic Frontier study area showing license blocks and tranches
Bathymetry: short dash (200m isobath); long dash (1,000m isobath)

Seabird surveys are carried out throughout the year from chartered vessels, ferries and opportunistic vessels working in the area. Surveys are conducted according to standard Seabird at Sea Team (SAST) methods, where birds are counted within a 300 metre band

transect on one side of the vessel, and a 90° scan ahead of the ship.

Although surveys carried out by JNCC are primarily for seabirds, sightings of marine mammals, turtles and large fish such as sharks and sunfish are also recorded. Opportunistic

sightings of cetaceans are frequent in the waters north and west of Scotland and provide an indication of the distribution and abundance of various cetacean species. Information recorded includes the species, number of animals (adults and juveniles), behaviour, direction of movement and occurrence within the transect. The ship's position, speed and course are recorded using a Global Positioning System (GPS), and environmental data such as sea state and wind force are noted.

The data resulting from these surveys are calculated as relative abundance indices, using

the number of individuals sighted per kilometre travelled. In addition, the location of sightings for less common cetacean species provides the first indication of their distribution in Atlantic Frontier waters.

During surveys carried out between January and December 1998, fifteen cetacean species were recorded in the study area (Table 1). A number of cetacean sightings were not identified to species level, including 15 whale sightings (21 animals) and 22 dolphin sightings (39 animals).

Table 1. Summary of cetacean sightings during 1998.

Species	No. of sightings	No. of individuals
Large whale sp.	10	16
Medium whale sp.	3	3
Small whale sp.	2	2
Beaked whale sp.	13	34
Fin whale	3	3
Sei whale	6	8
Minke whale	25	28
Humpback whale	1	1
Sperm whale	27	33
Northern Bottlenose whale	3	9
Sowerby's beaked whale	1	1
Killer whale	2	4
Pilot whale	31	391
Dolphin sp.	22	39
Risso's dolphin	2	4
White-beaked dolphin	50	167
White-sided dolphin	48	486
Common dolphin	20	146
Bottlenose dolphin	2	5
Harbour porpoise	33	59

The most commonly sighted species during 1998 was the white-beaked dolphin, which occurred in small groups and was mostly recorded within the 200 metre isobath in the Minch and off north Scotland. This species is replaced in deeper offshore water by the Atlantic white-sided dolphin, which was the most abundant species of cetacean recorded. White-sided dolphins often accompany schools of pilot whales, and both species are typically sighted in deeper waters off the shelf edge. Common dolphins were generally sighted south of 60°N latitude, and were often

recorded approaching the ship's bow, where they remained for up to forty minutes at a time. Risso's and bottlenose dolphins and harbour porpoises were mostly recorded in coastal waters around north Scotland and the Outer Hebrides. Two sightings of killer whales were recorded during 1998, both occurring in offshore waters west of the Outer Hebrides. The most commonly recorded baleen whale species was the minke whale, with 28 individuals sighted around the Outer Hebrides, particularly in the Minch.

Whale sightings in the Atlantic Frontier area during 1998

During 1998, AFEN surveys recorded several species of cetacean of particular interest to UK observers. Some of these species have a deep water, offshore distribution and are therefore inaccessible to many people, and others such as the beaked whale species are infrequently sighted and poorly known in our waters.

Large baleen whales can present difficulties in identification at sea, particularly when viewed at distance in a large swell. Often the blow from a large rorqual is all that is seen, and animals are then recorded as large whale species or as

blue/fin/sei whale. Fin and sei whales are recorded regularly during surveys, particularly to the north-west of the Outer Hebrides. Sei whales were the most frequently recorded large baleen whale species during 1998, and tended to occur in slightly larger groups than fin whales. Only one humpback whale was sighted during 1998 surveys, to the north of Shetland. Humpbacks remain a rare species in the survey region, with only five sightings during offshore surveys since 1979. Sightings of large rorquals are shown in Figure 2.

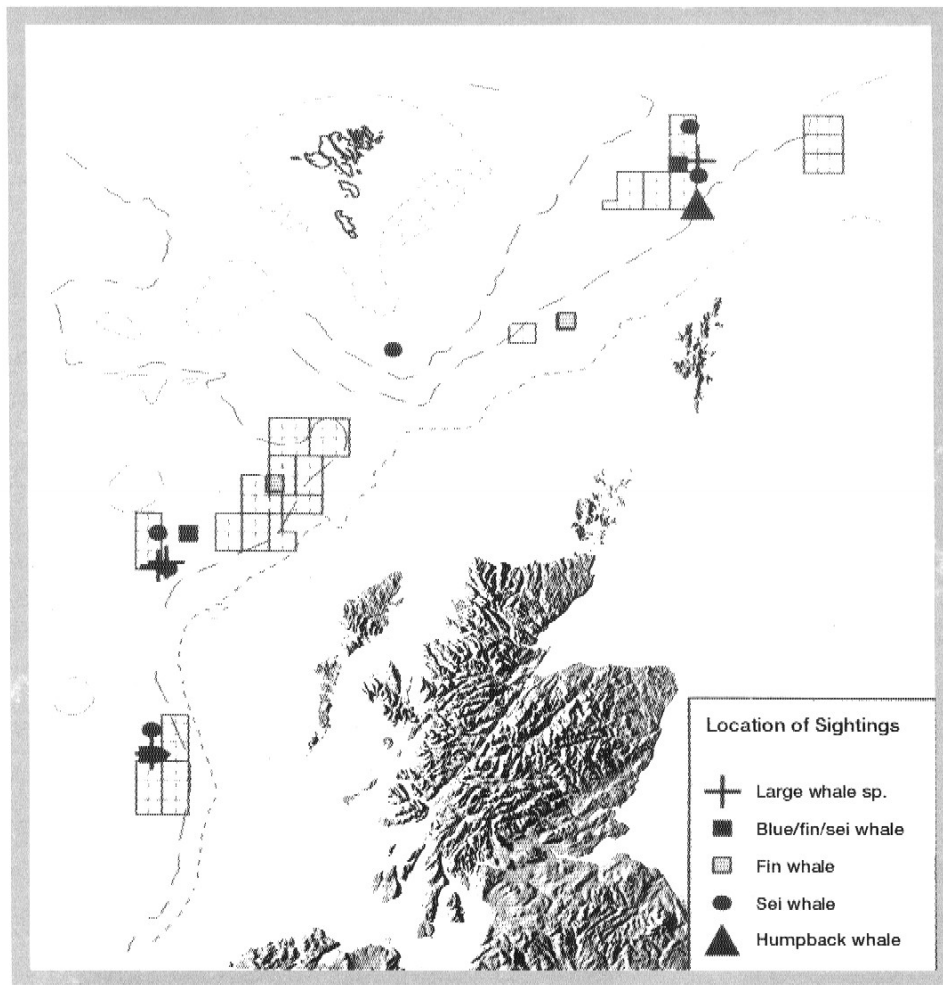


Figure 2. Location of large rorqual sightings during 1998.
Bathymetry: short dash (200 m isobath); long dash (1,000 m isobath).

Whilst baleen whales are often sighted at a distance from the vessel, sperm whales are generally viewed for longer and much closer to the ship. The sperm whale has a square head and wrinkled skin, which along with the distinctive bushy and angled blow allows for easy identification at sea. Sperm whales are the most frequently recorded large whale species at sea with 27 sightings during 1998 (Figure 3), along deeper waters of the shelf edge. This is partly due to their characteristic of logging at the

surface for minutes after a long dive, increasing time available for detection by an observer.

Northern Bottlenose whales were recorded on four occasions during 1998, with two sightings north-west of the Outer Hebrides, and two sightings in the Faroe-Shetland Channel (Figure 4). Bottlenose whales are characteristic of cold, deep waters and all sightings made during the survey were along the shelf edge.

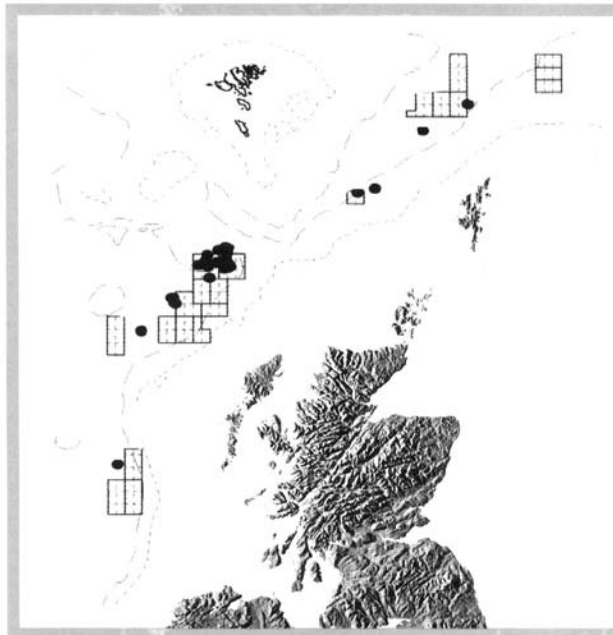


Figure 3. Location of sperm whale sightings during 1998.
Bathymetry: short dash (200 m isobath); long dash (1,000 m isobath).

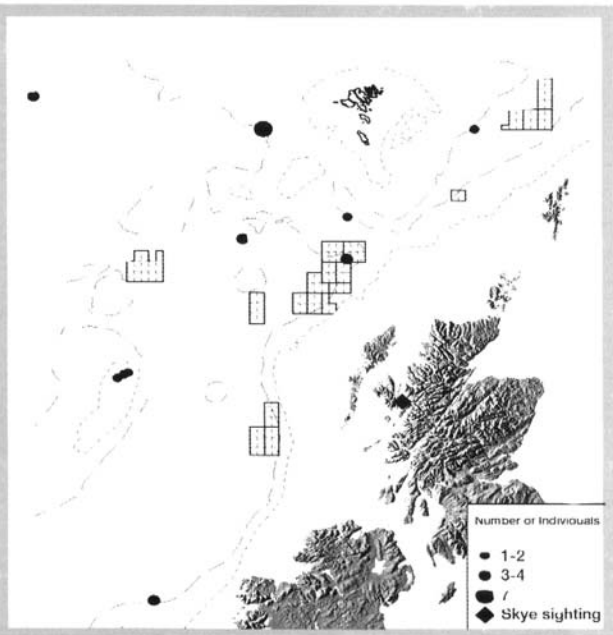


Figure 4. Location of northern bottlenose whale sightings during surveys between 1979 and 1998.
Bathymetry: short dash (200 m isobath); long dash (1,000 m isobath).

By comparison with other waters, the area seems to be of importance to beaked whales. A total of 13 sightings involving 34 animals were made during 1998 (Figure 5). Beaked whales are difficult to identify to species level since they are poorly known and rarely sighted at sea due to their offshore, deep-water habitat and ability to dive for long periods of time. The majority of beaked whales seen during surveys off Scotland have been identified as belonging to the genus

Mesoplodon, and one animal that surfaced close to the vessel during June was positively identified as a male Sowerby's beaked whale from the position of the teeth halfway along the jaw.

Surveys will continue into 1999, with future cetacean sightings adding to current data on distribution and abundance of cetaceans in the area.



Figure 5. Location of beaked whale sightings during 1998.
Bathymetry: short dash (200 m isobath); long dash (1,000 m isobath).

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