

SIGHTINGS FREQUENCY AND DISTRIBUTION OF CETACEANS IN SHETLAND WATERS

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INTRODUCTION The waters surrounding the Shetland Islands are one of the richest in the whole of Europe for whales and dolphins, with 21 species recorded in the region, sixteen in the last few years (Evans, 1994). Between 1991 and 1994, a project funded jointly by e WWF-UK, The Shetland Amenity Trust, and Scottish Natural Heritage was conducted on the harbour porpoise, to study its ecological distribution in Shetland, and interactions with potential food fishes to assess the role of changes in various fish stocks in porpoise population declines (see Evans & Borges, 1996; Evans, 1996). In the course of those studies, it became clear that some localities were favoured by various cetacean species. Identifying these areas and determining the ecological factors that determine their importance to cetaceans would be valuable not only for coastal management and conservation purposes, but also for the potential development of a cetacean watching industry.

METHODS Over the 13-week field season (from mid-June to mid-Sept 1995), the coastline of Shetland (including islands of Unst, Yell, Fetlar, Whalsay and Bressay) were visited to identify key locations where the public could readily observe cetaceans. Altogether, 400 hr of standardised (sea state of 2 or less) timed, land-based watches were carried out at a total of nineteen sites. This was supplemented by 80 hr of offshore vessel-based surveys incorporating pre-determined tracks. Fourteen boat transects were conducted from Lerwick, to sample the following five areas: Whalsay and Out Skerries, south-east coast to Sumburgh Head via Mousa Sound; c. 30 miles east of Noss (to a fishing bank where whales and dolphins have commonly been reported by fishermen); east coast to north end of Yell Sound; and north-east coast to Colgrave Sound and Bluemull Sounds. Visits were also made by ferry to Fair Isle, Papa Stour and Out Skerries.

Coastal localities identified as of likely importance for cetaceans were monitored over the entire field season from mid-June to mid-September. Survey methodology followed that developed during the Shetland porpoise study, with use of both visual and acoustic techniques to detect cetaceans. From the land-based watches and offshore boat surveys, encounter rates (per 100 min of observation) through the summer were calculated for different locations (Table 1). Watches only commenced when sea conditions were 2 or less, and ranged from 100 to 360 min duration, though the great majority lasted either 180 or 360 min (i.e. half a tidal cycle).

RESULTS A total of 400 hr of standardised timed, land-based watched were carried out at 17 sites around the mainland and smaller isles of Shetland and including Sumburgh Head, North Voe (Boddam), Quendale Bay, St. Ninians, Mousa Sound, Hamnavoe, Fedaland, Lunna Ness, Melby, Hillswick, Skaw (Whalsay), Marrister (Whalsay), Isbister (Whalsay), Ness of Sound (Yell), Head of Brough (Yell), Tresta (Fetlar) and Funzie Bay (Fetlar) (Fig. 1). Although some sites were visited once or twice, ten sites were visited between 5 and 12 times between June and September. Effort per site ranged from 3 to 38 hr watching.

Over the study period, a total of nine cetacean species were observed (in descending order of sightings frequency); harbour porpoise, minke whale, white-beaked dolphin, killer whale,

Atlantic white-sided dolphin, Risso's dolphin, common dolphin, long-finned pilot whale and humpback whale. Harbour porpoise was recorded in greatest numbers, followed by white-beaked dolphin, Atlantic white-sided dolphin, minke whale, killer whale, Risso's dolphin, common dolphin, long-finned pilot whale and humpback whale.

Harbour porpoises were the most widely distributed species. They have formed the subject of a dedicated study since 1990, the results of which have been summarised elsewhere (Evans, 1996; Evans & Borges, 1996). Harbour porpoise numbers generally increased during the summer, reaching a peak in August or September and supporting previous findings from watches at 50 sites distributed around Shetland (Evans, 1995,1996). For harbour porpoises, the highest encounter rates occurred at Skaw (Whalsay), in Noss Sound, in Mousa Sound, around St. Ninian's Isle and in Quendale Bay (Table 1).

For other cetacean species, sightings reported in 1993-95 indicate that although cetaceans can be seen in many parts of Shetland, species distributions tend to be aggregated into three principal areas: inshore waters around Sumburgh Head; the waters surrounding Mousa; and the area of sea between Whalsay and Out Skerries. Furthermore, the island ferries between Shetland mainland and Fair Isle, and between Shetland mainland and Whalsay/Out Skerries are also regularly productive, with sightings of several species of cetaceans. Status reviews for those species (except harbour porpoise) recorded during the project, and including records from 1993 and 1994, are given below:

Minke whales *Balaenoptera acutorostrata* This species was recorded mainly close to the east and south coasts of Shetland. Fifty-one out of 82 sightings (i.e. 62%) were made either off Sumburgh Head or in the vicinity of Whalsay and Out Skerries. Other popular haunts were in the vicinity of Noss and Mousa, with a combined total of 16 sightings. At least 49 sightings were additionally made from the MV "Good Shepherd" between Shetland and Fair Isle, particularly within 10 nm of Sumburgh Head. Eighty-four of 131 sightings (64%) comprised single animals, maximum group size being 6-12 individuals off Sumburgh Head on 26 and 27 June 1995. Sightings occurred in all months except January and November, but the great majority (94%) were between June and September (27 in June, 48 in July, 29 in August, and 19 in September).

Humpback whale *Megaptera novaeangliae* One to two (possibly up to three) individuals have been seen on 21 occasions between 26 June 1992 and 13 July 1995, all but five being from Sumburgh Head. The earliest sighting was on the 11 May and the latest on 16 September, with most sightings in the months of June and July. At least one animal has been individually recognised in four consecutive years by the white mark along the dorsal surface of the fin. Besides the records from the vicinity of Sumburgh Head, the species has also been seen east of Fair Isle, in Mousa Sound and east of Fetlar. They have been seen repeatedly breaching clear of the water, and also observed close inshore rubbing on rocks at Sumburgh Head.

Killer whale *Orcinus orca* There have been 94 sightings of killer whales in Shetland coastal waters between 1993-95. Group size has varied from single individuals to pods of 8-12 whales (including up to three adult males). Sightings around Shetland have occurred between April and December, but with the great majority of records (71 out of 94, or 76%) between May and July (6 sightings in May, 33 in June, 32 in July). Although killer whales have been seen all around Shetland, particular areas appear to be favoured in different years. In 1993, there were eight separate sightings between Mousa and Sumburgh Head from 30 June to 17 September. In 1994, nine sightings occurred in Yell Sound between 22 May and 28 July, 14 sightings in Bluemull and Colgrave Sounds between 19 April and 13 September (but mainly up to 29 July), but only two sightings between Mousa and Sumburgh Head. In

1995, killer whales reappeared along the south coast with five sightings between Levenwick and Sumburgh Head from 16 June to 10 September.

Long-finned pilot whale *Globicephala melas* The long-finned pilot whale is normally a pelagic species. A herd of about 100 individuals were seen 30 miles north-west of Foula on 20 February 1994, single individuals in Bluemull Sound on 27 May and 9 October 1994, and about ten at Burra Haaf on 29 August 1994. In 1995, one to two animals swam right up Olna Firth on 3 August and remained there until at least 15 August.

Atlantic white-sided dolphin *Lagenorhynchus acutus* Another pelagic species, the white-sided dolphin occasionally occurs close to the Shetland coast. Since 1993, there have been 12 sightings around Shetland or south to Fair Isle. Six of these have occurred off South Shetland, mainly off Sumburgh Head or in the Fair Isle Channel. All sightings have been between June and September, but with the majority (8 out of 12, or 67%) during August. Group sizes have varied from 2-500+ individuals, the latter being seen on 27 June 1995 off Sumburgh Head. In 1993, two groups of 50 were seen near Haroldswick, Unst on 18 July, and in Mid Yell Voe on 23 July.

White-beaked dolphin *Lagenorhynchus albirostris* Although formerly one of the most frequently recorded species of cetaceans in Shetland waters, the number of sightings since 1993 has been relatively low, with 38 records around Shetland between March and September, and an additional 33 from the MV "Good Shepherd" between Shetland and Fair Isle between January and October. Most records (57 out of 71, or 80%) occurred in July (8), August (35) and September (14). Group sizes vary from single animals to groups of 50-100 individuals. At least 8 were seen 7 nm south-west of Sumburgh on 29 July 1995, 50-100 east of Whalsay on 18 August 1995, and 60-100 off Sumburgh Head on 16 June 1994.

Common dolphin *Delphinus delphis* A rare species in Shetland waters, occurring in greatest numbers off south-west Britain and Ireland. In 1993, three entered Mavis Grind on 20 September and one remained there until at least 27 December.

Risso's dolphin *Grampus griseus* A comparatively scarce dolphin, this species has been sighted on 14 occasions around Shetland, or south to Fair Isle, with group sizes varying from 1-15 individuals. Most sightings have been on the east coast, with half the records between Whalsay and Hermaness. All sightings have occurred between July and October, with the majority (8 out of 14, or 57%) in August.

CONCLUSIONS Cetaceans occur regularly enough during the summer months to support a small-scale whale- and dolphin-watching industry in Shetland coastal waters. Shetland offers one of the best locations in the United Kingdom for seeing harbour porpoises, with several cliff sites affording excellent land-based vantage points. Between the months of June and September, the keen watcher may see between six and ten different species of cetacean, and most of these can be seen wither from land or from the inter-island ferries. Sumburgh Head is currently probably the best watching point although other excellent sites exist – the waters between Whalsay and Out Skerries, Noss and Bressay, and Mousa and Shetland mainland amongst others. With increased observation effort in some of the more remote Shetland locations (such as Hermaness on Unst, and Out Skerries), it is likely that the list of good watching sites will be enlarged.

Boat trips around Whalsay and Out Skerries were consistently rewarding, with concentrations of harbour porpoises and small aggregations of minke whales in these waters, and occasional sightings of killer whales, white-beaked, Atlantic white-sided and Risso's dolphins. White-

beaked dolphins and minke whales were also encountered regularly along the ferry route between Sumburgh Head and Fair Isle, and there were occasional sightings of groups of Atlantic white-sided dolphins, killer whales and Risso's dolphins. From land, Sumburgh Head is the best vantage point for visitors wishing to see a variety of cetaceans. During the dedicated watches in summer 1995, harbour porpoises, minke, killer and humpback whales were all sighted from this location. Incidental sightings of Atlantic white-sided dolphins, white-beaked dolphins and Risso's dolphins were also made.

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Table 1. Encounter rates (no. of sightings/100 min observation) for cetacean species at 17 land-based sites around Shetland.

Land-based site	No. hr watched	Harbour porpoise	White-beaked dolphin	Minke whale	Killer whale	Humpback whale	Total no. spp.
Tresta	6.0	6.67	0.00	0.00	0.00	0.00	1
Funzie Bay	6.0	3.61	0.00	0.00	0.00	0.00	1
Brough	6.0	6.94	0.56	0.00	0.00	0.00	2
Ness of Sound	6.0	0.00	0.00	0.00	0.00	0.00	0
Lunna Ness	18.0	1.28	0.00	0.00	0.00	0.00	1
Skaw	26.0	28.2	0.00	0.00	0.00	0.00	1
Marrister	25.7	2.57	0.00	0.00	0.00	0.00	1
Noss Sound	27.0	12.9	0.00	0.12	0.00	0.00	2
Mousa Sound	35.7	30.3	0.24	0.14	0.00	0.00	3
North Voe	30.0	4.97	0.00	0.05	0.00	0.00	2
Sumburgh Head	38.3	1.47	0.00	1.07	0.04	0.12	4
Quendale Bay	30.0	11.3	0.00	0.00	0.00	0.00	1
St. Ninian's	37.7	15.3	0.00	0.00	0.00	0.00	1
Hamnavoe	32.0	2.80	0.26	0.00	0.00	0.00	2
Papa Stour	6.0	0.47	0.00	0.00	0.00	0.00	1
Hillswick	18.0	0.82	0.00	0.00	0.00	0.00	1
Fedaland	15.0	8.33	0.00	0.00	0.00	0.00	1

Note: The cetacean species list recorded at a particular site is not exhaustive; it refers to those noted during timed watches.

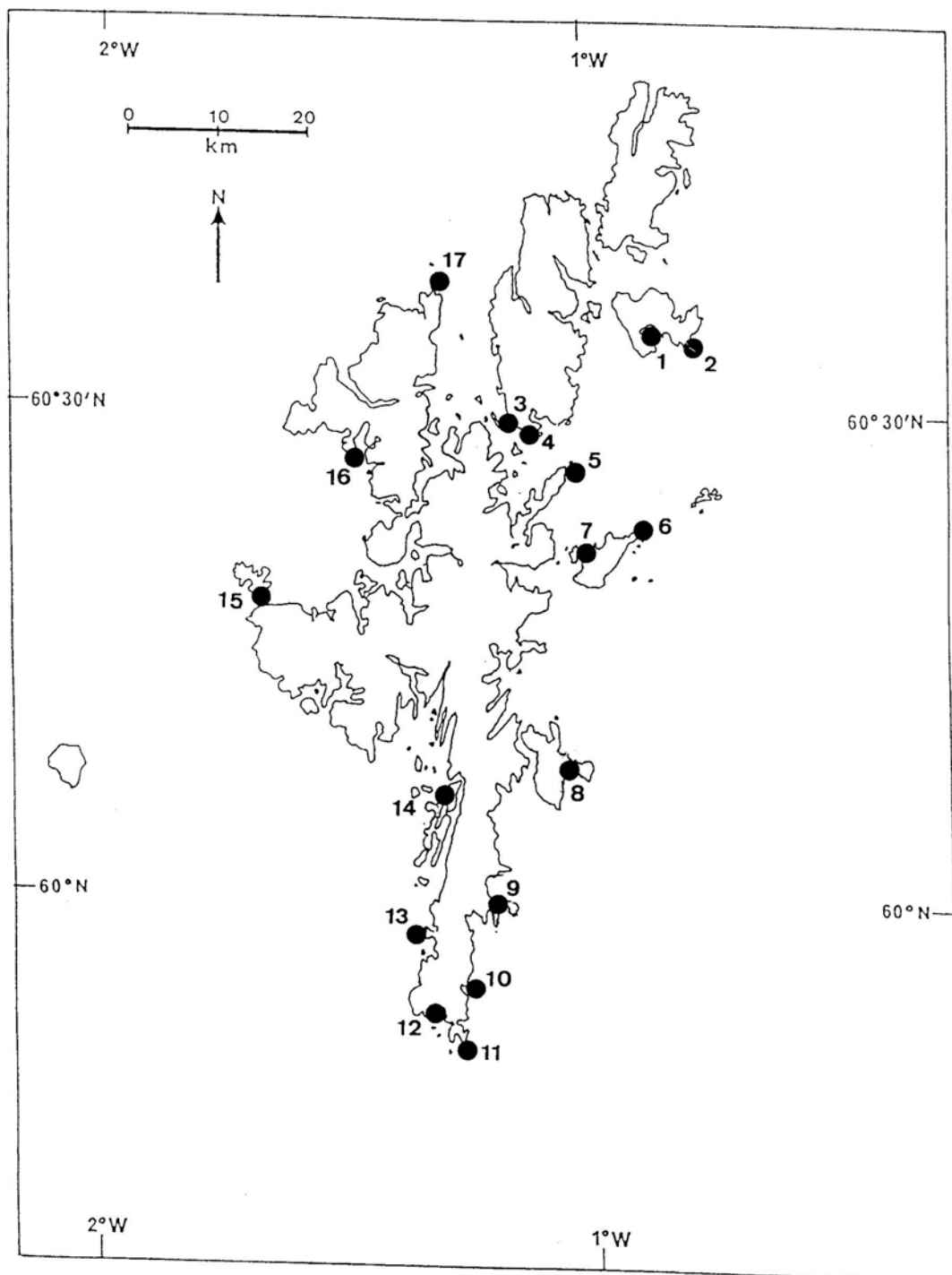


Fig. 1. Map showing seventeen land-based coastal sites systematically watched and offshore transects undertaken during summer 1995.

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|---|---------------------|----|---------------|----|------------------|
| 1 | Tresta (Fetlar) | 7 | Marrister | 13 | St Ninian's Isle |
| 2 | Funzie Bay (Fetlar) | 8 | Noss Sound | 14 | Hamnavoe |
| 3 | Brough (Yell) | 9 | Mousa Sound | 15 | Papa Stour |
| 4 | Ness of Sound | 10 | North Voe | 16 | Hillswick |
| 5 | Lunna Ness | 11 | Sumburgh Head | 17 | Fedaland |
| 6 | Skaw (Whalsay) | 12 | Quendale Bay | | |