

Strandings of male sperm whales *Physeter macrocephalus* Linnaeus, 1758 in Western Europe between October 1994 and January 1995

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Between October 1994 and January 1995 a total of 21 male sperm whales *Physeter macrocephalus* stranded on North Sea shores. Both individual and mass strandings took place. This article briefly reports data on these strandings. The social groups to which the whales belonged and the possible causes of the strandings are shortly discussed.

Strandingen van mannelijke potvissen Physeter macrocephalus in West Europa tussen oktober 1994 en januari 1995 - Tussen oktober 1994 en januari 1995 strandden er 21 mannelijke potvissen *Physeter macrocephalus* op de kusten van de Noordzee. Het ging om zowel individuele als massa strandingen. Dit artikel geeft korte informatie over de strandingen, en gaat in op de sociale groepen waartoe de potvissen behoorden en de mogelijke oorzaken van de strandingen.

Correspondence: E.J.O. Kompanje & dr. J.W.F. Reumer, Natuurmuseum Rotterdam,
P. O. Box 23452, NL-3001 KL Rotterdam, the Netherlands

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INTRODUCTION

During the 1994-1995 autumn/winter season 21 strandings of male sperm whales *Physeter macrocephalus* Linnaeus, 1758 were reported from the coasts of the North Sea. This article briefly reports data on these strandings.

STRANDINGS IN 1994-1995

Table 1 summarizes the strandings, which are also indicated on Fig. 1.

The first stranding involved a sperm whale on the beach near Whitby, Yorkshire (England), in October 1994. We have no specified date for this beaching. A freshly dead male sperm whale was found between the Dutch islands of Terschelling and Ameland on 3 November 1994 (Kompanje & Van Duijn 1994; Smeenk & Van Gompel 1994). This specimen was dissected during the following week. The skeleton was collected for

the Fries Natuurmuseum, Leeuwarden (the Netherlands). On the same day, a male sperm whale stranded alive on the German island of Baltrum. The two localities are some 125 km apart in the row of islands fringing the Wadden Sea.

The first mass stranding took place when three living male sperm whales were found on the beach at Koksijde (Coxyde), Belgium, on 18 November 1994. Partial autopsies were executed on 21 November. On 19 November a dead male sperm whale was found floating in the coastal waters near Nieuwpoort, Belgium (some 8 km NE of Koksijde); it was subsequently towed ashore. The rostral (toothbearing) parts of the lower jaws were collected for the Institut Royal des Sciences Naturelles de Belgique, Brussels. The remainders of these four whales

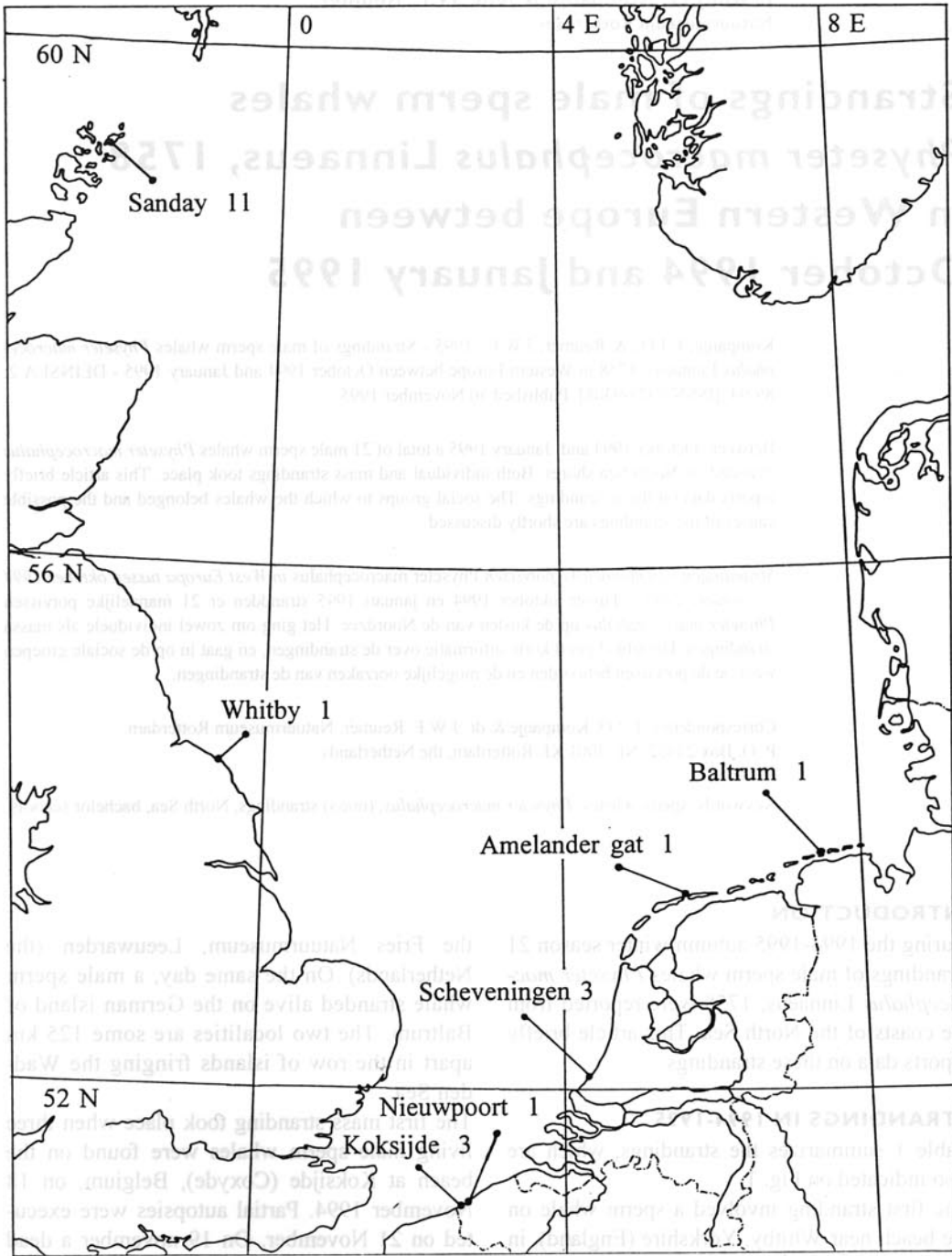


Figure 1 Map of the North Sea showing the localities of the strandings and the number of animals stranded.

were destroyed (Anonymous 1994). The second, and largest, mass stranding took place in the afternoon of the 7 December 1994. Eleven male sperm whales stranded at Backaskaill, on

the south coast of the island of Sanday, one of the Orkney Islands, Scotland. All eleven whales were buried on the beach four days later. No detailed autopsies have been carried out. One of

Table 1 Strandings of 21 male sperm whales between October 1994 and 12 January 1995

no.	date	place	length in cm
1	X-1994	Whitby (GB)	1580
2	03-XI-1994	Amelander gat (NL)	1440
3	03-XI-1994	Baltrum (D)	—
4	18-XI-1994	Koksijde (B)	1540
5	18-XI-1994	Koksijde (B)	1485
6	18-XI-1994	Koksijde (B)	1443
7	19-XI-1994	Nieuwpoort (B)	1820 or <1480
8	07-XII-1994	Sanday-Orkney (GB)	1339
9	07-XII-1994	Sanday-Orkney (GB)	1337
10	07-XII-1994	Sanday-Orkney (GB)	1320
11	07-XII-1994	Sanday-Orkney (GB)	1310
12	07-XII-1994	Sanday-Orkney (GB)	1302
13	07-XII-1994	Sanday-Orkney (GB)	1300
14	07-XII-1994	Sanday-Orkney (GB)	1290
15	07-XII-1994	Sanday-Orkney (GB)	1270
16	07-XII-1994	Sanday-Orkney (GB)	1270
17	07-XII-1994	Sanday-Orkney (GB)	1257
18	07-XII-1994	Sanday-Orkney (GB)	1229
19	12-I-1995	Scheveningen (NL)	1540
20	12-I-1995	Scheveningen (NL)	1535
21	12-I-1995	Scheveningen (NL)	1520

these sperm whales had a severely malformed lower jaw (personal communication by Harry Ross and Chris Booth).

The third mass stranding took place on the coast of the Netherlands, between Kijkduin and Scheveningen in the morning of 12 January 1995. Here, three male sperm whales stranded alive (Fig. 2). During the four following days the animals were dissected (Moeliker 1995) (Fig. 3) and the three skeletons were collected for the Natuurmuseum Rotterdam (the Netherlands), the Museum Natura Docet, Denekamp (the Netherlands), and for an as yet unknown foreign museum. Detailed tissue-sampling was performed and many photographs and videos were taken.

DISCUSSION

A mass stranding can be defined as the simultaneous beaching of three or more living whales or dolphins at one place. A mass stranding of large animals such as the sperm whale is a dramatic event. Fortunately, it is a rare phenomenon. Rice (1989) reported at least 42 mass strandings of sperm whales in the world since 1577. Most

mass strandings took place on the North Sea coasts, followed by New Zealand, Tasmania, the Gulf of California, Florida, the Bay of Biscay, Brazil, the Falkland Islands, Tierra del Fuego, Oregon, Australia and the Seychelles (Boschma 1938, Bryant 1979, Castello & Pinero 1974, Van Deirse 1918, Gaskin 1968, Gilmore 1959, Robson & Van Bree 1971, Sergeant 1982, Simões-Lopes & Ximenez 1993, Smeenk & Addink 1993, Stephenson 1975). Most of these involved breeding schools (males, females and juveniles). Others, in particular the North Sea strandings, concern male bachelor schools. Strandings of single animals, whether dead or alive, including newborn animals, are commonly reported.

As for the reasons of strandings, Robson & Van Bree (1971) mentioned violent electric storms and/or very sudden meteorological changes to have influence on the sonar system. This would result in panic, after which the animals strand in mass due to the strong social cohesion. Klinowska (1988) believes that mass strandings of living whales are due to disturbances in the geomagnetic field. Rice (1989) noted that 'navigational error' in addition to the strong social cohesion could be the most probable cause of mass strandings. Geraci (1978) summarized possible causes. The North Sea, when entered from the North, acts as a trap, seemingly without an escape. It is a shallow sea with many sand banks that could influence the sonar system of the entrapped sperm whales. In the days before the stranding on the Dutch coast of three animals on 12 January 1995, a strong northwesterly storm took place.

Table 1 gives the lengths of the animals. There is some confusion about the specimen from Nieuwpoort (no. 7). Its length was given as 1820 cm in a Belgian report (Anonymous 1994), while Smeenk & Van Gompel (1994) mentioned all Belgian animals to be between 13.8 and 14.8 m long. Male sperm whales attain puberty at an age of 7-11 years. They then have a length between 870 and 1030 cm. Full sexual maturity is attained at an age of about 18-21 years. The whales then have a length of about 1100 to 1200 cm. At an age of 35-60 years male sperm whales, with an average length of 1520 to 1610 cm, have reached physi-



Figure 2 The three sperm whales that were beached on 12 January 1995 between Kijkduin and Scheveningen (just south of The Hague), the Netherlands. [Photo: AEROPHOTO-SCHIPHOL B.V.]

cal maturity (Rice 1989). According to Gambell (1995), the male sperm whale is not physically mature before the age of 45 years. The maximum age to be reached is about 60 years.

Sperm whales aggregate in two types of social groups: breeding schools and bachelor schools. Breeding schools consist of females of all ages and immature and young adolescent males. Sexually mature males join these schools only during the mating season. Adolescent males leave the schools between the ages of 15 and 21 years, prior to attaining sexual maturity at a bodylength of about 1100 to 1200 cm (Rice 1989). They join bachelor schools, which consist entirely of older adolescent males and sexually mature males. Such a group may count up to 50 animals, and most of its members tend to be similar in size and age. Social bonds are not as strong as in the breeding schools, animals split and re-unite easily. In the North Atlantic only male whales are found. No more than three strandings of female sperm whales are known above 48° North (Boschma 1938). All other observations concerns male animals. In the North Sea sperm whales appear only accidentally. Sometimes an entire bachelor school is trapped in the North Sea. Almost always they will strand, like the bachelor school(s) described in this article.

Finally, it would be interesting to know whether the strandings of the 1994-1995 season could be considered to be one single mass stranding of animals belonging to one single bachelor school. This would then be a school that was entrapped in the North Sea basin during the autumn season, with subsequent strandings of individuals or smaller groups. So far, however, we do not know of sightings of sperm whales between October 1994 and January 1995. Such sightings did occur in 1993 (Smeenk & Addink 1993). The animals that got beached on Sanday, Orkney, had lengths (see Table 1) between 1229 and 1339 cm; all others measured between 1440 and 1580 cm. This could indicate the presence of two bachelor schools, one consisting of adolescents, the other one consisting of older, almost physically mature, males.



Figure 3 The authors (left : E.J.O.K, right: J.W.F.R) working on one of the 'Scheveningen' sperm whales [Photo: G.H.J. Peters]

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Chris Booth (Kirkwall, Orkney) and Harry Ross (Inverness, Scotland) provided useful information on the Orkney strandings and Chris Smeenk did so for the Dutch strandings.

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and the social bonds are not as strong as in the breeding schools of sperm whales and female calves. In the North Atlantic, sperm whales are found in more than one stranding of female sperm whales are known from the North Atlantic. All other observations concerning sperm whales in the North Sea seem to appear only accidentally, resulting in entire harem schools being trapped in the North Sea. Almost always they will strand like the harem schools described in this article.

Finally, it would be interesting to know whether the strandings of the 1994-1995 season could be considered to be one single mass stranding of animals belonging to one single harem school. This would then be a school that was trapped in the North Sea basin during the autumn season, with subsequent strandings of individuals in smaller groups. So far, however, we do not know of sightings of sperm whales between October 1994 and January 1995. Such sightings occur in 1997 (Smeenk & Addink 1997). The animals that got beached on Smeenk (Orkney) had lengths (see Table 1) between 139 and 1730 cm, all others measured between 1440 and 1780 cm. This could indicate the presence of two harem schools, one consisting of adolescent females, the other one consisting of older, almost physically mature males.