

XII. Red List of Marine Mammals of the Wadden Sea*

CONTRIBUTORS:

Denmark: S. Tougaard, C. Kinze

Germany: H. Benke**, G. Heidemann**

The Netherlands: P. J. H. Reijnders, M. F. Leopold

INTRODUCTION

Only four species of marine mammals may be considered to belong to the normal fauna of the Wadden Sea: two seal species, namely the common seal *Phoca vitulina* and the grey seal *Halichoerus grypus*, and two cetacean species, the harbour porpoise *Phocoena phocoena* and the bottlenose dolphin *Tursiops truncatus* (Wolff, 1983).

The bottlenose dolphin (*Tursiops truncatus*) has disappeared from the Wadden Sea. This species declined very strongly in the Wadden Sea area somewhere between 1965 and 1970 (Verwey & Wolff, 1983 a). The cause of disappearance is not exactly known but might be the decline of the herring *Clupea harengus*, pollution or possibly the cooling down of the North Sea after 1960 (Bakker & Smeenk, 1990). Only very rarely are sightings of single animals reported from the southern areas (The Netherlands and Niedersachsen). These animals are regarded as rare visitors.

The white-beaked dolphin (*Lagenorhynchus albirostris*) is typically found in the open sea and therefore is not taken into account here. However, occasionally, it approaches the coast, staying in the boundary between the Wadden Sea and the open sea. In recent years, the white-beaked dolphins have frequently been observed to enter the central Wadden Sea. Thus, they are considered to be transient through the area.

Seals

The common seal (*Phoca vitulina*) dwells in coastal marine habitats. For 1900, Reijnders (1992) estimated a population of approx. 37000 common seals in the Wadden Sea. An epidemic disease reduced the stock of seals in the entire Wadden Sea by approx. 60% in 1988. Since then, the stock has been recovering steadily. However, due to harassment and pollution, it is still considered to be threatened (Reijnders et al., 1990; Reijnders, 1992; Schwarz & Heidemann, 1994). Both of these aspects were taken into consideration in

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- * This list forms part of the Report on the RED LISTS OF BIOTOPES, FLORA AND FAUNA OF THE TRILATERAL WADDEN SEA AREA. For basic information concerning, for example, function of these lists, species taken into account, structure of the lists and abbreviations used, see also the general introduction to the Red Lists.
 - ** Author of the introductory text.

using the trilateral status „vulnerable“ in the trilateral Red List. In 1994, at least 9113 common seals were counted in the Wadden Sea (The Netherlands: 1230, Niedersachsen: 3111, Schleswig-Holstein: 3265, Denmark: 1507).

The grey seal (*Halichoerus grypus*) used to be widespread in the Wadden Sea until the early Middle Ages, but it became virtually extinct at the end of the 16th century, possibly because of increased human settlement and intensified hunting. Today, the grey seal finds suboptimal conditions in the Wadden Sea only. Undisturbed beaches and unflooded places to haul out in winter, vital for the successful rearing of the young, are almost unavailable (Reijnders et al., 1995). In 1967, a small permanent colony established itself near Amrum and in 1980 the same happened near Terschelling. These populations probably have been established by immigrants from Great Britain (Reijnders et al., 1995). In 1995, about 320 animals lived around traditional breeding places, all located far away from the coast. Of this population, 270 animals have been counted in The Netherlands, between Vlieland and Terschelling, and 50 of them in Schleswig-Holstein, between Sylt and Amrum (Vogel & Koch, 1992). The annual maximum number of pups counted in 1994 was 25 in The Netherlands and 10 in Schleswig-Holstein. The highest count for Schleswig-Holstein was 80 individuals, registered in 1994. In Niedersachsen and at the Isle of Helgoland, some grey seals have also been sighted. In the Wadden Sea of Niedersachsen, a few births of grey seal pups have recently been documented (Schwarz & Heidemann, 1994). The grey seal is resettling in the Wadden Sea area and the trilateral status “critical” – due to low numbers -has also to be seen in the light of this fact.

Cetaceans

Among the cetaceans, the harbour porpoise (*Phocoena phocoena*) is the most frequently sighted along the North Sea coast. It is also frequently found stranded on beaches. The harbour porpoise is a typical inhabitant of coastal areas adjacent to the Wadden Sea (Benke & Siebert, 1994). They enter estuaries leading into the Wadden Sea, in pursuit of prey. The same holds for the observations of Verwey in The Netherlands. At the offset of this century, harbour porpoises were widely distributed in coastal waters, from The Netherlands to Denmark. They could be observed regularly and in high numbers. In 1935, E. Mohr, a German zoologist, stated that she was frequently followed by fairly large schools of harbour porpoises, when fishing outside the estuaries of Elbe and Eider. A population decline of the harbour porpoise seems to have commenced in the 1940s or 1950s (Verwey & Wolff, 1983 b), with a second decline in the 1960s. However, during the last decades, a strong decrease in abundance in the southern part has been documented (Benke & Siebert, 1994; Reijnders & Wolff, 1981; Reijnders, 1992; Smeenk, 1987).

Current investigations on small cetaceans at the University of Kiel show a marked decrease in abundance from north to south in German waters. A similar pattern can be seen in the distribution of stranded porpoises along the coast. In addition, during the investigations, an important breeding area for harbour porpoises has been discovered around the Isle of Sylt extending into the Danish part of the Wadden Sea (Kinze, 1990 a). (Records of stranding along the coast of The Netherlands: 1990: 53; 1991: 34; 1992: 30; 1993: 28 [minimum]; 1994: 32 [minimum]; along the German North Sea coast: 1990: 62; 1991: 88; 1992: 74; 1993: 103; 1994: 98; Denmark: no comparable data available). A slight

increase in numbers observed as well as in frequency of occurrence has been noted recently (Camphuysen, 1994). The recent status of the harbour porpoise in coastal waters of The Netherlands has been described in Reijnders et al. (1995).

The surveys in 1994 show that the bottlenose dolphin (*Tursiops truncatus*) probably no longer breeds in the Wadden Sea area. In the past, it was common in the southwestern part of the Wadden Sea. In the area bordering Niedersachsen, it was less common, and in the waters of Schleswig-Holstein, it was seen only rarely (Reijnders & Wolff, 1981). At present, single animals are occasionally seen in the southern areas (The Netherlands and Niedersachsen). These animals are considered to be rare visitors. (Records: The Netherlands: 1 dead stranded animal in 1991; Germany: 1 dead stranded animal in 1991 and 1993, with a few sightings of live animals in Niedersachsen; Denmark: no strandings).

The white-beaked dolphin (*Lagenorhynchus albirostris*) is typically found in the open sea and therefore is not taken into account here. However, occasionally, it approaches the coast, staying in the boundary between the Wadden Sea and the open sea. These animals may then move into the central Wadden Sea area and when surprised by the low tide, they may strand and die. In 1993 several stranded animals were found alive and 10 were found dead in the German Wadden Sea. White-beaked dolphins are transient throughout the Wadden Sea area. (Dead stranded animals in The Netherlands: 1990: 11; 1991: 1; 1992: 7; 1993: 5; 1994: 7; in Germany: 1990: 3; 1991: 2; 1993: 10; 1994: 3; and in Denmark: 1990: 1; 1991-1994: 0). White-beaked Dolphins are typically oceanic; however, low numbers regularly occur in coastal waters for extended periods of time whereby single animals or small groups, occasionally comprising calves, enter the Wadden Sea area. This species is not listed here, but can be seen as a migratory species of International Responsibility.

Data source

The most recent data on seal populations in the Wadden Sea have been collected as part of a trilateral research and monitoring program, coordinated by the Secretariat for the Cooperation on the Protection of the Wadden Sea (CWSS). Research groups were based at the Institute for Forestry and Nature Research, Texel (NL), University of Oldenburg (Nds), University of Kiel (SH) and the Fishery and Maritime Museum Esbjerg (DK). Since 1990, the University of Kiel has conducted detailed investigations on small cetaceans in the North Sea and the Baltic Sea. A longer term series of observations exists with the „Seawatchers and Dutch Seabird Group“ based at the Institute for Sea Research and the Institute for Forestry and Nature Research, Texel (NL). Part of the data and information used here come from these research projects, other data was obtained through personal communication with C. Smeenk and M. Addink (National Museum of Natural History, Leiden) and C. Kinze (Zoological Museum, Copenhagen). For additional sources, see references.

Threat factors

Seals: Despite the present increase in abundance (especially of the common seal), the native seal populations of the Wadden Sea (common seal, grey seal) are to some degree threatened. A new epidemic cannot be ruled out (Harder & Liess, 1994; Schwarz & Heidemann, 1994). The introduction of toxic substances and spread of diseases constitutes a major, but poorly understood threat to the populations (de Swart et al., 1994).

Disturbance due to human activities along the beaches of the Wadden Sea, during low and high tide, and in offshore areas, causes stress to marine mammals and affects their well-being (e.g. postnatal development) (Vogel, 1994 a; Brasseur & Reijnders, 1994). More seals will drown in gillnets, if they are used more intensively in the future.

Harbour porpoises: As well as high levels of contamination, Evans et al. (1987) identified by-catches, depletion of the main prey species (herring) and harassment due to increasing boat traffic, as the main reasons for the decrease in abundance of the European populations of harbour porpoises. Analysis of harbour porpoise blubber tissues from the German North Sea yielded PCB-concentrations of 70.1 mg/kg (Vetter & Luckas, 1991). These concentrations are 12.5 times higher than those reported in animals from Greenlandic waters (5.8 mg/kg) (Granby & Kinze, 1991). However, there are no conclusive studies about the physiological effects of the sometimes very high concentrations of toxic lipophilic substances found in harbour porpoises (Reijnders, 1994; Reijnders & de Ruiter-Dijkman, 1995). For European waters, the toxic effects of organic contaminants on reproduction and the immune system have been shown only in seals, in experiments and autopsies (Helle et al., 1976; Reijnders, 1986; de Swart et al., 1994). However, the agents are considered to have the potential for deleterious effects on whales (Reijnders, 1996).

Based on interviews with fishermen in one of the major Danish fishing ports, the amount of by-catch of harbour porpoises per vessel per year has been estimated to number 750 (Kinze, 1990 b). Clausen & Andersen (1988) calculated a total of 3000 by-catch porpoises caught in the nets of Danish fishermen. In 1991, more than 200 porpoise carcasses were found in two weeks, on the coast of North Jutland (Denmark). Netmarks, cut-off fins and flukes suggest that these animals died in the industrial fishery, which was at that time practiced off the coast. According to most recent data from the Danish Institute of Fisheries and Marine Research, the by-catches of harbour porpoises due to only the Danish bottom-set gillnet fishery in the North Sea, for Cod, Sole and Turbot, amount to 4630 animals per year (Vinther, 1995). Thus, the by-catch in the bottom-set gillnet fishery is probably nowadays the most serious threat to harbour porpoise populations.

Heavy ship traffic can also be responsible for the increased mortality of porpoises, through injuries from collisions and contact with the propeller. Disturbance through traffic might also be an indirect contribution to the decrease in abundance: during recent decades, ship and especially leisure-boat traffic have increased dramatically. Mother-calf groups need undisturbed areas for suckling and raising the young. Repeated disturbance of the mothers can result in insufficient suckling of the calf and separation of the pair. This harassment is considered to be among the causes for the high mortality of calves. Taking into account that orientation and communication in toothed whales are mainly based on sound, it is assumed that engine noises are a factor of disturbance also for adult animals (Vogel, 1994 b).

Recommendations concerning Conservation

Harbour seals and grey seals:

- area protection of high- and low-tide breeding areas in the Wadden Sea,
- determination of the exact number of by-catches of seals due to fishery and possible regulation of the bottom-set gillnet fishery,
- cut down on or complete abolishment of the input of toxic substances.

Supplementary for grey seals:

- establishment of (flexible) protected areas along the beaches and/or non-flooded sandbanks during the pupping period.

Cetaceans:

- determination of the exact numbers of by-catches of cetaceans due to fishery, and improvement of fishing gear (especially bottom-set gillnets) to make them detectable for small cetaceans,
- establishment of fishing-free zones,
- cut down on or complete abolishment of the input of contaminants.

For harbour porpoises in particular:

- identification and protection of breeding areas. Until now, one such area has been recognized (waters surrounding the isle of Sylt and extending into the Danish part of the Wadden Sea; Kinze, 1990). Especially mother-calf groups are very susceptible to disturbance. Predominantly young and unexperienced animals get caught in nets (Benke & Siebert, 1994).

Measures for the conservation of breeding areas:

- prohibition of bottom-set gillnets during the breeding period,
- regulation of the boat traffic during the breeding period.

Summary

In the Wadden Sea, 4 species of marine mammals are threatened (2 seals and 2 small cetacean species) and are therefore placed on the trilateral Red List. The status of 3 species of marine mammals is critical and the status of 1 species is vulnerable.

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RED LIST OF MARINE MAMMALS OF THE WADDEN SEA

CR – Critical:

Grey seal

Halichoreus grypus

Harbour porpoise

Phocoena phocoena

Bottlenose dolphin

*Tursiops truncatus***VU – Vulnerable:**

Common seal

Phoca vitulina

LIST OF THREATENED MARINE MAMMALS OF THE WADDEN SEA

		Red List (trilateral)	Threats	Status of threat in the subregions of the Wadden Sea Area			
				NL	Nds	SH	DK
SEALS							
Common seal <i>Phoca vitulina</i> Linnaeus, 1758	Gewone zeehond Seehund Spættet sæl	VU	DIS, POL, CLI, HAB, WAT, PAR	VU	VU	VU	VU?
Grey seal <i>Halichoerus grypus</i> (Fabricius, 1791)	Grijze zeehond Kegelrobbe Gråsæl	CR	DIS, EXL, POL, CLI, HAB, WAT, PAR	SU	CR*	CR	CR*

* Recently resettling in the area

		Red List (trilateral)	Threats	Status of threat in the subregions of the Wadden Sea Area			
				NL	Nds	SH	DK
CETACEANS							
Harbour porpoise <i>Phocoena phocoena</i> (Linnaeus, 1758)	Bruinvis Schweinswal Marsvin	CR	EXL, POL, PAR, DIS	CR	CR	EN	EN
Bottlenose dolphin <i>Tursiops truncatus</i> (Montagu, 1821)	Tuimelaar Großer Tümmler Øresvin	CR*	EXL, POL, DIS	EX	CR	EX	(*)

* According to the small cetacean survey of 1994 (SCANS) probably disappeared from the entire area.

Status of threat:

EX = Extinct; **CR** = Critical; **EN** = Endangered; **VU** = Vulnerable; **SU** = Susceptible; * = not endangered; ? = status of endangerment is not exactly known; - = species does not occur; -(?) = species probably does not occur; (*) = it is unknown if or if not this species occurs.

Threats:

AFF = afforestation; AGR = agriculture; CLI = climatic change; DIS = disturbance; EUT = eutrophication; EXL = exploitation of living resources; EXM = mineral exploitation; FOR = forestry; HAB = loss of habitat; PAR = parasites; POL = pollution; WAT = water regulation.

For more detailed descriptions see the general introduction to the Red Lists.