

The harbour porpoise (dis-)entangled

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The harbour porpoise is the smallest and most numerous dolphin in the North Sea. Historically, the harbour porpoise was a common species in Dutch coastal waters, but for reasons not quite understood, it gradually disappeared during the 1950s and early 1960s. Somewhere late in the 20th century the harbour porpoise returned and we witnessed an increase in both sightings and strandings in The Netherlands. To investigate the cause of death of the stranded porpoises, NIOZ and Wageningen IMARES jointly organised two mass-necropsies. It appeared that roughly half of the porpoises found dead had drowned in fishing gear.

The harbour porpoise *Phocoena phocoena* is a small fish-eating dolphin, with a maximum length of only 1.8 m. The shallow Dutch coastal waters, estuaries and river mouths, the Wadden Sea and the former Zuiderzee (now the fresh water lake IJsselmeer) were prime habitats for this species for centuries. In the 1930s and 1940s, harbour porpoises were so common that few people kept notes and little is known about the habitat preferences of porpoises in the past. One of the pioneer researchers, studying porpoises in the wild rather than as stranded animals, was former NIOZ director dr. Jan Verwey. His descriptions of porpoises in the Marsdiep area are some of the very few first-hand accounts of their behaviour and fluctuations in seasonal abundance in Dutch nearshore waters. Comparisons of his notes made around World War II and those made by him in the 1970s illustrate that harbour por-



Fresh carcass of a harbour porpoise on the beach of Texel (photo Salko de Wolf).

poises were so rare in the 1970s, that they could be considered locally extinct. Convincing explanations for the decline have never been given. The Afsluitdijk was mentioned by some, toxic organo-

chlorines as PCBs and DDT were raised as an issue by others, but the explanations proposed have never really been conclusive.

An unexpected return

Sightings in the 1970s were near-absent and strandings were quite rare. Just over 15 porpoises were annually found stranded. A gradually increasing number of sightings in the mid-1980s to early 1990s was followed by a spectacular come-back. At first, only full-grown animals were seen and the occurrence was virtually restricted to mid-winter. In later years, thousands were recorded in winter and spring, and more and more animals were seen in summer and autumn, including mother-calf combinations. Both the historic decline and the recent increase in sightings were concurrent with similar trends in strandings. Only



Photo by: Wilbert & Corina Romijn.

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the recent increase in strandings was carefully documented: 30 year⁻¹ in the 1980s, 45 year⁻¹ in the 1990s, and c. 250 year⁻¹ in the early 21st century (Fig.1).

It is difficult to fully understand the return of the porpoise. There is evidence, however, that distributional shifts rather than population fluctuations underlie the trends observed. The re-distribution of harbour porpoises in the North Sea may have been triggered by local reductions or shifts in prey availability, in particular in the northern North Sea.

Bycatch or disease: what caused all these strandings?

So, more sightings were received and strandings increased, but was the increase in strandings simply a reflection of larger numbers roaming the area? Were there any anthropogenic factors involved that needed attention? The aim of two mass-necropsies organized by NIOZ in conjunction with IMARES (commissioned by the Ministry of Agriculture, Nature and Food Quality) was to identify the main lesions and causes of death of porpoises stranded on our coasts.

Of a total of 536 animals found in 2006, 64 were kept frozen for necropsy. Frequent observations included net marks on the skin, subcutaneous and muscular bruises, emaciation, parasitic infections, pneumonia, congestion and

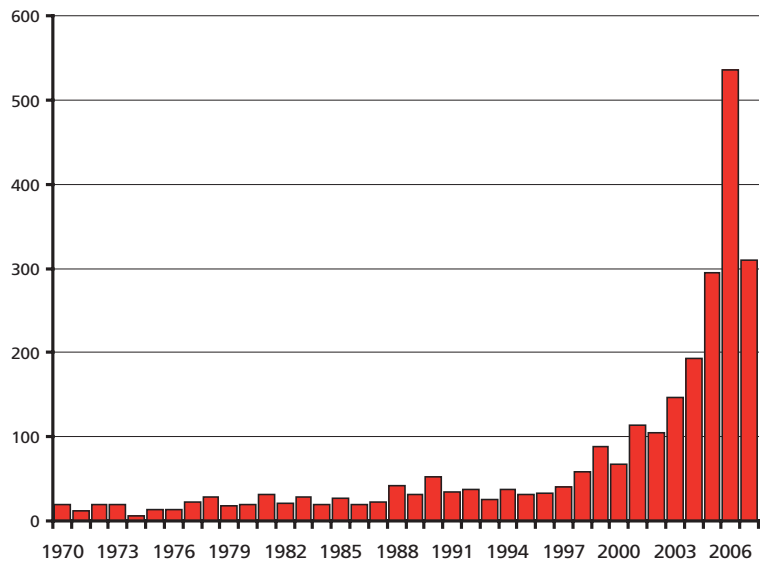


Fig. 1. Documented strandings of harbour porpoises in The Netherlands since 1970 (data from Naturalis and NIOZ).

oedema. Two causes of death were significant: by-catches in fishing gear and infectious diseases. By-catch in fishing nets (64%) was mainly observed in animals stranded in March and April while infectious diseases (30%) occurred throughout the year. The study showed that the diagnosis of the cause of death cannot be based on external observations only, and that by-caught porpoises are not always healthy. In 2007, 55 individuals out of a total of 310 stranded animals were kept for necropsies, this time organized by the veterinary faculty of Utrecht University. The diagnosis “proba-

bly by-catch” was made in 48% of the necropsies, but this figure is prone to modification following the results of histopathology of the tissues sampled. Of the suspect animals, 54% were in a good physical condition when they were drowned, but the rest were emaciated. Several cases of pneumonia and parasite infections were found.

And the latest trend...

And now for 2007. Declines were reported again! Strandings declined with 42% relative to 2006 and sighting rates declined markedly, indicating that harbour porpoises had not returned with the same strength in numbers in the course of 2007. There are currently small resident populations in the Delta area, small groups of animals that are around throughout the year. Along the North Sea coast, however, there was a recently established seasonal pattern of very low numbers in summer, and peak numbers in winter and early spring. This seasonal pattern would imply that the porpoises ‘arrive’ in the course of autumn and leave in late spring, probably for foraging areas elsewhere. Early signs received in 2007 suggest that the picture might change. Obviously, the decline might be a temporary fall-back in numbers followed by a return in years to come, but given other dramatic changes in the



Preparation for dissection.

North Sea in recent years, we should not be surprised by a more structural decline in wintering numbers in our country. Given the high bycatch rates of stranded animals and the fact that extensive set-net fisheries are currently developing, this retreat could well be to the benefit of the porpoise. Bad luck for the whale-watchers, however, sailing the TESO ferry across the Marsdiep to Texel had only just become a whalewatching experience again!



Careful dissection of a stranded harbour porpoise by a pathologist.