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Beached Bird Surveys

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Beached Bird Surveys at the
German North Sea Coast

In the North Sea, oil pollution can be considered one of the most important forms of marine pollution and is certainly the most noticeable. The analysis of oil samples taken from oiled birds and beaches on the German North Sea coast shows that oil pollution today can mainly be assigned to the illegal discharge of fuel oil residues at sea (Dahlmann et al., 2000). Major shipping accidents such as the PALLAS, where a relatively large amount of oil is released at one site, are important at a local level for short periods, the chronic pollution with heavy fuel oil residues is, however, omnipresent. This situation hasn't changed since the 1980s when oil sampling began (Vauk et al., 1987).

In response to this increase, the Beached Bird Surveys were initiated in the early 1980s on the German North Sea coast in order to monitor the level of oil pollution and its effect on the avifauna in the region. A number of measures to reduce oil pollution in the marine environment and in the North Sea in particular have been implemented since the 1950s, culminating in the designation of the North Sea as a Special Area according to MARPOL Annex I in 1999.

input into the North Sea" was initiated in Germany by the Federal Environmental Agency in cooperation with the federal states of Lower Saxony, Hamburg and Schleswig-Holstein. The three-year study is a follow-up of two previous studies on the marine oil-pollution/bird complex which has supplied us with an unbroken record of the effects of oil pollution on the avian part of the marine ecosystem since the middle of the 1980s.

The main question to be approached by the present project is: Have the measures implemented to reduce the illegal input of oil from shipping in the North Sea taken effect? The effectiveness of legislation and other measures regarding oil input from shipping is to be assessed on the basis of the results of Beached Birds Surveys, aerial and other surveillance activities, the amount of oil received by oil disposal facilities in German harbors and other evidence.

Beached Bird Surveys

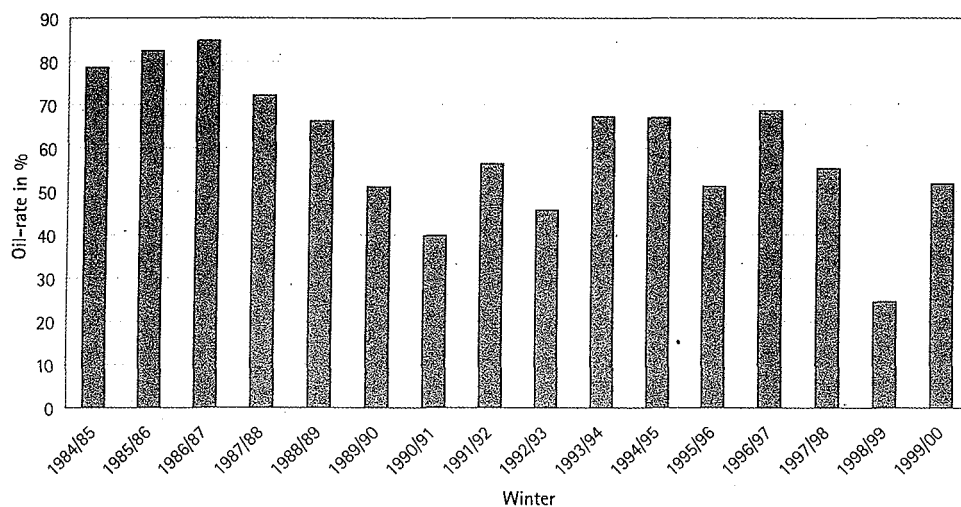
Beached Birds Surveys have been carried out on a regular basis on the German North Sea coasts since 1984. At present, about 40 survey sites are distributed along the German North Sea coast with a total length of about 120 km. In general, the sites are surveyed twice a month in line with the agreed guidelines at the OSPAR/JAMP level. The data from these surveys give a valuable and reliable indication of the level of oil pollution in the

southern North Sea as studies in the Netherlands have shown (Camphuysen & van Franeker, 1992). The percentage of all birds found that are oiled - the so-called oil rate - is used as an index of the level of oil pollution - as is standard throughout Europe. Simple counts of the number of oiled birds are too susceptible to the effects of factors other than oil pollution levels, such as weather conditions or popula-

Figure 1:
Oil-rates of the Guillemot
Uria aalge on the German
North Sea coast in winter
in the period 1984/85 to
1999/2000.

Research and
Development Project

In 1998, a Research and Development Project "Identification, quantification and evaluation of the oil



Dutch Shellfish Industry Launches New Fisheries Management Plan

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The Dutch cockle and mussel fishermen have launched a joint management plan for the shellfish fisheries in the Wadden Sea and Eastern Scheldt. The objective of the plan is the integration of fisheries and nature through tangible agreements. The plan was presented to the State Secretary for Fisheries, Mrs. G. Faber, on 29 March.

In 1993, the first management plan was made in co-operation with the government and nature conservation groups. The government and the shellfish industry agreed on a permanent closure of respectively 26% of the tidal flats in the Wadden Sea and 14% in the Eastern Scheldt. In years when shellfish stocks are low, 60% of the mean food requirement in shellfish for birds is reserved. In those years, the fishery is subject to quota restrictions, or even closure. In addition, the fishermen have taken measures to minimize potential disturbance of seals and birds and to protect eelgrass beds and stable mussel banks. Each year, the agreements in the management plan are translated into a fishing plan. To control compliance with the fishing plan, a black box is installed on all mussel and cockle vessels. This computer registers all fishing positions and activities.

Along with the launch of the first management plan in 1993, a scientific evaluation program was started to study the effects of the measures taken on nature conservation. On the basis of the evaluation, it was concluded that the policy strategy of integration of fisheries and nature has clearly been fruitful. Undesirable effects of the shellfish fishery on nature conservation values have been reduced significantly. Despite economic losses resulting

from the implementation of the management plan, the fishermen strongly support the measures taken and were complimented for the way they have taken on their co-managing responsibility. However, despite the management plan, the expected recovery of stable mussel beds and eelgrass fields in the Wadden Sea has lagged behind. According to the evaluation report, this was strictly due to natural factors. Therefore, the State Secretary for Fisheries deemed extra measures necessary.

In the new management plan, new management measures are included in addition to the existing agreements. The mussel and the cockle fishermen have closed respectively an additional 10% and 5% of the intertidal areas in the Wadden Sea. These areas are selected on the basis of a so-called habitat map, showing the statistical probability of the formation of stable mussel banks in the intertidal areas. The mussel fishermen have agreed to spare the remaining open intertidal areas as much as possible and to concentrate the seed fishery in the sublittoral areas. The cockle fishermen will not fish in open, intertidal areas where mussel seed was found. The government committed itself to explore whether or not the extra closure of important fishing grounds can be compensated for elsewhere.

The new management plan covers the period 1999-2003. A second scientific evaluation program has already started to measure the impacts of the existing and new management measures. In 2003, the State Secretary for Fisheries will prepare a policy decision on the future of the shellfish fishery in the Dutch Wadden Sea.

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tion size of the bird species involved, to be used as an index.

Results

Over 60 species of birds have been recorded as oiled on the beaches of the German North Sea coast. Nearly all are waterfowl or seabirds – the birds most susceptible to oil pollution because they live and feed in and on the water. The Guillemot *Uria aalge* is the most common species accounting for about half of all records. Two species of sea duck, the Eider Duck *Somateria mollissima* and the Common Scoter *Melanitta nigra*, account together for a further 25% of all records. The Guillemot is a pelagic species distributed throughout the North Sea in winter, the two duck species are more coastal. This makes it possible to assess and compare oil pollution levels in different regions.

Looking at the development in the oil-rate for the commonest species on the German North Sea coast, the Guillemot, over the last 16 years, three items are noticeable: high levels in the middle of the 80s, a general decrease, and a reduction in the early 90s (see Fig. 1). Are these trends, however, related to changes in chronic oil pollution levels or to changes in other factors?

Natural Factors

Two natural factors besides the level of chronic oil pollution have had a major effect on the oil-rate of birds found on the beaches. These are extreme weather conditions and changes in food availability. The exceptionally cold winter of 1995/96, with average temperatures below zero, reduced the oil-rates of a number of species on the German coast in that winter (see Fig. 1). Increased natural mortality caused most likely by a change in food availability occurred twice in the study period, affecting the Guillemot in 1998/99 and the Eider Duck in 1999/2000. In both cases the oil-rate was lowered for that winter (see Figs. 1 & 2).

Oil Incidents

The effects of oil spills such as the PALLAS accident have also had dramatic effects on the oil-rates of especially coastal species at a local level. Peaks in the oil-rate of the Eider Duck can be attributed to known oil spills that occurred near the coast (see Fig. 2).

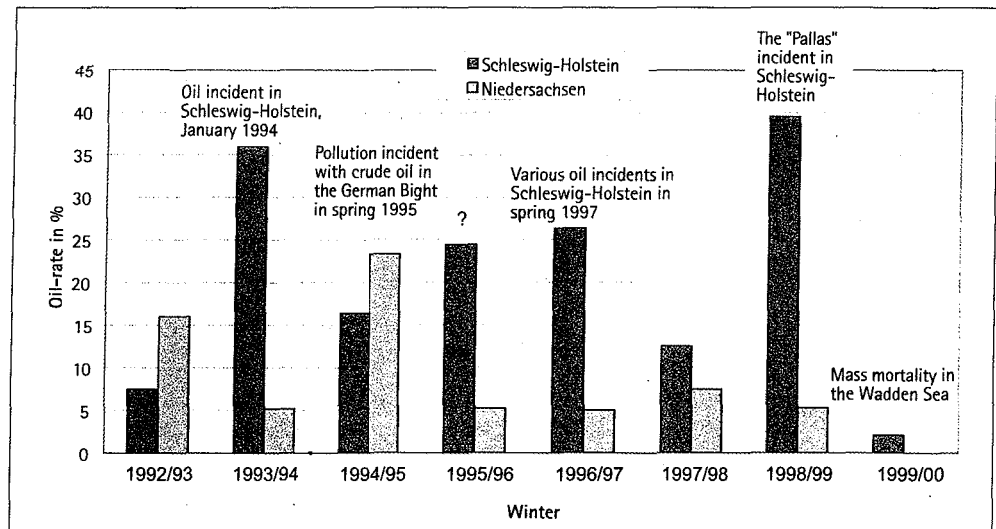


Figure 2: Oil-rates of the Eider Duck *Somateria mollissima* in Niedersachsen and Schleswig-Holstein, Germany in the period 1992/93 to 1999/2000.

Changes in the oil-rate that could be attributed to changes in factors other than the level of oil pollution have been filtered out from the data, allowing the data to be used as a reliable index for the level of chronic oil pollution in the southern North Sea.

Conclusions

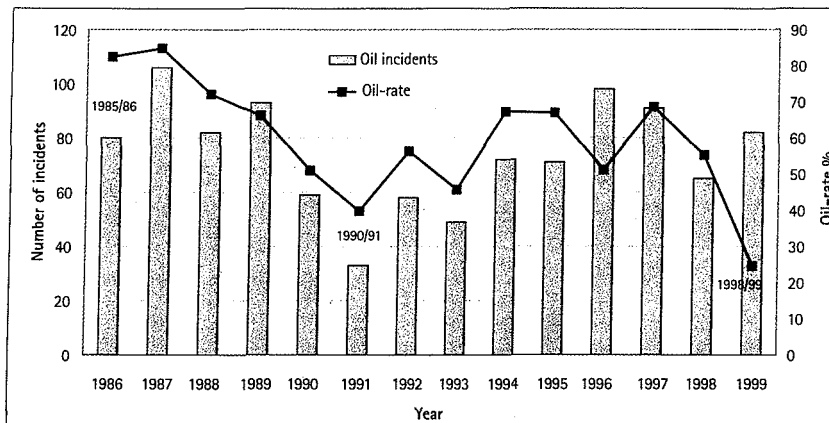
In the German Bight, there is a gradient from low oil-rate levels for species, such as the Eider Duck, which occurs in the Wadden Sea, to higher levels for those species occurring on the open North Sea such as the Guillemot, Gannet *Sula bassana* and Fulmar *Fulmarus glacialis*. The oil-rate of the Common Scoter, which is distributed in winter just seaward of the Wadden Sea islands, lies in between these values.

The oil-rate of the Guillemot on the German North Sea coast, although high in comparison to values recorded in recent years in northern England and Scotland, is still lower than the values encountered on the neighboring coast of the Netherlands and the northwestern coast of Jutland, Denmark. It compares well, however, with values recorded in the Danish Wadden Sea. (Camphuysen 1997; Skov et al., 1996)

On the German North Sea coast, the oil-rate of the Guillemot dropped from 80% at the end of the 1980s to 52% at the beginning of the 1990s and rose again to 62% at the end of that decade. The trends we found in the oil-rate of the Guillemot compare well with the results of oil surveillance flights and other records of oil pollution, and with the results of other beached bird surveys.

There is a good correlation between the trend in the number of oil incidents recorded in the Traf-

Figure 3: Numbers of oil incidents recorded by the central recording office in Cuxhaven (ZMK) in the area of the Traffic Separation Scheme, German Bight and winter oil-rates of the Guillemot *Uria aalge* on German North Sea Coasts for the period 1985/86 to 1998/99.



fic Separation Scheme region by the Central Information Center in Cuxhaven and the trends in the oil-rate recorded for the Guillemot on German North Sea coast (Fig. 3).

In addition, the general decline of the oil-rate on the German North Sea coast is reflected in the results of similar surveys from the neighboring coast of the Netherlands – where a steady decline was recorded from the 1970s up to 1997 – and from the Danish North Sea coast, where a significant decrease was recorded in the period 1984-94 (Camphuysen 1997; Skov et al., 1996). This general reduction in the oil-rates is considered to be due to the positive effects of the MARPOL agreements and aerial surveillance implemented to detect illegal discharges from shipping.

Last winter, the oil-rates of a number of pelagic and coastal species were lower than they have been on average over the last 5-6 years. Although too early to assert, this is perhaps an indication that the designation of the North Sea as a Special Area according to the MARPOL Annex I in August 1999 has had some effect.

Efforts to clean up the marine environment especially the North Sea have to some extent been successful, however, on the German coast today still half of all dead Guillemots are oiled – therefore much has still to be achieved! Beached Bird Surveys on the German North Sea coast provide a reliable, cost-effective way of monitoring the effectiveness of measures implemented to reduce the levels of oil pollution in the marine environment. They also contribute greatly to public awareness of the oil pollution problem. We hope therefore that all parts of this project will continue to be financed as a permanent monitoring program after August 2001, when Federal funding will be withdrawn.

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