

A REVIEW OF BEACHED BIRD SURVEYS WITHIN THE WADDEN SEA TRILATERAL MONITORING AND ASSESSMENT PROGRAM

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SUMMARY

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The Trilateral Monitoring and Assessment Programme (TMAP), established in 1994, is carried out in the framework of the Trilateral Cooperation on the Protection of the Wadden Sea, which includes Denmark, Germany, and the Netherlands. Its objective is integrated monitoring and assessment of the Wadden Sea ecosystem. Beached bird surveys have been carried out on southern North Sea coasts since the 1970s (Netherlands) or the mid-1980s (Germany and Denmark). The surveys use trilateral standardized procedures and are evaluated as part of the TMAP. The results are published at regular intervals in Wadden Sea Quality Status Reports by the Common Wadden Sea Secretariat. The results of the surveys within the Wadden Sea and adjoining regions indicate steady declines in pollution levels since the mid-1980s. For example, oiling rates (the proportion of beached birds that are oiled) of the Common Guillemot *Uria aalge* declined on German North Sea coasts to 62% in the period 1992/93–1994/95 from 82% (n = 620) during the three winters 1984/85–1986/87 (n = 967) and to 35.5% (n = 1024) in 2001/02–2003/04. The oiling rates of pelagic and offshore species are, however, still high on southern North Sea coasts. In the period 2001/02–2003/04, the oiling rates of the Red-throated Loon *Gavia stellata*, Common (Black) Scoter *Melanitta nigra*, and the Black-legged Kittiwake *Rissa tridactyla* on the German North Sea coast were 80% (n = 54), 50% (n = 357), and 22% (n = 137) respectively. An Ecological Quality Objective (EcoQO), phrased as “proportion of oiled Common Guillemots among those found dead or dying on beaches,” has been developed within the OSPAR Convention on the Protection of the Marine Environment of the North East Atlantic and is currently being implemented. Oiling rates for this species in the southern North Sea are currently much higher than the 10% level targeted by the EcoQO.

Key words: Beached bird surveys, Wadden Sea, Germany, Denmark, Netherlands, oil pollution, seabirds

INTRODUCTION

The Wadden Sea lies in the south-eastern corner of the North Sea off the coasts of the Netherlands, Germany, and Denmark. It is an extensive area of tidal flats, salt-marshes, dunes, sandbanks and creeks. The Wadden Sea is sheltered from the forces of the North Sea by a chain of islands. It harbours millions of water birds during their migration on the East Atlantic flyway, and it is an internationally important wintering and breeding area, especially for geese, ducks, waders, gulls and terns. A large Harbour Seal *Phoca vitulina* and a smaller Grey Seal *Halichoerus grypus* population are resident in the area. The Wadden Sea is ecologically highly sensitive and vulnerable to the effects of oil pollution.

The entire area is protected under several national schemes: national parks in Germany, a nature reserve in Denmark, and a key planning decision area in the Netherlands. In 1999, North West European Waters, including the North Sea, were designated as a special area by MARPOL I (International Convention for the Prevention of Pollution from Ships). The entire Wadden Sea was designated as a Particularly Sensitive Sea Area in 2002, because of its vulnerability to the impacts of international shipping. Most of the area is protected under the European Union's Birds Directive and its Flora, Fauna and Habitats Directive. It is also a Ramsar site (Ramsar Convention on Wetlands).

Since 1978, the three countries sharing the Wadden Sea ecosystem have cooperated to conserve and protect the region as an ecological entity. A Joint Declaration on the Protection of the Wadden Sea was made by the governments of the Netherlands, Germany, and Denmark in 1982. The three bordering states established a Common Wadden Sea Secretariat in 1987, with the task of supporting and coordinating cooperative activities. To bring together national strategies and instruments in a common policy for nature protection in the region, a trilateral cooperation area encompassing 13 500 km² has been defined in which common aims and principles can be applied. Trilateral Governmental Wadden Sea Conferences are held approximately every four years, where the status of existing protection measures is discussed and, when necessary, new measures are agreed on. Wadden Sea scientific symposia are also held every four years. They supply input to the governmental conferences. In 1985, the Wadden Sea states agreed to organise regular working conferences on various aspects of nature management in the Wadden Sea.

A Trilateral Monitoring and Assessment Program (TMAP), implemented in 1994, provides integrated monitoring and a scientific assessment of the status of the Wadden Sea ecosystem (Bakker *et al.* 1997). A trilateral monitoring and assessment group is responsible for implementing and coordinating the TMAP. A Wadden Sea plan with associated targets was agreed upon in 1997 (Common Wadden Sea

Secretariat 1998). Wadden Sea Quality Status Reports were published in 1991, 1993, 1999, and 2005 (Common Wadden Sea Secretariat 1991; De Jong *et al.* 1993, 1999; Essink *et al.* 2005). The reports describe and evaluate the current ecological state of the Wadden Sea, provide information on pollution levels, identify issues of concern and suggest, when necessary, additional protection measures. The results of the TMAP provide the basis for the Quality Status Reports and are also published by the Common Wadden Sea Secretariat as thematic reports in the journal *Wadden Sea Ecosystem*. Further information on the trilateral cooperation, including downloads of reports and other documents, is available online at <http://www.waddensea-secretariat.org>.

OIL POLLUTION: A THREAT TO THE WADDEN SEA

North Sea waters adjacent to the Wadden Sea have high levels of shipping. Numerous international harbours are situated along the coast. The entrance to the Kiel Canal, which provides access to the Baltic Sea, is in the centre of the Wadden Sea region. More than 65 500 movements of ships, travelling to and from German harbours and to and from the Kiel Canal, were registered in the German Bight in 2003. Most ship traffic occurs in the ship separation zone just north of the southern part of the Wadden Sea. Prevailing currents and winds tend to move any oil from this area to the east and north, along the Wadden Sea coast. Oil pollution in the waters adjacent to the Wadden Sea is correspondingly high and has been since the start of record-keeping. Oil pollution in the German Bight is caused mainly by illegal discharge of fuel oil residues from ships, as shown by analysis of oil samples from oiled birds and beaches (Dahlmann *et al.* 1994, Dahlmann & Secheyay 2000). A comparison of oil samples from the German North Sea coast in the 1980s (Vauk *et al.* 1987) and samples obtained more recently (Dahlmann & Secheyay 2000) indicates that this source of chronic oil pollution in the Wadden Sea region has not changed over the last 20 years.

Chronic oil pollution is not the only form of oil pollution that endangers the area. Southern North Sea waters are regularly hit by oil pollution incidents resulting from ships sinking or being damaged. Such incidents result in the death of thousands of seabirds and seaducks in the region. Because of the constant threat that it poses to the Wadden Sea environment, oil pollution is taken seriously by the trilateral cooperation. The issue was addressed at the last two trilateral governmental conferences, at which measures to reduce pollution levels were agreed on. In addition, beached bird surveys have been included in the TMAP.

BEACHED BIRD SURVEYS

Beached bird surveys have been used to monitor oil pollution on southern North Sea coasts since the 1970s in the Netherlands (Camphuysen 1997, 1998a, 1998b) and since the mid-1980s in Germany (Vauk *et al.* 1987, 1989; Averbek *et al.* 1993; Fleet & Reineking 2001; Fleet *et al.* 1995, 1999a, 1999b, 2000, 2003) and in Denmark (Skov *et al.* 1996). In 1997, beached bird surveys were included in the common package of TMAP parameters that are monitored in the Wadden Sea region.

Beached oiled seabirds are monitored to assess the level of chronic oil pollution in the Wadden Sea and adjacent North Sea waters, to measure the effectiveness of measures implemented to reduce this form of pollution, and to measure the effect of oil incidents occurring within or close to the region. The percentage of oiled

birds among the total number of dead birds found on the coast—the oiling rate—is used as an index of the level of oil pollution in adjacent waters. The surveys are carried out according to guidelines formulated for the Joint Assessment and Monitoring Programme of the OSPAR commission (OSPAR 1996). The guidelines define minimum standards for carrying out beached bird surveys in the Wadden Sea region:

- At least one survey of representative stretches of coastline is to be carried out each month during the winter season (preferably October to April).
- Surveys are carried out on foot, and all beached birds are registered.
- The presence or absence of oil and the condition of the corpse (complete or incomplete—that is, decomposed or partly eaten) must be recorded.
- Only the data from complete corpses is used in the calculation of the oiling rate.
- Recorded corpses are removed or marked to prevent double counts.

The organisation and frequency of the counts varies among the three countries. In Germany, for example, counts are carried out every two weeks in the period October to March on 40 fixed survey sites totalling 180 km of coastline. They are carried out on the two days following spring tide, when water levels are highest.

PAST AND PRESENT OIL POLLUTION LEVELS

Oil pollution levels were high in the southern North Sea in the 1970s and 1980s. In some species of seabirds (Common Guillemots *Uria aalge*, for example), nearly all of the specimens recorded on beaches in that period were oiled. Since then, a combination of measures introduced over the years (aerial surveillance and the introduction by MARPOL of regulations on the discharge of oil from ships into the marine environment) have reduced oil pollution levels in the North Sea considerably. The Wadden Sea Quality Status Report in 1999 registered constant declines in oiling rates since the 1970s in the Netherlands, especially within the Dutch Wadden Sea. These findings applied to nearly all species. According to the Quality Status Report, declines in the oiling rates of birds found on Danish North Sea coasts were less pronounced, and levels in Germany were high again after a decline in the early 1990s (de Jong *et al.* 1999).

Oiling rates of the Common Guillemot declined on German North Sea coasts to 48% ($n = 481$) in 1990/91–1992/93 from 82% ($n = 620$) during the three winters 1984/85–1986/87, but increased again to 63% ($n = 907$) in 1993/94–1995/96. That increase coincided with an increase in the mid-1990s in the ship traffic off the northernmost German North Sea coast (Fleet & Reineking 2001).

After publication of the Quality Status Report in 1999, the North Sea, and thus the entire region adjacent to the Wadden Sea, was established as a MARPOL Annex I special area. A recent analysis of beached bird data from the Wadden Sea region for the Wadden Sea Quality Status Report 2004 (Camphuysen *et al.* 2005) indicated that the Special Area status has had no generally positive effect on pollution levels in the southern North Sea. On some coasts, pollution levels have declined since 1999, but other areas have experienced increases in pollution in the same period. In Germany, guillemot oiling rates

have declined since the mid 1990s to 35.5% (n = 1024) in 2001/02–2003/04. Oiling rates for the guillemot on the North Sea coasts of the Netherlands and Denmark seem to have stabilised in recent years at just under 50% (Camphuysen *et al.* 2005). However, an oiling rate of 70% was recorded for the guillemot in the Netherlands in winter 2003/04, and a 56% rate was recorded on Danish North Sea coasts in 2002/03 (Camphuysen *et al.* 2005).

Pollution levels in the Wadden Sea, which lies behind a chain of protective islands, are currently low, and oiling rates of birds found in the Wadden Sea are much lower than those recorded for the same species on coasts exposed to the North Sea. That finding demonstrates that the southern North Sea, with its busy shipping lanes, is much more polluted with oil than is the Wadden Sea itself.

The oiling rates of typical Wadden Sea species such as the Shelduck *Tadorna tadorna* and the Oystercatcher *Haematopus ostralegus* on German Wadden Sea coasts in the period 2001/02–2003/04 were 0.8% (n = 126) and 0% (n = 66) respectively. In the period 2001/02–2003/04, the oiling rates of the Red-throated Loons *Gavia stellata*, Common Scoters *Melanitta nigra* and Black-legged Kittiwakes *Rissa tridactyla* on the German North Sea coast were 80% (n = 54), 50% (n = 357), and 22% (n = 137) respectively. Thus, pollution levels in North Sea waters adjacent to the Wadden Sea, although much reduced in comparison with the 1970s and 1980s, remain at an unacceptably high level despite numerous measures to combat the problem of oil pollution.

A recent study of guillemot winter survival (Voiter *et al.* 2005) showed that winter mortality is seriously affected by major oil pollution incidents and that such pollution can have a substantial impact on populations. In addition, the cumulative effects of mortality from chronic oil pollution—as opposed to major oil incidents—may be large considering the high percentages of seabirds recorded as oiled on the North Sea coasts of the Wadden Sea region.

A BEACHED BIRD ECOLOGICAL QUALITY OBJECTIVE

The oiling rate of Common Guillemots is currently being implemented as an Ecological Quality Objective for the North Sea area covered by the OSPAR Commission for the Protection of the Marine Environment of the East Atlantic (Camphuysen 2004, 2005). The objective states that the proportion of oiled guillemots should be 10% or less of the total dead birds found on coasts in all regions of the North Sea. Currently, oiling rates for the Common Guillemot on coasts exposed to the North Sea in the Wadden Sea region are much higher than the Ecological Quality Objective. Although decreases in the oiling rates of birds in the southern North Sea are a positive development resulting from diverse measures implemented to reduce oil pollution, oiling rates in the region are still unacceptably high. This is especially true for vulnerable bird species such as the Common Guillemot, seaducks, and loons.

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