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THE IMPACT OF OIL-POLLUTION ON SEA BIRDS IN EUROPE

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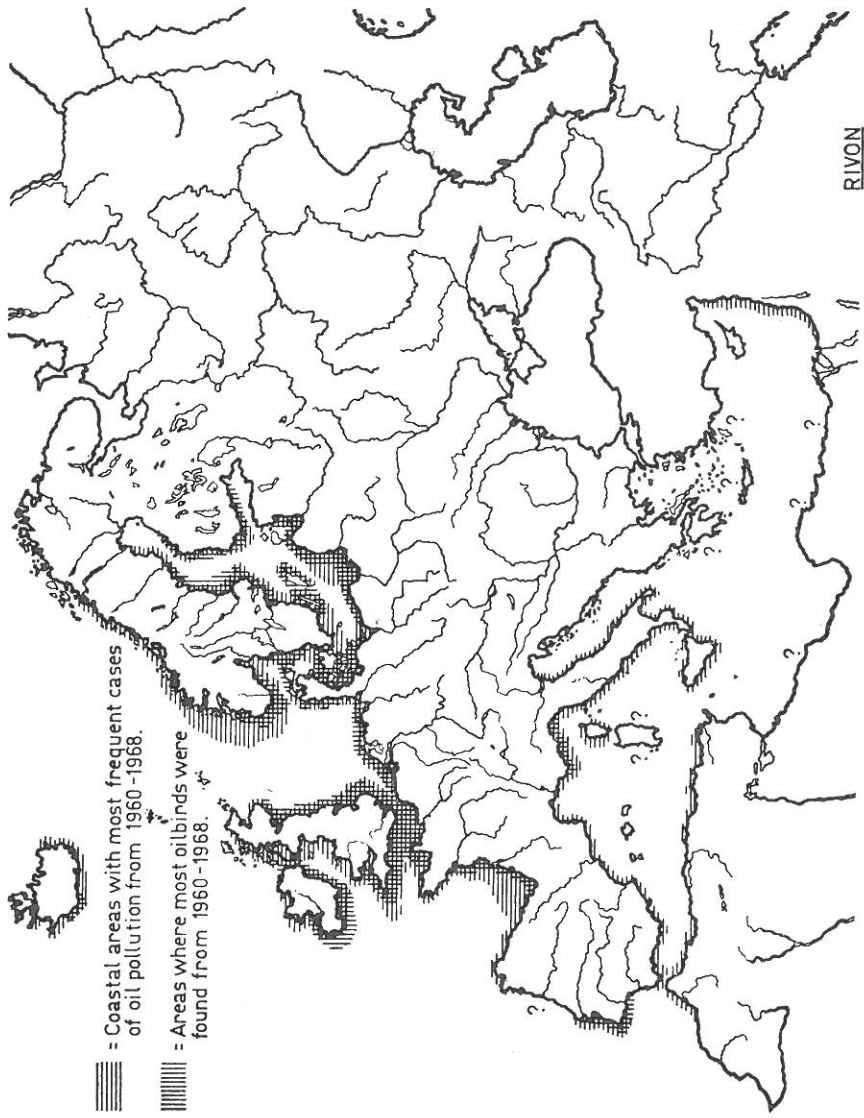
Introduction

Oiled birds have always been an indication of oil-pollution of the sea. The considerable numbers of birds that have perished on the coasts of almost all European countries over the years have contributed to the motivation of the establishment of the 'Convention for the Prevention of Pollution of the Sea by Oil'—London 1954.

Little quantitative research has been carried out into the course of the mortality of sea-birds by oil-pollution. Systematic observations, however, have been made in several countries particularly after 1958, in order to determine to what extent the Convention has brought about any improvement into the situation.

In the subsequent report the data from most of the countries of Western Europe, as far as they were available, have been summarized. These data have been obtained by consulting the national as well as the international literature on the subject, and by gathering information from the authorities in the countries concerned, that take an interest in this aspect of the problem. The data are unfortunately not at all complete. They make it possible, however, to get a broad survey of the situation, that may inspire us to further and more detailed investigation.

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The general situation

From the above-mentioned reports and individual statements regarding fuel-oil, it appears that a decrease of pollution by oil of the open sea can be stated. This decrease, however, is proceeding slowly and has not yet resulted in a noticeable improvement of the situation along the coast. Especially along the coast of the North Sea and the Baltic coast one may even ascertain increasing pollution, particularly in the autumn and in the early winter. In this respect we must take into account the fact that the increase of shipping also plays a part.

These data, moreover, merely concern the 'normal' pollution, which means that disasters like those with 'South-America' (Dutch S.W. coast, March 1966), the 'Seestern' (Medway Estuary, September 1966) and the 'Torrey Canyon' (off the coast of Cornwall, March 1967) have been eliminated as far as possible.

This situation can hardly be called encouraging: since the Convention of 1954 has been ratified by 39 countries, a more noticeable improvement might have been expected.

The oil-pollution of the coastal areas is illustrated on the map. The width of the indicated area shows approximately a relative measure of the oil-pollution during the period of 1960-1968.

Most striking is the pollution in Denmark, S.W. Norway, along the Baltic coast, around Great Britain and along the coast of the Northern part of the Netherlands, as far as Brittany and the Bay of Biscay.

According to the available data the pollution is decreasing towards Northern Europe; at the same time it is true that the Mediterranean has a constant, widely dispersed, but seldom a concentrated pollution.

The Oil-victims Among the Birds

A. Quantitative research along the coasts of the Netherlands and Belgium

In the Netherlands the investigation into the frequency of oil-victims among the sea-birds, which started twenty years ago, has also continued during the last few years. Since the latest publication in 1962 (Tanis and Mörzner Bruyns 1962) the investigation could be continued on a larger scale owing to the collaboration of Belgian ornithologists. In the Netherlands a count of affected birds was made every month and in Belgium several times a year along almost every part of the coast. In this way 6124 kilometers of the coast were investigated since July 1962. The average number of recovered victims was calculated for every year and every month separately. Finally the average number of birds per kilometer for every month was also determined for the whole period of 1962-1968.

By comparing the ultimate result to that of the period of 1958-1962 it is possible to draw some conclusions regarding the present situation of the problem of oiled birds on this part of the European coast.

Table 1. Average number of oiled birds per month per km. of coastline in the Netherlands and Belgium

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Average |
|-----------|------|------|------|------|-----|------|------|------|-------|------|------|------|---------|
| 1958-1962 | 1.4 | 2.9 | 4.8 | 3.2 | 2.9 | 0.3 | 0.6 | 0.2 | 0.1 | 2.9 | 0.8 | 1.2 | 1.9 |
| 1962-1968 | 3.9 | 3.0 | 5.7 | 12.2 | 3.3 | 1.6 | 1.4 | 1.6 | 1.9 | 3.3 | 3.8 | 5.2 | 3.8 |

Although the average numbers from different years sometimes showed a marked difference, the final calculation indicates a distinct increase during all the months of the year. Regarding the separate years the situation seemed to develop favourably from 1962 till 1964, except for a marked increase of the number of oil-victims especially from the autumn of 1965 onwards. Moreover, to such a degree that the monthly average number of victims per km. grew from 1.9 in the period of 1958-1962 to 3.8 during the last few years. Consequently, the number of oiled birds on the Dutch and Belgian coast has redoubled during recent times according to this relative approach. It is worth noticing that from observations of migration of sea-birds there is no evidence that alternations of any importance have occurred in the numbers of trans-migrants of the principal species during the last decade. Of the oiled birds on the relevant coasts these are: Common Scoter (*Melanitta nigra*) 35 per cent, Guillemot (*Uria aalge*) 15 per cent, Laridae 14 per cent and Razorbill (*Alca torda*) 7 per cent.

It is important to know to what extent the number of the victims, that have been confirmed, form an actual threat to the populations of the various species. The most stricken species in the Eastern North sea is the Common Scoter, up to 8300 victims have been found on 6000 km. on the investigated coastal area during 6 years, over a length of 480 km. of the Dutch-Belgian coast.

The actual number of birds which perish, however, is much higher, as a great many victims never reach the coast. It is even highly probable that the greater part of the birds perish at sea, and that only the relatively least contaminated birds arrive on the coasts.

Estimations as to the death-rate at sea vary from 6 to 25 times more than the numbers that wash ashore. With the shipwreck of the Liberian tanker 'South America' in 1966 it could be calculated, also owing to the collaboration of the Hydrobiological Delta-Institute, that carried out countings at sea, that then 8 to 11 times more birds perished at sea than could be counted on the coasts. A remarkable fact was that, of some species, such as the Eider (*Somateria mollissima*) and the Red-throated Diver (*Gavia stellata*) several hundreds of victims sinking irretrievably were seen at sea, while of these species only a few specimens washed ashore.

Consequently, it must be clear that a large part of the damage done to the populations of sea birds passes unnoticed.

B. *The situation in other West- and North-European countries*

Although a relatively large amount of incidental data is available, strictly quantitative data are rather scarce. The map indicates the areas where most oil victims are found. It is evident that to a certain degree there is a relationship between extent of oil-pollution in a certain area and the number of victims.

Of the greatest importance however is the period in which the pollution took place and the question whether this pollution threatens an important breeding, moulting, migration or wintering area of a certain species at that very moment.

An attempt has been made to obtain an idea about the total number of birds perishing in the North Sea and the North Atlantic every year. This survey does not claim to be more than an estimation, for lack of corresponding data, of time and location even of the best observed areas. Further coordination will have to show to what extent the estimate of 150,000-450,000 sea birds, of which almost 4/5 consists of Alcidae, Anatidae and Laridae is correct. (Cf. Von Bornstedt, 1960; Dorst, 1965).

C. *The Mediterranean*

As can be seen on the map the oil-pollution on the coasts of the Mediterranean is less than those of N.W. Europe. But it has shown clearly that in the basin of the Mediterranean there is almost everywhere a rather continuous, but as a rule slight pollution, with incidental occurrences of more concentrated oil-patches. These have been reported mainly from Toulon onwards along the Riviera as far as Genoa and Corsica.

None of the information received mentions oiled birds, and the descriptions of oil-polluted parts of the coasts of Spain and Morocco as well as some other coastal areas agree with this. However, this should not prevent us from remaining alert also in these areas, the more so as there are indications from amongst others, Israel and the Italian west coast, about increasing pollution over the last few years.

Discussion

Whenever a large number of dead or dying birds is found on the coast, the real toll which has been taken can amount to a tenfold or more. Experience has shown that even with a heavily stricken group like the Alcidae (Auks), the losses caused by the regular occurrence of pollution of little extent, need not yet have any disastrous effects on these species in view of the size of the breeding-populations.

The consequences become quite different however when the heart of the breeding area, or of an important moulting, migration- or wintering-area, where an important part of the population of a particular species has been concentrated, is being affected. This can be the case particularly when there is a threat of fuel-oil on an extensive scale as a result of

shipping-disasters and similar occurrences. As an example we may take the mortality among the Long-tailed Ducks (*Clangula hyemalis*) in 1952 and 1957, East of Gotland and along the coast of Estland, which is most likely the cause of its diminution to less than $\frac{1}{4}$ of its former population; the case of the Greater Snow Goose (*Anser caerulescens atlanticus*) which had a narrow escape at the oil pollution of its central wintering area in the marshes around Quebec (Canada) in December 1963 and the most serious threat of the Sooty Terns (*Sterna fuscata*) near Dry Tortugas (Florida) in January 1964.

The accident of the 'Torrey Canyon' in 1964, still fresh in our memory, has at any rate had a very detrimental effect on the affected populations of Guillemot, Razorbill, Puffin, (*Fratercula Arctica*), Herring Gull (*Larus argentatus*) and Shag (*Phalacrocorax aristotelis*), as well as on the French and British coasts. Here the threat to the southern subspecies of Guillemot (*Uria aalge albionis*) is perhaps the most serious.

One has to wait and see to what extent this population will be able to recover itself. These examples already show that catastrophes that can take place during an unfavourable season in breeding, moulting, feeding, migrating and wintering areas, that are of essential importance to the survival of one or more species, are to be feared even more than the ordinary yearly toll that is taken of the birds by fuel-oil.

Besides that, other factors have to be taken into account. The investigation into the results of the use of detergents in connection with the disaster with 'Torrey Canyon' has not been concluded. How are the effects on the biocoenoses on the shores and how big is the ability of reproduction of the surviving birds?

Do oil-patches in rough waters attract those birds that are flying over them?

Finally in this context it is worth noting that the results in trying to save the oiled birds by a process of cleaning and caring have been very slight up to the present day. This makes it necessary to put an emphasise on the preventive measures to be taken in order to forestall oil-pollution and to secure a strict observance of the safety-measures that have been taken by international agreement.

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