# Effects of the cold winter of 1962-63 on birds of the north coast of the Wash

R. E. M. PILCHER

The exceptionally severe winter of 1962-63 offered opportunities, possibly not equalled for over a century, of observing the effect of hard weather on wild life in general. This report is concerned solely with its effect on the salt marsh, shore- and sea-birds on the north coast of the Wash, in Lincolnshire.

The arctic conditions which reached the west coast of Britain on Christmas Eve did not really reach the Wash until the early hours of Boxing Day. Here they arrived ushered in by a biting north-westerly wind and a slight fall of snow. These conditions continued, apart from a very occasional and very slight mid-day thaw, for ten weeks; they were characterised by hard frosts, very cold winds, but very little snow. Many of the tides on the marshes froze and left behind large ice floes, which packed in masses, first in the creek bottoms and then on the creek sides. During the third week in January the River Witham was completely frozen at Boston and the port was closed to shipping. When the frozen river was broken up, partly by ice-breakers and partly by spring tides, packed ice floated down the river to be left on the mud-flats and green marsh.

The conditions of birds, mainly Dunlin and Knot, caught at intervals in mist nets on the saltings during this period appeared to be good; otherwise mist-netting would have been discontinued. The weather was, however, having its effect. Certain species, and notably Redshanks, habitually very wary birds, appeared to be reluctant to fly far and were relatively tame. It was not however until the tide line had been examined casually that the extent of the mortality among shore birds was suspected.

It appeared that the best time to investigate this mortality more thoroughly would be after the highest of the spring tides at the end of the cold spell, which could not of course be foreseen. On the morning of 26th February the tide rose to 25 ft. 8 ins., completely covering all the green marsh and carrying up to the foot of the sea wall, together with much wrack and debris, the bodies of birds which had died further out. The wrack was exceptionally thick, due to the fact that the ice floes had abraded the taller grasses and vegetation, which had broken off and formed a thick mat of debris covering many of the bodies of the smaller birds. The first investigation took place on the evening of 26th February; the second and third investigations took place on 2nd and 3rd March.

Those who took part in the investigation were: on 26th February, W. A. Cook, T. Richardson and R. E. M. Pilcher; on 2nd March, W. A. C., T. R., R. E. M. P., and M. V. Pilcher; on 3rd March M.V.P. and R.E.M.P.

The species of each bird was determined. This was rarely difficult, but in certain cases, particularly in the case of the divers and grebes, where there had been some oiling or discoloration from vegetable staining, the identity was checked against bill, wing, tarsus and other measurements.

As a guide to the hardiness of each individual, an attempt was made to estimate how long it had been dead; whether it had died early, in the middle of, or late in the cold spell. This estimate pretends only to relative accuracy. A number of birds which had clearly died before Christmas were excluded. In the table of species the birds are divided into three classes: *fresh*, appearing to have died in the last two weeks; *recent*, died two to four weeks previously; *old*, dead four to six weeks. The bodies were also examined as to their condition: whether they were wasted or not, and whether they appeared to have been shot. Evidence of oiling was also noted. A search was made for rings, but none was found.

The area of the investigation extended from Friskney in the north to Freiston in the south. It included the parishes of Friskney, Wrangle, Leake, Leverton, Benington, Butterwick and Freiston. Apart from a small gap of about half a mile at Leake, this represents a continuous frontage of 9 miles.

The number of dead of each species found at the high-water mark is recorded in Table I. What proportion of the total population of any one species succumbed during the cold weather cannot be estimated except within the widest of limits. It appeared on many occasions that birds were passing through and that their stay was brief, and it cannot be known how long they were at risk in the area.

**Table I. Number of birds found dead on the north shore of the Wash, 26th February to 3rd March 1963.**

| *species* | *fresh* | *recent* | *old* | *total* | *notes* |
|---|---|---|---|---|---|
| Black-throated Diver (*Colymbus arcticus* L.) | 1 | 10 | 1 | 12 | 7 oiled |
| Red-throated Diver (*C. stellatus* Pontopp.) | 1 | 9 | 2 | 12 | 2 oiled |
| Great-crested Grebe (*Podiceps cristatus* (L.)) | 1 | 7 | 1 | 9 | |
| Red-necked Grebe (*P. grisegena* (Boddaert)) | | 2 | | 2 | |
| Fulmar (*Fulmarus glacialis* (L.)) | | 1 | | 1 | |
| Gannet (*Sula bassana* (L.)) | 1 | | 1 | 1 | |
| Heron (*Ardea cinerea* L.) | | 1 | 1 | 2 | |
| Mallard (*Anas platyrhynchos* L.) | 1 | 3 | 3 | 7 | |
| Teal (*A. crecca* L.) | | 1 | | 1 | |
| Wigeon (*A. penelope* L.) | 6 | 19 | 10 | 35 | Mostly shot; few in poor condition |
| Tufted Duck (*Aythya fuligula* (L.)) | | 2 | | 2 | |
| Common Scoter (*Melanitta nigra* (L.)) | 2 | 7 | 1 | 10 | Mostly oiled |
| Red-breasted Merganser (*Mergus serrator* L.) | 1 | | | 1 | |
| Shelduck (*Tadorna tadorna* (L.)) | 7 | 24 | 27 | 58 | Condition very poor |
| Pink-footed Goose (*Anser brachyrhynchus* Baillon) | | 1 | 1 | 2 | Both shot |
| Dark-bellied Brent (*Branta b. bernicla* (L.)) | 3 | 6 | 3 | 12 | Mostly shot |
| Mute Swan (*Cygnus olor* (Gmelin)) | 1 | | | 1 | |
| Water Rail (*Rallus aquaticus* L.) | | | 1 | 1 | |
| Moorhen (*Gallinula chloropus* (L.)) | | 1 | 1 | 2 | |
| Oystercatcher (*Haematopus ostralegus* L.) | | | 1 | 1 | |
| Green Plover (*Vanellus vanellus* (L.)) | 1 | | 1 | 2 | |
| Grey Plover (*Charadrius squatarola* (L.)) | 1 | 4 | 2 | 7 | |
| Curlew (*Numenius arquata* (L.)) | 3 | 7 | 5 | 15 | |
| Bar-tailed Godwit (*Limosa lapponica* (L.)) | | 3 | | 2 | |
| Redshank (*Tringa totanus* (L.)) | 30 | 49 | 65 | 144 | Condition very poor |
| Knot (*Calidris canutus* (L.)) | 27 | 41 | 36 | 104 | |
| Dunlin (*C. alpina* (L.)) | 15 | 11 | 7 | 33 | |
| Greater Black-backed Gull (*Larus marinus* L.) | | 2 | 4 | 6 | |
| Herring Gull (*L. argentatus* Pontopp.) | 1 | 6 | 1 | 8 | |
| Common Gull (*L. canus* (L.)) | 5 | 24 | 22 | 51 | |
| Black-headed Gull (*L. ridibundus* L.) | 6 | 14 | 6 | 26 | |
| Kittiwake (*Rissa tridactyla* (L.)) | | 9 | | 9 | |
| Razorbill (*Alca torda* L.) | | | 3 | 3 | |
| Guillemot (*Uria aalge* Pontopp.) | 10 | 7 | 2 | 19 | Many oiled |

Total number of species = 35 Total number of birds examined = 603

The bodies of several other species were also found, except for Wood-Pigeon (*Columba palumbus* L.), never in any number. They included Partridge (*Perdix perdix* (L.)), Skylark (*Alauda arvensis* L.), Blackbird (*Turdus merula* L.), Meadow-Pipit (*Anthus pratensis* (L.)), Starling (*Sturnus vulgaris* L.), Linnet (*Carduelis cannabina* (L.)), Twite (*C. flavirostris* (L.)) and Reed-Bunting (*Emberiza schoeniclus* (L.)).

As the result of frequent visits to the marsh some estimate could be made of the relative abundance of one species as compared with another. The limits of accuracy are here again very wide, but one could say, for instance, that at the beginning of the cold spell there were many more Knot than Redshank seen alive and that this proportion appeared to be constant or increasing during the period under review; yet when the dead at the tide-line were examined, one found many more Redshank dead than Knot, an indication that the Knot is able to withstand hard weather better than the Redshank.

It proved in fact to be possible to estimate with fair accuracy the relative proportions of individual species in the wader population but in few other groups. When one looks, for instance, at the divers and grebes, one sees that the number of dead of the Black-throated and the Red-throated Diver is the same. I do not think that anyone who observes the birds of the Wash from the land would hesitate to say that the Red-throated is much the commoner of the two. I am not sure that this is so. The Red-necked Grebe is often a very common bird in winter on the Wash, but generally it is too far out to sea to be identified, whereas the Great Crested Grebe tends to stay more in the runs and channels and is constantly seen. Similarly, it may well be that the Black-throated Diver keeps to the more open water and is less commonly seen than the Red-throated, which not infrequently haunts tidal rivers. This suggestion is supported by the fact that of the 12 Black-throated Divers, seven showed evidence of oiling, whereas only two of the Red-throated were oiled.

When one comes to the ducks one is on rather surer ground. There can be no doubt that the Wigeon population during this period vastly exceeded that of the Shelduck. It may at times have been fifty to a hundred times greater. On the afternoon of 25th January, flock after flock of Wigeon, amounting to very many thousands, were seen hour after hour to fly to some fresh grazing on the banks of Wainfleet Haven, and large flocks were constantly seen on every visit. Yet the number of Wigeon found dead was few; many of these had been certainly shot, very few of the others were 'wasters'. The number of Shelduck found dead must represent a very high proportion of the total winter population and the hard winter must represent a major disaster to this species. Many had died early in the hard weather and the condition of all the birds found was very poor; many were merely skin, feathers, and bones. Probably a very few had been shot and by far the majority had died of starvation. The Wigeon with its much wider choice of food – *Enteromorpha*, thawed by the water; the grasses of the marsh and of the fields near the sea wall – would feed with difficulty, but appeared to be in no danger of starvation. Very few of the birds shot by the wildfowlers were really poor. The Shelducks, with a more restricted food preference and one which in turn would suffer from hard weather – molluscs, crustaceans and arthropods – failed to survive on a change to a more vegetable diet.

The Mallard, Teal and the two Pinkfeet had certainly been shot. No doubt had the area examined been one regularly frequented by Pink-footed Geese, the number of 'pricked' birds succumbing to hard weather would have been higher. The number of Brent (all *B.b.bernicla*) found dead is high. Some of these were undoubtedly shot; a gunner was seen to shoot into the brown of a flock of Brent and although none fell, some were certainly wounded. Only four were really wasted. Probably the true hard-weather mortality was low.

The diving ducks appear to have fared well. There were throughout this period a considerable number of Scaup and Goldeneye and not a few Long-tailed Ducks, but no bodies were found. Both individuals of the one species found, Tufted Duck, were in fair condition and may have been shot. Except when frozen out from their inland waters, Tufted Ducks are not common on the Wash. Although their food is predominantly animal matter, it is taken at a greater depth than the Shelduck's surface feeding and their food supply was presumably less restricted. The importance of the food supply cannot be over-stressed. It was probably the effect of very low temperatures on the food supply, rather than on the birds themselves, which accounts for the variation in specific mortality. An adequately fed bird withstood the cold, a starved bird died.

Most of the Scoters showed signs of oiling. Their condition was poor and they had probably died miserably of exposure.

Coming to the waders, vast numbers of Knot were present throughout the period and the mortality was probably not at all high. Judging from the proportion of population, the Dunlin probably suffered rather the more. The bird that fared disastrously was clearly the Redshank. The numbers of Redshank never approached those of the Knot – there may have been fifty or even a hundred times more of the latter, but more Redshank died. The cause of this high mortality is again probably differences in feeding habits. Knots feed on the mudflats using the moving tide. Red-

shanks feed far more on the green marsh in the creek bottoms and the creeks were very early packed with ice. Many shore birds however had moved on before the hard weather. The number of Bar-tailed Godwits lessened noticeably early in January and few were left in the area by the end of the month. Oystercatchers, which had been present in very large flocks – well over a thousand strong – moved away at the same time and none was seen after the middle of January. Green Plover and Golden Plover moved away even earlier. None was seen in the area between Christmas and 4th March. From that date on large movements of both species occurred northwards and by mid-March very large flocks of Green Plover were present on grass-land generally and especially on Cowbit Wash.

There does not appear to be any special significance in the number of gulls found. Throughout the year the bodies of gulls of various species can be seen along the high-water mark, dead from one cause or another. Many of the Guillemots and Razorbills were oiled and their deaths need not have been associated with the hard weather.

Summing up, it is quite clear that on the north side of the Wash the two species which suffered most severely during the hard weather were the Shelduck and the Redshank.

# Some effects of severe weather on wildfowl in Kent in 1962-63

JEFFERY HARRISON and MICHAEL HUDSON

**Summary**

Large numbers of wildfowl died in Kent early in 1963. Losses were especially heavy among birds on the Thames and Medway estuaries, where the inter-tidal zone was frozen for long periods. Most losses occurred 15th-26th January. Shelduck and Wigeon were severely affected, because their food became inaccessible. Losses were heavier than during the last comparable cold spell, in 1947, which had lower temperatures but more precipitation and in which the inter-tidal zone was frozen only for short periods.

More duck than drake Wigeon were found dead, even though there was an unusual preponderance of drakes in the local population. Dead Shelduck too were mostly females. Only 4 of 16 apparently starved ducks contained no food. There is evidence that the mortality was selective and that it was the weaker birds which were culled.

Numbers of ducks and geese during and after the cold spell are compared with those in other years. Nesting in 1963 was delayed, though less than in the cold spring of 1962. Breeding success was high for Shelduck and Pochard. Mallard did badly on the Thames, probably because of heavy losses of nests due to flooding of the coastal marshes by abnormally high summer tides.

It is suggested that if wildfowl losses in severe winters are to be minimised in future wildfowling should be stopped, if possible, when the inter-tidal zone freezes.

## Introduction

The exceptionally severe weather which lasted from 23rd December, 1962 until 5th March, 1963, unfortunately provided ample opportunities for studying the effects of the weather on wildfowl, particularly in north Kent, where large numbers died. This was in curious contrast to south Kent where very few were found dead. The difference is possibly to be accounted for by the absence of any intertidal feeding zones in south Kent, where wildfowl quickly turned to such plants as kale and sprouts.

This winter was the first since 1947 in which conditions were severe enough to follow up some observations made on Wigeon (*Anas penelope* L.) in north Kent by Harrison and McLean (1947). At the end of January, 1947, it became obvious that duck Wigeon were suffering from the cold spell far more than the drakes. From birds which were shot at that time, it was confirmed that the ducks were relatively thinner than the drakes. Experimental studies in north America suggest that Mallard drakes succumb more quickly to starvation in cold weather than do females (Latham, 1947; Jordan, 1953) but, as is shown below, the observations made on Wigeon and Shelduck (*Tadorna tadorna* (L.)) in 1963 support the findings of 1947.

The cold spell of 1947 differed from the 1963 spell and this was particularly reflected in the icing conditions of the saltings and the inter-tidal zone, which were far more severe and prolonged in 1963 and resulted in a widespread mortality, particularly of Wigeon and Shelduck, which did not occur in 1947.