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Losses of Mute Swans in England in the winter of 1962-63

HUGH BOYD and MALCOLM OGILVIE

Summary

The cold winter of 1962-63 led to a marked decline in the numbers of Mute Swans in England, though no precise estimate of the losses suffered is yet obtainable. The number of recoveries of ringed swans was exceptionally high in early March, at the end of the cold spell. Casualties attributed to cold were mostly found in late January. Losses due to collisions with overhead wires were abnormally low in January and February 1963. Mortality was much lower in the north-west than elsewhere.

The Mute Swan (*Cygnus olor* (Gmelin)) is the most conspicuous and most urban of the wildfowl in Great Britain and is known to be vulnerable to the effects of cold winters (Hilprecht, 1956). This paper is a preliminary report on the losses suffered by Mute Swans in England from December, 1962 to March, 1963, based very largely on recoveries of ringed birds. Because ringing began on a large scale only in 1960 and because the mortality of swans varies greatly with age as well as from year to year, it will not be possible to make a reliable and detailed comparison of the death-rate in 1962-63 with that in other winters until several more years have elapsed, but even the crude analyses now possible show some features of interest. Relatively few Mute Swans have been ringed in Scotland or Wales and these give no indication that swans in either country were affected by the cold spell, so that attention is here restricted to England, which holds about three-quarters of the British population.

Changes in relative numbers in England

The size of the British population of Mute Swans was investigated as recently as 1961 by means of a sample breeding census (Eltringham, 1963). It was not possible to organise another breeding survey in 1963, so that the only method of estimating changes in total numbers is by an extension of Eltringham's 'Winter Index', based on the monthly National Wildfowl Counts. The calculation of indices of this type is described by Eltringham and Atkinson-Willes (1961). Basically the method consists in comparing the number of swans seen in each month on a national sample of about 300 waters with the number seen in the comparable month of a master season. From these monthly figures, a seasonal index representative of the whole period September – March is calculated. In Table I, indices for 1962-63 and 1963-64 are compared with those for seasons since 1957-58. (These indices differ from those published by Eltringham for Great Britain as a whole.) There are clear indications of decreases in the two latest winters. It is difficult to interpret the index for a period in which exceptional losses may be actually being suffered, and the autumn index is perhaps more effective, but it is unfortunately not possible to determine what proportion of each sample consisted of birds bred in the preceding summer. Thus annual variations in breeding success as well as in mortality affect these indices.

It might be thought possible to investigate survival through the winter directly by paired comparisons of counts from month to month within each season. This method has proved useless, because of variations in the tendency to aggregate or disperse in the course of the annual cycle. Only where it can be shown that changes in numbers are due solely to births and deaths without immigration or emigration can direct counts be used to measure mortality. Observations and evidence from ringing suggest that 'closed' groups of this kind must be quite exceptional in England: in many cases where the numbers at one place remain nearly constant it has been found that many individuals are coming and going.

Times of recovery of ringed swans

Some measure of the relative magnitude of the losses suffered by Mute Swans in the cold weather of 1962-63 can be obtained by comparing the numbers of recoveries in each month (or quarter) in different years (Table II, upper part). The frequency of recoveries depends on the number of birds at risk and this was changing rapidly in 1962 and 1963 (Table II, lower part). The number of recoveries in January to March of swans ringed in the previous calendar year as a proportion of the number ringed serves as a more nearly quantitative index of losses (Table III). It appears that losses in early 1963 were more than twice as great as in the same period in 1961, though only 30% greater than in 1962. The most striking feature of the distribution of recoveries in 1963 is the large number in March.

The cold spell began about 21st December, 1962, and persisted until early March, 1963, with some amelioration in February, varying considerably from place to place. In Table IV recoveries are grouped into 10-day periods (dates of death cannot be inferred from recovery reports with any great precision: some recoveries included in the monthly totals of Table II and V have had to be omitted from Table IV for this reason). Numbers in late December are low. From January to March they vary about a mean frequency of 26, with rather few in January, a peak in mid-February and an especially marked peak in early March. These peaks do not correspond with the periods of severest cold. They suggest instead that most dead swans were found at times when it was relatively easy to look for them. Deaths attributed to cold or starvation by the finder are, however, spread in quite a different way, with a concentration in the second half of January.

Causes of death

At all times no indication of the cause of death is provided for nearly half the dead swans reported (Table V). The reliability of diagnosis by finders is also not likely to be great, because few people would contemplate making, or arranging for, a thorough post-mortem examination of so massive a bird. Collisions with wires or bridges or cars produce recognisable results, but the 5-6% of swans described as 'sick', 'diseased', 'poor' or 'dying' might or might not be victims of severe weather. The remarkable feature of Table V is that the marked increase in deaths attributed to cold or starvation in 1963 as compared with earlier years is offset by a reduction in the numbers supposed killed in other named ways. In other years collision with wires produced 63 of 242 (26·0%) reported deaths in January–March; in 1963 only 35 of 264 (13·3%). The reduction in wire-casualties was in fact restricted to January and February (4 and 3 respectively, against 18 and 25 in previous years). The fact that so many of their normal haunts were ice-covered might lead one to suppose that swans needed to fly more, rather than less, than usual in early 1963. Perhaps this was not so, or perhaps overhead wires were more readily seen and avoided because thickened by a covering of ice.

All seven recoveries due to the effects of cold in earlier years included in Table V were reported in 1962, five of them between 1st and 3rd January. There was severe cold in England from 23rd December, 1961 to 4th January, 1962. In 1962-63, when the cold spell began on 22nd December, the first casualty ascribed to the cold was not found until 4th January and only 5 of 36 such deaths occurred before 14th January. The ratio of cold-casualties to other recoveries in the period 22nd December – 5th January was 6:12 in 1961-62, against 2:9 in 1962-63, but clear proof that more casualties occurred in the first spell than in the corresponding period in 1962-63 cannot be found.

Regional differences

If recoveries in January – March, 1963 of swans ringed in the year 1962 are used as a measure of relative loss in different parts of the country (Table VI), it is obvious that casualties were much higher in the south and east than in the north and west. That is, losses were heaviest in the region where swans are most abundant (Atkinson-Willes, 1963). Further investigations will be needed to establish whether this was a consequence of the high density of swans or whether it can be accounted for solely by the greater severity of the weather in that part of the country.

Acknowledgement

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Table I. Index of abundance of Mute Swans in England from September to March 1957-58 to 1963-64. Data from National Wildfowl Counts

season	*number of swans counted* *master season (1957-58)*	*season cited*	*season index (Sept-Mar)*	*autumn index (Sept-Dec)*
1957–58			100	100
1958–59	12,488	11,986	96	89
1959–60	11,928	12,520	105	100
1960–61	13,552	13,410	99	92
1961–62	13,481	13,958	104	100
1962–63	11,563	9,329	81	82
1963–64				

Table II. Months of ringing and of recovery of Mute Swans

		Jan	*Feb*	*Mar*	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*total*
recovered														
before	1962	19	31	31	26	21	19	16	19	43	59	59	63	406
in	1962	57	52	60	47	40	15	15	11	43	46	49	29	464
in	1963	63	90	112	56	33	18	9	13	23	33	30	7	467
ringed														
in	1960	24	138	119	174	83	83	129	128	131	140	94	69	1,362
in	1961	116	112	332	306	329	209	149	350	270	290	164	272	2,899
in	1962	317	221	168	175	127	187	191	254	250	153	87	182	2,312
	1960–62	457	471	619	655	539	479	469	732	651	633	345	523	6,573

Table III. Numbers of recoveries in January–March 1961-63, related to numbers of Mute Swans ringed in England in preceding year

recovered in	*recoveries in Jan-Mar from ringing in previous year*	*number ringed in previous year*	*recovery rate (%)*
1961	28	1,366	2·05
1962	99	3,035	3·26
1963	106	2,491	4·26

Table IV. Recoveries of Mute Swans from late December 1962 to March 1963, grouped in 10-day intervals. Imprecisely-dated records omitted

	Dec	*January*			*February*			*March*		
recoveries	*22–31*	*1–10*	*11–20*	*21–30*	*31–9*	*10–19*	*21–1*	*2–11*	*12–21*	*22–31*
deaths from cold		3	10	9	3	3	4			
long dead			1		1		1	3	4	2
others	5	15	7	13	22	32	15	37	27	23
total	5	18	18	22	26	35	20	40	31	25

Table V. Reported causes of death of ringed Mute Swans in winter

	1963					*earlier years*				
causes of death	*Jan*	*Feb*	*Mar*	*sum*	*%*	*Jan*	*Feb*	*Mar*	*sum*	*%*
cold, starvation	23	13		36	13·8	6		1	7	2·9
'sick', 'exhausted'	5	8	3	16	6·1	1	6	5	12	5·0
other cause given	11	28	46	85	32·1	30	41	42	113	46·7
no details	24	41	62	127	48·0	38	33	39	110	45·4
total	63	90	111	264		75	80	87	242	

Table VI. Regional differences in rate of recovery in January–March 1963 of Mute Swans ringed in 1962

	south -west	*London & south-east*	*east Anglia*	*east midlands & north-east*	*west midlands & north-west*
recovered	24	30	22	10	20
ringed 1962	456	617	296	219	903
% recovered	5·3	4·9	7·4	4·6	2·2

Deaths of wild White-fronted Geese at Slimbridge in January 1963

J. V. BEER and H. BOYD

Summary

Heavy and persistent snow cover caused a serious shortage of food for White-fronted Geese in England and Wales from late December, 1962, to February, 1963. Fifteen Whitefronts found dead or dying at Slimbridge in January were all underweight and at least four had died from starvation. Recoveries of ringed birds show a similar concentration of losses in mid-January elsewhere in England and Wales, with an exceptional proportion of geese 'found dead' as well as unusually heavy shooting casualties. Recoveries from the Netherlands and France were also exceptionally numerous but do not show marked grouping in mid-January, perhaps because of emergency legal restrictions imposed in those countries.

On 26th December, 1962, the feeding grounds of the White-fronted Geese (*Anser a. albifrons* (Scopoli)) at Slimbridge, Glos., became wholly covered in snow, which remained until early March, 1963. White-fronted Geese are not seriously inconvenienced by light snow cover, searching widely for exposed grass or exposing it for themselves by sitting on the snow until it melts sufficiently for them to pull at the grass beneath. But the snow of late December lay so deep and thick and even that there was nothing for the geese to eat. 3,000 Whitefronts had been counted on 26th December and were still present on 29th. By 6th January the number had fallen to 800 and on 9th there were only 350. Fewer than 50 were seen on any day during the next four weeks. By 5th February, wind action and slight daytime thawing had exposed small areas of grass and thereafter the snow cover was not complete, even though the ground remained frozen until 5th March. By 9th February 500 geese had returned and their numbers increased to 1,200 on 14th, 2,000 on 16th and 2,750 on 25th.

Between 29th December and 28th January 15 dead or dying Whitefronts were brought in for examination. 13 of these were found between 8th and 17th January, when there were hardly any geese living at Slimbridge. None was picked up after the return of larger numbers in February. This paper reports on the condition of the birds that died and discusses why the deaths took place when they did.

Age and sex of casualties

Only two of the fifteen geese handled were first-winter birds. This proportion (13·3%) is little different from that of 9·6% first-winter birds seen in 1,400 inspected at Slimbridge on 21st December. This was the lowest proportion of young birds seen in late December in any year since 1946, when age-ratios were first studied. (The scarcity of young birds seems to have been due to widespread breeding failure in Siberia in 1962.) Since there were so few young geese, any difference in the response of young and older geese to the effects of thick snow cover would scarcely have been detectable in so small a number of corpses.

The sex of one badly-damaged goose could not be determined. Of the others, 10 were males and 4 females. Since the sex-ratio in Whitefronts flocks is normally very close to unity (Beer and Boyd, 1963), this disparity suggests that males were more vulnerable than females.

Causes of death

Four corpses were too badly damaged for the proximate cause of death to be discovered. Six of the remainder (five males) had been shot and four males seemed to have died from starvation. An adult female