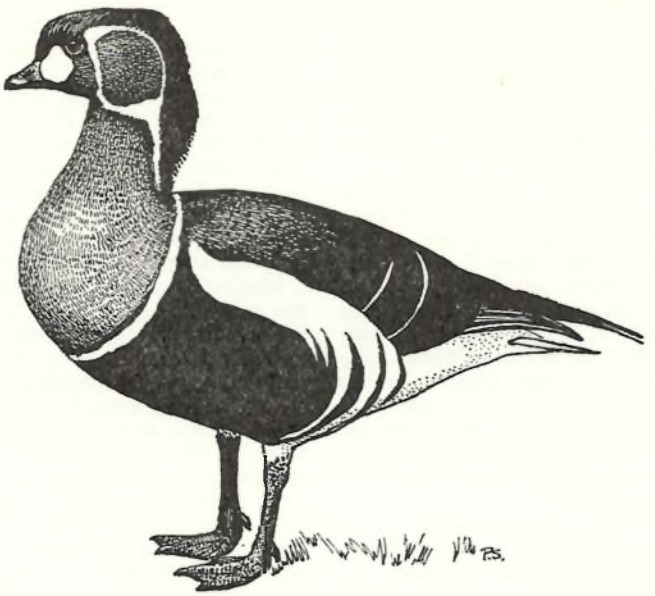

Year-book for 1966

Results of wildfowl ringing at Abberton Reservoir, Essex 1949 to 1966

MAJOR GENERAL C. B. WAINWRIGHT, C.B.

Summary

Between 1949 and 31st July 1966, 37,924 ducks and 376 swans were ringed at Abberton Reservoir, yielding 8,162 recoveries so far. Teal made up 70% of the catch and Mallard 21%. Fourteen other duck species have also been marked. The seasonal variations in the catch are examined and an association is found between the catch of Teal and the mean of the monthly winter counts on the reservoir. Tabular summaries of the recoveries show marked differences between species in the proportions recovered locally and overseas. Teal have been reported from 35 countries. Mallard recoveries from within 30 miles of Abberton show that there has not been a falling off in the recovery rate due to "reporter boredom." Average adult mortality rates include Mallard 43%, Teal 45%, Garganey 47% and Gadwall 52%.

Introduction

Abberton Reservoir lies about four miles north of the Blackwater estuary, one of the major wildfowl areas on the Essex coast. The reservoir, completed in 1940, has a water surface of 1,240 acres and a perimeter of about twelve miles, of which three-quarters is faced with a one in three concrete slope, unsuitable for traps. The remainder, separated from the rest by two causeways, has natural banks. The depth varies from a few feet at the upper end to more than 50 feet behind the dam, and when the water level is low there are large expanses of mud, and sometimes a small island becomes exposed. It is now the most important duck roost in south-east England, frequently holding over 7,000 ducks. (See map, Figure 1.)

I began trapping ducks for ringing in 1949. It started off as a hobby for a quiet retirement but I had little idea then how it would snowball. There was the excitement of catching my first Teal on 8th September, 1949, little thinking that the

one would become nearly 27,000 in 17 years. I had to learn how to make the traps, first five and now 18. They are all to my own design, being large, 12 foot square, but they can be moved up or down the banks as the water level varies (Wainwright 1955, 1957). I started with one boat, but now have a motor boat and a dinghy. By 1952 it had become more than one man could cope with, so I got an assistant. He was not an easy chap to find, but I have been unbelievably lucky in the two that I have had. A secretary as well soon became necessary to help with all the paper work. It isn't just a matter of ringing the ducks, records have to be kept, and pretty complete ones at that, otherwise the rest of this report could not have been written.

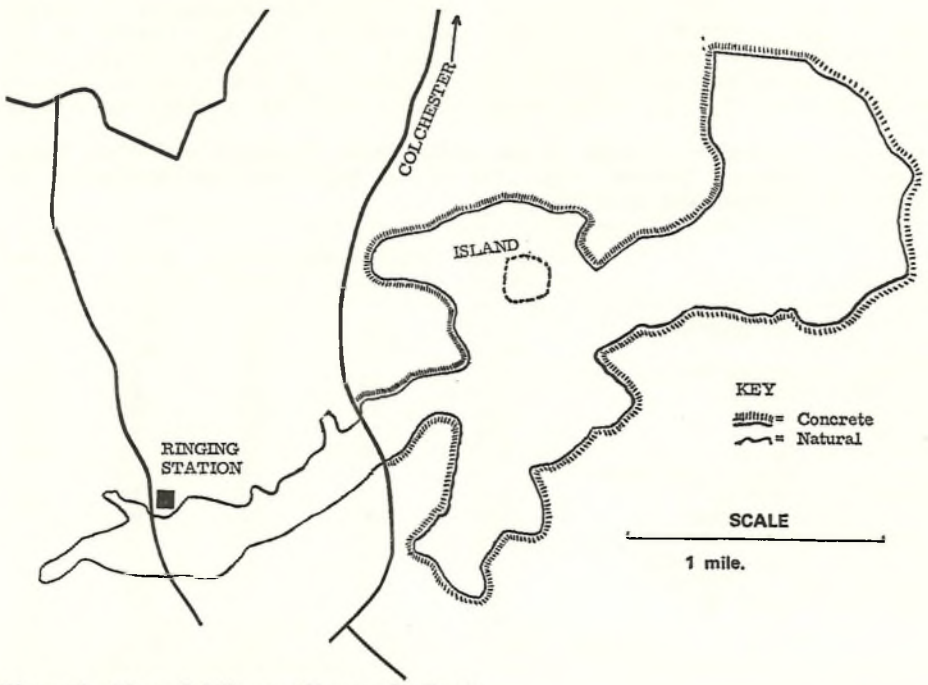

Figure 1. Map of Abberton Reservoir, Essex.

Apart from all the scientific information that has been produced I can't resist saying something about the excitement. Some notable days stand out in my mind. That wonderful day I remember particularly, 21st January, 1958, when we caught 205 ducks, 53 of them in one trap. The 135 Teal we ringed that day have produced 31 recoveries so far. Ducks return year after year to Abberton. Often I catch them in the same trap in which they were originally taken and ringed. Two I recall were ringed on the island in 1956 and recaught in the same place within two days of each other in October, 1964. Traps on the island have always been safe from disturbance, but one day a mink killed three Teal in a trap there, having swum the 400 yards from the mainland. Luckily he was foolish enough to stay in the trap and so made a good skin for the Colchester Museum. Mink should not be allowed to escape, they can run like hares, swim like otters and climb like squirrels.

Rings are discovered in the most unexpected places. Two of mine were found by diners in London restaurants. One, found in a pork pie, had been put on a Mallard ten weeks before. The second occasion was when a Teal was served up on a plate with the ring, 28 days old, still on its leg!

The progress of the ringing at Abberton has been recorded each year since 1955 in the Annual Reports of the Wildfowl Trust, while recoveries have been listed in the Bird Ringing Reports of the British Trust for Ornithology and used in several analytical papers. However, it seems useful to assemble here a summary of the achievements so far. Because of the great mass of data it is necessary to compress the information into tables and to select only a few points for discussion.

Ringing

The total numbers of each species ringed are shown in the first column of Table I. Though Teal and Mallard make up over 90% of the catch, a substantial number of Wigeon, and enough Garganey, Gadwall, Shoveler, Pochard and Tufted Duck have been ringed to add importantly to our knowledge of the movements of English-visiting ducks.

There have been great variations in the seasonal catches (Table II) from the lows of 574 in 1949-50 (when only five traps were in use) and 750 in 1951-52, to the peak of 4,802 in 1959-60. These fluctuations are partly, though not solely, due to differences in the numbers of ducks living on the reservoir. For long periods many birds may be present yet disdain to visit the traps, then suddenly they become interested. The level of the water is important, particularly if it is low enough to expose the island in the main reservoir, which then becomes much the best place for trapping. Table II shows that the numbers caught of all species of ducks, excluding Teal, show remarkably little variation from season to season, whilst the seasonal catches of Teal have fluctuated very widely. A detailed examination reveals that there is no close relationship between the numbers of Teal caught and those of the other species: in five seasons both were above average, in six both below, and in the other six, one above and one below the seventeen-season mean.

Table I. Numbers of dabbling ducks, diving ducks, Shelducks and Mute Swans ringed at Abberton Reservoir from 1949 to 31st July, 1966, and numbers so far recovered in Britain and overseas.

Species	*Number ringed*	*Number of recoveries In Britain*	*Overseas*	*Total recoveries*	*% recovered so far*
Mallard *Anas platyrhynchos*	8029	1493	444	1937	24
Teal *A. crecca*	26829	2755	2740	5495	21
Garganey *A. querquedula*	249	2	35	37	15
Gadwall *A. strepera*	73	14	14	28	38
Wigeon *A. penelope*	1426	97	209	306	22
Pintail *A. acuta*	114	18	13	31	27
Shoveler *A. clypeata*	265	24	36	60	23
Red-crested Pochard *Netta rufina*	4	2	0	2	
Pochard *Aythya ferina*	140	6	13	19	14
Tufted Duck *A. fuligula*	476	40	52	92	19
Scaup *A. marila*	16	4	2	6	
Goosander *Mergus merganser*	2	0	1	1	
Shelduck *Tadorna tadorna*	278	13	0	13	5
Mute Swan *Cygnus olor*	375	130	1	131	35
Totals	38276	4598	3560	8158	23

In addition, 3 Goldeneye *(Bucephala clangula)*, 1 Common Scoter *(Melanitta nigra)*, 2 Smew *(Mergus albellus)* and 1 Bewick's Swan *(Cygnus columbianus bewickii)* have been ringed without yet yielding a recovery. Fifteen other wildfowl (hybrids or escapes) have also been ringed, of which 3 have been recovered locally and 1 in Holland.

Table II. Numbers of Teal and of other ducks, but excluding swans, ringed at Abberton each season from 1949-50 to 1965-66. The season runs from 1st August to 31st July.

Season	*Teal*	*Others*	*Total*	*Season*	*Teal*	*Others*	*Total*
1949-50	375	199	574	1958-59	751	561	1112
1950-51	1575	410	1985	1959-60	4112	690	4802
1951-52	350	400	750	1960-61	795	592	1387
1952-53	1197	1287	2484	1961-62	2559	719	3278
1953-54	1348	586	1934	1962-63	1987	509	2496
1954-55	409	572	981	1963-64	1628	909	2537
1955-56	3126	562	3688	1964-65	1333	635	1968
1956-57	2265	706	2971	1965-66	879	1162	2041
1957-58	2140	794	2934	Total	26829	11093	37922
				Mean	1580	652	2232

However, an interesting comparison can be made between the size of the Teal catch and the counts of these birds made on the reservoir. The counts are organized under the National Wildfowl Count Scheme and take place once a month from September to March. The records from Abberton exist without a break from 1948-49. If the mean of each season's seven counts is taken, there is a fairly close relationship between this figure and the catch of Teal made in the same season (Fig. 2). There is also quite a close fit between the trends shown by the counts on Abberton and the trends in Britain as a whole. This suggests that the catch size of Teal at Abberton might be used as an indicator to the situation of the British population of the species. The latter has been discussed by Atkinson-Willes and Frith (1965) who pointed out that after the sharp peak of 1959-60 which was due to a massive influx of birds following the drying-out of an Isselmeer

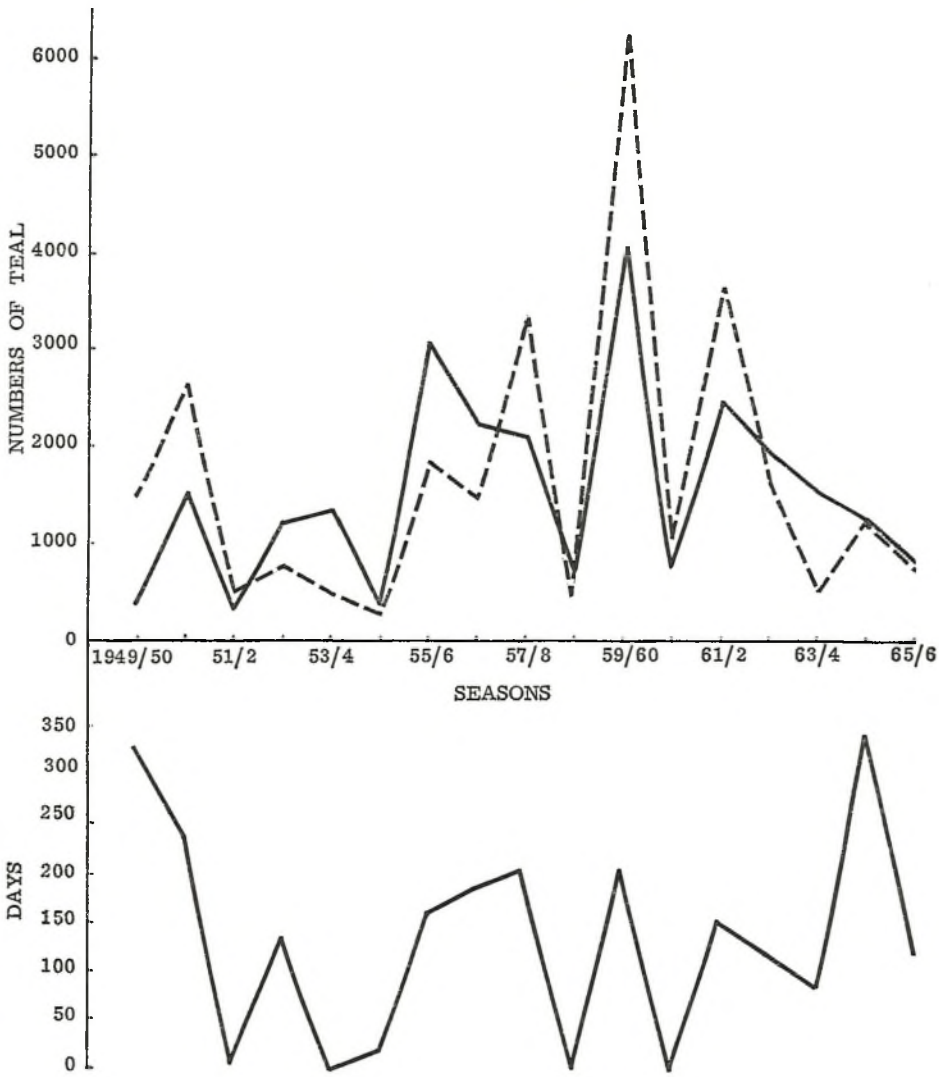

Figure 2. (Upper) Seasonal catch (——) and mean of monthly winter counts (— — —) of Teal at Abberton Reservoir, 1949-50 to 1965-66. (Lower) Number of days per season when trapping was possible on island.

polder, the level of population 1960-64 was not below the level of the years prior to the peak. There has been a decline since then (G. L. Atkinson-Willes, pers. com.) and the situation is more disturbing than it appeared two years ago.

Recoveries

The recoveries of Teal are displayed in Table III which comprises an impressive list of countries to which birds passing through Abberton have dispersed. In Europe, only Luxembourg, which has, however, produced a recovery of a Mallard, Switzerland and Albania are missing. Teal are one of the most widely travelled of ducks with a strong onward passage through Britain which is absent in most other species. Table I sets out the numbers of recoveries in Britain and overseas for all wildfowl species. To compare the dispersal of the different species it is easier to use Table IV in which the recoveries overseas are shown as a percentage of all recoveries.

The Garganey stands out because nearly all its recoveries are from abroad. This

Table III. The distribution of recoveries so far reported of Teal (*Anas crecca*) ringed at Abberton Reservoir from 1949 to 31st July, 1966.

Country of recovery	*Number of recoveries*	*Country of recovery*	*Number of recoveries*
England, under 30 miles	1500	Roumania	2
England, over 30 miles	1129	Bulgaria	4
Wales	82	Greece	1
Scotland	42	Turkey	2
Isle of Man	2	Belgium	39
Total in Britain	2755	Holland	181
		Germany	133
Northern Ireland	58	Denmark	239
Eire	351	Norway	20
Channel Islands	4	Sweden	116
France	785	Finland	216
Spain	97	Estonia	30
Portugal	13	Latvia	24
Azores	1	Lithuania	3
Morocco	1	Poland	18
Sardinia	1	Russia	359
Sicily	1	Siberia	8
Italy	26	Faroe Islands	1
Austria	1	Iceland	1
Czechoslovakia	1	Total overseas	2740
Hungary	2		
Yugoslavia	1		

Table IV. Proportion of recoveries of ducks ringed at Abberton, found locally, elsewhere in Britain or overseas, and total recovery-rates.

All figures are percentages, rounded to the nearest whole number. Species with fewer than 10 recoveries have been omitted.

	% of Recoveries			%
Species	*Under 30 miles*	*Elsewhere in Britain*	*Overseas*	*Recovered Ringed*
Mallard	67	10	23	24
Teal	27	23	50	21
Garganey	3	3	95	15
Gadwall	32	18	50	38
Wigeon	23	9	68	22
Pintail	39	19	42	27
Shoveler	27	13	60	23
Tufted Duck	35	9	56	19
Pochard	32	0	68	14
Shelduck	77	23	0	5
All ducks	37	19	44	21

is because as a summer visitor to England it arrives after the end of our shooting season and leaves before or very soon after the opening of the season on 1st September. On passage through France and Italy it is often shot, particularly in the valley of the Po. The recovery rate is low, probably because the wintering areas (not yet precisely known) are in Africa, where the reporting of rings is less likely than in Europe. By contrast the low recovery rate of the Shelduck is because the species is fully protected in Britain.

Two-thirds of the Wigeon and Pochard have been found abroad compared with less than a quarter of the Mallard. Two-thirds of the recoveries of this last species have been within 30 miles of Abberton compared with 23-39% of other ducks.

Table V. First season recovery rates of Mallard ringed at Abberton and recovered within 30 miles.

Season of ringing	*Number ringed*	*Recoveries %*	*Season of ringing*	*Number ringed*	*Recoveries %*
1949-50	130	9.2	1958-59	276	7.2
1950-51	348	11.5	1959-60	532	5.3
1951-52	316	15.7	1960-61	444	6.1
1952-53	1025	16.2	1961-62	556	6.8
1953-54	207	15.4	1962-63	386	8.3
1954-55	334	9.3	1963-64	548	7.1
1955-56	371	15.4	1964-65	467	8.4
1956-57	468	17.3	1965-66	1006	8.7
1957-58	615	9.7			

There have been indications from other studies in Europe and North America that where massive numbers of a species are ringed the recovery rate falls over the years due to a growing disinclination to continue reporting rings by the shooters (Martinson 1966). Where large-scale ringing is taking place at a single ringing station there is likely to be a further fall (Paludan 1953). This would be understandable in the case of Abberton as the local wildfowlers began to realise that nearly every duck they shot with a "British Museum" ring on its leg came from there. It is, after all, quite a chore to write a letter, find a stamp and go to the postbox. Not everyone realises that each recovery is valuable even if it apparently duplicates the previous one.

Table IV showed that 67% of Mallard recoveries are from within 30 miles of Abberton. The data on this species should therefore show whether there is any decrease in reporting by shooters over the last seventeen seasons. I have therefore set out in Table V the recovery rates for the first season of ringing.

These show a much higher level for the first nine seasons than subsequently, but after the drop there has been no further decline. Although some of the fall off in recovery rate may be due to "reporter boredom" a number of other local factors have affected the picture. In 1958 a duck decoy only ten miles away was closed and there has been a decrease in shooting at two localities within two miles of the reservoir. The other fluctuations probably reflect the variability in shooting conditions, the dates at which birds were ringed, the proportion of adults in the catch and so on. As I know many local wildfowlers I have learnt of many local recoveries direct from them.

In general, ducks ringed in their first year of life give fewer recoveries overseas than do older birds, probably because rather more are lost during the season in England and so do not survive to emigrate. The Gadwall appears to be exceptional, 52% of recoveries of juveniles coming from abroad compared with only 19% of adults, but the numbers are still too small to show conclusively what causes the difference.

Survival

Table VI shows the seasons of all recoveries. The season of recovery is taken as the same as that of ringing, running from 1st August to 31st July. The series diminish rapidly as the birds die off, although a few have survived more than ten years after ringing. For a few species recoveries in the first season are less than those in the second. This draws attention to a bias due to the date of ringing. Species which arrive and are ringed early in the season are more likely to be recovered that season than those ringed near the end. A second bias is caused by the fact that towards the end of the series, ducks have been at risk for fewer and fewer seasons. However, this complication can be allowed for by expressing the number of recoveries as a

Table VI. Seasons of recovery of ducks and Mute Swans ringed at Abberton Reservoir, 1949-66.

Species	*Season of Recovery* 1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	later	*Total*
Mallard	980	526	228	102	54	18	10	11	4	2	2	1937
Teal	2224	1697	745	422	188	122	61	24	7	3	2	5495
Garganey	13	8	10	4	1	1						37
Gadwall	17	7	3				1					28
Wigeon	63	119	50	31	20	10	2	5	2	2	2	306
Pintail	14	9	3	1	1	1	1	1				31
Shoveler	37	15	5	1		1		1				60
R-c. Pochard	1								1			2
Pochard	10	4	3	1		1						19
Tufted Duck	24	34	16	7	4	1	3	1	2			92
Scaup	3	1	1					1				6
Shelduck	8	2		1	2							13
other ducks	3	1				1						5
Mute Swan	75	19	13	9	4	2	4	2	3			131
Total	3472	2442	1077	579	274	158	82	46	19	7	6	8162

Of the ducks recovered more than 10 seasons after ringing, one Mallard was in 11th and a second in 12th season; one Teal in 11th and one in 15th; one Wigeon in 11th and one in 12th.

Table VII. Average annual mortality rates of ducks ringed at Abberton.
The estimates in italics are less reliable than the others, because of the small numbers of recoveries on which they are based. Figures in brackets are from Boyd (1962) — see text.

Mallard	43%	(48%)	Wigeon	43%	(47%)
Teal	45%	(51%)	Pintail	*36%*	(48%)
Garganey	*47%*		Shoveler	37%	(44%)
Gadwall	*52%*		Tufted Duck	35%	(46%)

Note: This is encouraging. If one assumes that every pair alive at the beginning of the breeding season averages only two ducklings, a mortality rate of 50% would be tolerable.

Table VIII. Recaptures at Abberton of ducks and Mute Swans ringed there 1949-1965.

Species	*Season of Recapture* 2nd	3rd	4th	5th	6th	7th	8th	9th	10th	*Total*
Mallard	214	104	29	14	9	2	2	1		375
Teal	878	373	216	97	35	17	13	4	2	1635
Garganey	6		2							8
Gadwall	2	1	1	1	1					6
Wigeon	22	6	3	3	1					35
Pintail	1	1								2
Shoveler	3	1	1	1						6
R-c. Pochard	1									1
Pochard	2		1	1		1				5
Tufted Duck	10	8		1		1				20
Shelduck	11	2	2	4	1	1				12
Mute Swan	10	1	2	3	3		1			20
Total	1160	497	257	125	50	22	16	5	2	2134

percentage of the number of ducks eligible. After correction in this way, and excluding the first season, it is possible to calculate the average annual mortality rate, using the method of Bellrose and Chase (1950). Table VII gives estimates of mortality rates for those species with sufficient available data. Comparisons are given where possible with the mortality rates calculated by Boyd (1962) from earlier British and European ringing. Boyd's figures are higher than mine, but he included in his samples recoveries of birds from 1st January, which were in their first season on my definition. No mortality rates for Garganey and Gadwall ringed in Europe have been published before.

Table VIII records the numbers of survivors recaptured at Abberton in later seasons. The series are much like those of the recoveries and likewise can be used to estimate mortality. However, it is unlikely that all surviving ducks return to Abberton, or that ducks that have once been trapped are equally likely to be caught again. Crude calculations for Mallard and Teal put the apparent mortality rates for recaptured ducks at 57% and 54% respectively compared with the estimates of 43% and 45% from recoveries. These figures for retrapped birds may be higher because of increasing trap-shyness with experience.

Acknowledgements

I should like to express my sincere thanks to the following:

the South Essex Waterworks Company, who have so very kindly allowed me to work on their Reservoir and given me every help, as also have their Resident Engineers and workmen;

Mr. Stanley Allderidge, who showed me the best way to put the traps together;

Bert Winchester, who was my assistant from 1952 to 1956, when he was followed by Roy King, who is still with me and as keen as ever;

Mrs. Ireland, who has helped with the paper work since 1955;

all the friends who have helped at so many different times.

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