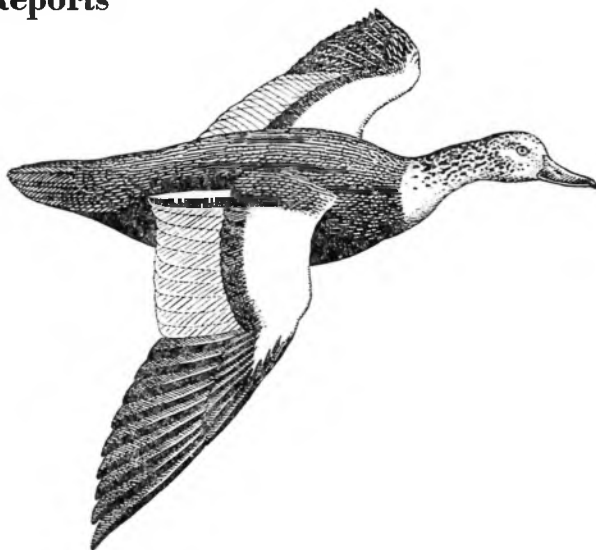


Current Reports



Wildfowl survey in south-west Asia : progress in 1968

Introduction

The continued support of the World Wildlife Fund has again been invaluable in extending and consolidating the survey. The mid-winter counts were well supported and these and previous results were used to prepare a series of sixteen papers for submission to the International Regional Meeting on Wildfowl Conservation, held in Leningrad in September 1968. Preparation of these papers, the accompanying maps and the working papers which preceded them took up most of the time available during the spring and summer, particularly as the majority of the correspondents of the Asiatic Wildfowl Working Group took an active part in their preparation.

An International Wildfowl Research Bureau Mission started an eight-month survey of wildfowl and wetlands in the Middle East and south-west Asia. The mission was led by Jacques Vieillard, and included Hubert Kowalski of the Station Biologique de la Tour du Valat and Fred Koning of the Netherlands. It was financed by a generous grant from Dr. L. Hoffman and a substantial personal contribution from Jacques Vieillard and his colleagues.

Plans for 1969 include consideration of the work of the survey, particularly the intensification of efforts in priority areas, co-ordination of the mid-winter census, and development of the White-winged

Wood Duck *Cairina scutulata* Project in Assam.

Progress and prospects in the region are summarised below country by country:

Egypt (U.A.R.)

There have been indications that increasing numbers of palaeartic wildfowl have been using the new reservoirs in upper Egypt and the Sudan. In spite of obvious governmental interest in the tourist value of wildlife, as evidenced by the International Festivals of Duck Shooting, it has not yet been possible to arrange official or private participation in mid-winter counts.

Jordan

A valuable report was prepared by the Royal Society for the Conservation of Nature for the Leningrad Meeting, and again records of wintering wildfowl at Azraq Oasis have been provided by Ainsworth Harrison of the British Embassy, Amman. His most interesting record was of a female Falcated Duck *Anas falcata* shot by a local wildfowler on 10th January 1969. Other records in 1968-69 of Falcated Duck from Iraq and near Delhi suggest that in such years of exceptional drought in India and Pakistan this species may stray over a very wide range.

Iraq

The I.W.R.B. Mission spent three weeks

in Iraq in connection with the 1968-69 International Wildfowl Census. They were well looked after by the Director of the Iraq Natural History Museum, but found procedural difficulties for travel in Iraq almost insurmountable. Ultimately one week was spent in the field but the numbers of wildfowl seen were disappointing. This was no doubt due to the very heavy rain which had earlier been experienced in Iraq and southern Iran which appears to have caused the wildfowl populations to be more dispersed than usual. The Mission concluded that further exploration of the wildfowl situation in Iraq required a well planned survey using helicopters and light aircraft. This will need planning several years in advance with the support both of the Iraqi Government and the Oil Companies.

Persian Gulf States

A valuable paper was published during the year by Seton-Browne and Harrison (*Bull. B.O.C.* 88 : 59-73) on the wildfowl of the Batinah Coast. It revealed a wealth of small but valuable wetlands in the south-eastern corner of the Arabian peninsula. Some of the most interesting records were of White-fronted Geese *Anser albifrons*, Greylag *Anser anser*, the African Spur-winged Goose *Plectropterus gambensis* (first record in Arabian peninsula), Indian Cotton Teal *Nettapus coromandelianus*, Common Shelduck *Tadorna*

tadorna, and Common Scoter *Melanitta nigra*.

Elsewhere reports from occasional observers in the Gulf States have been largely negative except that occasionally large numbers of duck have been seen during passage on sewage sludge ponds of oil company compounds. Pintail *Anas acuta* and Garganey *Anas querquedula* were also recorded from the Batinah coast on passage.

Further observations from these areas could lead to valuable discoveries, and the Batinah Coast is recommended as an off-beat objective for an enterprising expedition.

Iran

Once again, thanks to the enthusiastic support of the Department of Game and Fisheries, valuable surveys were carried out both along the southern Caspian seaboard and in south-western Iran. The Caspian surveys were more detailed than any previously carried out. Many additional wetlands were covered, in some cases for the first time. The I.W.R.B. Mission visited Lake Rezaieyeh and the Dasht-e Moghan on the U.S.S.R. border, and then joined forces with the Game and Fish Department for the survey of the southern Caspian wetlands. Lindon Cornwallis from the Edward Grey Institute joined the Game and Fish Department team for the surveys in Khuzistan and Fars while the I.W.R.B. Mission were



Place-names in SW. Asia mentioned in the text, and in the previous progress report in WILDFOWL 19.

visiting Iraq and making an independent survey along the northern shore of the Persian Gulf before going to Pakistan.

The mid-winter counts produced much new information. Although it is still too early to judge changes in numbers, the absence of the huge flocks of Lesser Whitefronts *Anser erythropus* from their former wintering grounds was remarkable. Also, taken generally, the numbers of wildfowl seen appears to have been far less than previously assumed from the accumulated observations of the last twelve years. Meticulous observations failed to reveal any Scaup *Aythya marila*, or Bean Geese *Anser fabalis*, and very few Ferruginous Duck *Aythya nyroca* and Red-crested Pochard *Netta rufina*, which were formerly characteristic of certain parts of Mazanderan. On the other hand for the first time in recent years large numbers of swans were recorded, namely 843 Bewick's *Cygnus columbianus*, 1,663 Whooper *Cygnus cygnus* and 214 Mute *Cygnus olor*.

The mid-winter counts also showed the importance of the Siah Kasheem reserve in the Pahlavi Mordab. It is now in its second year and appears to be benefiting from its protected status. The increase in numbers of swans and geese was particularly noticeable.

It was of particular interest that during the summer Professor Rhys Davies, the geologist, found a large flock of Ruddy Shelduck *Tadorna ferruginea* at the small high altitude lake of Nur Gol. This lake is not shown on maps due to a drafting error in the old Survey of India series which has never been corrected. The existence of gatherings of Ruddy Shelduck at this lake was reported to Peter Scott in 1938, but Professor Davies has been the first observer to visit the area since. The possibility of it being a moulting ground cannot be overlooked.

Proposals were under consideration to create a national park around Lake Tashk (a potential 'Category A' MAR site) and Lake Bakhtigan in the Province of Fars, and also a protected area in the Bay of Gorgan.

It must also be noted that during the season a total of 565 ducks were ringed. This was a very creditable effort and only made possible through the help of young Iranian trainee game biologists who are making very promising progress.

Afghanistan

There were no significant developments during 1968, but subsequently the I.W.R.B. Mission spent a month in

Afghanistan surveying proposed MAR wetlands and developing relations with the Afghan authorities. There is great scope here for visiting naturalists to contribute to knowledge of the country's fauna as well as to participate in the wildfowl counts, and any expeditions to Afghanistan may be assured of full co-operation from the newly formed Wildlife Conservation Committee.

Pakistan

The Wildlife Enquiry Committee, proposed by the World Wildlife Fund expeditions led by Guy Mountfort, started work in November with eighteen months in which to complete their report. Some progress was also made with the establishment of a Pakistan national appeal of the World Wildlife Fund. In September the First Seminar on Wildlife Management was held in Bahawalpur. As the immediate result of one of the resolutions of this Seminar, an 83,000 acre Game Sanctuary was set up near Lal Suhanra twenty miles north-east of Bahawalpur (29° 22' N, 71° 57' E). This area included 7-12 square miles of shallow ponds, mud-flats and islands which hold up to twenty-five thousand ducks in a drought year such as 1968-69, and always large numbers on spring and autumn passage. It is now regarded as a potential category 'A' MAR wetland; a conclusion since endorsed by the I.W.R.B. Mission. The value of the sanctuary has great importance for species other than wildfowl and it is hoped to re-establish Blackbuck *Antelope cervicapra*, Nilgai *Bosephalus tragocamelus* and Chikara Gazelle *Gazella gazella* in the savannah and desert parts. Houbara Bustard *Chlamydotis undulata* occur in winter and many species of raptor and waterbirds.

Lal Suhanra sanctuary is the site of a World Wildlife Fund Project to re-introduce the Marbled Teal *Anas angustirostris* to Pakistan. It has declined almost to the point of extinction in most of its former range in SW. Asia. Breeding stock will be reared at the Wildfowl Trust and flown out to Pakistan in the autumn of 1969. The initial stock are to be kept in a large aviary for breeding purposes, young stock only being released. The species used to occur in the area and the prospects of their successful re-introduction under sanctuary conditions appear to be good.

The Khabbaki Lake sanctuary has been guarded by two resident game watchers of the Forest Department and the waterfowl population was noticeably larger than

in previous years. The numbers were enhanced by about ten thousand Common Pochard *Aythya ferina* which may have been displaced from elsewhere by the drought. The I.W.R.B. Mission have, however, confirmed the exceptional value of this lake. Numbers of White-headed Duck *Oxyura leucocephala* were almost the same as in 1967-68.

India

There was again a good response from observers in India during the 1968-69 mid-winter counts, but many important wildfowl areas remain unexamined. It is now apparent that these can only be covered by specific expeditions and it is hoped that with the help of the World Wildlife Fund Indian National Appeal such expeditions led by experienced Indian ornithologists can be sponsored in future years.

One important mid-winter expedition, financed by private donations, was made to the wetlands of the Kaziranga Sanctuary. A very thorough survey was made of 'bheels' and creeks from elephant-back, but the results, however, belied previous assumptions of 'large numbers'. The total count only amounted to 2,608. A tentative conclusion was that if there should be so few birds in this best controlled and least disturbed area in Assam then numbers outside must be even less than previously supposed. This supports a general conclusion that in the present state of knowledge extrapolation can be dangerous unless observers can commit themselves to estimates if not counts. Two further points of interest were the sighting of a Lesser Whitefront (only the third record for Assam) and the sight of a tiger killing a deer within twenty-five yards of them while they were counting ducks on a 'bheel'.

In Assam a special project was launched to save the White-winged Wood Duck. This was implemented by M. J. S. Mackenzie with the blessing of the World Wildlife Fund. The species occurs mostly in the low-level primary forest where streams debouched on to the plain with occasional deep pools left buried in its depths. Such forest is the most easily worked for timber or cleared for agriculture so it is not surprising that inroads have been made into the habitat of the Wood Duck in the last few decades. Small numbers are still seen regularly in Upper Assam whereas in other parts of its range occurrences are now exceedingly rare. It is noteworthy also that the I.U.C.N./I.C.B.P. accepted the species for inclusion

in their 'Red Book', as a species severely threatened with extinction.

The project provides for the survey of potential habitats to locate an area for a viable reserve; the capture of young breeding stock, part of which will be established in the care of the Wildfowl Trust and part at a suitable location in Upper Assam; and finally the establishment of a reserve with reinforcement of the breeding stock from captive bred birds. Five males and one female were successfully reared, and, with the concurrence of the Project's advisory committee, safely dispatched to Slimbridge.

The probability of finding a small viable reserve now appears to be remote and it is becoming obvious that the only permanent solution would be the establishment of a new national park in this low-level primary forest. The selection of such an area is a major and specialized task. It is being proposed therefore that this should be subject of a separate W.W.F. / I.U.C.N. / Bombay Nat. Hist. Soc. project to be financed by the forthcoming Indian National Appeal of the World Wildlife Fund. The national park however would protect far more than the White-winged Wood Duck. It might save in the nick of time some of Assam's most spectacular butterflies which have almost vanished due to destruction of this same biotope, and also fabulous orchids many of which are still undescribed. The forests abound in other wildlife most of which is not in such danger as yet.

Ceylon

With the help of correspondents in Ceylon a very comprehensive paper was submitted to the Leningrad Meeting. Besides this there have been no further developments.

Leningrad Meeting

Due to cost of travel involved only five members of the Asiatic Wildfowl Working Group registered for the meeting. However, when it became apparent that the European delegates would not be able to attend, the delegates from Asia also decided not to attend. The resolutions made at Leningrad have, however, been drawn to the attention of the Governments of India, Pakistan and Iran, and have received wide publicity in these countries. It is hoped that a further meeting on wildfowl conservation can be held in the near future in a more accessible location.

CHRISTOPHER SAVAGE

Wildfowl Ringing, 1968

Swans

A number of amateur studies of the Mute Swan in Britain involving ringing continued with the help of the Wildfowl Trust. A joint study of the Mute Swan population of The Fleet and Radipole Lake, Dorset, was begun by the Edward Grey Institute, Oxford, and the Wildfowl Trust. Marking of the birds includes the use of large plastic coloured and numbered rings. A further 47 Bewick's Swans were caught and ringed at Slimbridge bringing the total now marked to over 100.

Geese

The Canada Goose was the only species to be ringed during the year. The Trust continued its support for ringing projects in Shropshire where the local Ornithological Society caught 250 birds, in the west Midlands where Dr. C. D. T. Minton and his team handled 871 birds, and in Yorkshire where Mr. A. F. G. Walker and his helpers rounded-up 425 birds. Associated with this last study was a

catch made of 223 moulting Canada Geese on the Beaully Firth, Inverness-shire, organised by the Hon. D. Weir.

Ducks

The Table gives the details of the 8,720 ducks ringed by the Wildfowl Trust, or by people using rings supplied by the Trust, during 1968. The total is somewhat below last year's record, largely because of a planned decrease in the numbers of Mallard caught at Borough Fen and Slimbridge at certain times of the year when there is little now to be gained from ringing. Features of the Table include the continuing success of Nacton Decoy in catching Pintail and Wigeon, and the useful numbers of Tufted Duck ringed at three stations.

Small but valuable numbers of Mallard and Teal were ringed at Abbotsbury Decoy, Dorset (Mr. F. Lexster), Valley, Anglesey (Mr. R. Palethorpe), and Orierton Decoy, Pembrokeshire (Mr. P. Stuttard). We are grateful to these people for ringing duck for us and for allowing us to make use of the results.

Ducks ringed, 1968.

	<i>Abberton</i>	<i>Nacton</i>	<i>Borough Fen</i>	<i>Deeping Lake</i>	<i>Dersingham</i>	<i>Slimbridge</i>	<i>Loch Leven</i>	<i>Other stations</i>	<i>Totals</i>
Shelduck	26								26
Pintail	1	349		1	1	2			354
Teal	475	384	713	5	423			39	2039
Mallard	1277	862	1434	199	888	326	238	68	5292
Gadwall	1				20	1	7		30
Wigeon	46	203		2	5		6		262
Garganey	8		1		3				12
Shoveler	31		4	3	2		3		43
Pochard	7			32					39
Tufted Duck	104			141	1		370	3	619
Scaup					1			2	3
Smew	1								1
Totals	1978	1798	2152	383	1344	329	624	112	8720

M. A. OGILVIE

Abberton Ringing Station, 1968

The reservoir had a significant addition to its wildfowl population with the arrival of 63 White-fronted Geese on 1st February. Attracted by the large acreage of winter wheat west of the Top Section, they fed there most days until their departure in the second week of March, fighting out to roost at night on the coast in the Bradwell area.

Frequently up to 30 Bewick's Swans grazed with the Whitefronts, often being in view from the public roadway and attracting much attention from bird watchers and also the public in general. Certainly they were a great asset to the Reservoir in its Bird Sanctuary role.

We were naturally delighted when 19 White-fronted Geese arrived again in December, but although they eventually built up to 35 in number they were much more free-ranging than in the previous winter. This was because of the acute shortage of available winter wheat due to the extremely unsuitable autumn conditions for cultivating and sowing cereals. Nevertheless, geese had returned for two winters, although in small numbers, an unusual phenomenon for this part of Essex. An exciting prospect presents itself of Abberton becoming a regular goose place.

Early in the year we took 46 Wigeon. The spring produced two pairs of Garganey. Several Shoveler were ringed, both passage and breeding birds, and later we marked 11 of their ducklings from three different broods. We also got a lead of Shelducks, mostly immature non-breeders. Being protected and inedible they produce a low recovery rate.

During the year several good runs of catches were obtained with Tufted Ducks. These will often readily come in to those already ringed and left in the traps; the large deep water trap on the Top Section was particularly successful in this respect. A Smew trapped in a circular American type diving duck trap had the distinction of being the first male of the species to be ringed in England.

During the summer a large number of Mallard passed through the eclipse stage on the Top and Middle reservoirs, hiding in the dense marginal vegetation. They trapped fairly easily, and information on the length of flightless period, weights and subsequent wing growth rates was obtained from over 150 ducks.

A considerable drop in the water level during the summer, exposing the Island and marginal mud flats, is needed at

Abberton Reservoir to attract and hold large numbers of migratory ducks and to allow them to be caught throughout the autumn and winter. This failed to happen in 1968. Heavy summer rains, with 6 inches of rainfall on one day early in September as a climax, resulted in heavy flooding and an abnormal intake of water from the River Stour. Consequently the catching suffered; 1,981 ducks were ringed, most of which involved very hard work in unpleasant conditions.

A large influx of ducks occurred in early September, with probably a maximum of 6-7,000 during the first two weeks. The dabblers were quick to find and take advantage of the large acreage of sodden cereal stubbles adjoining the reservoir, and fed heavily on these until the spilt grain was exhausted or the fields were again cultivated. With the loss of this food supply there was no alternative available at the reservoir. The water level was rising fast and the few shallows disappearing, so most of the ducks quickly dispersed on to the vast flooded areas throughout SE. England with their huge food supplies. This resulted in the smallest Abberton October Wildfowl Count ever. Reports came to us of more Teal than normal on coastal and inland marshes. This was certainly not true of Abberton. Teal made up a much larger proportion of the catch in the past but, as in recent years, this was again not so, the number ringed not reaching 500.

Apart from the wildfowl, 3,209 other birds were ringed during the year. Perhaps most remarkable was the ringing of 724 Yellow Wagtails, a figure far in excess of any other yearly total. They produce many recaptures, the same birds being caught year after year. Recoveries are less easily come by; indeed after ringing over 8,000, we have only just had our first report from abroad, in Senegal. Eight Kingfishers were mist-netted throughout the autumn and winter, all juveniles excepting one, and no retraps were made. As never more than two Kingfishers were seen, there is some suggestion of movement. A Slavonian Grebe, a bird little ringed, was almost the first in a new trap experimentally sited in deep water. Ten Little Grebes were also ringed.

A large amount of maintenance was carried out during the spring and summer months. All of the traps had to be inspected and where necessary repaired and rewired. The portable traps need to be in excellent condition as they are sub-

ject to a great deal of pulling back and forth through reeds and deep mud in constant pursuit of a variable water level, particularly on the Island when it appears. Carrying out emergency repairs during unfavourable winter conditions is not a job sought after.

The very large deep water trap on the Top Section had to be completely rebuilt, a formidable task. Readily available willow poles were used for this purpose and little carpentry was involved, but we used a great deal of wire netting. The existing trap, in spite of its poor condition, was catching Mallard well, and it is satisfying to note that the three weeks of repair work was carried out so that only two days catching were lost. With a view to increased diving duck catching, an additional deep water trap was constructed amongst willows below the weir on the Middle Section. Again natural willow poles were used, and, being an experimental site, old wire netting was utilised for covering. By the end of the year some Tufted Ducks had been caught, but unfortunately the numbers of diving ducks feeding in the area in previous winters had not materialised.

The yearly task of overhauling and painting the 18 ft. clinker built motor launch 'Gadwall' was accomplished and she was relaunched with usual ceremony in June. The dinghy also had to be painted and other equipment for trapping on the Island had to be maintained in spite of not being used. This also applied

to the ringing and storage hut on the Main Section.

The maintenance programme coupled with continuous operating of duck traps and intensive small bird trapping, keeps me busy between duck catching seasons, and the popular conception of most of the locals that my summer is spent in quiet contemplative relaxation is not strictly accurate.

1968 was irrevocably marred by the sudden death of General Wainwright. I was privileged to serve as his assistant for nearly 13 years. Lady Craven has given us the use of the General's study, and of the boats and caravan, and is helpful in many other ways. Mrs. Ireland continues as loyal and efficient a secretary as ever.

Mr. Fred Trust, Assistant Chief Officer of the London Fire Brigade and formerly of the Romford Ringing Station, joined the team in June. An expert mist-netter, he motors down from London whenever his duties allow. His skilful netting soon produced exciting results, and since October he has taken over complete responsibility for the small bird aspect of the work at Abberton. Permission was obtained for him to site a cedar hut close to the caravan. This was essential to prevent confusion and some rather odd records. A Sedge Warbler recorded with a wing measurement of 273 mm. and a weight of 1,120 gm. was treated as mighty suspect and more likely to be a Mallard!

R. KING

Borough Fen Decoy, 1968

January was an open month with the decoy pond frozen for only four days from the 10th to the 15th. As in the previous January, the proportion of duck dogged into the pipe (32%) was higher than the general winter level, perhaps indicating an influx of naive birds. Deeping Lake trap was operated throughout the month; besides the duck, 80 rails were ringed. During the period 10th to 17th about 850 surface feeding ducks were roosting on Deeping Lake, but the majority of the diving duck left. Unfortunately the area of open water was not near the trap, and the waterfowl did not seem prepared to make a big trek over the ice.

The birds in the Decoy ignored the dog almost completely in February. Plenty of frozen potatoes were made available but grain appeared to have a

greater attraction. Once the duck were in the pipe feeding, however, they would stay and dabble amongst the potatoes. Catches in the Deeping Lake trap were disappointing considering the numbers there.

The season ended in March with a total of 3,695. Early migrants at Deeping were Sand Martins on the 25th, and Chiffchaff 27th. They preceded the first Lepidoptera, Tortoiseshell and Brimstone butterflies on the 28th. The first passerine nest found with eggs was a Dunnock with two on the 21st, followed by a Song Thrush with one egg on the 23rd. Twelve nests had been found by the end of the month including three Mallard.

Maintenance commenced in April with a biting easterly wind and squalls of sleet and snow. The approach roadway was repaired with broken limestone. Fifty

bundles of reed were cut from the Decoy reed bed for screen repairs, and the willow and poplar off-cuts bundled for rebuilding backwalls. Some big willows were felled on the north side of the pond, and about 50 poles of willow and poplar taken out for use at the Peakirk Waterfowl Gardens. A concrete post was incorporated in the screens rebuilt this year. The wooden posts used in the past rot just at ground level after about six years. The peat appears to preserve the buried portion whilst the part which is high and dry also remains solid. Overhanging branches at the little ends of pipes were ruthlessly cut back and the whole system of paths mown prior to the Open Weekend on the 25th-26th May. In superb weather conditions 172 visitors were shown the techniques of decoying, plus recovery maps and other display material.

A diaphragm-type pump was hired to remove the mud from each of the eight pipes which were badly silted up, there being only a few inches of water over a foot or so of mud. This very shallow water evaporated very quickly and necessitated frequent topping up in the traditional way from the River Welland. Each pipe was dammed off, and all the sludge and water therein pumped over the back bank into the vegetation. The water then filtered back into the pond whilst the residue was quickly hidden by a strong growth of nettles and goose-grass.

The first catch of the new season was made on 3rd July and 38 duck had been taken by the end of the month. There was considerable storm damage after 4 inches of rain in 24 hours on the 10th. A mature white poplar fell on to the NE pipe completely demolishing the first 5 hoops. Some repairs were made to the trap at Deeping Lake, materials and labour provided by the owners, Messrs. Dandridge. As well as the Mallard 40 Mute Swans were ringed.

Assisted by the Spalding and District Wildfowlers' Association a round-up of flightless Canada Geese was carried out at Grimsthorpe Park, Lincs.

An analysis of Decoy-ringed Mallard over the past 10 years was completed. As a policy decision, an experimental quota limit had been set to the numbers of Mallard to be caught in September and October when the origin of the birds caught is very much in doubt. However, the weather took a decisive hand and gale force winds with heavy rain reduced the number of duck roosting on the pond from 1,000 to less than 100 on 14th September. Several more trees were uprooted

during this period: one ash, falling across the mouth of the West pipe, fortunately caused no structural damage. There was also considerable disturbance due to late harvesting operations, with combine-harvesters and strawbalers frequently becoming bogged down.

In October heavy and frequent rain made the approach paths to the pipes very muddy and great difficulty was experienced in moving around the decoy quietly. There was a lot of local flooding and the duck became very lethargic when on the pond, probably due to the abundance of food in the unharvested cereal and root crops.

Some improvement in the weather occurred in November and the catch was quite satisfactory. Blood samples were taken for the Ministry of Agriculture, Fisheries and Food from the ducks and rails for the Duck Plague virus. No positives were discovered.

The early frustrations of the season carried on to the end of the year, and no duck were caught after 19th December when the pond froze and remained so until the New Year.

However, one cheerful point was that the Deeping Lake traps had succeeded in catching a record lot of diving ducks, including 101 Tufted Duck.

A Curlew Sandpiper I ringed in 1963 was recovered in Tunisia in May; two Black-headed Gulls ringed in 1965 were found in Finland during the year; a long-lived Goldfinch met its end in Northumberland nearly seven years after being ringed in September 1961. 181 Nest Record Cards covering 23 species were completed and also 50 Moulting Cards from 25 species. A total of 1,771 birds other than wildfowl were ringed.

Monthly totals of ducks caught at Borough Fen Decoy and Deeping Lake, 1968.

	<i>Borough Fen Decoy</i>	<i>Deeping Lake</i>
Jan.	131	99
Feb.	120	28
March	47	58
April	—	—
May	—	—
June	—	—
July	38	22
August	284	17
Sep.	707	29
Oct.	526	15
Nov.	420	39
Dec.	91	41
Totals	2364	348

W. A. COOK

Dersingham Decoy, 1968

Throughout January the Decoy maintained a regular evening flight of Mallard, although the pond was frozen over for a number of days. Several large catches of duck were made and by the end of the month each catch produced a retrap rate of 60%.

The breeding survey showed a slight decrease in the number of known breeding pairs, to 13 Mallard, 3 Gadwall, 2 Shoveler and one possible Teal. May brought a period of dry weather which resulted in a low mortality among ducklings compared with previous years. Out of 59 Mallard 36 were reared; of 28 Gadwall, 13 reared; of 18 Shoveler, 11 reared.

During the summer repair work and improvements to both pipes were completed. By the end of September the duck population on the Decoy was at its maximum for 1968 with 768 Teal, 179 Mallard, 11 Gadwall, 5 Garganey and 20 Wigeon.

Exceptionally heavy rain during September and October flooded most of the surrounding stubble. These conditions were excellent for dabbling duck and resulted in very few being caught during the first half of the season. By the end of October the Teal population dropped to between 100-200, this level being maintained until the end of December. Mallard stayed at between 200-300 until the end of November, dropping through December to 100-125.

The total number of duck ringed during 1968 was 1,344, made up of 888 Mallard, 423 Teal, 20 Gadwall, 5 Wigeon, 2 Shoveler, 1 Pintail, 3 Garganey, 1 Tufted

and 1 Scaup. Of these 171 were caught in cage traps. 1,265 birds other than wildfowl were ringed.

A first batch of 50 W.A.G.B.I.-reared Mallard was released in July and by November all had dispersed from the area. Further releases will be made during 1969 in the hope that some of them will stay and increase the breeding population in the area.

A dog was obtained for training as a piper at the Decoy. All through his training Mallard and Teal were decoyed to the pipe entrance, at times as many as 40 duck. Another red letter day in the history of the Decoy came on 24th February 1969 when the first two duck, both Teal, were caught by decoying with a piper. With this additional method of catching, 1969 should be a most interesting season to say the least.

Monthly totals of ducks caught and ringed in Dersingham Decoy, 1968.

	<i>Mallard</i>	<i>Teal</i>	<i>Others</i>	<i>Totals</i>
Jan.	146	8	5	159
Feb.	52	—	1	53
March	—	—	—	—
April	2	—	—	2
May	—	—	—	—
June	—	—	—	—
July	21	2	1	24
August	98	29	18	145
Sep.	65	110	8	183
Oct.	150	94	—	244
Nov.	194	127	—	321
Dec.	160	53	—	213
Totals	888	423	33	1344

R. BERRY

Wildfowl censuses and counts

Goose censuses

Pink-footed Goose *Anser brachyrhynchus*. About 65,000 Pinkfeet were counted in Britain at the time of the annual census held on 9th/10th November 1968. This figure shows no change from that for the previous year. Also similar was the low breeding success as measured by the percentage of young birds counted in the flocks (11.7% young birds; average brood size 1.4).

European White-fronted Goose *Anser albifrons albifrons*. Peak numbers in Britain were reached in mid-January 1969 when 11,200 birds were counted. This was a somewhat earlier peak than normal;

by the time of the census held on 8th/9th February numbers had dropped to 8,800. Although the previous winter's exceptional peak of 12,000 was not repeated the general level of population was above the average of recent years. Breeding had been poor (13.2% young; average brood size 1.6).

Greenland White-fronted Goose *Anser albifrons flavirostris*. No census was carried out but counts at major Scottish and Irish haunts showed no change from the levels of recent years. In Scotland a sample of 450 contained 16.4% young; in Ireland a very much larger sample of several thousand had 35.0% young.

Greylag Goose *Anser anser*. 61,000 Greylags were counted during the annual census on 9th/10th November 1968. This represents a slight increase over the previous winter, but breeding had been the poorest recorded in twelve years of counts (5.9% young; average brood size 1.3).

Barnacle Goose *Branta leucopsis*. The flock wintering on the Solway, which breeds in Spitsbergen, reached a peak of 2,200 during the season. For the second year running breeding had been good (23.2% young).

The Greenland population of Barnacle Geese was not fully censused. Increased numbers were found to be wintering on Islay, with over 12,000 present through the winter, but it is not known whether this represents an overall population increase, or merely a redistribution. Breeding had been poor (9.5% young; average brood size 1.3).

Light-bellied Brent Goose *Branta bernicla hrota*. The highest count at Lindisfarne, Northumberland, of the Spitsbergen population reached 1,000. In Ireland censuses were held in November 1968 and February 1969 of the Greenland stock when 7,765 and 5,982 birds were counted respectively (1.5% young).

Dark-bellied Brent Goose *Branta bernicla bernicla*. The highest count in Britain was 13,700 in mid-January 1969. This is over 2,000 below the peak for the last two winters, and counts from the rest of the wintering range in France and Holland show that there has been an overall decrease. The main reason is the almost total breeding failure (<1% young) following the poor production of 1967 (6.0%).

M. A. OGILVIE

Duck counts

Shelduck *Tadorna tadorna*. This species was more plentiful than usual in the early part of the winter (especially December), but less so from January onwards.

Teal *Anas crecca*. The counts in October, November and March were the highest since 1964-65. A marked improvement was noted in Scotland during the early part of the winter, and later there were relatively large numbers in the south-west. The seasonal index topped 50 for the first time in four years.

Mallard *Anas platyrhynchos*. Throughout the winter the species was rather less plentiful than usual in the eastern and

northern parts of the country, and noticeably more plentiful in the west.

Wigeon *Anas penelope*. This was the best season since 1955-56 and the second best on record. Large numbers were present in all districts throughout most of the winter, and in November and January the counts were the largest recorded for the time of year. This is now the fifth consecutive season to show an increase in the seasonal index.

Pochard *Aythya ferina*. This species was not as numerous as in recent seasons, but still well above the level of the early 1960s. Very large numbers were recorded in Scotland from October until January, but elsewhere results were generally disappointing.

Tufted Duck *Aythya fuligula*. This species was plentiful throughout the winter in southern and western districts and very plentiful in Scotland during the first half of the season. The seasonal index is the highest since 1965-66, and slightly above the average level of the last ten years.

Seasonal Indices, 1968-69 (1959-60=100)			
Shelduck	102	Wigeon	124
Teal	52	Pochard	162
Mallard	104	Tufted Duck	102

International wildfowl census

The third international wildfowl census was held in mid-January 1969. Counts were made in Britain at 1,291 sites producing the following numbers of duck:

Shelduck	36842
Pintail	8660
Teal	36054
Mallard	148181
Gadwall	492
Wigeon	150233
Shoveler	2925
Eider	10289
Pochard	28517
Tufted Duck	29029
Scaup	17893
Common Scoter	3823
Velvet Scoter	27
Long-tailed Duck	284
Goldeneye	7897
Smew	64
Red-breasted Merganser	3394
Goosander	1385
Total	486029

Counts from other countries total over 4,860,000 ducks from 4,800 sites.

G. L. ATKINSON-WILLES
C. J. BEALE

Loch Leven, 1968

The intensity of nest searching on St. Serf's Island was reduced to a level sufficient to detect seasonal changes in egg size, clutch size and hatching success. In all, nests of 363 Mallard, 192 Tufted Duck, 31 Gadwall, 23 Wigeon, 5 Shoveler and a Teal were marked and checked. Clutch size was determined for those clutches with at least two records of the maximum clutch size and no inconsistencies such as egg loss whilst the clutch was being laid (Table I). In both species the clutch size was found to decline through the season in all three years. This may well be an age effect, the younger less prolific birds laying later. It will take some years of ringing to see whether this or some other factor is the cause. Measurements were taken of several hundred eggs, since in several species egg size has been found to increase with age, providing another check on the hypothesis. The mean clutch sizes showed no significant difference between the years, the lower figure for Mallard in 1966 probably being due to the late start in nest-searching that season.

Table I. Clutch size of Mallard and Tufted Duck, 1966-68.

Year	No.	Clutch size	
		Mean	s.e.
Mallard			
1966	126	8.16	0.18
1967	181	8.58	0.25
1968	109	9.00	0.17
Tufted Duck			
1966	118	9.51	0.27
1967	158	9.49	0.25
1968	165	9.69	0.18

Of 103 Mallard nests 66% hatched (cf. 49% and 78% in the previous years), while of 126 Tufted 71% hatched (cf. 53% and 40%). The season was an unusually fine one in Scotland. Other factors which might have contributed to the good success could be the lower intensity of nest-searching and changes in the degree to which the fledging of Jackdaws, one of the main egg predators, coincided with the peak of egg laying. Several more seasons are needed to check such correlations. Once again it was found that better hatching success was achieved in those nests situated in or near the massive gullery on the island. Both species showed preference for nesting in association with gulls, this being less marked in the case of Mallard, many of which start to lay before the gulls.

Two attempts were made to measure the extent to which nest searching and marking might increase predation. A 50 m. square in the *Deschampsia* zone was kept free of visits from early in the season; and a series of false nests was made up with hens' eggs, some marked with canes in the usual way, some unmarked. Neither test was wholly conclusive and both will need repeating, but the indications were that no very great increase in predation resulted from our normal activities.

After the nesting season 30 transects two metres wide were closely searched through the various nesting zones. The nests then found, compared with those marked by flushing visits once a week in each area, give an estimate of the total nests (including re-nests) on the island. For Mallard the calculation gave 391 and for Tufted Duck 452. The latter accorded closely with counts of 468 females on the Loch early in May just before the main nesting of this species. This suggests that most females of this species do lay in their first year. Previously there were suggestions that they did not breed until more than two years old, i.e. in their third summer. The point is clearly an important one in the understanding of population dynamics and must be further investigated.

Catching females on the nest with hand nets continued successfully. Including recaptures from previous years, 111 Mallard, 82 Tufted Duck, 11 Gadwall, 7 Wigeon and 8 Shoveler were caught in this way. The precise location of their nests were determined by distance and bearing from the posts of the permanent grid of 50 metre squares. This will enable interesting data to be gathered on the preciseness with which duck return to the nesting area in following years.

Much time and energy went into attempts to fill one of the main gaps in the study, the extent to which hatched ducklings survived to fledging. The marking of young with coloured tags would necessitate frequent visits to the island to catch them in the short interval between hatching and leaving the nest. This would create too much disturbance. The females caught on their nests were marked with conspicuous wing tags, in the hope that the broods could be identified from the accompanying adult. But the broods split up or amalgamated and different females left their young at different stages. The only remaining method

was to assess post-hatching mortality by the declining numbers of young in the later stages of development. Even this did not give satisfactory results.

More definitely it is known that 218 Tufted at the very minimum reached fledging, for this is the number caught in the diving duck traps erected in the shallow waters of the loch. Undoubtedly the true figure is higher, but, even with

the outstandingly good weather of 1968, Loch Leven would appear not to be a good place for duckling rearing, however good the nesting conditions are on St. Serf's. Many young Tufted Ducks were captured more than once and the changes in weight and wing length are being analysed in relation to those reared at Slimbridge by Dr. Kear from the 80 near-hatching eggs taken from St. Serf's.

I. K. MARSHALL
C. R. G. CAMPBELL

Geese at Loch Leven

Every year several thousand Pink-footed and Greylag Geese winter in the area of Kinross, Scotland, roosting on Loch Leven and feeding in the surrounding farmland. In 1967, the main arrival of the Pinkfeet began on 29th September; numbers reached a peak of 7,000 by 5th October, and thereafter fluctuated around 2,000. The Greylag arrived from mid-October and reached a mid-winter peak of around 4,000. Single specimens of Ross's, Greenland Whitefront, Lesser Snow, Barnacle, and Light-bellied Brent Geese were recorded among flocks of the main species. In addition, up to 400 Whooper Swans wintered in the Loch Leven area.

From September 1966, these birds have been the subject of a special study by Hugh Boyd and Colin Campbell, both of the Wildfowl Trust. However, the following summer, Hugh Boyd emigrated to Canada and his place was taken by Ian Newton of the Nature Conservancy, Edinburgh. Help was also received from J. Swan and A. Allison. The aim of the project is to study the feeding ecology of the geese in relation to agriculture, throughout the winter and over several seasons.

The area around the loch comprises various types of farmland, and is used daily by both geese and swans. In September, a study area is mapped to show the crops available on the fields when the birds first arrive. Thereafter, once each month until the birds depart in April, the fields are again mapped to show any changes that had taken place. On a regular circuit, note is made, several times a week, of the location, size, and species-composition of all the goose and swan flocks encountered, the fields being numbered for ease of recording. In addition, a count at dawn flight of geese roosting on the loch is made once each week.

All types of fields are visited by the geese, and grass figures largely in the diet of both species throughout the winter. However, their main food for the two months after arrival is spilled grain which they obtain from harvested cereal fields. Later in the autumn, unharvested potatoes become important, but more to Greylag than to Pinkfeet. During snow, the Greylag feed on turnips when other foods are unavailable. This is one of their main points of conflict with agriculture, as the turnips are needed for outwintered sheep. Both species make greater use of grass fields in the New Year, when other forms of food are diminishing; and in late March and April this again causes conflict, because the farmers then require the fresh spring grass (the 'early bite') for milk cows and lambing ewes. The geese also feed on sprouting cereals but this habit is fairly local and limited in extent, and does not present a problem around Loch Leven.

The Pinkfeet feed mostly within six miles of the loch and the Greylag mostly within two miles. However, both species favour traditional fields, which are used again and again, while other, apparently suitable, fields nearby are used only to a small extent, or not at all. Over the area as a whole, less than one-third of the suitable fields within fighting distance of the roost are used by the geese.

Our data on the feeding of Whooper Swans are incomplete. It seems, however, that they also feed mostly on spilled grain and waste potatoes in autumn and early winter, and take more grass and growing cereals towards spring.

I. NEWTON
(Nature Conservancy, Edinburgh)
C. R. G. CAMPBELL
(Wildfowl Trust)

Greylag Geese at Loch Druidibeg

In 1968, on behalf of the Nature Conservancy, I began to study the Greylag Geese nesting on the National Nature Reserve at Loch Druidibeg, South Uist, Outer Hebrides. The intention was to assess their numbers and breeding success, and the damage they cause to agricultural crops, in the hope that the information gained might help to plan an appropriate management policy for these birds.

The Outer Hebrides are one of the last strongholds of the indigenous non-migratory Greylag in Britain. The birds nest mostly among tall heather growing on the islets of remote moorland lochs, and flight chiefly to farmland to feed. Their main centre in the Hebrides has long been at Loch Druidibeg, which is one of the largest lochs on the islands and provides an abundance of suitable nesting islets. Soon after the young hatch, however, they are taken by their parents to two neighbouring lochs, a'Machair and Stilligarry, with better grazing nearby. In 1958, these three lochs became a National Nature Reserve, managed jointly by the Estate Owners and the Nature Conservancy.

In 1968, 71 nests were found in three square miles of the reserve. All these nests were on the loch islets, and some were only 3-4 yards apart. Most clutches contained 5 eggs, and the range was 3-7. Only 38 clutches hatched successfully; three were deserted and the remaining 30 were lost to predators. Crows were proven culprits, and Great Black-backed Gulls and otters were also suspected. There was no evidence of mortality among goslings, in that there was no significant decline in the number of broods seen on the water, nor in the mean brood-size, from the time of hatching until the young were on the wing. One hundred goslings were marked with numbered wing-tags on hatching, and three have since been recovered during organised wildfowl shoots. Together with previous ringing recoveries on the islands they confirm that the birds are resident in the area throughout the year.

Large numbers of non-breeding Greylag also assemble to moult on Loch Druidibeg, and in this year a maximum count of about 300 individuals was obtained. Probably these birds had come from the whole of the islands, for no other large flocks were seen elsewhere at this time.

In the ten years since the reserve was created, the number of geese breeding there has probably almost doubled, though earlier counts are much less reliable. The establishment of the reserve has also brought an increased sympathy for the geese among the islanders, as a result of which the birds are now allowed to breed successfully on at least ten other lochs in the area from which they were formerly absent or present only in occasional years. At the same time the birds have withdrawn from three of the more remote hill lochs, with poor grazing, to which they had presumably been driven in the past by persecution.

The islanders still complain because the geese eat their corn which, following local tradition, is grown in unfenced plots down to the water's edge. Both the stems and heads of the corn are eaten; and this delays the harvest and lessens the yield of grain. The geese are reluctant to fly into standing corn, but walk into the corn plots from the water or from the surrounding grassland. Further, for much of the time the damage is being done, the birds are unable to fly. I therefore tried to protect the crops with fences. These were wholly effective, but the damage was anyway slight in this year, with less than 1% of the corn in unfenced plots grazed. After harvest, the geese also attack the stooks and pull out the seed-heads. By this time, the birds are on the wing and crops over the entire islands are liable to damage. No attempt has been made to assess or prevent this damage, but this also seems to have been negligible in this year, for the weather was good and the stooks were out for only a short time.

I. NEWTON
(Nature Conservancy, Edinburgh)



Wild Geese at the New Grounds, 1968-69

European White-fronted Goose *Anser albifrons albifrons*.

The first arrivals of the winter were 10 on 27th October, the second latest date recorded. The next six weeks produced a trickle of additional birds until there were 114 on 9th December. The onset of a cold snap signalled a great surge in arrivals with 303 counted on 10th December, 690 on the 11th, 1,300 on the 12th and 3,000 on the 15th. Further influxes occurred later in the month to give a total of 3,900 on the 28th. This is the highest end of year figure since 1952. Arrivals continued over the next two weeks producing counts of 5,000 on 3rd January and 6,300 on the 14th. The flock remained at or near this very high level for the rest of the month with a peak count of 6,600 on the 29th. This is very close to the record count of 6,700 in February 1968. The very high numbers present in the 1967-68 winter we partly attributed to the decrease in disturbance during the foot and mouth epidemic. There was no such obvious reason this winter, unless there was a carry-over of the good effect from the previous year with the geese 'remembering' the better than usual conditions they found. However, the conditions did not remain so favourable during 1968-69, as in early February a cold spell with snow cover over the fields caused many of the geese to leave the area. The total dropped to 4,100 on 6th February. About 3,500-4,000 birds remained for the rest of February, the main departures starting in early March. There were 3,500 present on 6th March, 1,100 on the 7th, 600 on the 8th and 15 on the 9th. These last few stayed on during the cold weather of the

next two weeks, being last seen on the 24th.

1968 was one of the worst breeding seasons for the Whitefronts since we began collecting records in 1947. Only 13.2% young birds were counted in the flocks; average brood size of 1.6. This compares with the 22-year average of 28.1%.

Lesser White-fronted Goose *Anser erythropus*.

A pair of adults was first seen on 24th January and these stayed for the rest of the winter. Another adult, paired to a European Whitefront, was seen on 28th February and again on 5th March.

Bean Goose *Anser fabalis*

An adult of the Russian race *rossicus* was first seen on 15th December and subsequently to the end of January.

Pink-footed Goose *Anser brachyrhynchus*.

Two adult Pinkfeet were seen on 23rd January and frequently during February. They stayed on with the last 15 Whitefronts, departing with them on 24th March.

Barnacle Goose *Branta leucopsis*.

A single Barnacle Goose appeared on 10th December. Two were present on 15th January and five on the 23rd. Only two were seen during February and a single bird was last seen on 5th March.

Red-breasted Goose *Branta ruficollis*.

An adult bird was seen on 19th January and stayed to the end of the month. This is the seventh record for the New Grounds.

M. A. OGILVIE

Wild swans at Slimbridge, 1968-69

Bewick's Swans

The first Bewick's Swans *Cygnus columbianus bewickii* to arrive on Swan Lake this winter came earlier than ever, on 20th October 1968—20 days earlier than in the previous year. These first arrivals were all swans that had been to Swan Lake before: Pepper and Amber, Romeo and McJuliet, and Sahara and Gobi with one cygnet. The numbers built up very quickly and by Christmas there were 266.

The total number of swans identified this season was 439 and the most on one day was 366, 167 more than last season.

Comparisons with previous years can be seen from Table I which also shows the percentage of cygnets in the flock each year.

The percentage of cygnets was very low for the second year running. The largest brood was one of three cygnets, that of Lefty and Mr. Wrong. It is probable that this was due to bad weather conditions on the breeding grounds which, according to Russian sources, are on the southern half of the Yamal Peninsula and along the tundra bordering the Kara Sea. (Not all the swans from there

Table I. Numbers of Bewick's Swans at Slimbridge 1963-64 to 1968-69, and annual breeding success.

Season	Total of different swans seen	No. returning from previous years (Adult/2nd yr. only)	Cygnet		Mean brood size	Maximum on Swan Lake on one day
			No.	%		
1963-64	24	—	6	25	2.0	24
1964-65	74	13	16	22	2.7	56
1965-66	148	31	43	29	1.7	125
1966-67	336	68	97	29	2.7	224*
1967-68	342	102	31	9	1.6	199
1968-69	439	130	34	8	1.6	366

* 271 birds were counted on 13th January 1967, mostly on the River Severn and Dumbles.

migrate to north-west Europe.)

The increased total for the number of swans on any one day was probably due to the food being scattered over a larger area of the shallow water than last year, extending all along the shore in front of the house and also along the shore of the bay near the entrance to the pen. It is thought that the feeding areas may have to be limited next season in order to control the number of swans, for the study depends on the observer memorising the name and face-patterns of every bird.

This season a great many more swans stayed consistently after arrival than in previous years. The proportion of swans that stayed for less than eight days was only 10%. It seems certain now that such swans go away because they do not learn about the food, or are kept away from it by the established swans. Where they go to we do not know, although Bewick's Swans are often reported in several places in south and west England including Sedgemoor and Chew Reservoir in Somerset, River Cherwell floods in Oxfordshire, Caldicot Moor, Monmouth, and Walmore Common and Ashleworth Ham near Gloucester. There is also a wet field behind the village of Slimbridge called the Moors, a little over one mile from the Wildfowl Trust Headquarters, where many of our swans regularly feed including a few that seldom come to Swan Lake. We had, for instance, a pair, Cheetah and Chalice, which came to Swan Lake on 31st December and 1st January without finding the food either day, but were seen on the Moors on 6th January and again on 14th February and probably fed there for several weeks. Even more interesting were a pair Oliver and Denise, which had previously only been seen on 1st January 1968. They returned this winter on 31st December, with two cygnets. They again failed to find the food and went away for 65 days. However, they were seen on the Moors on 14th and 18th February and also on the Dumbles on 2nd March. They

returned to Swan Lake on 7th March when they found the food and having done so spent a great deal of their time feeding. By this date more than half the swans had left on their spring migration and Oliver and Denise were able to assume a dominant position among those that remained. They were one of the last pairs to leave on migration, on 27th March.

Chance may play a part in whether swans visit Slimbridge on their south-westerly migration. This year, Bertie Bassett, Mom, Prongy and Square, who had arrived very early last winter and in previous winters, did not come this season until the beginning of March, suggesting that they had wintered somewhere else, perhaps having gone there with another flock of swans or having overflowed Slimbridge.

The first major exodus took place on 6th March 1969, two days after a full moon. Another major departure date was the 23rd, five days after a new moon (!), and all but the three swans mentioned earlier had left by 29th March.

Table II shows the numbers and percentages of adult and second year swans returning in later years. Cygnets, which cannot definitely be re-identified in subsequent winters, are omitted from the Table. The numbers of birds returning to Slimbridge in the second year are rather lower than might have been expected but after that the proportion returning declines more slowly, presumably through mortality. A provisional annual survival rate of 85% has been calculated from the figures in the Table.

Nine swans returned this winter having not appeared last. Of these Becky, Ivy, General and Red Spot had lost their mates of 1966-67. However, such losses do not necessarily interrupt returns, for Beater, Shieldy and Ambrosia present again this season had lost their mates of last year. Stamp left on the spring migration three days before its mate of last winter, Bertie Bassett, arrived on Swan Lake. This suggests that Bertie might

Table II. Numbers and percentages of adult and second year Bewick's Swans returning to Slimbridge in seasons after the first sighting.

Season of first sighting	Number seen for first time	Numbers and percentages* returning in subsequent seasons									
		2nd		3rd		4th		5th		6th	
		No.	%	No.	%	No.	%	No.	%	No.	%
1963-64	18	13	72	11	85	11	100	9	82	7	85
1964-65	45	20	44	19	95	14	74	14	100		
1965-66	74	38	51	28	74	26	93				
1966-67	171	51	30	33	65						
1967-68	209	50	24								

Mean annual survival (from percentages returning in 3rd and subsequent seasons) = 85%.

* The number returning in each season is expressed as a percentage of the number present in the preceding season.

have got lost at the beginning of the season. There were also two cases of swans losing their mates during the winter. Pierre was on Swan Lake from 9th to 26th December with his mate Auguste and two cygnets. After two days of the family's absence Auguste returned alone with one cygnet. Muscat came to Swan Lake on 15th, 16th, 24th and 26th December with his mate Grape and two cygnets but they failed to find the food. However, on 14th January Grape alone came back with the two cygnets and having found the food became firmly established.

The photographic coverage of the swans has been much greater this season which will be a considerable advantage next season in identifying them when they return. The swans become more and more individual to us and it is because of their slight individual differences in head shape, posture, etc., that the photographs are of so much more help than just the identikit-type drawings based on bill pattern alone. With greater recognition and more ringed swans we hope that next season the accuracy of the study may be increased.

Ringing

Forty-seven swans flew into trees at night, crash landed and were caught and ringed this season, mostly towards the beginning of the winter when there were several nights with awkward winds. The tall coloured plastic rings with large numbers engraved on them have been used all winter and have proved very easily readable. There was some concern when a swan ringed this year, Bess, was noticed 72 days later without the plastic ring, though still carrying the metal ring on the other leg put on for control purposes. It is believed that the plastic ring was not glued on properly. When correctly used the glue is so strong that rings have had to be cut in order to remove them. Besides serving as a check on iden-

tification by individual characteristics, the large rings enable swans to be identified at other places in Britain. A ringed swan, Speckly, which was with us for 20 days at the end of last season, was seen this year on the River Cherwell floods near Banbury, but never came to Swan Lake. We hope that further reports of such ringed swans will give us a better idea of where our birds go when they are not at Slimbridge. We also hope to ring many more next season, perhaps using a decoy pipe catching method.

Out of the 47 swans ringed during the season only four were at all damaged in the crash landings which allowed them to be caught, Brimmer, Momac and Concorde, all caught on 22nd March, and Sahara, ringed earlier in the season. The first three all hit trees in the dark in an east wind and fortunately recovered fairly soon though Momac had to be kept in a pen for a ten day convalescence. Momac and Concorde, together with an undamaged swan, Feather, stayed on Swan Lake until 11th April, Momac leaving last on the morning of the 12th. Sahara was originally caught in the flight net on 23rd November, the only time it was used this season, and he seemed completely unhurt. The next night however a swan crashed into the television aerial of the hostel but managed to fly out to the Dumbles. This must have been Sahara as he was found four days later sitting on the Dumbles unable to walk or fly and surrounded by crows. He was put in a pen for eight days, having already lost over 2 lb. in weight. Put back on the pond to join his mate, Gobi, and cygnet, he then recovered quickly. Before his injury he had been a very powerful swan, almost top of the 'peck order', and on being returned to the pond, although far from fit was still top swan without actually having to assert his authority. The others carefully kept out of his way. One of the Kontiki cygnets was seen to crash

land on the island in Swan Lake and although it appeared all right at the time and managed to fly out with the others, it was missing the next day. Its body was found two days later in the Tack Piece where it had obviously landed and, being injured or too weak to go any further, had been found and killed by a fox. It had been ringed earlier in the season and had a cataract in one eye which may have accounted for its bad flying.

We have had four more recoveries notified of ringed swans: Bootsy, shot at Lake Laidze, near Talsi, Latvia, on 26th October 1967; Mrs. Blount, found dead in Co. Antrim, Northern Ireland, on 14th November 1968; Colin, found injured in Co. Donegal, Eire, on 9th November 1968; and Andy, found injured in Neubrandenburg, East Germany, on 18th November 1968. Andy subsequently flew off.

Behaviour

The increase in numbers this season and therefore in the time spent on daily identification gave little opportunity for the detailed study of aggressive behaviour in the swans. However, large numbers of aggressive encounters were recorded as were courtship displays in sub-adult swans. A cygnet belonging to a powerful pair, even when by itself, can chase off another adult or even a pair of adults which are below its parents in the 'peck order'. This behaviour is interesting because of its parallels in human society.

The behaviour of the swans during two thunderstorms was observed. The first thunderstorm was around midnight on the night of 21st December and the swans all clustered in the middle of the pond calling loudly. The second thunderstorm was just before dusk on 17th January and one thunderclap panicked the swans, 70-80 being put into the air at once and flying very hazardously because of the strong gusting south wind. On that evening all the swans had gone before dusk. There was one other night during the season when all the swans became thoroughly unsettled and went out leaving the pond empty at dusk. This was on 7th January when, with a very strong south-east wind, the first swans to leave found flying very difficult. Many had to land back on the pond, to avoid hitting trees and buildings. Seeing this going on, the remaining swans panicked, walked up the grass and took off.

Whooper Swans (Plate IV)

During the season 14 Whooper Swans *Cygnus cygnus cygnus* came to Swan

Lake, the first arriving on 7th November. This bird, Whoopic, stayed on Swan Lake and took up with a Bewick's, Tahiri, until on 19th December he went away with one of three more Whoopers, including one cygnet, which had arrived the day before. He returned on 24th December with another Whooper, Toopic, with which he was apparently paired until he had a collision with a tree on 7th January. Toopic, during Whoopic's subsequent convalescence, gradually lost interest in him, becoming attached to a different swan, Looper, with which she left on 4th February. Whoopic stayed for a further 17 days after which he too left. Three other Whoopers became regulars during this time, a pair, Super and Duper, and also Trooper. They left with Looper and Toopic on 4th February. However, on 3rd March Toopic, Looper and a new bird, Swooper, came back together with the cygnet and six days later another new pair arrived, Snooper and Grouper. These six all left on 1st April. The behaviour of the Whoopers is quite different from that of the Bewick's. Although it is possible that all these Whoopers were sub-adult birds, they seemed to stay with one 'mate' for much shorter periods than do the Bewick's when they are sub-adult, as illustrated by Toopic who at the beginning of the season consorted with Whoopic, then later with Looper and Swooper and finally took Snooper from Grouper.

This is the first winter that Whoopers have come to Swan Lake (except for a pair which landed for ten minutes the year before) and there was little time to study their behaviour in detail, but there seems to be great scope in this field especially in comparison with the Bewick's and we hope to know more next year.

Mute Swans

Up to sixty Mute Swans *Cygnus olor*, mostly sub-adults, were present on Swan Lake throughout the winter, but no particular study of them was possible.

Observation facilities

Plate VI shows Swan Lake now edged with observation windows, the three great sheets of the Honorary Director's studio, the new Administrative Block's and, in between, the long glassed-in verandah of the Swan Observatory. This is open to Trust Members and Swan Supporters who can remain until half an hour after sunset to share the incomparable spectacle provided by the floodlit concourse of great white birds.

DAFILA SCOTT

Breeding Results 1968: Slimbridge Collection.

	Date of first egg	Incubated by hens eggs	Hatched in hatched incubator	Hatched by parents	Reared by parents	Total reared
Magpie Goose	23.7	25	7			1
Fulvous Whistling Duck	7.4	66	37	10		35
Cuban Whistling Duck	28.4	18	4		6	9
Javan Whistling Duck	12.7	1				
White-faced Whistling Duck		20	14			12
N. Red-billed Whistling Duck		25	17			15
S. Red-billed Whistling Duck		27	18			16
Black Swan	25.1				3	3
Mute Swan					1	1
Black-necked Swan	9.2				2	2
Bewick's Swan	8.5	6	5			5
Trumpeter Swan	9.4	8	6			8
Swan Goose	4.4	8	6			7
Russian Bean Goose	28.4	18	2			2
Pink-footed Goose	21.4				7	6
European White-fronted Goose	1.5	7	5			5
Greenland White-fronted Goose	19.4	19	8			6
Lesser White-fronted Goose	28.4	12	11			9
Western Greylag Goose	5.4				17	17
Bar-headed Goose	25.4	24	11		5	16
Emperor Goose	27.4	16	10	1		6
Lesser Snow Goose		8	6		14	14
Greater Snow Goose	30.4				4	1
Atlantic Canada Goose	24.3				5	1
Moffit's Canada Goose		5				
Giant Canada Goose	29.3				5	
Lesser Canada Goose	21.4	5	3			3
Taverner's Canada Goose	11.4	4	2		1	2
Dusky Canada Goose	15.4				4	3
Cackling Canada Goose	25.5	5	3			2
Hawaiian Goose	16.2	72	30			25
Barnacle Goose	26.4				22	20
Black Brant	8.5	11	5			4
Red-breasted Goose	14.5	16	7			5
Ruddy Shelduck	3.4	20	6			5
Cape Shelduck	23.3	10	7			7
New Zealand Shelduck	15.4	6	5			4
Common Shelduck	3.5	7				
Abyssinian Blue-winged Goose	15.5	7	6			7
Andean Goose	6.4				2	1
Ashy-headed Goose	3.5	5	1		8	5
Ruddy-headed Goose	7.4	5	3		2	1
Lesser Magellan Goose		10			4	7
Greater Magellan Goose	19.4	10			6	1
Cereopsis Goose					4	1
Patagonian Crested Duck	23.3	12	10		8	8
Andean Crested Duck	9.2	20	8			8
Marbled Teal		10	7	55		42
Bronze-winged Duck	3.4	5				
Cape Teal		14	12	5		15
Hottentot Teal	12.7	2				
Versicolor Teal	17.4	25	14	2		11
Red-billed Pintail	11.6	17	9			7
Bahama Pintail	8.5	31	29			29
Chilean Pintail	29.3			12		12
Northern Pintail	22.4	5	2			2
Kerguelen Pintail	16.4	14	4			4
Chilean Teal	25.3	18	11	26		30
Sharp-winged Teal	10.5	5	1			
Falcatid Teal	20.5	20	3			1
Australian Grey Teal	1.4	30	14			13
Chestnut-breasted Teal		19	10	4	5	5
New Zealand Brown Teal	8.2	17	10			14
Greenland Mallard		6				6
Hawaiian Duck	10.4	20	15		3	3

	<i>Date of first egg</i>	<i>Incubated by hens eggs hatched</i>	<i>Hatched in incubator</i>	<i>Hatched by parents</i>	<i>Reared by parents</i>	<i>Total reared</i>	
Laysan Teal	12.4	11	8	16	3	3	25
North American Black Duck	21.4			6			6
Indian Spotbill	26.4	13	3				1
Chinese Spotbill		12					
New Zealand Grey Duck				6			6
Pelew Island Grey Duck		8		6			6
Philippine Duck	13.5	13	9	5			14
African Yellowbill	17.3			5			5
Abyssinian Yellowbill	18.3			5			5
African Black Duck	13.2	6	1				
Gadwall	7.4			30			30
European Wigeon				15			9
American Wigeon				7			6
Chiloe Wigeon	20.4	42	26				9
Blue-winged Teal	28.4	34	24	4			14
N. Cinnamon Teal	3.5	19	9				8
Argentine Red Shoveler	4.5	7	5				1
Cape Shoveler	5.5	12	6				4
New Zealand Shoveler	7.5	8	3				1
Common Shoveler	4.5	19	10				6
Ringed Teal	1.5	36	13	5			10
Common Eider	1.5	16	8	4			12
Red-crested Pochard	6.4	8	3	16			15
Rosybill	5.6	22	15	3			13
African Pochard		4					
European Pochard	4.5	7	5				5
Redhead	8.5	7	4	8			12
Common White-eye		18	18	4			16
Baer's Pochard	13.6	7	6				6
Australian White-eye	28.4			17			14
New Zealand Scaup	15.5			8			8
Lesser Scaup		22	16	5			15
European Greater Scaup		6	1				1
Brazilian Teal		8	3				3
Maned Goose	19.3	10	6				5
Mandarin Duck				57			57
North American Wood Duck				142			72
Comb Duck	25.6	42	32	4			22
Hartlaub's Duck	1.7	8	8				6
Muscovy Duck					9	3	3
European Goldeneye	22.4	11	1				1
Smew	1.6	10	8				6
Hooded Merganser	28.4	8	1				
Red-breasted Merganser	20.6	7	2				
North American Ruddy Duck					40	10	10
African White-backed Duck		6					
Crested Screamer	5.4				4	2	2
Rosy Flamingo	15.6				1	1	1

Note: Where no date is given for first egg, nests were not found until the clutch was complete.

Breeding Results 1968: Peakirk Collection.

	<i>Date of first egg</i>	<i>Eggs incubated</i>	<i>Eggs hatched</i>	<i>Young reared</i>
Fulvous Whistling Duck	17.7	8	5	4
Black Swan	27.1	12	6	4
Black-necked Swan	27.2	3		
Swan Goose	8.4	8	2	
Pink-footed Goose	1.5	14	5	3
Greenland White-fronted Goose	2.5	6		
Lesser White-fronted Goose	21.5	6	1	
Western Greylag Goose	29.3	10	7	7
Emperor Goose	24.5	13	1	
Taverner's Canada Goose	3.5	6	1	1

	Date of first egg	Eggs incubated	Eggs hatched	Young reared
Cackling Canada Goose	29.4	11	8	6
Barnacle Goose	5.5	24	1	
Red-breasted Goose	19.6	5	3	2
Ruddy Shelduck	25.4	9		
Cape Shelduck	3.4	5	3	3
Common Shelduck	6.5	13	7	7
Greater Magellan Goose	27.4	4	2	1
Cereopsis Goose	7.2	3		
Marbled Teal	6.7	9	5	2
Bahama Pintail	22.5	22	12	6
Chilean Pintail	28.4	14	8	8
Northern Pintail	4.5	21	12	8
Chilean Teal	10.4	18	11	10
European Green-winged Teal	6.6	7	4	
Falcated Teal	13.6	7	2	1
Chestnut-breasted Teal	16.5	7	2	
North American Black Duck	9.5	7	5	5
Laysan Teal	28.4	20	10	9
Chinese Spotbill	10.5	20	3	2
African Black Duck	31.3	1		
Gadwall	8.5	11	4	2
European Wigeon	30.4	31	18	14
American Wigeon	14.6	11	2	1
N. Cinnamon Teal	7.6	6		
Red-crested Pochard	3.4	44	12	7
Rosybill	1.6	5		
European Pochard	19.5	13	8	5
Australian White-eye	8.5	7	7	6
New Zealand Scaup	11.6	7	7	
Tufted Duck	22.5	35	7	4
Maned Goose	23.4	6	2	2
Mandarin Duck	19.4	25	9	3
North American Wood Duck	28.3	38	17	8
European Goldeneye	5.5	1		
North American Ruddy Duck	15.6	23	7	3

Breeding the Rosy or Caribbean Flamingo at the Wildfowl Trust, Slimbridge

It was not until 1961 that it was decided to add flamingos to the waterfowl collection at Slimbridge. We made a start by having some 12 Chilean Flamingos *Phoenicopterus ruber chilensis* which were put into our South American Pen. These were followed by Greater and Lesser Flamingos *Phoenicopterus ruber roseus* and *Phoeniconaias minor* from Kenya, which went to our African enclosure. The Rosy Flamingos *Phoenicopterus ruber ruber*, which we were most anxious to have, were extremely difficult to come by, and our first birds were a fine pair presented by Antwerp Zoo. Somewhat later we were able to add a consignment from a Florida pet store. It was necessary to learn as much as possible about the husbandry of these beautiful birds, so we sought information from all the Zoos and Collections that kept flamingos. Perhaps the most significant

remark was 'Not to worry, it will be seven years before you breed them'—and indeed this proved to be true. But in the meantime we went to a great deal of trouble to give them the right feed. Everyone seemed to have different ideas, but we have evolved a 'flamingo soup' that seems satisfactory for keeping the birds not only in good condition but also in good colour. Initially we bought meals and whole dried shrimps and mixed them together in our cement mixer! We now have a proper food mill and through this are putting equal quantities of wheat, whole maize, poultry biscuit, turkey starter crumbs and dried shrimp. To this is added minced carrot, beetroot and lettuce, along with Canthaxanthin and Rhodophyl for colour maintenance. Special concrete feeding basins were constructed and these are regularly and scrupulously cleaned.

At the same time we were busy working out what we thought would be ideal nesting conditions for all the flamingos, and 'atolls' were built in the middle of their ponds. These consist principally of a concrete ridge forming an oval or circle, rising from the bottom of the pond at a gentle angle and enclosing an area of soft mud out of which they could build the mounds that form their nests. Some concrete 'nests' were added to give the birds the right idea.

The Rosy Flamingos were the first species to show any signs of breeding in 1966, one or two nests were built but these were only half-hearted attempts. Similarly in 1967, although the activity was a little greater and indeed extended to the Chilean Flamingos, it was not the breeding year. However, at the beginning of May 1968 nest building was commenced in earnest by the Rosy Flamingos. Sixteen nests in all were constructed and on the 15th May the first egg was laid. A second bird laid on the 19th. (Plate XVa, p. 165). Entry into the pen was forbidden, the vegetation was allowed to grow rank although overlooked by the restaurant, the nettles proliferated and none of the ducks' nests was visited. But we had forgotten one thing, and that was the periodic cleaning of the restaurant windows. On 7th June the window cleaners came when no member of the staff was near and took their ladders into the pen. Immediately the flamingos left their nests but fortunately a visitor in the restaurant saw this happen and sent for staff help. Needless to say the window cleaners were asked to leave immediately. The birds then returned to their nests but the bird which had been second to lay proceeded to push its egg out of its nest. It was replaced but again was turned out. By this time we felt that much more disturbance would cause the other bird, which had started to incubate again, to leave also. So a wooden egg was placed in the second bird's nest but it would not even tolerate this. Its good egg, which measured 99.6×56.0 mm., was put in our incubator as a last hope. We felt the chances of rearing a day old flamingo were remote—even if the egg did hatch—for the birds feed their young by regurgitation and to reproduce the kind of food so supplied seemed to be impossible. However, to our surprise, on listening to the egg on 15th June, there was a distinct tapping and indeed a faint squeak. What to do? It was decided that we must test the egg that was under the first flamingo. It was still being incubated but was overdue for

hatching, and we had to see if it were alive. It was obvious on handling the egg, which measured 91.7×55.7 mm., that it was addled, so it was removed and the tapping egg substituted in the nest.

On 16th June the male was observed to be incubating with its tail held more erect than previously. The chick finally emerged from the egg between 17.00 and 20.00 hrs. The female 'nibbled' the chick persistently, especially round head and bill, for 15 minutes after preening herself. Similar attention was later shown by the male.

The chick's legs were bright pinkish-red, the bill a flesh pink with darker tip. At 11.25 on 18th June the chick attempted to stand, helping itself up with bill pressed on to the nest and wings held down with head shaking. Finally it stood for a short period. By the tenth day many of the chick's movements had an adult quality. Thus it bowed head forward with wings outstretched after preening. It also stretched its wings and leg sideways and jumped about (see Plate XVb and XVI).

The chick left the nest and fed itself at the food tray on 2nd July at 16 days of age. For a great deal of this time we had the most dreadful weather with torrential rain, and the chick at various times seemed to be covered with mud in spite of the parent brooding it. However, it survived and has now grown into a fine bird. For a considerable time after leaving the nest it took most of its food from its parents. They were obviously being debilitated, particularly the male, for they were completely drained of their lovely pink colour and became virtually like the European Greater Flamingo, with which they are considered conspecific. We therefore decided to remove the young bird at the age of 11 weeks, before the strain on the parents became too great. It was returned after three weeks' absence and from then on the parents appeared to take no interest in it, and the bird fended for itself. During the autumn the parents, or perhaps one should say the foster parents, gradually returned to their full colour, the young bird progressed well, and in five months time was beginning to go pink. At this stage it was decided that the one and only flamingo to be reared in Britain ought not to fly away, so we caught and pinioned it. This was duly done without any ill effect and now it is a happy member of our flock of 37 Rosy Flamingos.