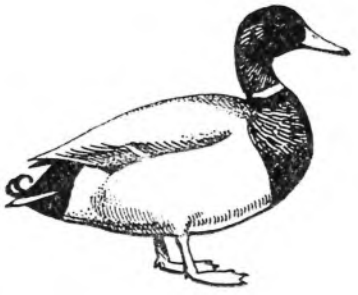

Current Reports, 1969
Slimbridge
WILD GEESE AT THE NEW GROUNDS, 1969-70

European White-fronted Goose *Anser albifrons albifrons*

The first to arrive were seven on 20th October. A month later there were still only 27, but new birds came almost daily in the last week of November, giving a total of 475 on 1st December. This rose to 560 on the 3rd, and then a larger influx took it to 1,040 on the 7th and 1,400 on the 8th. As is usual, these arrivals coincided with cold snaps. Further influxes occurred during December and there were counts of 2,650 on the 15th and 3,500 on the 23rd. There was a considerable arrival in early January with 6,300 present on the 9th. The peak came on 26th January when no less than 7,600 were counted. This easily beats the previous best count at the New Grounds (6,700 in February 1968). The peak was quite short-lived and by 6th February the total had fallen to about 6,000. It fell further to 5,400 on the 13th. There were still 5,500 on the 20th but early departures reduced the flock to 4,300 on the 25th and again to 2,100 on March 5th. Only four birds remained after the 9th, being last seen on the 24th.

A good breeding season in 1969 clearly contributed to the record numbers present. Indeed the number of two-year-old and adult birds present at the peak was actually slightly less than the total of similarly aged birds in the previous winter, when there were relatively few young. Sample counts in late November revealed 44.7% young in the flock (a very high figure) with an average brood size of 2.7. By the end of December this had dropped to 36.8% and there was a further slight drop to 34.6% in mid-February.

No Lesser White-fronted Geese *Anser erythropus* were seen this winter; the first blank year since 1964-65.

Bean Goose *Anser fabalis*

An adult, of the race *rossicus*, was first seen on 6th March. It stayed on with the last four Whitefronts until their departure on the 24th.

Pink-footed Goose *Anser brachyrhynchus*

Four, a family of two adults and two young, were seen on several occasions from 19th December to 4th January. On 16th January a pair with one young, and another pair were seen.

Barnacle Goose *Branta leucopsis*

One appeared on 9th January, and another on the 20th. Three were seen together on 8th February and a fourth bird on the 22nd. There were still three present on 5th March.

Dark-bellied Brent Goose *Branta bernicla bernicla*

A first winter bird was first seen on 14th December and remained until 13th February. An adult was also present from 16th January until mid-February.

M. A. OGILVIE

WILD SWANS AT SLIMBRIDGE, 1969-70

A pair of Bewick's Swans *Cygnus columbianus bewickii* was seen on Cheddar Reservoir, Somerset, on 31st October 1969, but none came to Swan Lake until 6th November, when eight birds arrived. They comprised two pairs that had been to Slimbridge previously and four new unpaired swans, three of which were second year birds. The numbers built up fairly steadily (arrivals between 6th and 23rd November averaged six a day) but in the last week of November the arrival rate rose to an unprecedented level. This was the period when the country was shivering under several degrees of frost, and between 24th and 30th November 176 Bewick's Swans arrived (i.e. 25 a day). Perhaps this major influx accounts for the very early date on which the maximum number of Bewick's Swans on Swan Lake in one day was reached. This was on 8th January, when 404 different swans were present (482 had by then been recorded). By comparison, in the previous six seasons the peak number occurred four times in February and twice in March. This season's peak was 38 more than the previous record, 366 in 1968-69. Similarly the previous record of different swans identified in one season was also surpassed, 570 swans being recorded, against 439 in 1968-69 (Table I). As many as 238 of these had been to Slimbridge before as adults or two-year-olds, a much better return rate than in any previous year. The full details of the number of returning birds related to the year they were first seen are set out in Table II.

The percentage of cygnets was at first misleadingly high. This was because a number of families with cygnets arrived early. By 27th November (not even one-fifth of the way through the season) more than two-thirds (i.e. 28) of the final total of cygnets had arrived and then represented 13% of the swans present. Except for one lone cygnet whose parents were unknown, all 28 were young of swans that had been to Slimbridge before. The eventual cygnet proportion of the flock was only 7%, and reports from other areas confirmed that, for the third year in succession, it had been a bad breeding season (see Table I). However, the average brood size was relatively high, indicating that the overall lack of cygnets was due to the complete failure of many pairs to produce young. This in turn suggests that weather or other conditions were adverse in some parts of their range and not in others.

Most of the swans that had been to

Table I. Numbers of Bewick's Swans at Slimbridge 1963-64 to 1969-70, and annual breeding success.

Season	*Total of different swans seen*	*No. returning from previous years (Adult/2nd yr. only)*	*Cygnets* No.	%	*Mean brood size*	*Maximum on Swan Lake on one day*
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	9	1.6	366
1969-70	570	238	41	7	2.1	404

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

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 of original total, returning in subsequent seasons* 2nd No.	%	3rd No.	%	4th No.	%	5th No.	%	6th No.	%	7th No.	%
1963-64	18	13	72	11	61	11	61	9	50	7	39	6	33
1964-65	45	20	44	19	42	14	31	14	31	11	24		
1965-66	74	38	51	28	36	26	35	24	32				
1966-67	171	51	30	33	19	31	18						
1967-68	209	50	24	51	24								
1968-69	275	115	42										

Slimbridge before returned early in the season, while new swans, discounting cygnets, arrived more slowly and formed the bulk (82%) of the adults and second year swans that came after 1st January. By 24th December (one-third of the way through the season) only half of the new swans had come, but 87% of the previously recorded swans had arrived. Many Bewick's Swans that have become established at Slimbridge in earlier years therefore migrate fairly quickly to this area rather than moving on in front of the continental cold weather as the later (new) arrivals appear to do. Likewise, all the cygnets that came to Slimbridge and stayed (excepting the lone one) had arrived by 3rd January. Only the cob of the last family to arrive had not become established at Slimbridge in previous years. The two quite new families that arrived after 3rd January only stayed for a day each.

This season for the first time, three swans returned to Slimbridge having missed two winters. All three had been ringed, but they were quite recognisable without reference to the rings as Dingaan, Mouldy, and Bitsa. Dingaan, an adult in 1966-67, brought a mate. Mouldy, a two-year-old in 1966-67, also brought a mate. Bitsa, a three-year-old in 1966-67, had lost his mate. Fifteen swans returned having missed one season. Their details (and the three mentioned above also fit into this pattern) show them to be predominantly a certain 'type' of swan. In 1967-68 these fifteen were described as one cygnet, six second-year birds, three third-year, two adults and three of unknown age. Therefore most of these swans were immature; and only three were mated (one each of the last three categories). Two of these three returned alone this winter; their mates had either become lost or died. The third swan, Pouff, had the distinction of returning with its mate, Offset, which had spent the whole 1968-69 season here. They were the first pair known to become so separated and then reunited. It would be interesting to know exactly how long they had been separated; indeed how long a Bewick's Swan will wait before taking a new mate. The 'bachelor' gap may help to prevent a swan taking a second mate while the first is still alive. The possibility of a swan meeting up with a lost mate appears not to be as remote as might be supposed. Momac and Brown, for example, were a well-mated pair when Momac was injured in a flying accident in March 1969 and had to receive treatment. Brown waited five days, until most of the swans had left on migration. It was sixteen days later (on 27th March) before Momac set off. Yet on 26th November they returned to Slimbridge together.

In contrast though, John and Rachel, another firm pair, left Slimbridge together on 7th March 1969. When Rachel returned on 18th November she had a new mate. Pair forming and breeding may also take place quickly. Brimmer, an unmated swan, did not leave Slimbridge until 27th March 1969. When she returned this season, she brought a mate and cygnet with her.

The number of flying accidents was greatly reduced this winter and only eight swans (two adults and six cygnets) were ringed as a result of incompetent landings, against 47 last season. This must be a tribute to the improved floodlighting of buildings and trees, and it was fitting that it should happen in the season when catching of the swans became much less dependent on accident and more under our control. A channel leading out of a corner of Swan Lake was equipped with overlapping screens and a concealed approach. Swans feeding therein could then be driven, unable to take off because of the restricted space, up to a holding corral at the top of the Rushy Pen. This arrangement may be described as a success, although perhaps not an unqualified one—yet. There were four catches—7, 48, 53 and 13—but several birds were repeats, caught in previous drives. Altogether 97 were ringed or re-ringed with the large plastic rings that we now use. Two hundred and twelve Bewick's Swans have been ringed at the Trust since 1961.

The catch of 13 was made on 18th January. After that date only a very few swans would go up the channel. The others did not show any obvious fear of it—and indeed the catches had disturbed the pond amazingly little. However, most of the swans were in very good condition by then, and so might be less anxious to crowd up a narrow inlet to feed. They had also established preferred areas around the pond, from which they did not stray far.

Some ringed swans were seen in other places this winter. The furthest afield was in the Netherlands (see p. 152). A swan with a red and white ring was seen at Welney on 4th January but it was too far away for the number to be read. However, from the colours we know that it was ringed as a two-year-old in 1967-68, and that it has not wintered at Slimbridge since. Four ringed swans were seen at Hasfield (16 miles north of Slimbridge)

and 23 other swans were identified there. These 27 comprised 12 swans new to Slimbridge this winter that had not become established, five swans that had been firmly established at Slimbridge, and six swans that knew what Slimbridge had to offer from this and previous seasons, but chose to spend part, or almost all, of the winter elsewhere. This last group included Cheetah and Chalice (and their three cygnets) and Oliver and Denise. Both these pairs spent much of last season on the Moors, a mile from the Trust. This year, although both knew about the food, they left either because they could not stand the pressure of so many birds on Swan Lake at one time, or because they felt a need for grass, which was scarce around the Trust due to the long dry summer and late grazing by stock. The latter reason would account for the well-established five leaving—one pair for four weeks, the other three for a total of 16 days. The pair had tolerated a fortnight of 350+ swans on the pond when they left on 17th January, so it seems unlikely that population pressure was the deciding factor. The other three did not leave until February.

Reasons for absences are not always obvious. A pair in the first eight to arrive had spent a long winter at Slimbridge last year but left that same day and did not return until 3rd January. We do not know where they had been, nor why they should have left when space and food were plentiful. It has been noted that some of these more irregular swans tend to reappear at Slimbridge on Sundays. It is possible that they have been disturbed by people out at the weekend.

The season was very short. The arrival date (6th November) was the second latest by three days, and the first major departure of the swans came as early as 24th February. There was another mass exodus on 6th March, and the last three left on 18th March. Towards the end of the season, however, a novel and interesting quirk in swan behaviour occurred. The conventional behaviour has been for the swans to roost on the Dumbles and river mudbanks, and to fly between the estuary and the Trust twice daily to feed. This year there was less flying about than ever before, perhaps due to greater confidence coming from the almost disturbance-free conditions that have now been created, but in the last week ten swans used Swan Lake exclusively as a roost. They were one pair that had been firmly established in the first half of the season, one pair that had been to Swan Lake on a few isolated days, and six that had never been before. All ten would arrive in the dusk and leave again early in the morning. They were never seen to feed on the pond, and they were thought to be spending the day four miles up-river, but it was interesting that they should choose to roost on Swan Lake rather than on the river.

Only four Whooper Swans *Cygnus cygnus cygnus* came to Swan Lake this season, compared with 14 last year, and only three stayed. They were thought to be a pair and their cygnet, but like last year it was soon found that relationships were not what they appeared. First the cygnet disappeared for a week. Then it returned and 12 days later one of the adults left. The cygnet and the other adult, which incidentally had no tail feathers, stayed a further 17 days before leaving on 5th March. Few observations were made on any of the swans' behaviour, as the daily recording of so many birds left little time for anything else. However, this summer it is hoped to consolidate what has been learned from the detailed registers of the past seven years, so that next season the time spent on daily recording may perhaps be reduced, and more time devoted to other aspects of the swans' biology.

MARY EVANS

OTHER RESEARCH AND CONSERVATION

Slimbridge headquarters staff continued to co-ordinate and analyse the population and ecological studies made at the Trust's other stations and throughout Britain. These are reported on separately later in the Current Reports. This section is concerned with work in progress at Slimbridge itself.

The Decoy, operated under Mr. Ogilvie's supervision, in the autumn produced 720 duck, mostly Mallard. His small-scale breeding biology study of ducks in the Decoy Wood and on nearby Frampton Gravel Pits was continued. The Canada Goose population at the latter site was again rounded up for ringing.

The vegetation cover in relation to topographical level on the Dumbles and the slowing erosion at its edge were mapped by Dr. M. Owen. He examined agricultural management of the New Grounds and correlated variations in exploitation and disturbance with the goose usage of the different areas. Defaecation rates of geese in the field were determined so that droppings within 36 pegged plots on the Dumbles could be related to usage and preferences. Behavioural aspects of goose feeding studied included feeding time, pecking rates and walking rates, in different months and vegetation types. Related studies of feeding ecology at Bridgwater Bay, Somerset; Caerlaverock, Dumfries; and the Wexford Slobs, Ireland, were aided in planning and analysis. In conjunction with Dr. Kear, hand-reared geese were used to study the extremely rapid through-put of food and to determine preferences for different plants.

Using the Collection's facilities, Dr. Janet Kear amassed more data on clutch sizes and on weights of eggs and downy young. Returning from a four month sojourn in New Zealand, she was engaged in working up field data gathered there, particularly with regard Blue Ducks. Their growth patterns (p. 115) and those of certain waders were determined. Pecking preference trials were continued to test the rôles of object colour, brightness, shape, shading, size and movement in releasing feeding behaviour. Some further tests were made of depth perception and its maturation.

Post-mortems were carried out by Dr. Beer on birds dying within the Collections, mortality being a little lower than previously. A particular study was made of avian tuberculosis in collaboration with the Agricultural Research Council's Institute at Compton, Berkshire. Aspergillosis occurred sporadically, but could be avoided in newly arrived birds by getting them rapidly back into good condition. A paper is in preparation on amyloid disease and atherosclerosis which often occur in adult birds. Various specimens were sent to M.A.F.F. Laboratories, Weybridge; St. John's Hospital, London; and the Departments of Zoology at Cardiff and Bristol Universities.

Another room was made available for the museum collections which continued to expand, 227 items being added. Improvements were made in the technique of freeze-drying downies, using the facilities in the Department of Zoology, Cardiff. Specimens were presented to the British Museum (Natural History), the University of Florida, the Children's Hospital, Bristol, the Department of Zoology, Aberdeen, and to several individual researchers. All observations and museum specimens relating to the extinct Auckland Islands Merganser were correlated (p. 78).

A number of studies on physiology and behaviour, particularly in relation to learning, were assisted by the provision of incubated eggs, newly hatched young, or adults. These went to the Universities of Cambridge, Durham, Edinburgh, Hull, Leicester, Southampton and Stirling.

G. V. T. MATTHEWS

EDUCATION

Courses of lectures were given in the Departments of Zoology in Bristol and in Cardiff, and in the Department of Psychology in Bristol by Dr. Matthews, and field study excursions using the Collection at Slimbridge were organised from those Universities and also Aberystwyth, London, Oxford and Reading. Through Bristol University Mr. M. J. Penny completed his M.Sc. thesis on the feeding behaviour of waders on Aldabra Island in the Indian Ocean and Mr. A. Whiten began work for a Ph.D. on bird orientation, investigating the visual abilities of pigeons. Through the University College of Cardiff Mr. P. N. Humphreys continued his Ph.D. study of wildfowl fertility and sperm morphology. Through Bath University Mr. J. Mattocks completed his M.Sc. study on the flora and fauna of the goose's gut. Through Portsmouth Technological College Mr. G. H. G. Martin's Ph.D. study of the conservation and feeding ecology of wildfowl and waders in Langstone Harbour was completed.

The new 50-bed Youth Hostel Association's Field Study Hostel at Slimbridge was opened in October. Mr. Jackson supervised the equipping of the two large study rooms with apparatus and a library. Extensive use has already been made of the Hostel, its amenities being unanimously praised. More than 22,000 children visited Slimbridge in organised day

parties. Two television programmes were made. The annual Identification Competition for schools took place in March with a record number of entrants, 150. Several displays were mounted: for the Gazebo at Slimbridge, for the Gloucestershire Rural Studies Association Exhibition, for the Game Fair at Stanford, Rugby. Work commenced on the seven large boards making a permanent exhibition for the new entrance hall at Peakirk. Much photographic work was undertaken and innumerable requests for information answered.

G. V. T. MATTHEWS

1969 BREEDING SEASON

The collection at present comprises some 1,900 pinioned birds of 175 races and 134 species. There are in addition 100 full-winged birds of 26 forms. During the winter months there are 400-500 Bewick's Swans, 80 Canada Geese and at least 1,000 ducks visiting the pens. In consequence 80 tons of grain, 15 tons of poultry biscuit, 10 tons of fish and 20 tons of turkey starter crumbs are needed to support the population. This does not take into account the food for our flamingo collection. Dried shrimp are imported from Holland and these, together with maize and the prophylactic constituents of this feed, produce a bill that makes our Bursar shudder. However, kind people do buy our surplus birds and this helps to soften the blow.

The principal additions to the collection during the year comprised 2 male and 1 female Peruvian Torrent Duck *Merganetta armata leucogenis*, 2 male and 4 female Australian Shoveler *Anas rhynchotis rhynchotis*, 1 male Pink-eared Duck *Malacorhynchus membranaceus* reared by Mr. Tom Spence of Perth Zoo, and 3 New Zealand Blue Mountain Duck *Hymenolaimus malacorhynchos* reared by Dr. Janet Kear when in New Zealand. Through a purchase of Wandering Whistling Duck *Dendrocygna arcuata* the Dendrocygnini collection is once more comprehensive. Fifty Lesser, 20 Greater and 14 James's Flamingos have been added to our flock. Whilst aviculture is not the main objective of the Wildfowl Trust, it is certainly important from the conservation point of view—one wonders if the Ne-ne and Koloa would be with us today if it were not for the devoted efforts of the aviculturists. Fifty more Ne-ne were sent back for release on Maui and it is hoped to send another 56 in the summer of 1970, bringing the total to 200 returned to the Hawaiian islands from Slimbridge. Twenty-five Marbled Teal were sent to Pakistan for a restoration project at Lal Suhanra, organised by Mr. Kit Savage (p. 87). Another rescue operation has been started at Slimbridge for the White-winged Wood Duck, absent from the Collection for some years and now threatened by loss of habitat in Assam. Mr. Sam Mackenzie has sent us a consignment of 7 males and 5 females.

The 1969 breeding season at the Wildfowl Trust was not particularly sparkling, as will be seen from the tables opposite and p. 140. The Hawaiian Geese did rather better than for some years, undoubtedly due to the dissemination of wild blood amongst the breeding males. A similar picture though rather better has occurred at Pohakoloa. Mr. Jack Williams of Tunstead did well with a pair of the rare Mexican Duck *Anas platyrhynchos diazi* loaned to him, producing young. He also reared 21 Ne-nes.

Perhaps our greatest success in 1969 was with our flamingos when the Chilean *Phoenicopterus ruber chilensis* were bred for the first time in Great Britain. The Andean *Phoenicoparrus andinus* bred for the first time anywhere in captivity. The flock of 20 Andean live in a small enclosure, their nesting island being a few feet from the public. Here the first bird laid on 27th May. In all, seven birds nested and it was the seventh egg that hatched on 13th July after 29 days of incubation. The downy appeared to be identical with the young of other species of the family. The chick fell out of the nest on the second day but managed to crawl back in. After five days it was continually leaving the nest and pecking at pieces of its shell. At five months, it had ceased to feed from its parents, who had by this time been drained completely of their pink coloration.

The Chilean colony, comprising some 70 birds, commenced laying on 15th June, and 30 eggs were laid over the next four months. A number were spoiled through being rolled out of the nests. In all, ten hatched, the first on 30th July. Chicks were still hatching when the early frosts came, and five reached maturity.

S. T. JOHNSTONE

Breeding Results 1969: Slimbridge Collection.

	Date of 1st egg	*No. of eggs brought in*	*Hatched by hen*	*Hatched in incubator*	*Hatched by parents*	*Reared by parents*	*Total reared*
Magpie Goose	4.7	11					
Eyton's Whistling Duck	21.6	5					
Fulvous Whistling Duck		77	41	10	7		35
Cuban Whistling Duck	16.5	24	16				16
Javan Whistling Duck		1					
White-faced Whistling Duck	20.5	33	23	5			21
N. Red-billed Whistling Duck	20.5	23	19		5	5	24
S. Red-billed Whistling Duck	30.5	40	39		6	3	40
Coscoroba Swan	6.3	4					
Black Swan	8.2	4					
Mute Swan		6			2		5
Black-necked Swan	6.2	3			4	3	5
Bewick's Swan	20.5	5					
Trumpeter Swan	7.5	1	1				
Swan Goose	4.4	19	5		2		2
Western Bean Goose	2.5	5	1				1
Russian Bean Goose	26.4	11	1				1
Pink-footed Goose	20.4	11	1		3	2	3
European White-fronted Goose	28.4	6					
Greenland White-fronted Goose	7.5	26	9	6			12
Lesser White-fronted Goose	3.5	8	4		4	2	5
Greylag Goose	9.4	2	2		24	23	25
Bar-headed Goose	21.4	8	3	5	2	2	9
Emperor Goose	22.4	21	9	4			9
Lesser Snow Goose	24.4	5	5		4		7
Greater Snow Goose	4.5	6	3		2		2
Ross's Goose	19.5	3	2				2
Atlantic Canada Goose	21.3	6			6	1	6
Moffitt's Canada Goose	12.4	4					
Giant Canada Goose	29.3	8			6	6	6
Lesser Canada Goose	20.4	6	4		3	3	6
Taverner's Canada Goose	27.4	4					
Dusky Canada Goose	7.4				5	5	5
Cackling Canada Goose	17.5	4					
Hawaiian Goose	30.1	72	34				32
Barnacle Goose	19.4	14	4		16	14	18
Black Brant	13.5	1					
Red-breasted Goose	4.6	5	3				2
Ruddy Shelduck	5.4	11	5				4
Cape Shelduck	5.4	6					
New Zealand Shelduck	19.4	6					
Abyssinian Blue-winged Goose	7.5	13	9	5			12
Andean Goose	23.4	15	6		6	3	9
Lesser Magellan Goose	27.4	4	4		3	2	6
Greater Magellan Goose	28.3				6	6	6
Cereopsis Goose	13.1				2		
Falkland Flightless Steamer Duck	27.3				4		
Patagonian Crested Duck	11.4	23	7		5	3	8
Andean Crested Duck	16.1	18	13				13
Marbled Teal		9	6	39			33
Bronze-winged Duck	27.3	4	2		3		1
Cape Teal	1.6	6	5				5
Hottentot Teal		2	1		3	2	3
Versicolor Teal	5.4	36	18		9		11
Red-billed Pintail	30.5	13	10				10
Bahama Pintail	16.4	28	18	28	25	9	60
Chilean Pintail				17	7	3	19

	Date of 1st egg	*No. of eggs brought in*	*Hatched by hen*	*Hatched in incubator*	*Hatched by parents*	*Reared by parents*	*Total reared*
Northern Pintail		8	8	5			12
Chilean Teal	20.3	12	7	15	6	4	22
Falcated Teal	28.5	14	3				2
Australian Grey Teal	20.5	18	5				5
Chestnut-breasted Teal	19.4	6	4		5	3	7
New Zealand Brown Teal	2.4	9	2		4	1	2
Hawaiian Duck	29.3	41	21	10	5	3	34
Laysan Teal	17.4	21	9	11	6	3	21
North American Black Duck			6				4
Indian Spotbill		14	10				10
New Zealand Grey Duck	19.5			15			15
Pelew Island Grey Duck				3			3
Philippine Duck	19.5	13	6	5			10
African Yellowbill		9	7	2			8
Abyssinian Yellowbill	9.4	7	1				
African Black Duck		4					
Gadwall	23.4			45	20	15	60
European Wigeon	9.5	30	15	20			32
Chiloe Wigeon		8	4	6	12	10	18
Blue-winged Teal	16.5	27	11	4			12
Cinnamon Teal	30.5				8		
Garganey					9		
Argentine Red Shoveler		8	7				7
Cape Shoveler	15.4	22	4				2
New Zealand Shoveler	1.6	8	3				1
Common Shoveler	3.5	8	8				7
Ringed Teal	14.4	44	12	1			10
European Eider	28.4	19	11		3		12
Faeroe Eider		11					
Red-crested Pochard	5.4	16	3	2			2
Rosybill	19.5			5			5
African Pochard		4					
European Pochard		6	5				1
Redhead	24.4	11	4	19			18
Common White-eye		15	3	15	6	3	15
Australian White-eye				24	7		18
Tufted Duck	15.6			6			4
New Zealand Scaup	2.5	17	5	22			23
Lesser Scaup	5.6	20	10				10
Brazilian Teal		5	1				1
Mandarin Duck	14.4			33	10	4	50
North American Wood Duck	10.3	10	6	32	12	5	37
Comb Duck		30	24				15
Muscovy Duck					8		
European Goldeneye	19.5	6					
Smew	29.5	5	3				3
Red-breasted Merganser	14.6	5	1				
North American Ruddy Duck	19.5				50	30	30
African White-backed Duck		2					
Crested Screamer	28.4				4	2	2
Andean Flamingo	27.5						1
Chilean Flamingo	15.6				10		5
Common Shelduck × European Eider		8	5				4

Peakirk

1969 BREEDING SEASON

Peakirk had the wettest spring in living memory. During cold spells, unidentified vermin (thought to be stoats) accounted for heavy losses in a number of the rarer species, and these unfortunately included Fulvous Whistling Duck, Versicolor Teal, Hottentot Teal, Falcated Teal, Garganey, Argentine Red Shoveler and Brazil Teal.

Results for the season were particularly poor and numbers of young reared were very low. The six pairs of Ne-ne introduced into special breeding pens constructed on the Neaverson Area in the autumn of 1968 failed to lay. The main success was the breeding of Trumpeter Swans for the first time at Peakirk. The first egg was laid on 22nd April, and out of a total of six eggs, four young were hatched on 6th June. Three cygnets were reared to maturity. Other of the more notable species bred were Cackling Canada, Black Brant, New Zealand Brown Teal, European Eider and Baer's Pochard.

P. B. VARDY

Breeding Results 1969, Peakirk Collection.

	Date of first egg	*Eggs incubated*	*Eggs hatched*	*Young reared*
Black Swan	20.3	5	5	5
Black-necked Swan	9.3	4	2	1
Trumpeter Swan	22.4	6	4	3
Swan Goose	13.4	7	4	3
Western Bean Goose	27.4	3	0	
Pink-footed Goose	29.4	20	10	9
Greenland White-fronted Goose	21.4	17	1	
Western Greylag Goose	30.3	18	17	13
Emperor Goose	18.5	6	3	2
Blue Snow Goose	2.5	10	1	1
Taverner's Canada Goose	23.5	5	1	
Cackling Canada Goose	19.4	12	8	8
Barnacle Goose	14.5	25	5	1
Black Brant	4.5	2	1	1
Red-breasted Goose	24.6	5	0	
Cape Shelduck	24.3	6	1	1
New Zealand Shelduck	10.5	1	0	
Common Shelduck	11.5	9	5	5
Greater Magellan Goose	26.4	6	4	3
Lesser Magellan Goose	13.4	3	1	
Bahama Pintail	21.5	19	8	5
Chilean Pintail	10.4	13	12	6
Northern Pintail	22.4	30	18	16
Chilean Teal	18.5	13	4	3
Chestnut-breasted Teal	17.4	6	1	1
New Zealand Brown Teal	22.4	24	7	4
North American Black Duck	9.5	1	0	
Hawaiian Duck	19.4	6	0	
Laysan Teal	22.4	26	20	16
New Zealand Grey Duck	15.6	6	2	2
Abyssinian Yellowbill	4.6	1	0	
Gadwall	12.5	6	2	1
European Wigeon	27.5	22	15	14
American Wigeon	13.6	5	1	
Cinnamon Teal	17.5	6	0	
European Eider	24.5	6	4	4
Red-crested Pochard	9.4	23	6	4
Rosybill	3.6	16	9	6
African Pochard	2.6	5	1	
European Pochard	15.5	7	6	5
Baer's Pochard	2.6	8	4	1
Australian White-eye	23.5	28	24	14
New Zealand Scaup	2.6	5	0	
Tufted Duck	28.5	31	21	11
Mandarin Duck	13.4	5	1	1
North American Wood Duck	13.4	44	19	5
North American Ruddy Duck	17.6	19	4	

Borough Fen Decoy

The hard weather that began on 22nd December continued until 7th January when the pond had thawed sufficiently to attract 130 Mallard and 750 Teal. By the 15th the latter had topped four figures, but Mallard were down to 95. Of the 153 duck caught in January 138 were Teal. It was disappointing not to have caught more Teal but they were well fed and reluctant to follow the dog. Wintry conditions, however, improve trapping at Deeping Lake where 104 were taken plus the usual crop of Moorhens and Coots. The trap was baited with bread on two occasions in an attempt to catch some of the roosting gulls. None were taken in January, and it is odd that although nearly one thousand were caught in the 1965-66 season, they have since refused to co-operate. Goldeneye and Goosander were also present on the Lake throughout the month. Although often in the vicinity of the trap, they took a hint from the gulls and stayed outside.

February was a near complete failure at the Decoy, with a total catch of only 15. Frost and then snow emptied the pond, and no catches were made after the 7th. Heavy snow mid-month damaged nets at the House and South-west pipes. Metal hoops were introduced in 1959 and 1960, so the net tears before a hoop collapses and there has been no repetition of the 1955 calamity when all the eight wooden pipes went down.

The nets were repaired by placing a ladder on the ice below the tear. The labour was in vain as no more duck were taken in either pipe up to the end of the season.

The Deeping Lake trap was fairly productive and although 2,000 diving and surface feeding water birds kept an area of water open, the trap was completely frozen from the 12th to the 20th. One catch of 54 gulls was made which included a Black-headed Gull ringed as a pullus on Jutland on 9th June 1968.

If February was a failure at the Decoy, then March was a disaster, only four duck being taken. As there were few duck on the pond a number of willows were pollarded, the better poles being used to replace dead willows in the main fence at Peakirk. Cutting reed in Norfolk on the 26th I had the misfortune to slip a disc and the Decoy and Deeping Lake trap were left open from that date; but it is doubtful whether many more duck would have been taken. Blood samples taken for the M.A.F.F. laboratory at Weybridge totalled 622 between November and March, comprising 205 Mallard, 183 Teal, 58 Coot, 26 Moorhen, 113 Tufted, 21 Pochard, 5 Great Crested Grebe, 6 Shoveler and 5 Pintail.

During April, May and June maintenance proceeded as usual. Reed was cut from the Decoy reed bed, there was a general clearing of debris, and outcrops of encroaching vegetation were cut back from the main paths and from the ends of the pipes. New net was fitted to the E. and SW. pipes. New screens built this year again incorporated one concrete post, and it is interesting to see that such posts erected last year are already coloured by lichens and leaf stains. Six hundred yards of wire netting on the perimeter fence were replaced and some repairs were carried out to the Deeping Lake trap. Frequent and heavy rain storms made the grass grow very quickly, and mowing by machine very difficult. The annual decoy open weekend was spoiled by foul weather and only 40 visitors braved the elements.

The annual round-up of flightless Canada Geese at Grimsthorpe Park on 5th July was assisted by members of the Spalding and District Wildfowlers' Association. Newly ringed birds totalled 86 and 15 retraps included one ringed in Leicestershire in 1955. Deeping trap was put into operation and three pipes fed at the Decoy. Mallard numbers there slowly increased to 65 on the 28th. Three Garganey present for a week from the 21st could not be persuaded to enter the pipes. Mallard hand-reared by the Whittlesey Wildfowlers were released on to the Decoy pond for the third successive year. They appear to integrate well with the wild stock and contain no birds of apparent doubtful ancestry.

The August lead built up very slowly and the best daily count of 230 contrasted with the flight of 2,500 leaving Deeping Lake each evening. Mallard were released for the orientation studies at Great Casterton in sunny conditions and at points half a mile from the Decoy under cloud.

September is by far the best month in the decoyman's calendar, and 975 ducks were taken at the Decoy. On one day, the 24th, 118 were taken in three separate pipes. Numbers using the Decoy also improved, peaking at 1,190 on that day. The Mallard tend to disperse into the

local drains and ponds as the cereal crops are harvested. Some difficulty was experienced in topping up the pond from the river Welland. The banks were so dry as to become porous and by the time the water reached the Decoy sluice half a mile away there was insufficient height to take it over the sill. We had to pump for four days in order to maintain the level necessary. As the bulk of the catch would be Mallard, the trap at Deeping Lake was only operated for part of the month.

October was memorable for the number of foggy mornings. On these days the duck are unable to find the Decoy and roost elsewhere. When the bad visibility continues over a few days, these new quarters become permanent and the Decoy lead is lost. The total daily count of Mallard fell from 885 to 74. Mr. A. G. Kemball (Max Planck Institute) examined 88 water birds for leeches (Hirudinea). No specimens were found on the feet, bill or feathers of any birds then or since. No leeches were found in the Decoy pond. Possibly excreta from the high concentration of duck in the autumn makes the water unsuitable. There are in fact no water plants other than *Phragmites* growing in the main pond area. At Deeping Lake a large population of the duck leech *Theromyzon tesselatum* occurs on the island and the shallow margins.

The lead in November fluctuated between 790 and 60. A nice catch of 94 was made on the 4th including some very heavy (1,400 grams) short winged males. Shoveler numbers were well up with a maximum of 65 in the early part of the month.

With December came the first real frosts, and early morning ice breaking was the order of the day. Teal began to outnumber Mallard in the daily counts, although the best count of 190 was a long way below that of January, so 1969 ended much the same as 1968 with a frozen Decoy pond, 1,817 ringed duck and acres of paper work.

Birds other than duck ringed at the Decoy, Peakirk and Deeping Lake, in 1969 totalled 963 of 45 species. At the Decoy Willow Warbler and Chiffchaff arrived on 14th April, Sand Martin on the 18th, Turtle Dove and Blackcap on the 22nd, Swallow on the 24th and a lone Whitethroat on the 25th. This bird stayed only a few days and the species was not recorded during the rest of the year.

Nest record cards were despatched to the British Trust for Ornithology totalling 326 of 29 species. Nests that had been followed to a positive conclusion showed 69% failures of 72 at Peakirk and 67% of 244 at the Decoy. Song Thrushes there had a particularly bad time, 82 nests being recorded from a population of not more than 25 pairs.

Five Swifts appeared over the Decoy on 29th August which is the latest record for this species. A new record on 25th September was a Hoopoe which called frequently from the thicket between the House and North Pipes. Wind direction and a crowded pond made it impossible to search for a sight of this rarity.

Monthly catches of duck at Borough Fen Decoy and Deeping Lake, 1969.

Month	*Borough Fen Decoy*	*Deeping Lake*
January	153	104
February	15	74
March	4	32
April	—	1
May	—	—
June	—	1
July	23	36
August	183	224
September	975	72
October	300	79
November	369	20
December	199	79
	2221	722

W. A. COOK

Welney Wildfowl Refuge, Norfolk

By the end of 1969 the Trust held the freehold of 492 acres in a contiguous block, together with the shooting rights on a further 130 acres adjoining. Two semi-detached cottages, conveniently situated half way along, below the great retaining banks, were purchased for conversion as the local headquarters and house for the Warden. Mr. G. H. (Josh) Scott took up this position full time at the beginning of the year. During the winter months he was engaged in making near-daily counts of the wildfowl and noting their distribution within the reserve. This information was compared with vegetation maps made in the summer months by a team under Dr. Owen. Their surveys also produced standing

crop and seed production estimates for *Ranunculus*, *Rumex*, *Carex*, *Eleocharis* and *Polygonum*, some of the natural foods of wintering duck. Further information was provided by the analysis of viscera that wildfowlers made available from birds they shot in the Washes on either side of the refuge area. These, with particular reference to Wigeon, were carried out in conjunction with Mr. G. Thomas of the Royal Society for the Protection of Birds. Indeed, close liaison was maintained with the R.S.P.B. and the Cambridgeshire and Isle of Ely Naturalists' Trust, both bodies owning refuge areas upstream from the Wildfowl Trust's. A joint pamphlet setting out the past and present status of the Ouse Washes was produced by the three bodies.

During the summer months the Warden reverted to his traditional occupation of 'shepherding' the several hundred horses, cattle, sheep and goats that are imported to graze the lush pastures. Such grazing is essential to maintain the washlands in their present condition which is so favourable both for the wintering and nesting birds. It also brings in a very useful grazing rental to the Trust. Despite this pre-occupation, the Warden keeps an eye on the breeding birds. One of the main excitements of the year was the breeding of two pairs of Black Terns. Both nests hatched off but the area had then dried out and afforded little refuge from predators. However, one bird is known to have survived to flying stage. By contrast, the duck nests had earlier been eliminated by an unseasonable flood just after a survey by a team under Mr. Ogilvie had indicated that there were many more nests than in the previous year. Some re-nesting took place.

Although intruders on to the washland itself are rigorously excluded, disturbance can still be produced by people walking the right of way along the retaining banks. It is planned to reduce this disturbance by screening. Osier sets are being planted along the boundaries to afford relief in the long term. The central part of the reserve is to be overlooked by a permanent observation building, entered by a footbridge across the river. It is thus especially desirable to avoid incidental disturbance, and to this end an inner bank, 10 ft. high, is being constructed along our boundary. The first 200 yards was finished during this summer. It was heartening to see the monstrous draglines in action on behalf of conservation instead of draining our remaining wetlands. The material for the bank was excavated from an area up to 20 yards wide resulting in a fine, irregular stretch of water with three large islands. It is hoped that Bewick's Swans will be attracted to this pond as they are to Swan Lake at Slimbridge. A permanent body of standing water also adds to the ecological diversity of the area and will attract many species at times when the floods are not out.

While earth-moving machinery was on the site, it was used to construct a group of six experimental plots, 100 × 25 metres, each surrounded by 0.6 metre earth walls. These will be used for testing various cutting and flooding regimes before applying them as management techniques within the reserve as a whole.

Although much remains to be done in the way of research, management and provision of observational facilities, the simple lack of disturbance is already making the Welney reserve much more attractive to wildfowl. In February more than 14,000 wildfowl were on the reserve, but this was easily surpassed on 26th December when there were at least 20,000 birds (even higher figures in the following months will be reported next year). The detailed count on 28th December gave: 15,000 Wigeon, 2,000 Mallard, 370 Teal, 293 Bewick's Swans, 200 Pintail, 30 Shoveler, 25 Whooper Swans, 17 Mute Swans, 15 Coot, 8 Gadwall, 7 Pink-footed Geese and 4 Tufted Duck.

G. V. T. MATTHEWS

Dersingham Decoy, 1969

During January and February over 200 Mallard and Teal were trapped despite the freezing temperatures and the snow that lay in early January and again in mid-February. With the onset of the milder conditions a large number of the wildfowl dispersed from the area. Breeding birds quickly arrived and reached a record total of 34 pairs of Mallard, two of Shoveler and three of Gadwall. The spring and summer were dry, resulting in the lowest duckling mortality to be recorded since records started in 1966.

During the summer a hundred bundles of reed were cut for general maintenance to both pipes. The pond between the SW.

and W. pipes was also enlarged by a digger from the farm. The water dropped to a low level and pumping became necessary. Ten inches of water had to be pumped in before any number of duck arrived.

With a dog trained as a piper, we were looking forward to the coming season; it was, however, to become a disappointing one, although it started with a bang. The local wildfowlers' club released 72 duck at the Decoy in July, which brought the total to over 120 since 1968. By the end of the season five pairs had stayed, and it is hoped they will increase our local breeding population.

The first duck to be caught by using a dog was on 16th July when the pond total was six Teal and ten Mallard. By the end of August 180 Mallard, 60 Gadwall and Teal were day roosting, some of them flighting out to feed on the surrounding stubble. The piper was used at regular intervals, but no more than once during any day. Although as many as 58 duck and more were decoyed to the pipe mouth, only a small number entered the catching area.

The Teal population continued to build up and 29th September brought a peak of 495 Teal, 223 Mallard and 29 Wigeon on the pond. By this date 633 duck had been trapped.

With the dry conditions continuing, the water level again dropped and we had to pump for three days. This did not interfere with the wildfowl or catching and over 600 duck continued to frequent the pond. However, a major unavoidable disturbance did now occur and lasted until the end of October. A dragline was reshaping one of the main drains, which comes within 30 yards of the pond. A large hedgerow had to be cut down on the Decoy boundary.

For the first four days, over 500 duck arrived at the decoy at morning flight, but when work started on the drain they left. We lost our lead of duck, all except 41 Mallard, that would not leave the pond area and stayed until 28th October, when they were joined by 63 Teal. Only 80 duck were caught and ringed during October.

Over 100 Teal remained with 200 Mallard until 18th November when the first hard frost of the season covered the pond with a thin layer of ice. This cold weather was repeated several times during November, the 100+ duck that remained managing to keep part of the pond free of ice.

December was on the whole a cold month with ice on the pond most days, resulting in only 90 duck being caught for the month. The area was by no means short of wildfowl, as over 2,000 Mallard, 1,000 Wigeon and 1,000 Shelduck were counted most days on the Wash near Wolferton.

Of the year's ringing total of 1,436, only 126 were caught by dogging. It was suggested that the wildfowlers' ducks that were released and stayed during 1969 would block the pipe entrance when the dog was used, thus stopping other ducks following the dog and this did appear to happen on numerous occasions.

Acknowledgements

I wish to thank Mr. C. Knights, Gooderstone, Norfolk, and Mr. G. T. Andrewartha, Hatfield, Doncaster, for loaning the Dersingham Decoy fuel and pumps on two occasions during 1969. Without them the decoy would have ceased to operate at 100% because of the low water table.

R. BERRY

Abberton Ringing Station

Some extremely cold weather from January well into April made this a rather trying and unpleasant period to be operating duck traps. Particularly disappointing was the failure to catch the spring passage ducks, Shoveler, Garganey and Tufted.

The breeding season was also in the main a poor one, partly due to unfavourable weather and also to rising water flooding nests. For the first time since records have been kept Great Crested Grebes failed to rear any young, although some 20 pairs attempted to breed. A pair of Grasshopper Warblers bred, it is believed successfully, for the first time and three or four Shoveler reared young. A good many young Herons also fledged.

The usual large maintenance programme lasted until well into September. Generally repairs were light, but a hard worked trap on the Top Section had to be completely rebuilt. This was one of the original 1950 vintage 12 ft. square portable traps. In 1958 it was thoroughly overhauled and floated to its present position, where it caught many ducks.

Aside from the normal winter season,

regular duck counts were made throughout the summer by S. Linsell. The seasonal moulting flock of Pochard, predominantly male, reached a new level, 5,163, at the end of July; a most impressive sight. A maximum of 1,288 moulting Tufted Duck was also counted on that date. The largest duck count was made on 12th October with a total of 7,043 ducks. Mr. Linsell became permanent Warden of the Essex Naturalist Trust's Reserve at Fingringhoe Wick in October, and his services as a regular counter are greatly missed, the full burden now being on the shoulders of his associate, R. Gardiner, who has been counting at Abberton for more than twenty years.

The duck trapping, mostly of Mallard, began to regain momentum in July. It was not until August that Teal started to appear regularly in the catch, and over 40 Shoveler were taken. Always difficult ducks to procure, it was a surprise when a lead was established with a large flock, mostly young birds, on the Top Section, catching in the deep water trap. Very seldom does this happen, and for a brief period my daily visits were exciting and often profitable.

By the middle of September the duck population was nearly 7,000, mostly dabblers, the diving ducks have completed their moult and departed. The water level, which had remained high throughout the summer, owing to some very heavy rainfall, started dropping dramatically. The high temperatures over eastern England produced a huge demand for water and there was no opportunity of replacement. By 4th October the Island was just awash and thick with ducks. With massive help from the Resident Engineer and his willing assistants, three 12 ft. square 3-funnel traps were moved on to the Island, and the supporting tackle set up. They remained there until just before Christmas when the rapidly rising water level forced their evacuation. They produced a large catch of Teal but little else. A party of Snow Buntings enhanced the area for several weeks.

Throughout the autumn and until the end of the year the traps on the Top Section maintained a steady catching rate, thus continuing the precedence they have gained in recent years. Their comparative ease of access also makes them easy to operate, although the tendency for this smaller stretch of water to ice over can be frustrating.

Two 'firsts' for the Station were achieved on the same day when a 1st year male Red-breasted Merganser and a Black-necked Grebe were taken in adjacent traps. Three Scaup were the first caught since 1962.

Apart from 68 Snipe ringed, and seven Spotted Redshanks in one trap, wader trapping fared badly. Indeed, despite the fairly low water level in autumn and exposed mud, waders remained disappointingly scarce.

The over-wintering White-fronted Geese remained until early February, grazing winter wheat. A small party of Bewick's Swans stayed until the end of March, and seemed to display a positive preference for grass. In the autumn White-fronts did not return until 12th December, the first Bewick's in a snowstorm on 26th November.

Abberton appears to be just too far inland to attract influxes of rarer birds which occur at the coastal observatories, apart from some water birds. The most unusual of the visitors comprised Long-eared Owl (2), Bittern, Black Redstart, Little Ringed Plover and quite a lot of Little Gulls.

Mr. Fred Trust, who has taken on the small bird ringing at Abberton, erected a cedar hut adjacent to the ringing Caravan. Despite his professional duties he was able to spend 101 days at the Reservoir. He operated some 20 trapping sites, mostly mist-nets, along half a mile of the north shore of the Middle Section. Birds ringed for the first time at Abberton were Common Gull, Cuckoo, Coal Tit, Grasshopper Warbler, Goldcrest, Pied Flycatcher and Lesser Redpoll. Some other unusual catches included Marsh Tit, Tree Creeper, Fieldfare, Mistle Thrush, Redwing and Brambling.

The South Essex Waterworks Company started work on landscaping a seven acre Public Access Site adjoining the Main Section. They constructed a large bird hide which will enable the public to have viewing access to the reservoir birds, while enjoying pleasant surroundings with a pond for ducks, a car park and other amenities.

A memorial gate to General Wainwright, designed by Peter Scott, was made and erected at the top of the steps leading down to the ringing Caravan on the Layer Breton causeway. This fine piece of design and craftsmanship stands as a lasting tribute to the General and the enormous effort he put into establishing and operating the Abberton Ringing Station.

R. KING

Loch Leven, Kinross

Nest searching at full intensity was resumed this year, since it had become clear that Loch Leven is not a productive area in terms of fledged young, largely owing to the lack of shelter and cover after hatching. The main research interest is therefore in the early stages of the breeding cycle—nest site preferences, onset and timing of laying, clutch size, incubation time, hatching success and variations in these parameters from season to season. Altogether 864 nests were located, 84 of these being in a 100 × 100 metre control zone which was only searched at the end of the season. The fate of the nest can then still be ascertained by the presence or absence of egg membranes. In the control zone 83% of the nests had escaped predation (mainly by Jackdaws) as opposed to 59% in the areas visited once weekly in the course of our study. It should perhaps be emphasised again that this does not mean a comparable loss of fledged young. Disturbance resulted in more meals for Jackdaws rather than less fledged ducks. Nevertheless it was desirable to have some measure of the additional hazard imposed by our presence, particularly as control of the predators is envisaged next year as part of the management programme. These Jackdaws have the rather unusual habit of nesting in old rabbit burrows and no less than 356 such nests were located on St. Serf's Island on 3rd June. There are other similar colonies on the Benarty and Lomond hills and birds from there commute to St. Serf's, especially soon after dawn. Up to 121 Jackdaws have been seen in the air over the duck nesting area at one time. Almost every day a Jackdaw flying with an egg in its bill was recorded, and one nest was predated while watched in full view from only 50 yards away.

Commonly, several Jackdaws are involved, their fighting over the contents leaving a partly pulled-out nest, with broken grass stems around and with shell fragments, yolk and albumen in the bottom. Where probably only one bird was involved the nest would be intact and devoid of remains, the eggs having been pierced and carried off in the Jackdaw's bill to a favourite perch. Where trees and bushes overhang the Loch, as along the Island's northern shore, dozens of egg shells were found in the shallow water.

The nests in the study area are marked by an upright four foot cane the same distance to the north. To test whether the Jackdaws were profiting by such indications of nest sites, we set up 20 handmade nests, each equipped with five hen's eggs covered with vegetation. Half were marked with canes, half were unmarked. The Jackdaws had found nearly all the nests by the end of a fortnight, with only a slight suggestion that the marked nests fell victim earlier.

Carrion Crows are very seldom seen on the Island. We have some indications that Moorhens will take eggs occasionally on the fringes of the nesting areas. The Black-headed Gulls do not predate nests, indeed both Mallard and Tufted Duck show a preference for nesting within the gullery, which probably exceeds 9,000 pairs. This year seven pairs of Herring Gulls nested on the Island and are rather more suspect. On the Isle of May, only 20 miles to the east, there is a colony of 24,000 nests, so any tendency to increase on St. Serf's will have to be watched carefully. The only mammalian nest-predator is the Brown Rat, but this is strictly and successfully controlled by self-feed poison bait boxes, particularly effective in the winter when other food is scarce.

A total of 157 adult ducks were caught by handnet rising off the nest. Of these, 41 had been marked in previous years. Again the location of the nests in relation to the permanent grid posts was determined.

At the end of the nesting season a team combed out the unvisited control zone and also a series of transects throughout the nesting area so that estimates of the total population could be made.

In the winter months the study of the feeding ecology of Pink-footed and Greylag Geese in the neighbourhood of the Loch was continued, the 1969-70 winter probably being the final one for this project. The seasons have contrasted sharply in regard harvesting conditions, and hence grain spill, and in early spring growing conditions. This work was carried out in conjunction with Dr. Ian Newton of the Nature Conservancy, Edinburgh, who also supervised the duck breeding study.

The year was marred by the sudden death, on 8th July, of Ian Marshall, who had joined the Loch Leven team in October 1967. It was but small solace to his wife, Rosemary, left with a baby daughter, that the undetected brain tumour would have been inoperable. All his colleagues' sympathy cannot offset her tragic loss.

C. R. G. CAMPBELL

Wildfowl Ringing, 1969

Swans

Support was continued for a small number of amateur studies of the Mute Swan. The first full year's work was carried out on the Mute Swan population of The Fleet and Radipole Lake, Dorset, by the Wildfowl Trust, jointly with the Edward Grey Institute of Oxford University. Just over 200 birds were caught and ringed there. Following the development of a successful catching method, no less than 91 Bewick's Swans were caught and ringed at Slimbridge (see page 134).

Geese

Ringing of Canada Geese has continued at a high level, the Wildfowl Trust supporting the project of the Yorkshire Canada Goose Study Group. They rounded-up 350 birds, and as a part of this study a further catch, of 225, was organised on the Beauly Firth by the Hon. D. Weir (see page 99).

Ducks

The ringing totals of the Trust's various ringing stations are shown in the Table. The level of Mallard and Teal ringing is now being held close to predetermined levels, in order to monitor the populations on a reasonably systematic basis. Other species are not subject to restrictions and it is pleasing to note the good totals of Pintail, Wigeon and Tufted Duck.

Ducks ringed, 1969

	Abberton	*Nacton*	*Borough Fen*	*Deeping Lake*	*Dersingham*	*Slimbridge*	*Loch Leven*	*Others*	*Total*
Shelduck	6							2	8
Pintail	5	250	1	5		3		1	265
Teal	1258	342	297	41	402	13	1	1	2355
Malard	1146	1126	1513	446	993	729	73	21	6047
Gadwall					21	2	5		28
Wigeon	14	183		2	15		4		218
Garganey	3								3
Shoveler	50	4	6	4	4	4			72
Pochard	18			13					31
Tufted Duck	118			111			232		461
Scaup	3				1				4
Goldeneye	1								1
Red-breasted Merganser	1								1
Total	2623	1905	1817	622	1436	751	315	25	9494

M. A. OGILVIE

Wildfowl censuses and counts in Britain, 1969-70

Goose censuses

Pink-footed Goose *Anser brachyrhynchus*. The annual census held on 8th/9th November 1969, revealed a total of about 74,000 Pinkfeet, an increase of 9,000 on the previous year. The breeding success was much improved over the past two years (24.4% young birds in the flocks; average brood size 2.2). This undoubtedly contributed to the rise in numbers.

European White-fronted Goose *Anser albifrons albifrons*. The peak winter population was reached in the last half of January at a record level of about 13,000. A very good breeding season (35—40% young; brood size 2.4) was a contributory factor.

Greenland White-fronted Goose *Anser albifrons flavirostris*. This race has never

been accurately censused owing to its dispersed distribution through west Scotland and Ireland, but counts are made regularly at its major haunts in both countries and these have not shown any marked change in 1969-70. For the second winter running the breeding success from a small sample of Scottish wintering birds was much lower (14.0%) than from a much larger sample in Ireland (35.0%).

Greylag Goose *Anser anser.* About 62,000 Greylags were counted during the annual census on 8th/9th November 1969, very slightly though not significantly up on the previous year. There is a strong possibility that adverse counting conditions and movements between wintering areas during the count led to an under-estimate of the true picture. This view is reinforced by the proportions of young found in the flocks (21.2%; brood size 1.9) which would have been expected to lead to an overall increase.

Barnacle Goose *Branta leucopsis.* The Spitsbergen breeding population, wintering on the Solway reached a peak of 4,000, above the level of recent years. Breeding success was good (27%).

No census was made of the Greenland population, though there was a further slight increase in the numbers at the principal wintering haunt of Islay, where there were 14,300 in November 1969 and 13,700 in March 1970. Breeding success was moderately good (20.0% young, though average brood size was low 1.9).

Light-bellied Brent Goose *Branta bernicla hrota.* The flock at Lindisfarne, Northumberland, reached a peak of 1,500 in late January, higher than for several years. No censuses were held in Ireland this winter, but counts were made of the proportions of young birds (47%) indicating a very good breeding season.

Dark-bellied Brent Goose *Branta bernicla bernicla.* The peak population in Britain was reached in mid-February when 16,900 birds were counted. This high figure was certainly due to the excellent breeding success recorded (45%).

M. A. OGILVIE

Duck counts

Shelduck *Tadorna tadorna.* A record season, the best since 1948, with most birds arriving in January. The spring dispersal was delayed, probably by adverse weather.

Teal *Anas crecca.* This species continues to increase, with this the best season since the hard winter of 1962-63. A major influx occurred in January driven from the Continent by hard weather.

Mallard *Anas platyrhynchos.* Counts in the early winter were normal, but by November numbers were low in Scotland and unusually high in England and Wales.

Wigeon *Anas penelope.* A record season, the best since counts began in 1948. Large numbers arrived in January, with 36,000 counted on the Ouse Washes alone.

Pochard *Aythya ferina.* The record level of the 1965-66 and 1966-67 seasons was regained, with high numbers present throughout the country.

Tufted Duck *Aythya fuligula.* A satisfactory season. The population has now fluctuated slightly around the same level for the past thirteen years.

Seasonal indices, 1969-70 (1959-60=100)

Shelduck	113	Wigeon	137
Teal	59	Pochard	192
Mallard	102	Tufted Duck	104

International Wildfowl Census

The fourth census was held in mid-November 1969 and mid-January 1970. The November count was made to discover whether it gives a better representation of the winter population. In Britain 889 sites were observed in November, and 1,064 in January, the numbers of duck seen being as follows:

	November 1969	January 1970
Shelduck	13214	46450
Pintail	6604	8369
Teal	28696	37570
Mallard	122765	111684
Gadwall	1445	316
Wigeon	91904	165882
Shoveler	2758	1958
Eider	6138	8282
Pochard	22979	23572
Tufted Duck	22024	26871
Scaup	2081	14801
Common Scoter	1699	1168
Velvet Scoter	99	50
Long-tailed Duck	485	413
Goldeneye	5154	7822
Smew	8	103
Red-breasted Merganser	925	1027
Goosander	229	1588
Totals	329207	457926

G. L. ATKINSON-WILLES
BARBARA YARKER

International Research and Conservation

On 1st January the headquarters of the International Wildfowl Research Bureau was established at Slimbridge, with Dr. Matthews as Director (in addition to his Trust position). The Trust allocated accommodation for the Administrator, Mr. E. Carp from the Netherlands, and a secretary, and provided other facilities.

A five-day meeting of the Executive Board was organised in May in Vienna. The biennial Congress of the International Union of Game Biologists was attended in Moscow. This afforded invaluable opportunities to strengthen liaison with the Russian biologists, both there and in field trips to the north, south and east as far as Lake Baikal. The vast text of the Proceedings of the International Regional Conference on Wildfowl Conservation, held in Leningrad in September 1968, was prepared for publication.

Much time was spent in producing an acceptable draft of a Convention on Wetlands of International Importance to Waterfowl. It is hoped that the consideration and signing of this will be one of the main tasks of the next big meeting on wildfowl conservation. This was scheduled for Iran in early 1971 and preparations were already under way.

The Bureau's Bulletin was edited into a new form and a start made on publishing therein an up-to-date bibliography of the wildfowl and waders, covering all the world's literature.

Representations were made against the urgent threats to wetland habitat of waterfowl, especially those in the Waddensee of the Netherlands, the Thjorsarver breeding grounds of the Pink-footed Goose in Iceland, and the Foulness wintering grounds of the Brent Geese.

Also in connection with the I.W.R.B. Mr. Atkinson-Willes continued to act as Co-ordinator of the Duck Working Group and attended a meeting of east European wildfowl counters in Leipzig. Another international mid-winter census was organised in January and, as an extension of the programme, one in November.

The other Working Groups of the I.W.R.B. have their Co-ordinators based elsewhere, namely for Geese, Professor M. F. Morzer Bruijns in the Netherlands (with Mr. Ogilvie as British representative); for Waders, Mr. F. Spitz in France (Mr. P. J. K. Burton in Britain); for Habitat Management, Dr. J. Szijj in West Germany; for Hunting Rationalisation, Dr. T. Lampio in Finland. The last group was formed during the year and is working in close contact with the International Hunting Council, and through them with W.A.G.B.I. in Britain. Then there are the Regional Surveys for Southern Africa (Professor J. M. Winterbottom); West Africa (Mr. F. Roux); Central Asia (Dr. V. E. Flint); North-East Asia (Dr. A. A. Kitschinsky); and South-West Asia, where Mr. C. D. W. Savage continues his work (see below).

Other overseas matters included the attendance of Dr. Kear at the International Ethological Congress at Rennes in France, and the election of Dr. Matthews as a Corresponding Fellow of the American Ornithologists' Union.

G. V. T. MATTHEWS

Wildfowl survey in south-west Asia

Introduction

The highlight of 1969 was the receipt in Pakistan of a consignment of Marbled Teal *Marmaronetta angustirostris* for reintroduction at Lal Suhanra near Bahawaipur (see p. 87). There were the usual winter wildfowl counts, though fewer than in the 1968-69 season, and three very successful expeditions in association with I.W.R.B. A conference in Novosibirsk on bird migration and the spread of arboviruses was attended by delegates from Iraq. Informal discussions on the Wildfowl Survey took place during the General Assembly of the International Union for the Conservation of Nature at New Delhi.

Activities of the Survey were cramped for lack of funds, for although the project was placed in World Wildlife category 'A' shopping list no funds could be allocated in 1969. Ironically Rs.2,000 in Indian currency lay unused for lack of volunteers in priority areas previously not covered by the counts.

Egypt (U.A.R.)

Professor Yu. A. Isakov visited the Nile delta during the winter months and confirmed the impression gathered from others that irrigation development, canalisation of water courses and density of human population has rendered this former major wintering area of relatively small importance today. Visitors in winter to Lake Nasser on the other hand have found large flocks of wintering waterfowl which would reward an ornithological expedition.

A recent expedition to Dakhla Oasis to the west of the Nile delta has recorded Cape Teal *Anas capensis* which seems to replace the Marbled Teal in similar habitats in central and southern Africa. This is an interesting extension of its range.

Jordan and Iraq

No reports have been received although observations and ringing have been continued by the Iraq Natural History Museum.

Iran

The work of the Department of Game and Fisheries has gone from strength to strength, and since the Director, Mr. Eskander Firouz, has recently been elevated to cabinet rank conservation of wildlife in Iran is likely to continue to flourish.

The Department ringed 968 ducks during the season and recoveries received now total 1,755, mostly from the U.S.S.R. In addition wildfowl counts have again been made on the wetlands of the Caspian and in Fars. The latter were the subject of intensive study by Lindon Cornwallis who participated in the counts again and also in a reconnaissance survey of the Seistan wetlands which had last been studied by Savage in 1960. Counts in the Caspian wetlands were assisted by H. Kowalski who was kindly deputed by Dr. Hoffman from Tour du Valat.

Afghanistan

No mid-winter counts were made, but by good chance Fred Koning from the Netherlands was able to visit Lake Ab-e Istadah when on a mission to Pakistan on behalf of the Fauna Preservation Society. He made meticulous counts of the huge flocks of wildlife and waders, and, most exciting of all, discovered a party of 74 Siberian White Cranes *Grus leucogeranus*. The latter are now extremely rare and in recent years have only been seen in winter at the Bharatpur sanctuary in India. The usual numbers seen have in fact been 70-80, but in 1969-70 only twelve were present and grave fears had been expressed for the remainder. It would seem, however, that the flock may have reunited at Lake Ab-e Istadah as it would have been too much of a coincidence for there to have been two groups of similar numbers.

Pakistan and India

The 1969-70 season has been another of severe drought. Wherever there has been an expanse of suitable water the ducks have been present in their thousands. Unfortunately too few of these concentrations have been counted but in Pakistan at least two important new wetlands have come to notice to offset the disaster of losing one proposed category 'A' wetland to drainage at Kharrar Jheel. Efforts to have the Calcutta Salt Lakes made a permanent wildfowl sanctuary were supported by a resolution of the I.U.C.N. General Assembly but realisation is encountering many problems with other interests.

The almost total absence of Greylag *Anser anser* in their usual wintering grounds west of Delhi possibly explained an unusual concentration on the Ravi river near Lahore. These, however, only amounted to less than two hundred and seem to emphasise that the former bordes of Greylag which were to be found 'on nearly every large jheel' are a thing of the past, and apart from those which visit Upper Assam the Greylag may be nearly extinct in the sub-continent.

An unusual record from East Pakistan was a first year Falcated Duck *Anas falcata* shot in Sylhet and identified from relics airmailed to the writer. This was in fact the first recorded in East Pakistan though it had always been assumed that the species had been previously overlooked.

During the summer papers were submitted by Salim Ali and Savage to the symposium of bird migration and arboviruses held in Novosibirsk. M. Blondin from Tour du Valat attended on behalf of I.W.R.B. Later, however, Dr. Salim Ali was able to visit Novosibirsk at the invitation of the organisers and had the rare opportunity of visiting the central Siberian breeding grounds of many

species that winter in southern Asia. Dr. Salim Ali said afterwards that the most encouraging thing he noted was that so much of the vast duck factory was still virtually inaccessible to man. True the more accessible fringes were severely affected by human activity but there was so much more that was not. He thought that it was still possible to save the wildfowl of Asia if a concentrated international effort could be made now, before it is too late.

C. D. W. SAVAGE

Bewick's Swans in the Netherlands, March 1970

Introduction

In March 1970, I spent eight days in the Netherlands in order: (1) to examine the winter habitats of Bewick's Swans *Cygnus columbianus bewickii* and to see whether the conditions under which the swans can be observed there made future studies based on individual recognition feasible; (2) to see if any Slimbridge wintering birds could be found, as the Netherlands are on their migration route between Britain and Arctic Siberia.

Itinerary

On 22nd March, the area along the river Yssel upstream of Kampen was visited and also that along the west side of the Veluwemeer. On 23rd March, an excursion was made to the area near Nijkerk. On 24th March, the enclosure dyke of the Ysselmeer, places along the shore at Gaast and Molkwerum, and also the inland lakes north of Lemmer, were visited.

On 25th, 26th, 27th and 28th March, the areas around Kampen, along the Yssel and the Veluwemeer, were revisited, and the numbers of swans recorded and those near enough were checked with a telescope for Slimbridge swans. On 27th March an excursion was made to South Flevoland, the greater part of which is still flooded.

Numbers

A total of about 450 Bewick's Swans was seen. Everywhere there were fewer swans than there had been a week earlier, indicating that I was too late. This spring, also, the majority of Bewick's seemed to leave England earlier than usual. The largest group to leave Slimbridge went on 24th February, compared with 6th March in 1969. The weather was fairly mild while I was there, especially at the beginning of the week.

The largest numbers of Bewick's were found along the Yssel where the most seen on one day was 364 on 28th March. These were in groups ranging from ones and twos to 104 which was the largest flock I saw during my stay. The average number in a flock was about 35.

Along the Veluwemeer the most seen on one day was 49, on 22nd March; these were along the shore of the East polder just south of Elburg. I returned on three different days after that and the numbers had decreased considerably. Those remaining were scattered out in the middle of the Veluwemeer.

The only other place where there was any number of Bewick's was in fields opposite Nijkerk which I only managed to visit twice. The first time there were only 14 but six days later there were 46. Three days before I arrived there had been 150 in these fields. Up near the enclosure dyke, which is supposed to be a favourite haunt of Bewick's Swans, there were 13 birds on 24th March.

Discovery of Slimbridge birds

In my whole visit only 320 individuals were close enough for individual identification. On 22nd March I found a Slimbridge swan called Karoo in a flock of 49 on the Veluwemeer south of Elburg. Although I was doubtful of his identification at the time, not knowing the chances of seeing a Slimbridge swan in Holland, I am now sure, having since seen portrait photographs of him taken on Swan Lake.

On 24th March I found a Slimbridge pair, Peasant and Gypsy, in a flock of 67 unfamiliar swans on the floodwaters along the Yssel at Zalk, between Kampen and Zwolle. By the next evening Peasant and Gypsy had disappeared and there were only 27 swans. On 26th March in the evening, the numbers had built up again to 59, and among them was Raquello, bearing a large white plastic ring. The number, G156, was scarcely

discernible in the low light but, as I subsequently discovered, it could be read with a telescope in good light up to a distance of nearly 200 yards.

On the morning of 27th March, in the same place, I also saw a swan bearing a tall metal ring, but too far away for the number to be seen. Thirty-three of these rings were used at Slimbridge in 1966-67 and this swan must then have been a cygnet for it was not named or drawn.

On 28th March I found Peasant and Gypsy again, further along the river, just upstream of Zwolle. Here in a flock of 104, I also found another Slimbridge swan, Booster, recognised first by his bill pattern. Only after half an hour of waiting, was his numbered plastic ring seen above the water as proof of his identity.

Habitat

The Bewick's seemed to prefer the flooded areas along the Yssel to more permanent waters. The water level was rising daily while I was there, and more and more of the fields were becoming covered. Some swans were seen on shallow open water, such as that just inside the enclosure dyke.

The Bewick's also seemed to like the Veluwemeer, which is about two feet deep all the way across. But the numbers seen were small compared with the numbers which usually occur here. There is apparently a pollution problem due to the effluent and sewage from Harderwijk though it seems that this should be having little effect as far north as Elburg yet.

Swans were also seen grazing on comparatively dry grass fields in two places, near Nijkerk and in a field in the East polder roughly opposite Elburg.

Behaviour

In only one place were swans seen up-ending. Otherwise they were feeding with only their necks down below the water. This perhaps indicates that up-ending was not absolutely necessary. In many of the places along the river which gradually became flooded the swans moved as the water depth increased and dry patches changed. Along the Yssel and on the Veluwemeer the swans were feeding, preening and sleeping, and occasionally having arguments. Those on the fields were grazing. Those seen in the South polder were sleeping and some were preening. Although this area is still mostly flooded, it does not appear to have the right food for the swans.

Members of pairs and families did not stay as close to each other as they do on Swan Lake—while one sleeps the other may feed up to 40 yards away. This may perhaps be because, amongst smaller groups of swans and in less crowded conditions, they can maintain contact more easily.

It appeared that pairs and individual swans moved about independently of unrelated swans with which they may have been consorting in some other area. Only pairs and families seemed to move together. The Slimbridge swans were found singly or as a pair, not in a Slimbridge group. Many of the swans became familiar to me and I found that a known pair would move about along a short stretch of the Yssel, being with different swans in each place each day.

Possibilities for future viewing

The Bewick's Swans were surprisingly tolerant of humans, especially in vehicles. They were more wary of people on foot when it was not possible to approach within 150 yards. Many of the places where the Bewick's were on the river were close to human habitation and at one place they fed immediately beside the main traffic bridge across the Yssel in Zwolle.

I am sure a large flock of swans could be built up in one place by regularly feeding them with wheat as has been done at Slimbridge. One of the best places might be on the shore of the East polder just south of Elburg. Bewick's have been known to occur here for many years. A number of small hides with covered approaches might be put up along the shore here perhaps in front of the hedge below the dyke. It is also a good place for other birds including waders and ducks. Along the Yssel feeding would have to be done fairly close to the dyke road so that observations could be made from a vehicle. Hides would not be so good here due to the fluctuating water levels.

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