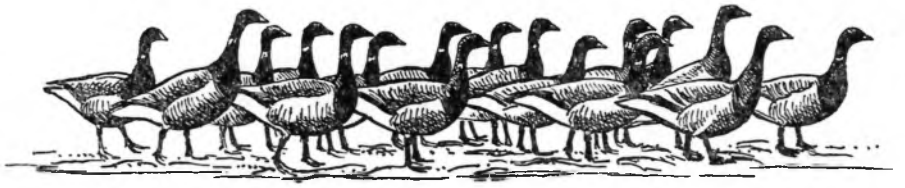

Research, Conservation and Education

The Wildfowl Trust's contributions in 1971

Research

This year saw the beginning of a new ten-year Contract with the Nature Conservancy, financing the directorate and monitoring services of the Trust. The monthly wildfowl counts, and the international mid-winter counts continued to be co-ordinated by Mr. Atkinson-Willes, assisted by Mr. Garvey (p. 126). Under the Contract, automatic data processing and computer facilities were made available at the Biological Records Centre at the Nature Conservancy's Monks Wood Experimental Station. We are particularly grateful to the Head of the Centre, Dr. F. H. Perring, and his staff for their assistance in getting this important development under way. Mr. Salmon is permanently out-posted at Monks Wood.

Mr. Ogilvie continued to organise the collection of data on goose populations and also was responsible for the ringing programme which is likewise becoming automated through Monks Wood. He was himself engaged on a ringing study of colonially breeding Mute Swans in Dorset, jointly with the Edward Grey Institute, Oxford University. He also operated, on a restricted basis, the Slimbridge Decoy. Mr. Cook continued to operate the Borough Fen Decoy, Mr. King the traps at Abberton Reservoir, while Mr. Revett took over the Nacton Decoy (pp. 128-130).

A new three-year Grant from the Natural Environment Research Council enabled Dr. Owen to continue his studies on the feeding ecology of grazing wildfowl. He started a study of the Barnacle Geese at the Trust's Eastpark Refuge, Caerlaverock. There Mr. Campbell, with the assistance of Mr. Colley, carried out observations and routine measurements (p. 140). Much of Dr. Owen's work on the White-fronted Geese at Slimbridge was published or is in press. Work on the feeding of Wigeon on the Ouse Washes was continued in close co-operation with the Royal Society for the Protection of Birds.

Work on the feeding behaviour and nutrition of captive wildfowl was continued by Dr. Kear, with the advantage of a fine new rearing room specifically designed for the purpose. Several student projects on behaviour were supervised. One of Dr. Kear's responsibilities is to ensure that the vast amount of factual data on wildfowl, collected throughout the Trust's history, reaches publication. She is also concerned, with Dr. R. K. Murton, in a continuing series of analyses of breeding in relation to latitude. The new team monograph, *The Swans*, was seen to the presses. Miss Evans, together with the Scott family, continued the fascinating study of the Bewick's Swans (p. 132). Miss Evans made a four-panel display for the swan observatory. More progress was made on the analysis of the Mallard orientation collected by Mr Cook, while preparations were made to widen the study to other species at Nacton. Prof. Matthews was elected President of the Association for the Study of Animal Behaviour, of which Dr. Kear continued as Secretary.

The routine monitoring of the collection's health was continued by Mr. Wood, with Mr. Humphreys giving veterinary advice. Further progress was made towards controlling the diseases to which wildfowl are prone. The co-operation of Dr. A. McDiarmid of the Agricultural Research Council was again most valuable. The X-ray machine was extensively used to monitor the Bewick's Swans for lead pellets (p. 132). Post-mortem material was distributed to a number of external workers while the reference collection of skin and skeletal material at Slimbridge was further expanded.

G.V.T.M.

WILDFOWL CENSUSES AND COUNTS IN BRITAIN, 1971-72

Goose censuses

Pink-footed Goose *Anser brachyrhynchus.* The annual autumn census was carried out on 6th/7th November. 65,000 Pinkfeet were counted, a drop of about 7,000 on the previous year. There were 22.2% young birds present indicating an average breeding success, though the mean brood size was low at 1.9.

European White-fronted Goose *Anser albifrons albifrons.* Peak numbers were very low at 6,000 in mid-January. The main causes of the low numbers were the mild winter and a very poor breeding season (8.5% young birds with a mean brood size of 2.0).

Greenland White-fronted Goose *Anser albifrons flavirostris.* Despite a very poor breeding season (12% young birds), numbers in the two main haunts in Eire and western Scotland were about average. No complete census was attempted.

Greylag Goose *Anser anser.* The annual census on 6th/7th November showed there were 64,000 Greylags in the country, almost the same as in the previous year. The breeding season was of below average success (17.5% young; mean brood size 1.8).

Barnacle Goose *Branta leucopsis.* The Solway wintering population, which breeds in Svalbard, reached a peak of 3,700 in November. There were 15% young birds; mean brood size 1.8. The Greenland population also had a below average breeding season with 13.6% young birds and a mean brood size of 1.8. However, the main wintering haunt of Islay showed a further slight increase in numbers with 16,500 in November and 17,000 in March. No counts were made elsewhere in its wintering range.

Light-bellied Brent Goose *Branta bernicla hrota.* The maximum count at Lindisfarne was about 700 in mid-February. There was no complete count in Ireland this winter.

Dark-bellied Brent Goose *Branta bernicla bernicla.* Following two very good breeding seasons, 1971 was an almost total failure with less than 1% of young birds in the flocks. Not surprisingly the maximum counted in Britain was down on last winter, to 18,000 in mid-January.

M.A.O.

Duck counts

Shelduck *Tadorna tadorna.* Unusually large numbers were present and the seasonal index was easily the highest on record, the previous highest being in 1969-70. Many arrived before the November count and a further major influx occurred in January.

Teal *Anas crecca.* The last two years have seen a welcome increase in this species. Although the seasonal index was slightly lower than that for 1970-71, it was higher than the seven previous ones. For the second successive year there was an influx in mid-winter, probably from the Netherlands, and the Ouse Washes held 5,320 in December. In February numbers were unusually high in western England.

Mallard *Anas platyrhynchos.* There was a marked decrease in numbers from the level reached in the previous year, but the seasonal index was close to normal, in fact five of the last seven years have had very similar seasonal indices. In the autumn and early winter numbers were high in south-east England and low in Scotland, but by late winter numbers were generally low. Poor breeding results in 1971 may have been at least partly responsible for the decrease.

Wigeon *Anas penelope.* A total of 35,556 were counted on the Ouse Washes on 11th February and about 23,000 at Lindisfarne in early winter, but apart from these two concentrations numbers elsewhere were generally lower than usual. Nevertheless, it was another very good season and the February index was the best for sixteen years.

Pochard *Aythya ferina.* This was an extremely good year with Scottish counts being particularly satisfactory. In January there was a peak of 7,500 on a loch near Edinburgh. A sharp increase in numbers occurred in 1965-66 and in spite of a few poorer years since, the population is apparently holding at this high level.

Tufted Duck *Aythya fuligula.* This species has had another very successful season. Throughout the winter there have been abnormally high numbers in England and Wales, though rather low counts in Scotland. The full run of seasonal indices from 1948-49 to 1971-72 indicates a fairly steady increase in numbers during the first ten years, then a period of relatively little change and finally a substantial increase in the last two years.

Season Indices 1971-72 (1959-60=100)

Shelduck	136	Wigeon	137
Teal	64	Pochard	193
Mallard	102	Tufted Duck	124

International Wildfowl Census 1971-72

The sixth census was held in mid-November 1971 and mid-January 1972. In Britain the number of sites covered was fewer than in the previous winter, with 941 in November and 1098 in January. The drop in the totals of ducks counted is partly a reflection of this and partly due to the very mild winter. The numbers of duck seen in Britain were as follows:

Species	*November 1971*	*January 1972*
Shelduck	21087	31940
Pintail	10942	10023
Teal	36339	42249
Mallard	124420	119293
Gadwall	1177	620
Wigeon	99195	136032
Shoveler	5567	4759
Eider	4730	5493
Pochard	28749	31112
Tufted Duck	31988	35006
Scaup	8563	15417
Common Scoter	1393	4000
Velvet Scoter	54	199
Long-tailed Duck	169	761
Goldeneye	5104	10430
Smew	5	40
Red-breasted Merganser	1187	1876
Goosander	600	1336
Totals	381269	450586

G. L. Atkinson-Willes
P. L. Garvey

DUCKS RINGED BY THE WILDFOWL TRUST, 1971

	Abberton	*Nacton*	*Borough Fen*	*Deeping Lake*	*Slimbridge*	*Others*	*Totals*
Shelduck	3					2	5
Pintail	3	204	1	3	7	12	230
Teal	674	240	231	3	13	2	1163
Mallard	1000	580	1045	252	222	6	3105
Gadwall	8	1		1	3		13
Wigeon	78	151		5		1	235
Garganey	10						10
Shoveler	50	14	1	4	3		72
Red-crested Pochard	1						1
Pochard	54			8			62
Tufted Duck	362	3		102			467
Scaup	1						1
Smew	3						3
Red-breasted Merganser				1			1
Totals	2247	1193	1278	379	248	23	5368

M.A.O.

ABBERTON RESERVOIR, 1971

The beginning of the year was relatively mild and calm with only two short snowfalls. January was the best month with 227 duck ringed, 61 of these Wigeon taken in the Middle Section. The mid-January count showed a total of 4,279 duck of 10 different species, well above the average.

Two Smew caught in the large deep water trap on the Top Section, called the 'Smew Trap' in 1958, were the first of this species therein. Here a lead was established with Tufted Duck, contributing largely towards the record total.

White-fronted Geese and Bewick's Swans were disappointingly scarce, not more than ten being seen at any one time, and Bewick's only reached a maximum of nine, these grazing some flooded pasture during early February. The early spring passage of duck was rather meagre and, apart from Tufted, the catching was poor. The first pair of Garganey was seen on 22nd April; a pair was caught in June. Breeding was probably attempted.

As in many other SE. districts, Mallard experienced a poor breeding season, whereas Shoveler, Tufted and Pochard did rather better than normal. Some big broods were produced, and a few ducklings successfully caught and marked, together with their parents.

Maintenance work was started in March with a complete repair and paint up of the ringing caravan, which, despite its age, still serves its purpose admirably. From then until the autumn every spare moment was spent in overhauling the boats, traps and other gear.

Further effort was made to increase the catch of summering duck, in addition to the now regular trapping of moulting Mallard, but without great success. The moulting flock of Pochard, which reached a maximum of 2,094 on 2nd August, proved to be as elusive as ever and efforts to get them in the cage trap on the Dam proved quite futile. However, a few were caught flightless in a circular diving duck trap freshly sited at the NE. corner of the Middle Section. Abberton's first flightless Gadwall was ringed in August.

Regrettably no lead of Shoveler was obtained during September when over 400 were counted. Rather late in the autumn it was found that under certain circumstances an occasional one would enter the portable traps along the open shore, a new departure, and it is hoped that it may be possible to exploit this discovery in future.

The exceptionally heavy rainfall in June had ensured a steady extraction from the River Stour and in spite of the dry summer and early autumn the Island was not exposed until early October. The anticipated rains did not come and the Island remained partly awash until the beginning of December. Although Teal numbers were exceptionally low, those present were attracted to the Island and the smallness of the catch is largely attributed to the failure to risk placing traps thereon.

Trapping was concentrated on the Top and Middle Sections. The quick, clean harvest left little spilt grain to attract the dabbling duck on to the stubbles at the western end and catching quickly petered out. The best month was September, when the highest autumn count was 5,640. Some Pochard were caught during this month, mostly in the 'Smew Trap'.

There was little severe weather up to the end of the year, explaining the generally low numbers of duck. Teal were down to just over 100 by mid-December. Two very late Garganey were caught in October and a Smew in December. The ringing total for the year was 2,247 distributed as shown in the tables, below and on p. 127.

Fred Trust's passerine ringing group achieved some useful ringing. Two new birds were noted for Abberton, a Bluethroat and a Barred Warbler. Goldcrests were also unusually plentiful during the autumn passage. Among other rare visitors in 1971 was an Osprey which stayed for some days towards the end of May, but probably the most delightful birds seen were the Bearded Tits which were present in small numbers on the Top Section from October until the end of the year.

Organised field parties were entertained at the Public Bird Watching Site and shown the Exhibition Caravan, containing photographs, recovery maps and models. Whenever possible a display of duck ringing was staged as an added interest.

Deep gratitude is again extended to the Essex Water Company for their continued indulgence in the use of their reservoir as a Ringing Station, and for the financial and practical help and the many facilities afforded during the year.

Numbers of duck ringed each month at Abberton in 1971.

January	227	July	128
February	91	August	232
March	94	September	400
April	67	October	369
May	51	November	292
June	59	December	237

R. King

BOROUGH FEN DECOY, 1971

The icy grip that held the Decoy pond at the end of 1970 continued until 7th January. After that up to 100 Mallard and 50 Teal returned. A total of 58 duck were taken in this month plus 74 from the trap at Deeping Lake.

February, by contrast, was a very open month, and only 23 duck were taken in the Decoy plus 55 from Deeping Lake. The Decoy counts hovered around 50 Mallard plus 25 Teal.

Trapping was very spasmodic throughout March and although the Decoy was not closed until the 25th only 17 duck were taken. The Deeping Lake trap was more productive with a take of 70. The season's total, including re-traps, was 1,495 for Borough Fen and 379 for Deeping.

Large, dangerous willows were felled early in April providing stakes for Peakirk. The shoots then produced the thick low cover essential for efficient Decoy operation. The Vicar of Boston, the Rev. David Scott, and Mr. John Moore rebuilt the NE. pipe, demolished in 1969 by a fallen White Poplar. The *Glyceria* that had become established in that pipe in two years had made it unworkable and was completely dug out. About 60 bundles of reed were cut for screen repairs.

By May mowing becomes the main chore, entailing some 20 man hours of labour per week May to July. The annual Decoy opening on the last weekend in May attracted 98 people. The 29th was wet and cold but the 30th was a really splendid afternoon.

The small influx of Mallard that appeared in early June and peaked at 110 was tackled and 70 were caught. Heavy rain caused a tree in full leaf to fall over the little end of the house pipe on the 20th, and two days were spent in clearing up the debris.

On 9th July the Canada Geese were rounded up at Grimsthorpe Park, Lincs., assisted by members of the Spalding and Whittlesey Wildfowling Clubs. Every one of the 409 geese there were caught, and 123 were removed and transported to pastures new by the wildfowlers.

In July the Decoy was opened for the 1971-72 season. The maximum Mallard count during August was 240 on the 16th and 135 duck were taken. About five tons of tail corn were given by Mr. Riddington of Crowland and stored for autumn and winter use. Piper, the Decoy dog, had a liver infection and pneumonia towards the end of the month but a series of antibiotic injections had him on his feet again in a few days.

Superb anti-cyclonic weather conditions spoiled the prospects of good catches in early September. Brilliant sunshine gave hard sharp shadows and made the duck very wary; the sight of the dog would raise the pond. The numbers using the pond only topped 500 on two occasions while a peak of over 1,200 is more usual this month. Despite efforts by Piper only 315 duck were captured.

On the 25th Piper went off his food and on Sunday evening the 26th, he died, having made his first catch on 11th September 1958 and his last on 22nd September 1971. He is buried on the bank of the filler drain in company with many earlier Pipers whose loyalty and devotion cover three centuries.

The prospects for October looked bleak. The best day count for the month was on the 25th with 475 Mallard, 220 Teal and 15 Shoveler. 293 ducks were caught.

A mongrel collie/terrier puppy was obtained in November to become Piper II. She was about six weeks old, golden coated with white feet. On the 11th a very unorthodox catch was made by dropping her over the Dog Leap and walking up the pipe. She followed on the other side of the screens and lured in six Mallard. Gale force winds on the 21st damaged the end wall at the West pipe and this was rebuilt in moonlight after evening flight. Catching was minimal towards the end of the month due to early frost and the clampdown of fog, although the 447 caught was on a par with earlier seasons. This harder weather improved the take at Deeping, and Tufted Duck began to figure in the ringing totals. This trend continued through December, 85 having been ringed by the end of the year.

Nests were recorded at the Decoy for the British Trust for Ornithology and 124 cards were forwarded for inclusion in the Nest Record Scheme.

Monthly ringing totals of duck caught at Borough Fen Decoy and Deeping Lake, 1971.

Month	*Borough Fen Decoy*	*Deeping Lake*
Jan.	45	63
Feb.	20	38
March	20	69
April	—	21
May	—	—
June	57	—
July	13	—
August	117	9
Sept.	289	—
Oct.	246	46
Nov.	344	39
Dec.	86	94

W. A. Cook

NACTON DECOY, 1971

The 174 duck caught and ringed during January were the last to be handled by 'Tom' Baker prior to his retirement in June. His remarkable career as decoyman at Nacton had spanned 52 years during which time he handled close on 200,000 wildfowl, establishing Nacton Decoy as one of the most successful ever in a period when decoys generally were in decline. He was succeeded on 1st June by his son-in-law, Don Revett, and although officially retired Tom still insisted on doing a full day's work which was a great help toward the maintenance effort.

June and July were devoted to essential jobs around the Decoy pond, including attention to erosion at the sides of the pipes and landings, putting new netting on the large end of the North pipe, erecting some new dog-screens at the South and West pipes and digging out sludge from the pipes and drainage ditches.

An innovation at Nacton this year was an Open Day for Wildfowl Trust members. This was held on 20th June but only nine members availed themselves of this unique opportunity to see the Decoy. The day's events included viewing the ponds, demonstration of the catching technique, display of recovery maps and a nature walk.

Three large sycamore trees in a dangerous condition and overshadowing the Duck house were felled and removed. An adjacent small keep-pond which was in a state of disrepair was cleaned out, refenced and later in the year made into a keeping-aviary for full-winged wildfowl in connection with projected orientation work with Pintail and Wigeon. Unfortunately the aviary was not ready before the season's Pintail/Wigeon catch petered out, but two Mallard releases indicated an unusual directional preference compared with Slimbridge and Borough Fen results, although there may have been some bias due to the selection of release site. However, all is ready for some serious orientation work in 1972.

Mallard started arriving back on the pond in early August with numbers building up steadily to a peak of about 900 during the first week in September. The first Pintail and Wigeon of the season were seen on 19th August. Counts of 250 Pintail were obtained on many days during the first three weeks of September. Wigeon numbers were similar during the daytime but on several occasions there were spectacular influxes of some 400 birds at dusk—alas, too late to catch them and they flighted again before dawn. Decoying during September was frustrated by seemingly endless days of bright sunshine without a cloud in the sky; conditions which are not conducive to successful operation as there are problems when shadows are projected on to the dog screens, and the ducks are apparently reluctant to enter a pipe under such circumstances. However, catches could be made early and late in the day so that a reasonable number of birds were ringed.

By mid-October wildfowl numbers had decreased dramatically in the continuing mild weather and Pintail and Wigeon were notably absent during November and December. An unusual catch for Nacton was three Tufted Duck. Pochard were much in evidence in November and December, with 65 on 28th November but they would not respond to the dog.

Throughout the season two decoy dogs were in use; a 12-year-old dog who at first seemed reluctant to work for her new master but later on proved quite reliable and was responsible for the bulk of the season's catch, and a two-year-old who in her first full season was rather excitable and unreliable.

The Decoy Cottage was modernised to provide basic amenities and structural alteration inside enabled a better utilisation of the rooms. A start was made on a general clean-up and restyling of the approach area to the ponds. This had become largely overgrown with elders and laurels giving it an unkempt appearance out of character with the rest of the Decoy.

The pond was disturbed by intruders on three known occasions. This was despite warning notice boards. Almost contant patrolling of the perimeter of Decoy Wood was necessary at weekends during October against would-be chestnut gatherers. The Decoy is extremely vulnerable to unauthorised entry since it is completely unfenced and the tranquility of the pond is under constant threat. Disturbances can, in extreme cases, cause large numbers of wildfowl to defect altogether for the remainder of the season or their intended halt on migration.

Numbers of duck ringed each month at Nacton in 1971

January	174	July	—
February	—	August	108
March	—	September	512
April	—	October	236
May	—	November	122
June	—	December	41

D. Revett

Conservation

The data on wildfowl distribution, numbers, migration and mortality form the basis for protective and other legislative measures by the Nature Conservancy and other bodies concerned with wetland conservation. Similarly the ecological studies provided the basis for the scientific management, particularly at the Trust's own refuge at Slimbridge, Eastpark, Caerlaverock (p. 140), and Welney (p. 140). Close liaison was maintained with many conservation bodies, especially the Royal Society for the Protection of Birds and the Wildfowlers' Association (W.A.G.B.I.), directly and through the Conservancy's Wildfowl Conservation Committee, of which Prof. Matthews was Vice-Chairman.

Liaison with other countries was through the International Waterfowl Research Bureau, whose headquarters remained at Slimbridge with Prof. Matthews as Director and Mr. Carp as Administrator. The extremely important International Conference on the Conservation of Wetlands and Waterfowl, at Ramsar, Iran, in February, and the Convention which emerged from it have already been described in WILDFOWL 22. The I.W.R.B. organised an international Swan Symposium at Slimbridge in December, attended by researchers from as far away as Alaska, Japan and New Zealand. This was followed by the I.W.R.B.'s Executive Board Meeting, to make a complete week of international activity at the New Grounds. The Final Act of the Ramsar Conference was published within three months and work continued on the massive Proceedings through the rest of the year. The I.W.R.B. Bulletin was also prepared and circulated. The Symposium papers may be published in book form.

G.V.T.M.

SLIMBRIDGE: THE WILD GEESE, 1971-72

European White-fronted Goose *Anser albifrons albifrons*

The first arrivals were ten on 5th October, and by the 11th 94 were present. A slow build up through November took the flock to 400 on the 26th and then it increased a little faster to reach 1,210 on 16th December and 1,800 by the end of the month. 2,600 were present on 13th January and 2,800 on the 21st. The flock stayed at this level until early February when it increased to 3,200 on the 4th and a very low peak of 3,350 on the 9th. Thereafter it dropped to 2,500 on the 23rd and by 2nd March only 1,100 remained. Further departures occurred and 535 were counted on the 6th. These stayed until the 14th and the last one was seen the next day.

The extraordinarily low peak count was a reflection firstly of the extremely mild winter both in England and in the Netherlands, the main winter quarters for this population, and secondly of the very poor breeding season of 1971. Only 8.5% young were counted in the flocks, one of the lowest proportions ever recorded at Slimbridge, with a mean brood size of 2.0. The figures are averages of several counts taken at intervals during the winter.

Lesser White-fronted Goose *Anser erythropus*

An adult was present from 22nd January until late February while a first-year bird was seen briefly on 14th February.

Bean Goose *Anser fabalis*

An adult appeared with some of the earliest Whitefronts, on 8th October, and stayed right through the winter until well into February. It was joined by a second adult on 22nd January, which also stayed for about another month. Both were characteristic of the Western race, *fabalis*.

Pink-footed Goose *Anser brachyrhynchus*

Nine were first seen on 3rd January and up to 14 were seen during the month. A single one was still present on 14th February.

Barnacle Goose *Branta leucopsis*

A single adult was present from 4th to 13th January.

Dark-bellied Brent Goose *Branta bernicla bernicla*

An adult was first seen on 2nd December. It stayed through the winter and was last observed on 6th March.

M.A.O.

SLIMBRIDGE: THE WILD SWANS 1971-72

This winter the first five Bewick's Swans came to Slimbridge on 25th October. Three of these were complete newcomers to Slimbridge, while the other two, Antony and Antonia, had become well established in previous winters. It was interesting that, like the first swans to arrive last winter, these birds did not reappear the next day. Indeed the three never returned; Antony and Antonia did on 12th December. There is no apparent reason why these first birds do not settle. The Rushy Pen has always been cleared of visitors by the time they fly in, for they usually are first seen on the river estuary, or else arrive early in the morning before the Trust is open.

Numbers built up to 67 during the first four days after which there was a lull for 12 days. Then another four days of massive influx followed, with fairly constant arrivals during November. By the end of the month 292 swans had been recorded, 16 more than the same date last winter, the record year so far. December, however, took the puff out of our sails: during the next four weeks only 43 swans arrived; in the next three days there was a moderate surge ahead of 28. On 1st January, as a feeble climax, the greatest number of Bewick's, 311, came to Swan Lake on one day for the season. This grand total was exactly 100 less than in the previous winter, and considerably down on the past three winters.

Disappearances began very early: on 10th January in the middle of mild wet weather 107 birds left, but of these only 40 were genuine departures. The rest returned sooner or later, for prolonged stays or irregular appearances. And so, although by 13th January numbers had dropped to 161, they slowly built up again as new birds continued to arrive, and old ones returned. By 1st February the total was up again to 297; however, by the middle of the month it was around 130, and never rose again beyond about 160 (at the end of the month). Numbers continued fairly high, however, until mid-March; then, within a week they were all gone, the last ones leaving on 22nd March.

The final total of recognised individuals for the season was 528, which was down on the past two seasons. The cygnet proportion was also low, 11%, and the mean brood size was 1.7. There was only one pair with four cygnets; six had three; eight had two; and there were 19 singles. Of the total, 258 had been here in previous seasons making the return rate of adults and yearlings 55%.

During the winter 161 swans were caught, and 88 were ringed for the first time. Some improvements had been carried out to the catching and holding systems, which generally made the process more efficient: the last pen into which the swans are herded was made considerably smaller, and was constructed out of plastic covered wire so that any possible damage to the birds was eliminated. The smaller pen makes it easier to catch them up individually. Also during last summer, new plastic jackets to restrain the swans during processing had been designed and constructed. They were made from P.V.C.-coated 'Trevira' with fastenings of 'Velcro', so that the jackets are very quick to do up, and are adjustable according to the swan's size. All the processing can be done with the jacket in place, except for measuring the wing, which is done at the end anyway. The jackets can be hosed down after each catch, and any dye washes off them.

The policy of X-raying was continued, especially as plates of birds also X-rayed in the previous winter would show if any shot had been gained in the intervening year. Efforts were concentrated on yearlings and juveniles, and the results for the two years are as follows:

	Total	*Adults*	*Yearlings*	*Juveniles*
Total X-rayed	181	111	36	34
With shot	57(31%	41(37%)	11(31%)	5(15%)

Differences between the two years in the percentage of juveniles and yearlings with shot in them were not significant, as samples were so small in the first year.

A distinctly higher proportion of the adults were carrying lead in 1971-72 (49% of 35) than in the previous year (32% of 76). We feared that perhaps the yellow-tailed birds were attracting the attention of shooters. However, this was not the case, for 79% of 1970-71 yellow-tails returned this season as against 81% in a sample of similar age and Slimbridge experience. Incidentally, some of the returnees still had a few yellow feathers, so the dyeing programme is throwing interesting light on the moult sequence.

The suggestion that shooting pressure on this protected species was increasing gave particular interest to the 14 birds which were X-rayed in both years. The shot content in 12 was the same. Two had gained, both previously having one shot each. Schoolboy now had two, and Pie

21 of three different sizes. If swans were caught again during the winter, the opportunity was taken to re-X-ray them. This showed that one bird, Guy, contained six pellets on 30th November, but by 2nd February had gained two more. He had only spent seven days away from Slimbridge in the interim.

At the beginning of January the remains of 12 swans were found on the Dumbles and other fields close to the Trust. Six of these had quite certainly died recently. All had been got at by foxes, but it was impossible to say whether the swans had been alive or dead when this happened. Certainly the tides were very high, which may have encouraged the swans on to dry land at night, and there were thought to be a lot of foxes in the area. One swan, Denise, did provide a clue as to the reasons for the deaths. When X-rayed it was found that she had a lead pellet in her head, which had pierced the optic nerve. Had the pellet been lodged there previously she would have been seen to be blind in one eye when on Swan lake two days earlier. She was not, so she must have been shot near the Trust. Her mate, Oliver, was also found dead very close to her. We can only conjecture that he landed with her when she was shot and was pounced by a fox, for they were near to a hedge. They were one of our most interesting pairs of swans, for although they had come to Slimbridge every year since 1967-68, they did not appear regularly, but seemed to vary their attendance according to weather or population pressure on the pond. All the swans found at this time were X-rayed, but, of course, the foxes had removed varying amounts of the evidence. The local Wildfowlers' Club was as upset as we were at this oafish destruction by Marsh Cowboys of these lovely, protected birds (one of the cygnets X-rayed alive during the winter had pellets of the size often used by clay-pigeon shooters). Certainly we can no longer comfortably assume that our swans are only shot when overseas.

A pair of Whooper Swans came regularly to Swan Lake between 29th December and 20th January. They had been before in February 1970, although it was uncertain at the time if they were a pair (see WILDFOWL 21). Then one of them had no tail feathers, but these appeared quite normal this winter.

Sightings of Slimbridge Bewick's Swans in Britain and Europe, December 1971 to April 1972

The first swan catches at Slimbridge were in November and they continued until early February. Just before release 96 swans had their tail and wing tips dipped in picric acid, a yellow dye, for easier identification away from Slimbridge. All sightings of Slimbridge swans, whether identified by dye, ring, or bill pattern alone or in combinations are shown in the Table. Actual numbers are obviously impossible to reach in certain categories, as some of the birds reported could be the same individual moving around.

An analysis was made as to how the swans were identified as having been at Slimbridge. It was assumed that the dye attracted an observer's attention before a ring or bill pattern. Swans seen from the Observatory on the Trust's Welney

Table. Distribution of marked swans in north-west Europe, winter-spring 1972.

Period	*Ireland*	*Britain west of Slimbridge*	*Within 40 km. of Slimbridge*	*Britain east of Slimbridge*	*Ouse Washes*	*Netherlands*	*West Germany*	*Denmark*	*East Germany*	*Sweden*	*Poland*
Dec. III	1	—	2	—	2	—	—	—	—	—	—
Dec. IV	4	—	—	—	8	—	—	—	—	—	—
Jan.. I	1	—	—	—	8	—	—	—	—	—	—
Jan. II	1	—	—	4	13	—	—	—	—	—	—
Jan. III	1	2	—	3	17	3	—	—	—	—	—
Jan. IV	1	1	—	1	18	8	—	—	—	—	—
Feb. I	2	—	2	1	19	1	—	—	—	—	—
Feb. II	6	3	12	1	20	4	—	—	1	—	—
Feb. III	1	—	—	1	20	3	9	—	—	—	—
Feb. IV	—	—	9	—	17	1	9	—	—	—	—
Mar. I	—	—	—	1	20	6	9	—	—	—	3
Mar. II	—	—	—	—	15	1	5	—	1	—	—
Mar. III	—	—	—	1	29	11	17	—	2	—	—
Mar. IV	—	—	—	—	—	—	1	—	1	3	—
April I/III	—	—	—	—	—	—	2	1	2	3	—

Refuge on the Ouse Washes were excluded as conditions there cannot really be classed as those of the field. The attraction of artificial feeding would allow a higher proportion of swans to be recognise by ring or bill pattern alone.

The minimum number of swans to be identified by dye was 56; 20 (and two cygnets, by association) were recognised by bill pattern only; 24 were recognised by ring alone, and of these, the numbers of ten were read.

Sightings are very much fewer before mid-December. One ringed bird was seen on Öland, Sweden, on 15th October. A ringed swan arrived at Welney at the end of October, and was joined by another in the third week of November. They were still there a month later, and did not move on to Slimbridge.

It is not possible to say yet whether artificial feeding at Welney will affect the numbers (and especially of established swans) at Slimbridge. Certainly 23 known swans were identified at Welney, none of which moved on to Slimbridge. Seventeen swans, which were at Slimbridge earlier in the winter, arrived later at Welney. However, Karoo, which arrived at Welney on 25th January, after having been at Slimbridge the day before, returned six days later to Slimbridge, although she only stayed two days. Nothing was then heard of her until she called in at Welney again for five days at the end of March. It will be fascinating to see what those birds that sampled Welney this winter will do next year.

Other swans that were recognised and which had not been checked in at Slimbridge this winter were six in Ireland; two in Britain; five in the Netherlands; and three in West Germany.

It is interesting to note that swans had moved from Slimbridge to the Netherlands as early as the third week of January and to Poland by the first week of March. These early eastward movements were also noted in 1970-71, another mild winter.

Two sightings were of especial interest: Gold left Slimbridge with Miller on 9th February, but on 18th March was seen on the river Dove in south Derbyshire, alone in the company of two Mute Swans. Similarly Cumula and Nimbus left Slimbridge on 10th January. Three weeks later Nimbus returned alone and stayed until 18th March. Meanwhile Cumula had been reported from the Netherlands on 22nd February, from where she disappeared on 12th March.

The number of sightings was certainly swelled by the fact that Dafila Scott and I made a special trip to find Slimbridge swans, starting on 17th March. On that date we recognised 28 swans out of a total of 360 at Welney. Of these, 16 had been at Slimbridge during the winter, including Cuba and Castro and their two cygnets. The interesting point about this family is that they first arrived at Slimbridge with three cygnets and one of their cygnets from the previous year, called Cupid. Quite early in January Cuba and Castro disappeared with two of the cygnets, leaving behind Cupid and the third cygnet. It is not known where they went, but on 1st February they returned for the day. Far from the family reuniting, Cupid and the cygnet remained behind until 18th March, while the rest of the family disappeared, to turn up later at Welney.

By contrast, another pair at Welney was Compass and Point. They too had been at Slimbridge and left their cygnet of the previous year, South, with which they had been associating, behind there. But they only had ten days to themselves at Welney. Then South flew in, and all three were still there on 17th March.

The next three days Dafila Scott and I spent looking at the swans in the Netherlands, the only large flocks being found in the fields between Bunschoten and Nijkerk (groups of 175 and 29) and on the Veluwemeer near Strand Horst (group of 27). The grouping on the fields altered slightly during the next two days, and the total number diminished to about 70 by 21st March. No swans were found on the river Yssel, which was extremely low. Out of the total number of swans, about 170 were close enough for the bill patterns to be seen well, and ten Slimbridge birds were found (all between Bunschoten and Nijkerk). These comprised four with Darvic rings, one with a metal ring only, one unringed, and a pair, Peasant and Gypsy, with their two cygnets. This pair were also seen in the Netherlands by Dafila Scott in spring 1970, but then on the Yssel, when the weather had been much wetter. None of the birds were dyed, but were approachable by foot to about 150 yards.

On 21st March we moved on to West Germany, passing on the way an area reported to be a well-known resting place for migratory swans—a dead arm of the river Ems at Vellage, south of Weener. No swans were to be seen, however.

The following three days were spent on the Elbe estuary, north-west of Stade, where in some springs 800 or more Bewick's Swans have been reported. We found groups totalling about 450 individuals on the Asselersand and Gauensie-

kersand, areas theatened by industrial development, and another 500 individuals, also in large groups, on the Allwördener Aussendeich. A further 34 swans were seen on the Nord-Kehdingen flats. Because of the very dry weather we were able to approach the swans by car across the fields outside the main dyke, and sometimes get to within 80 yards of them. Problems did, however, arise because of the very strong sun and resulting dark shadows, the heat haze and the strong wind which shook the telescope. A total of 14 Slimbridge birds were found. On the Asselersand there were two yellow tails. Another four were on the Allwördener Aussendeich, plus two ringed swans, and the Peasant/Gipsy family again! We found them on the 22nd, having last seen them in the Netherlands four days earlier. The last three swans were a pair called Beachcomber (ringed) and Beechnut and their cygnet. Beachcomber was particularly interesting, as his ring number had been read, on the upper Elbe, on 27th February. He had therefore moved north-west at a time when he might have been expected to go east. However, presumably it was not time to go east, and the river just became too low near Hitzacker, where he was seen. When Dafila Scott and I visited this area on 25th March, only seven swans were found (up to 13 dyed swans were seen there last spring and reports of up to 700 birds were received). Similarly only 18 Bewick's were seen on the Stor south of Kellinghusen the day before, whereas eight dyed birds had been reported from there the previous spring.

On returning to Britain we found that the last swans had left Slimbridge on 22nd March and Welney on the 25th. There appeared to have been no corresponding increase in the Netherlands or Germany. Do late leaving birds make longer flights, over-flying these countries? All the Slimbridge swans seen in the Netherlands and Germany had left Slimbridge by 13th February, and so they would have had plenty of time to settle down in either of these countries again. It is fascinating to know even a little more about the swans' movements and migration, especially at this individual level; but how to find out about the rate of travel of individuals, and more especially their motives which may be in complete contrast to those of other individuals, remains a problem for the future.

Mary Evans

SLIMBRIDGE: CURATOR'S REPORT FOR 1971

A thousand birds of ninety kinds were reared at Slimbridge in 1971.

Perhaps the satisfaction of the season was that fifty-eight Hawaiian Geese were hatched—the largest number so far at Slimbridge—of which fifty-four survived.

The breeding of the White-winged Wood Duck was a minor triumph as the birds had only been reared once before in captivity, by Mr. Schuyl at Rotterdam before the war. Then a pair of pinioned birds bred in a small open enclosure. It is not known what happened to the birds that were hatched or how long they survived in captivity.

White-winged Wood Duck were first represented at Slimbridge by a consignment from Siam which arrived in the summer of 1955. In those days our aviary accommodation was at a minimum and the ten birds that arrived, after quarantining, were let loose in the Rushy Pen. During the quarantine period the difficulty was to find the right food. Grain, biscuit, bread, etc., were refused but minced eel was eaten avidly. This was gradually mixed with biscuit and wheat and finally, by the time the birds were released, they were more interested in the biscuit and wheat than the eel. They survived for four or five years and although the females were seen going in and out of nesting boxes no eggs were found and the last bird died in 1960.

In 1968, under the auspices of the World Wildlife Fund, some birds were caught in Assam as juveniles by Mr. Sam Mackenzie and they were eventually sent to Slimbridge in February 1969. They turned out to be five males and one female. Subsequently in January 1970, a further four females and two males arrived. This gave the Wildfowl Trust five pairs of these very rare birds, four pairs of which were pinioned. Two pairs were sent to other aviculturists in order to spread the chances of propagating the birds. The full-winged pair was put into our Guinness Aviary where their diet consisted of turkey starter crumbs, wheat, brown bread, biscuit meal, minced beef, minced eel and dried shrimp, together with duck weed.

Various kinds of nesting sites were provided. In the fork of one tree in the aviary a box 2′ × 18″ with 6″ sides was

fixed and filled with peat, earth and leaves. A similar sized kennel 18″ high at the hip with a 6″ square hole in one end was placed in another tree. Another kennel was available at ground level and yet another in the winter house, raised on logs a foot from the ground. The last was eventually the selected nesting site.

The eggs are very similar in size and shape, though somewhat more opaque, to the Muscovy and were laid over a period of fourteen days. But the importance of the breeding project restricted our observation as to when the bird actually started to incubate. It did seem that she was never on view after eight eggs had been laid. It was surmised that the incubation period would correspond with the Muscovy but no one was allowed near the nest during the incubation period. Finally after thirty-three days both birds were seen on the pond and we could then examine the nest. At this stage nine out of the ten eggs were found to be chipping. Within forty-eight hours the female bird was on the pond with nine ducklings, one of which was obviously the weakling of the family. Within twenty-four hours it was apparent that the male was going to cause a great deal of trouble as he spent his time catching the ducklings and dunking them in the pond. Consequently he was removed during the rearing period.

The ducklings themselves are not very distinctive, being dark brown and yellow, rather like large Mallard ducklings except that the post orbital stripe turns up almost at a right angle to the dark brown cap (Plate XV, facing p. 128). The legs are duo-coloured like all Cairinini, in this case black and yellow.

The remaining ducklings grew well on a diet of minced shrimp, turkey starter crumbs and duck weed. When they were fully feathered they were removed from the mother to another aviary and the male was re-united with her.

The adolescents had a brown rather than black plumage and it was apparent that two of them, a male and a female, were going to be much whiter on the head and neck, with more white blotches over the body than the other birds. At a year old the female of these two is almost completely white on the head and neck and the back has large areas of white. This would seem to confirm that the mystery bird shown in a photograph in the Eighth Annual Report (1957) might well have been this white form of White-winged Wood Duck.

S. T. Johnstone

PEAKIRK: CURATOR'S REPORT FOR 1971

The breeding season commenced with the Cereopsis Goose laying its first egg on 15th February.

The weather was mostly wet during January, February and March, and this was followed by fine conditions in April and May, more rain in June, and further good weather in July and August

In order to finalise domestic matters in the New Service Area, a start was made during the winter by the Curator's staff on the construction of a covered Sitting Hen Box Area, and work on this project was completed by the beginning of March ready for the breeding season. This building is able to accommodate up to 72 sitting hens, and the general care and management of these is now greatly facilitated.

Unfortunately none of the pairs of breeding Ne-ne on the Neaverson Area laid, and it is considered that the area is possibly too isolated and exposed for the successful breeding of this species. Arrangements will be made to quarter these birds in the Main Side Pens for the 1972 season.

Further achievements were obtained from the Trumpeter swans; six out of seven eggs were hatched and the cygnets successfully reared to maturity.

A 'first ever' within the Trust was recorded when the only pair of Ring-necked Ducks at Peakirk laid and young were reared. This pair of birds was introduced to the New Grounds from Slimbridge in March 1966. The birds nested close to the water's edge on the island near the railway line, and the first of a total of eight eggs was laid on 2nd June. Unfortunately five of the eggs proved to be infertile, but after an incubation period of 26 days, the remaining three eggs were hatched and reared.

In addition to the rearing of five young Red-breasted Geese, other more notable species bred included Ross's Goose, Cackling Canada Goose, Patagonian Crested Duck, New Zealand Brown Duck, Baer's Pochard and Maned Goose.

P. R. Vardy

Slimbridge breeding results, 1971.

Species	*Date of first egg*	*No. of eggs*	*Infertile*	*Hatched*	*Hatched by parent*	*Total reared*
Magpie Goose	24.5	27	22	3		1
Eyton's Whistling Duck	17.6	23	7	15		13
Fulvous Whistling Duck	20.3	43	10	25		15
Cuban Whistling Duck	29.3	10	3	4	7	1
White-faced Whistling Duck	18.5	25	6	19		18
N. Red-billed Whistling Duck	20.5	19	11	7		7
S. Red-billed Whistling Duck	24.3	80	9	71	25	45
Black Swan	8.2	9	5		4	4
Black-necked Swan	11.2	11	1		10	4
Trumpeter Swan	27.4	8	1		1	1
Swan Goose	1.5	10	6	2		2
Western Bean Goose	20.4	6	6			
Russian Bean Goose	4.5	10	3	4		4
Pink-footed Goose	1.5				3	2
Pacific White-fronted Goose	9.5	5	1	4		4
Greenland White-fronted Goose	20.4	13	6	3	2	4
Lesser White-fronted Goose	24.4	23	6	14		11
Western Greylag Goose	11.4				20	20
Eastern Greylag Goose	25.4	4			4	4
Bar-headed Goose	24.4	26	18	4	8	4
Lesser Snow Goose	30.4				17	11
Greater Snow Goose	6.5	6	5	1	4	5
Ross's Goose	16.5	4	3	1		1
Atlantic Canada Goose	28.3				23	23
Moffitt's Canada Goose	12.4				1	1
Giant Canada Goose	25.3	5	2	3	10	10
Lesser Canada Goose	7.4				6	6
Taverner's Canada Goose	4.5	5	5			
Cackling Canada Goose	3.5	8	5		4	7
Hawaiian Goose	3.2	123	34	58		54
Barnacle Goose	20.4				24	22
Black Brant	30.5	4	2	2		2
Red-breasted Goose	30.5	5	5			
Ruddy Shelduck	3.4	10	9	1	7	7
Cape Shelduck	22.3	4	1	3		3
New Zealand Shelduck	8.3	9	3	4		4
Common Shelduck	12.4	14	3	10		10
Egyptian Goose	1.2				14	14
Abyssinian Blue-winged Goose	18.4	14	5	6		6
Andean Goose	9.4	19	12		5	5
Ashy-headed Goose	14.4	6	1	4	4	4
Greater Magellan Goose	14.4	4		3		3
Cereopsis Goose	15.1				3	1
Patagonian Crested Duck	3.4				5	5
Andean Crested Duck	20.4	3		3		3
Marbled Teal	8.5	76	23	51		49
Bronze-winged Duck	8.4	5	1	2		
Hottentot Teal	11.2	9	4	2		2
Versicolor Teal	10.4	29	8	20		17
Puna Teal	24.4	13	6	7		7
Red-billed Pintail	26.4	19	11	6		6
Bahama Pintail	7.4	42	17	23		23
Chilean Pintail	6.3				12	12
Northern Pintail	12.3	15	12	2		2
Falcated Teal	19.4	14	7	4		4
Australian Grey Teal	19.6	14	11	3		3
Chestnut-breasted Teal	18.4	12	3	9		8
New Zealand Brown Teal	1.4	5	4	1		1
Hawaiian Duck	12.4	30	10	20		18
Laysan Teal	11.4	16	8	7		7

Species	*Date of first egg*	*No. of eggs*	*Infertile*	*Hatched*	*Hatched by parent*	*Total reared*
Mexican Duck	3.4	6	4	1		1
Indian Spotbill	5.5	15	14	1		1
New Zealand Grey Duck	15.4	8	3	5		4
Pelew Island Grey Duck	16.4	16	1	15		14
Philippine Duck	29.4	36	3	33	10	34
African Yellowbill	20.4	22	6	16		16
Abyssinian Yellowbill	30.3	26	12	14		12
Gadwall	16.4					50
European Wigeon	18.4	34	2	24	8	17
American Wigeon	9.5	26	8	13		4
Chiloe Wigeon	7.5	30	14	12		11
Blue-winged Teal	20.4	20	20			
N. Cinnamon Teal	10.5	10	2	6		5
Cape Shoveler	25.4	8	3	4		4
Australian Shoveler	10.4	19	19			
Common Shoveler	1.5	33	11	14		14
New Zealand Shoveler	21.5	10	4	4		2
Ringed Teal	19.4	36	29	7		7
European Eider	5.5	39	16	19		14
King Eider	14.6	4	4			
Spectacled Eider	17.5	1	1			
Red-crested Pochard	10.3	47	12	32		26
Rosybill	13.5	13	9	4		4
African Pochard	7.5	7	2	5		5
European Pochard	30.4	11	1	8		8
Redhead	25.4	19	4	7	4	7
Common White-eye	13.5	38	10	14	7	11
Baer's Pochard	30.5	20	10	10		8
Australian White-eye	20.3					2
New Zealand Scaup	22.3				9	8
Tufted Duck	30.4	40	1	38		38
Lesser Scaup	16.4	7	1	6		6
Mandarin	13.4	39	3	36	7	36
Carolina	23.3	41	1	39		20
L. Brazilian Teal	1.6	5	4	1		
Comb Duck	16.6	15	6	7		1
White-winged Wood Duck	23.5	9			9	7
Muscovy Duck	16.5	10	4			
European Goldeneye	20.4	5	5			
American Goldeneye	23.4	10	10			
Bufflehead	?	1		1		
Smew	3.5	41	23	11		4
Red-breasted Merganser	3.6	8	3	1		
North American Ruddy Duck	1.5	31	18	7	20+	25
Greater Flamingo	18.6	?				5
Chilean Flamingo	25.5	?				13
Andean Flamingo	17.4	7	7			

Peakirk breeding results, 1971.

Species	*Date of first egg*	*Eggs incubated*	*Eggs hatched*	*Young reared*
Fulvous Whistling Duck	12.5	23	3	
Southern Red-billed Whistling Duck	1.7	10	7	2
Black-necked Swan	4.3	5	2	2
Trumpeter Swan	24.4	7	6	6
Swan Goose	10.4	12		
Western Bean Goose	22.4	4		
Pink-footed Goose	7.5	16	10	5
Greenland White-fronted Goose	30.4	13	6	6
Lesser White-fronted Goose	18.5	4	1	1
Western Greylag Goose	26.4	22	10	6
Emperor Goose	24.5	15	2	1
Lesser Snow Goose	3.5	11	2	2
Ross's Goose	10.5	6	2	1
Taverner's Canada Goose	21.4	12		
Cackling Canada Goose	24.4	11	8	7
Barnacle Goose	3.5	30	13	10
Red-breasted Goose	12.6	9	6	5
Ruddy Shelduck	23.4	6	2	2
Cape Shelduck	10.4	5	3	3
New Zealand Shelduck	13.5	6	1	1
Common Shelduck	25.4	51	32	32
Andean Goose	29.5	8	2	1
Ruddy-headed Goose	21.4	6	5	3
Lesser Magellan Goose	12.4	14	10	7
Greater Magellan Goose	17.5	4	4	3
Cereopsis Goose	15.2	6	3	3
Patagonian Crested Duck	9.5	7	4	4
Marbled Teal	10.5	20	18	14
Bahama Pintail	10.6	11	6	2
Northern Pintail	4.5	12		
Chilean Teal	13.4	17	5	1
Falcated Teal	30.5	3		
New Zealand Brown Duck	14.4	15	7	5
Mexican Duck	24.4	23		
North American Black Duck	10.5	10	1	1
Laysan Teal	30.4	11	7	5
Philippine Duck	12.5	10	2	2
Abyssinian Yellowbill	25.5	8	5	3
Gadwall	10.5	27	11	11
European Wigeon	3.6	13	11	11
American Wigeon	18.6	5	1	
Common Shoveler	2.5	21	20	14
Red-crested Pochard	17.4	47	11	5
Rosybill	17.5	36	19	18
Southern Pochard	30.5	7		
European Pochard	29.4	8	6	4
Redhead	27.5	8	4	3
Baer's Pochard	5.6	10	6	2
Ring-necked Duck	2.6	8	3	3
Tufted Duck	23.5	30	13	7
Lesser Scaup	26.5	1	1	
Maned Goose	7.4	15	3	3
Mandarin Duck	7.4	20	3	2
North American Wood Duck	26.3	65	32	14
North American Ruddy Duck	16.5	9	2	

WELNEY WILDFOWL REFUGE, 1971

It was another very good year at Welney with large numbers of ducks and swans using the refuge area. Wigeon numbers were particularly high in January with about 20,000 present on the 30th, out of some 32,000 counted on the whole of the Ouse Washes. Thereafter the total dropped away to 8,500 on 20th February, 5,000 on 27th February and 20th March, and 3,000 on 3rd April. Mallard numbers stayed around the 2,000 level through January falling to under 1,000 from mid-February onwards. The highest Teal count was 1,700 on 16th January. Pintail reached a peak of 400 on 23rd January while Shoveler reached 350 on the 16th. Only small numbers of both species remained after the end of February.

No less than 1,234 Bewick's Swans were counted on the whole of the Ouse Washes on 18th January and even this record was beaten on 15th February when 1,278 were present. The number on the refuge during this period fluctuated between 300 and 400. Many of these were fed daily outside the Observatory building. Up to 25 Whooper Swans were frequently with them. Small parties of White-fronted Geese were seen in the area during January, but never more than 20. A flock of 64 paid a brief visit from 27th February to 3rd March.

The breeding season was rather mixed with one pair of Ruffs probably though not certainly breeding either in or just to the north of the refuge. Only two pairs of Godwits bred, compared with five in 1970, but both were sucessful in rearing young to the flying stage. Black Terns called in but did not stay. A pair of Short-eared Owls laid a clutch of seven eggs and reared five young. The male was notable in his defence of the nest; on one occasion almost knocking out the warden with a blow to the head. Most duck species had a good season and three broods of Teal and two each of Garganey and Tufted Duck were noted. Snipe and Redshank also bred well.

Mallard numbers were high in the autumn with 3,500 present throughout September, and over 2,000 for most of the rest of the year. There was little natural flooding until early December and the other duck species were not numerous until then, though there were 8,000 Wigeon as early as 13th November. After the Washes flooded numbers rose rapidly and there were 18,000 Wigeon on 31st December as well as 1,800 Teal, 400 Shoveler and 150 Pintail. The first Bewick's Swans returned on 6th November and by early December there were over 180, with 232 present at the end of the month. The daily feeding routine in front of the windows of the Observatory quickly got into its swing providing the spectacle of a great flotilla of swans closely pursuing the warden with his barrow full of grain. Up to 20 Whooper Swans were again with them.

Developments during the year included the purchase of an additional wash bringing the Trust's holding up to 601 acres (243 hectares). The main screen bank was further extended to about 850 metres with spurs at each end projecting 100 metres into the washes. A new corridor was constructed at the southern end of the refuge extending northwards from the road across the washes for about 700 metres. Several new observation hides were installed along the new banking, bringing the total on the refuge to 29.

Wigeon House was opened as a guest house from March and was well booked from then on. The total number of visitors to the refuge in the year was over 800. This included a visit from T. R. H. Prince Philip, Prince Charles and Prince Andrew on 10th January.

M.A.O.

EASTPARK REFUGE, CAERLAVEROCK, 1971-72

Barnacle Geese

The first arrivals came in force with 1,250 present in the afternoon of 25th September though there had been none in the morning. The flock increased further during the next four weeks: 1,500 on 28th September; 2,010 on 9th October; 3,100 on the 11th and 3,200 on the 21st. On 11th November, 3,700 were counted but this peak number remained for only eight days, the flock reducing to 3,200 throughout the latter half of November and December. From 11th to 24th January the flock again increased, to 3,400. In February there was a maximum of 2,350 at Caerlaverock, while in March and April the maximum numbers were 440 and 340 respectively.

The numbers of geese at Caerlaverock fluctuated widely, often, as last winter, on a daily basis. Flocks of geese were seen to leave heading south-west to the main Kirkcudbrightshire haunts on several occasions and their return was frequently noted as well. There were at least some Barnacle Geese at Caerlaverock on almost three-quarters of the days between October and April on which observations were made (see Table).

The Table also shows the percentage of geese noted each month on the merse, the Eastpark Farm arable, and on other arable in the Caerlaverock area. It can be seen that there has been a marked increase in the amount of arable feeding, both within and outside the Refuge. Very detailed observations are being made of the feeding distribution and behaviour of the Barnacle Geese as part of a research project.

Observations on Barnacle Geese at Caerlaverock, 1971-72

Month	*Observation days* *Present*	*Absent*	*Goose days*	*% on merse*	*% on Eastpark arable*	*% on other arable*
October	23	0	89280	36.9	62.3	0.8
November	18	3	78520	16.1	57.4	26.5
December	18	4	61660	78.8	21.2	—
January	25	0	93030	7.0	54.1	38.9
February	7	15	8236	41.2	58.8	—
March	7	13	3174	24.2	69.5	6.3
April	11	8	1032	92.0	8.0	—
Total	109	43	334932	31.6	51.1	17.3
Total 1970-71	*136*	*33*	*183616*	*42.1*	*44.3*	*13.6*

From a sample of 706 geese examined in good conditions the proportion of young was observed to be 15%, and the average brood size 1.8.

A number of searches of other Barnacle haunts in the Solway were made during the winter. The main alternative haunts to Caerlaverock is Rockcliffe Marsh at the inner end of the firth. Here there were occasional flocks of up to 100 until the end of January. Then on 3rd February the main flock left Caerlaverock and up to 1,200 birds were regularly seen at Rockcliffe and also at Cardurnock Point, Cumberland, on the south side of the firth. The remaining 1,200 to 1,500 birds spent most of their time on farmland between Southerness and Southwick Marsh, Kircudbrightshire, across the River Nith from Caerlaverock.

What was almost certainly the same white Barnacle that was seen in the 1970-71 winter returned in late September and was seen frequently thereafter. Another white Barnacle (a first-winter bird) was also seen many times from 10th October. The two never associated and were therefore presumably not related. The first bird did not appear to have any of the light brown-edged feathers on its back that distinguished the bird of the previous winter, while the first winter bird had quite distinct light brown wing coverts, as well as other odd light brown-tipped feathers on its back and neck.

Pinkfeet

Large numbers of Pinkfeet were present in the area throughout the winter but only a few hundreds fed on the refuge until after the end of the shooting season in February. On 27th February up to 4,000 Pinkfeet were feeding on the merse and fields, and during March there was a maximum of 3,500 present there. On 5th March it was estimated that there were about 10,000 Pinkfeet feeding on the north side of the Solway. Numbers gradually declined during March and April and the last of the winter were 49 feeding on the merse on 9th May.

Greylags

Up to 110 were recorded in the locality during the winter, with a maximum of 52 recorded on the refuge.

Other wildfowl

An adult Light-bellied Brent was seen with the Barnacles for most of the winter. Two Greenland Whitefronts were seen among the Pinkfeet on 29th February and 1st March. A Lesser Snow Goose, presumably an escape, was also with the Pinkfeet from 20th to 23rd February.

The enclosure area of ponds with the tame wildfowl proved very attractive to wild wildfowl and at various times through the winter the following were seen inside the fence for shorter or longer periods: 3,100 Barnacle Geese, 700 Pinkfeet, 7 Greylags, 3 Whooper Swans, 1 Bewick's Swan, 285 Mallard, 65 Wigeon, 45 Teal and smaller numbers of Shelduck, Shoveler, Pintail, Pochard, Tufted Duck and Red-breasted Merganser.

Developments

During the summer 2½-metre high screen banks were constructed, providing screened approaches along both sides of the Saltcot Road to the Nature Conservancy's observation tower, and along both sides of the Avenue to the new two-storey tower built by the Trust. Screen banks were also constructed around three sides of the wild area of the enclosure to prevent disturbance to the visiting wildfowl. By the middle of September over three and three-quarter kilometres of bankings had been built and grass seeded to blend in with the surrounding countryside. At field entrances, gates with wooden slat screening were erected.

Nineteen fibre-glass hides were built into the banks at strategic viewing points. The new Avenue tower holds up to thirty people and provides a magnificent view over the refuge and the inner Solway. The Nature Conservancy have provided a 'wrap-round' observation point at the base of their Saltcot tower. This gives an excellent view over the merse.

The fox-proof fence surrounding the enclosure was increased to take in an area of eight hectares and a large pond constructed, measuring approximately 100 × 50 metres and two and a half metres deep in the centre. A wooden observatory was erected overlooking this pond; the building also serves as an interpretative centre for the refuge and houses a set of wall books prepared by the Trust's education department. Inside the enclosure quantities of willows, brambles and rushes have been planted to provide nesting cover along the edges of the ponds.

The removal of earth to build the screen banks has produced shallow ponds and scrapes along the bases of all the banks. These are proving to be most attractive for different waders and ducks, but most gratifying of all is that the Barnacles often use them for drinking and washing. This has at times brought the geese within a few metres of the watchers in the hides.

The farmyard was levelled and laid with tarmac and the general tidying up of the farm more or less completed. Nearly two and a half kilometres of new field fencing was erected and the final development work of the year was the laying of hard core into the entrances of all field gates.

L. T. Colley was appointed assistant warden in August 1971.

Visitors

A total of 1,070 people visited the refuge and were escorted round the various facilities.

C. R. G. Campbell

Education

With Prof. Matthews and Dr. Kear holding honorary staff positions at University College, Cardiff, several undergraduate courses were undertaken, and the work of two Ph.D. students at Slimbridge supervised. At Bristol University, Prof. Matthews gave other courses to undergraduates and supervised a third Ph.D. student. Undergraduates from other universities, namely Bath, Birmingham, Leicester, London, Manchester, Oxford, Reading and Southampton visited Slimbridge. Research projects at most of these were assisted by facilities or specimens. The Trust received a visitation from nearly all the Vice-Chancellors and Principals of the British Universities, in one hectic afternoon.

Mr. Jackson prepared a display, consisting of 12 double-sided wall book panels, for the observatory building at Eastpark, Caerlaverock.

A total of 567 school parties were handled at Slimbridge, comprising 21,468 children, and at the Youth Hostel there were 2,200 overnight stays by members of Field Study Groups.

With the Gate records showing 234,015 people paying for admission at Slimbridge and Peakirk, an impressive number are exposed to the educative influence of the birds themselves and to the existing wall displays. A particularly encouraging feature was a rise in the number of people coming in the winter months, when the wild swans, geese and ducks are to be seen at their best.

G.V.T.M.

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THE WILDFOWL TRUST

SLIMBRIDGE, GLOUCESTER

The aims of the Wildfowl Trust are:

1. To maintain and breed wildfowl in captivity, especially those species which are in danger of extinction.
2. To carry out scientific study of wildfowl in the wild state and in captivity.
3. To apply that scientific knowledge and experience to the conservation of wildfowl at home and overseas.
4. To educate the public by all available means to a greater appreciation of wildfowl in particular and nature in general.

TERMS OF MEMBERSHIP

LIFE FELLOWS	A single payment of £100.00. Entitled to all privileges of Full Membership (see below) but with free entry with one free guest to any refuge which is open for visiting.
FELLOWS	£5.00 a year. Privileges as for Life Fellows.
FULL MEMBERS	£3.00 a year. Entitled to free entry to Slimbridge and to Peakirk with one free guest but may opt for free entry to any one other refuge which is open for visiting instead of Peakirk. Entitled to entry at half price to other refuges which are open for visiting. Receive a free copy of WILDFOWL and bulletins, and may vote at the A.G.M.
ASSOCIATE MEMBERS	£1.50 a year. Entitled to free entry to Slimbridge and to Peakirk (but may opt for free entry to any one other refuge which is open for visiting instead of Peakirk). Entitled to entry at half price to other refuges which are open for visiting. Receive a free copy of bulletins.
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NOTE. The 16-page Annual Report and Accounts of the Wildfowl Trust for 1971 have been distributed separately to Members.