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Norfolk Bird Report - 1984

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Norfolk Mammal Report - 1984

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Line-drawings: 89, 92 & 94 Marsh Harrier *(N. Arlott)*; Front Cover: Nesting Parrot Crossbills and 123 Avocet family *(G. M. S. Easy)*; 106 and 139 Breydon scenes, 143 Mole, 144 and End Cover: Otters, 152 Roe Deer, 158 Badgers and 160 Hare *(J. Last)*; 96 Ross's Gull, 98 Parrot Crossbills, 105 Rock Sparrow, 114 Slavonian Grebes, 119 Garganey, 121 Hen Harrier, 122 Water Rail, 124 Pectoral Sandpipers, 125 Broad-billed Sandpiper, 128 Turnstones, 132 Wryneck, 136 Yellow-browed Warbler and 137 Firecrest *(R. Millington)*; 97 Dipper, 102 Ringed Plover, 106 Shorelarks, 113 Red-breasted Flycatcher, 116 Spoonbills, 107 Sandwich Terns; 83 Bearded Tits, 118 Shelduck, 123 Kentish Plover, 126 Heron/Black-tailed Godwit; 131 White-winged Black Terns, 134 Black Redstart, 140 Bearded Tit and 141 Grey Plover *(the late R. A. Richardson)*.

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NORFOLK BIRD REPORT 1984

Editorial

The Council of the Norfolk & Norwich Naturalists Society, in association with Norfolk Ornithologists Association, is pleased to present the annual report on the birds of Norfolk.

Review of the Year: The opening months of 1984 are probably best remembered for the superb goose-watching in the county. Increasing numbers of Pink-feet are now joining the Holkham White-fronts where occasional Bean Geese also put in an appearance. The juvenile Red-breasted Goose remained into March and the county's largest ever Barnacle Goose influx saw flocks of nearly 100 at Holkham and 155 at Cley with others briefly joining the huge gaggles of Pink-feet feeding on sugar-beet tops near Brancaster. Careful searching of the Brents at Cley usually revealed the Black Brant which lingered into March being joined by a second individual when it returned in autumn. Britain's only regular sizeable gathering of Bean Geese reached 236 in the Yare Valley. On the Ouse Washes assembled a record number of 3364 Bewick's Swans.

Along with the rest of Britain, Norfolk shared in the influx of Glaucous and Iceland Gulls. Few however were reported in the second winter period. March saw the fledging of Norfolk's first Parrot Crossbills under the amazed eyes of hundreds of bird-watchers. Further details appear in this Report. The Holkham Park flock of Hawfinches reached 25 birds making this one of the easiest localities to see this elusive species.

By April a heavy Ring Ouzel passage was in progress and the shortage of Sand Martins became apparent, though a reasonable breeding season resulted in 1000+ at Welney in the autumn. Some of the more unusual species included one or two wandering White Storks, a drake Green-winged Teal at Welney, 3 Hoopoes, an early Ortolan Bunting at Walsey Hills and a co-operative Rough-legged Buzzard inland on Massingham Heath in a year when there were hardly any sightings.

Most bird-watchers expect May to produce 'the goods' and 1984 was no exception. Persistent north-easterlies with cloud did nothing for holidaymakers, but resulted in 14 Wrynecks, 9 Bluethroats, 5 Icterine Warblers, 2 Red-breasted Flycatchers, a Red-throated Pipit, 3 Ortolan Buntings and several Red-backed Shrikes. Other species during the month included Serin, Red-footed Falcon and the county's sixth Marsh Sandpiper at Holme, Short-toed Lark at Wells, Great Reed Warbler at Titchwell, the almost annual Broad-billed Sandpiper at Breydon, Buff-breasted Sandpiper at Cley, Little Bittern at Norwich and the county's first Ross's Gull at Cley moving to Titchwell, for many people *the* bird of the year.

Most unfortunately the county's first White-tailed Eagle for over 20 years was met by a charge of shot and subsequently died. A great pity the vandal responsible escaped the hand of the law.

Migration had largely 'tailed-off' by June although rarities included drake Blue-winged Teal, Ferruginous Duck, Red-necked Phalaropes and Tawny Pipit while a twenty minute sea-watch off Cley resulted in 250 Manx Shearwaters.

As is often the case a few Nearctic waders appeared in July when 2 White-rumped Sandpipers and 2 Pectoral Sandpipers were reported. Whether they arrived from west or from east is debatable. It turned out to be a bumper year for Pectoral Sandpipers a few being seen at Wisbech Sewage Farm the closure of which seemed imminent at the time of publication of the 1983 Report. However, the bulldozers' arrival was delayed and the surviving lagoons are expected to remain attractive to waders until mid-summer 1985.

A good show of regular drift-migrants in August and September included several Icterine Warblers, Barred Warblers, Red-backed Shrikes and Wrynecks as well as the rarer Ortolan Bunting and 2 Greenish Warblers including one on underwatched Scolt Head Island. Yet another Marsh Sandpiper arrived at Cley and a Lesser Yellowlegs at Snettisham, only the fourth for Norfolk. A juvenile White-winged Black Tern stayed 4 days along the waterfront at King's Lynn followed in September by an adult at the same site and another juvenile inland at Denver Sluice. These in common with all the local terns and gulls flew down-river each evening to roost on The Wash.

Sea watches were generally not outstanding, yet the usual crop of Sooty Shearwaters, a couple of Cory's Shearwaters and Leach's Petrels and Long-tailed Skuas were all logged. One of the better skua passages was observed September 4th when there were 160 Bonxies off Sheringham and 150 off Cley. Three Siberian Stonechats were seen in September and an influx of Yellow-browed Warblers started late in the month. The shrill peeping of these tiny gems became a feature of Holkham woods. An immature Blue-winged Teal stayed a week at Welney, but was not easy to locate in the increasing flocks of immigrant ducks.

October was disappointing apart from the semi-rarities such as Red-breasted Flycatchers, more Yellow-browed Warblers while only one Great Grey Shrike was recorded. A Red-throated Pipit was a surprise find by one lucky observer while working on inland trial plots of cereals. An elusive Little Bunting was found at Wells. Scores of birders went home happy after having the proverbial 'crippling' views of a juvenile Honey Buzzard sitting around in trees at Holkham. It may have been coincidence but large numbers of wasps were in the area at the time presumably having been stirred-up by our feathered friend.

Warm southerly winds made November a month to remember with deposits of Sahara dust being recorded in Britain. These warm conditions resulted in several sightings of Swifts and other late migrants including a Nightingale on Blakeney Point on 17th/18th. Two Pallas's Warblers occurred in the month and another Little Bunting at Holkham. Mealy Redpolls began to appear, the forerunners of a large influx throughout Britain. Many settled down to winter at Wells. Shore Larks again remained scarce being only regularly seen at Blakeney Point. Possibly the big increase in bird-watchers and the public along their favourite feeding grounds at Salthouse has caused too much disturbance. Time will tell.

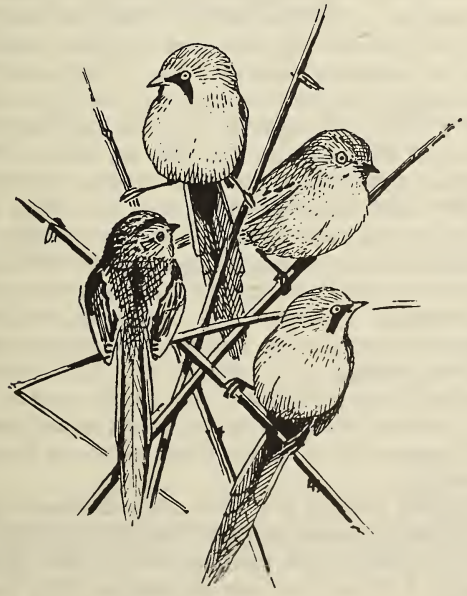
Over 20 Slavonian Grebes were in Holkham Bay in December and more Peregrines have been seen in recent winters. The month also produced another record 4549 Bewick's Swans on the Ouse Washes — before the weather turned severe. A wintering Lesser Whitethroat at Welney stayed until mid-January 1985 when it finally succumbed during freezing weather conditions. Unseasonal breeding by a Blackbird in Norwich Railway station's Christmas tree made the local press. Bird-watchers occasionally depend upon the goodwill and tolerance of the general public to enable them to pursue their hobby. It is in this context that thanks are extended to Costessey residents who kindly allowed observers to view a Waxwing in their gardens in late December (JBK).

Recording: Records for the 1985 Report should be sent *by the end of January* to Michael J. Seago, 33 Acacia Road, Thorpe St. Andrew, Norwich NR7 0PP. *Late arrivals are not guaranteed inclusion in the current Report.* All observations should be submitted in the order followed by Dr. K. H. Voous's *List of Recent Holarctic Bird Species* (1977) and *not* in diary form which creates very time-consuming situations. In order to minimise the work involved, records will not normally be acknowledged. The names of all contributors will be included in the Report.

Field descriptions of semi-rarities, as listed in the 1983 Report (page 337) should also be submitted as such records are considered by the County Records Committee (B. Bland, G. E. Dunmore, S. C. Joyner, J. B. Kemp and R. Millington) prior to publication. Records of rarities considered by British Birds Rarities Committee should be submitted with full details as soon as possible after observation and not left until the end of the year. Several observations remain outstanding for this reason. Record forms for the submission of national rarities are available either from the Editor or from G. E. Dunmore (49 The Avenues, Norwich NR2 3QR).

Acknowledgements: Thanks are due to R. Tidman for obtaining photographs and also to the following photographers and artists: N. Arlott, G. M. S. Easy, R. Millington, M. Raines, R. Vaughan, P. Wheeler, B. J. Wingrove and S. Young. Among the vignettes is a selection by the late R. A. Richardson.

Thanks are also due to Holme Bird Observatory/Norfolk Ornithologists Association; to Norfolk Naturalists Trust Wardens; to the National Trust; to the Nature Conservancy Council, to the R.S.P.B; to Nar Valley Ornithological Society; to G. E. Dunmore (for liaising with British Birds Rarities Committee and acting as Secretary/Chairman of the local Records Committee); to P. R. Allard and D. A. Dorling for assistance and encouragement; to Mrs. M. Dorling, Mrs. J. Dunmore, Mrs. P. A. Rix and Mrs. S. F. Seago and to all other contributors.



Marsh Harriers at Titchwell Marsh Reserve (1980-1983)

Norman Sills

Part 2: Feeding Ecology

Hunting Ranges

Two hunting ranges were used during the four years: marshland near the nesting areas and arable land to the south. As table 4 shows, during the incubation phase nearly all prey came from areas of marsh whereas during the post-fledging phase the majority came from arable land.

Phase	*Marsh*	*Arable*
Incubation	92%	8%
Nestling	58%	42%
Post-fledging	12%	88%

Table 4. *Origins of prey during 1982 and 1983.*

Marsh hunting range

The marsh hunting range was 26 hectares of reed on the reserve as well as 19 hectares of reed and 18 hectares of grazing marsh near the reserve. (150 hectares of *Limonium* saltmarsh, 50 hectares of *Aster* saltmarsh and 23 hectares of shallow, open pools — all adjacent to the nest sites — were almost never used for hunting purposes).

The male hunted over the reeds and reed-edge in typical fashion but more often over the 11 hectares of freshwater reeds than the 15 hectares of tidal reeds. Most marshland prey was caught in the freshwater section. During the incubation phase in 1982 the male caught 13 prey from the reeds in a total observed hunting-time of 361 minutes, an average of 27.8 minutes, or 2.15 prey per hour of hunting. This compares favourably with an area in the Netherlands where a bigamous male caught an average of 1.4 prey per hour during the same phase (Altenburg 1982).

An interesting feature of the males hunting technique was observed at Titchwell in 1982. On at least 16 dates during the incubation phase the male hunted the reserves' reedbed in a hunt-perch-hunt-perch sequence. On many occasions he remained at the reserve for periods averaging 37 minutes (s.d. 28 minutes) and during that time he alternately hunted over the reeds for an average of 5.9 minutes (s.d. 5.1) without a break and perched for an average of 10.5 minutes (s.d. 6.9). If successful he generally hunted and/or perched once or twice and then left the reserve. If unsuccessful he sometimes persisted for 60 or 90 minutes before giving up and leaving. By maximising the time between passes over a certain point, prey may become less wary and therefore more vulnerable.

It might be expected that hunting over the reeds would be more profitable during the nestling and post-fledging phases than earlier in the season due to a relative abundance of juvenile reed warblers, reed buntings and bearded tits. This was not the case; the catch averaged 1.80 prey per hour of hunting, all by the female. She used

the same hunt-perch technique as the male. Perhaps the increasing height and density of reed rendered the abundant prey less available.

Farmland hunting range

The arable hunting range was used extensively by the male every year and by the female to varying degrees in 1980 and 1981.

During the nestling and post-fledging phases in 1982 and 1983 observations on the farmland aimed at determining the size of the hunting range; identifying those parts of the range most favoured by the male; measuring the time taken to catch prey; ascertaining prey destination; and collecting data for other sections of the work.

Maps (1:25,000) were prepared showing hedgerows, copses, tracks etc. and crops were mapped in both years. The maps were also used for plotting the males hunting routes. Between two and five observers watched from strategic points and plotted his hunting route, catching site and return flight. At the end of the season a master-map was covered with a 250 metre x 250 metre grid (ie. squares of 6.25 hectares or 15.4 acres) and by placing a dot in a square every time the male passed through hunting (not returning) a map was built up showing hunting intensity over the whole range. In 1982 34 visits were made between 26th May and 2nd August; in 1983 24 visits between 22nd June and 11th August excluding the first fortnight in July.

The overall hunting range in 1982 was 1,250 hectares (3,088 acres). In 1983 the mapped area was 881 hectares although because the area south of the secondary females nesting site was under-watched the actual area was probably over 950 hectares (2,347 acres).

The entire hunting range was not utilised throughout the nestling and post-fledging phases. Figure 1 shows how the range expanded during 1982, one line giving the area based on only those squares through which the male hunted; the other line giving the overall area during the same period, ie. including those squares within the range where the male was not seen.

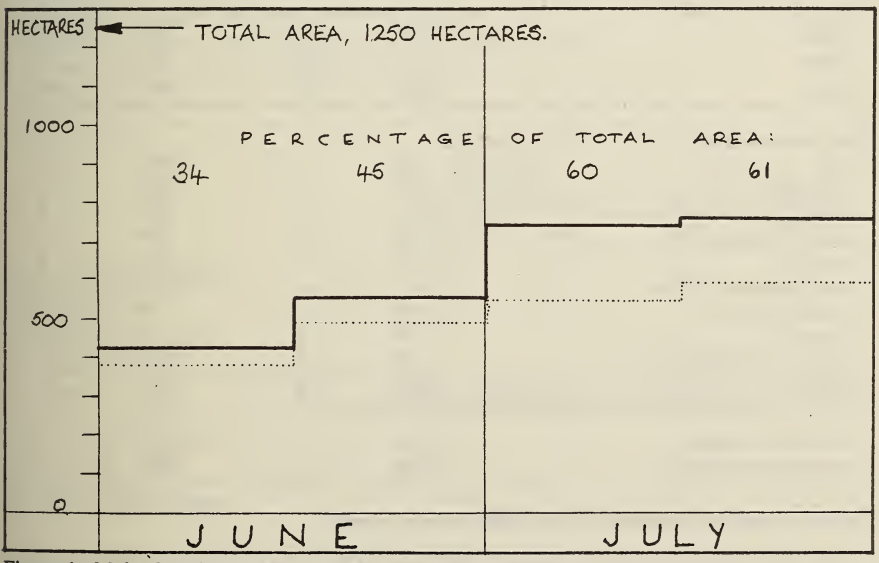


Figure 1: *Males hunting range in 1982.*
Solid line — overall area
Dotted line — based on squares hunted over.

Thus early in the nestling phase only a third of the total hunting range was used and this was nearer to the primary female than the secondary female whose young still had not hatched. The range gradually expanded during the following two months, some squares being deserted and others being utilised. The centre of gravity also shifted so that by the end of July, when the primary females' young had dispersed into the hunting range but before the secondary females' young had left their nesting area, the male was generally hunting nearer to the secondary females' site.

In both years the overall hunting range was larger than in other studies. Thiollay (in Brown 1976) gives 270 to 420 hectares in the Camargue and Schipper (in Altenburg 1982) gives 250 and 390 to 500 hectares in the Netherlands. However, these ranges included marshland (not necessarily dense blocks of reed) where prey density was higher than in the adjoining agricultural land. On the other hand Altenburg gives range-sizes for a bigamous male at Lauwersmeer, Netherlands, which very closely followed those in figure 1:420 hectares in the nestling phase (June) and 730 hectares in the post-fledging phase (July). The Lauwersmeer range, like that at Titchwell, included large tracts of arable land.

Table 5 gives the type and extent of crops etc in 1982 and 1983. The crop types have been grouped into two because it is suggested that the extent of low crops (under 50 centimetres high in June/July) have an effect on food availability. The proportion of low crops more than doubled from 1982 to 1983 (24% to 53%) largely as a result of one farm estate growing a large area of peas and potatoes.

Crop	*1982*		*1982*	
	hectares	*%*	*hectares*	*%*
Talls crops, over 0.5 m				
cereals	932	75	362	41
beans	—	—	25	3
total:	932	75	387	44
Short crops, under 0.5 m				
peas	45	4	152	17
sugar beet	93	7	89	10
potatoes	—	—	83	9
road verges/tracks	74	6	74	8
pasture	24	2	37	4
short-stemmed barley	—	—	11	1
carrots/sprouts	19	2	9	1
lavender	16	1	5	1
young tree plantations	23	2	12	1
total:	294	24	472	53
mature woodland	23		23	
total range, hectares	1249		881	

Table 5: *Land use in males 1982 and 1983 hunting ranges.*

The 1982 hunting range was farmed by three estates. One had quite a high proportion of 20 to 50 hectare fields but, at the other extreme, another estates fields varied from two to 22 hectares.

Because many fields didn't conform to the usual rectangular pattern, hedgerow length is best expressed in terms of length per unit area. Lengths were measured for each 6.25 hectare square and included a small proportion of hedgeless verges. Over the entire 1,250 hectare hunting range of 1982 the total hedge length was 64.8 kilometres or 5.2 kms per square kilometre. Virtually all hedges were 1.5 metres tall, 'A' shaped and with very few trees.

Figure 2 shows the hunting range in 1982 and the extent to which the male harrier hunted through each 6.25 hectare square during the nestling and post-fledging phases. In an attempt to determine why certain squares were favoured more than others, two habitat factors were examined: (a) hedgerow length and (b) the presence of low crops and other features such as farm tracks, pits and areas of rough grass.

Hedgerows: not all squares were watched for an equal length of time so only those (50 squares) which had been observed for 60 to 70 hours were considered. Those squares which contained no hedgerows (mainly the centres of large fields) never had more than six hunting passes per square and those squares with eight or more passes always contained 100 to 500 metres of hedgerow. However, many well-hedged squares — 280 (mean length per square) to 600 metres — had under eight passes per square so that when the two factors were combined there was a low correlation ($r = 0.22$). So although the male tended to avoid the centres of fields he did not concentrate on well-hedged squares.

Crop types: in 1982 50 squares (312 hectares) were observed for 65 hours and in 1983 71 squares (443 hectares) were watched for 50 to 54 hours. It was possible, therefore, to compare the number of passes through each square with the presence or absence of two characteristics in each square. Firstly the presence or absence of low crops such as peas, sugar beet, short-stemmed varieties of barley and potatoes; and secondly the presence or absence of farm tracks, sapling plantations and overgrown pits. The sites of catches and attempted catches were also mapped so these, too, could be compared with the presence or absence of the two characteristics. Attempted catches included instances where the male circled low over a small area of ground for several minutes but without actually pursuing prey.

	Squares with low crops		*Squares with tall crops*	
	with other features		with other features	
	1982	1983	1982	1983
mean no. passes/square	7.8	6.7	9.2	1.0
total catches	10	10	6	1
total attempted catches	2	11	8	—
	without other features		without other features	
mean no. passes/square	4.7	2.9	3.4	1.9
total catches	6	2	3	—
total attempted catches	6	4	3	2

Table 6: *Hunting, catching and attempted catching intensity on four types of arable land in 1982 (65 hours watching) and 1983 (52 hours watching).* 'Other features' include farm tracks, overgrown pits, young plantations and scrub.

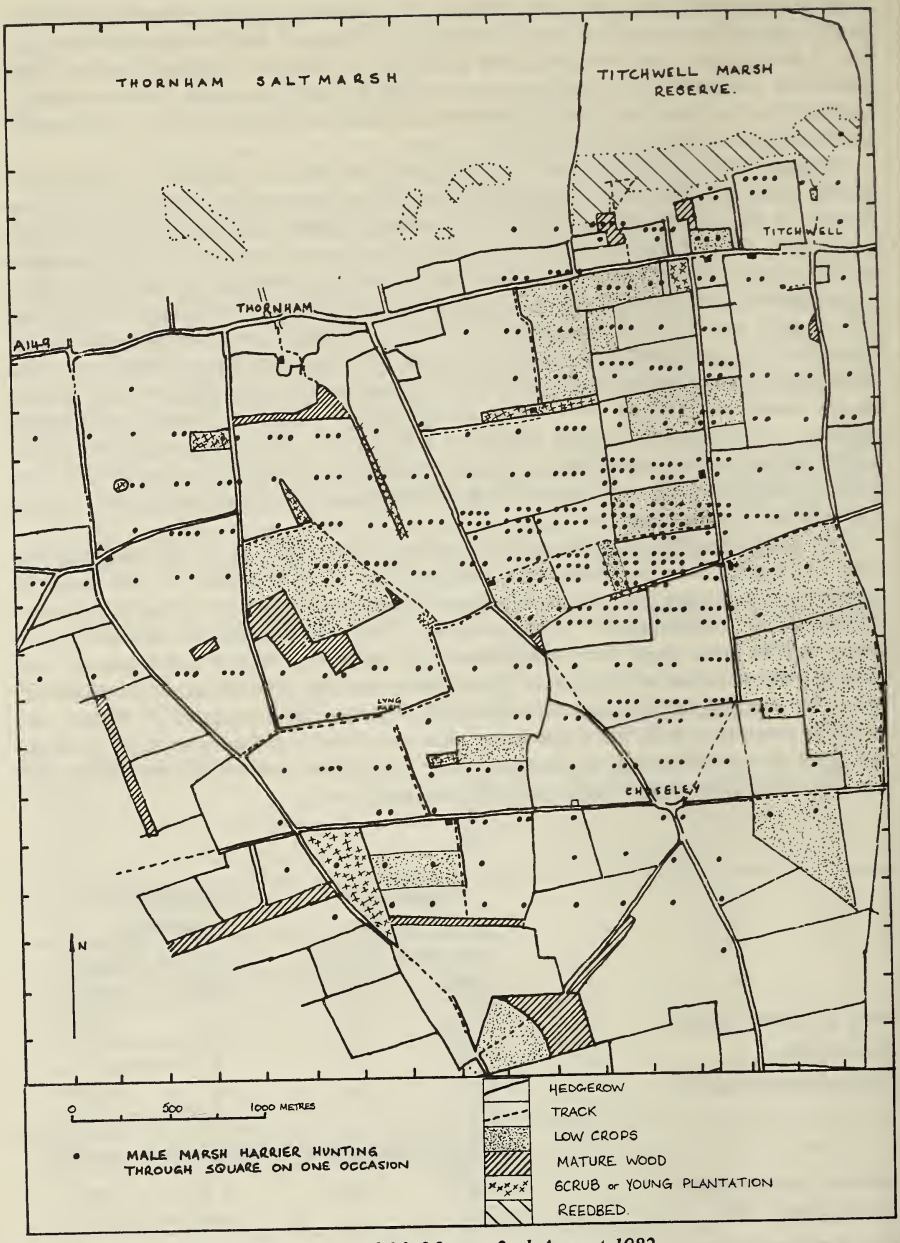


Figure 2: *Males hunting range from 26th May to 2nd August 1982.*

Table 6 combines the data and shows that the areas with low crops and other features were favoured by the hunting male. (In a 2 x 2 χ^2 test using passes per square against low/tall crops and presence/absence of other features, χ^2 = 49.29 and 71.32 in 1982 and 1983 respectively, p = <0.001). In 1982, when the hunting range had a smaller proportion (24%) of low crops he hunted over areas which, although covered with relatively tall wheat or barley, included other features such as tracks and plantations. In 1983 low crops occupied 53% of the hunting range and these areas were favoured more than tall crops whether the latter included other features or not.

In 1982 and 1983 the male passed through the best squares an average of 7.8, 6.7 and 9.2 times in 65, 52 and 65 hours respectively, that is once every 8.3, 7.8 and 7.0 hours. In the most frequently visited squares he passed over, on average, once every three hours.

Low crops were generally preferred to tall crops presumably because the harrier could see prey more easily and, with less vegetation to hinder the drop onto prey, the latter had less chance of escaping. The major low crops — peas, sugar beet and potatoes — all had a high proportion of bare ground amongst the plants and prey such as starlings, skylarks and pheasants took advantage of this open ground to take grit, weed-seeds and to dust bathe. As the harrier depends on surprise for making a successful catch it is important that prey is hidden from the harrier by the plants until it is too late to escape.

The insect fauna of the pea crop may have been ultimately responsible for the harriers frequent visits. In late July 1983 vegetation sweeps (34 x 10 sweeps) through the crop revealed an average of 10 insects per 10 sweeps of which 83% were wingless or sedentary winged-insects: aphids, weevils (Curculionidae), other small beetles, mirid bugs and tortrix moths in order of abundance. The weevils, mirid bugs and tortrix moths were the largest insects and formed 28% of the total. It seems likely that all of these insects formed at least part of the diet of the harriers prey: juvenile starlings and, to a lesser degree, young pheasants. Less extensive sweeps through the potato crop produced virtually no insects except flies.

Peas were harvested in early August and all the vegetation was removed, leaving a very shallow (1 cm) litter covering the fields. Twenty sets of 10 sweeps three days after harvest yielded only 2.2 non-dipteran insects per 10 sweeps. Although a few starlings were still present, they would have had so much advance warning of an approaching harrier that the chances of being captured would probably have been negligible.

Time Taken to Catch Prey

Times were recorded whilst the males hunting routes were mapped. On 30 occasions it was possible not only to see him leave the reserve but also to watch him constantly until he caught prey. Throughout June and July it took an average of 17.9 minutes between leaving the reserve and catching prey (minimum 4, maximum 60, s.d. 12.9) to which should be added about 10 minutes for plucking the prey and 5 minutes for the return flight to give an average round trip of about 33 minutes. Altenburg gives 24 to 40 minutes for hunting trips over similar habitat in the Netherlands.

In the four years the male was never seen hunting during spells of drizzle or rain. On occasions when a downpour occurred during a hunting trip he stood on the ground until the rain passed and only then resumed hunting. If that applies generally to marsh harriers, summer rainfall could be a major factor controlling their breeding distribution. Their breeding range in Europe largely coincides with summer rainfall (May to October inclusive) of 25 to 50 centimetres; the average summer rainfall at Titchwell from 1979 to 1983 was 33 centimetres.

Destination of Prey

Whenever observers were positioned such that return-flight routes to both nests were equally visible, the proportion of prey taken to each nest was noted. On 49 such occasions during the nestling and post-fledging phases 66% of prey went to the primary female at Titchwell and 34% to the secondary female. Altenburg gives almost identical figures for a bigamous male in the Netherlands which took between 63 and 68% of its prey to the primary female. He suggested that this was possibly associated with the position of their nests.

In 37 instances it was possible to measure the distances from the catching site to the two nest sites and then determine whether the male harrier took the prey to the nearer nest or not. The mean distance from the catching site to the primary females nest site was 2.58 kilometres (s.d. 0.88 km) and to the secondary females site, 3.34 kilometres (s.d. 0.92 km.).

On 73% of these occasions prey was taken to the nearer nest to the catching site. When prey was taken to the further nest, however, the distances to the two nests were more or less equal; an average difference of only 230 metres. So it seems likely that the proportions of prey which the primary and secondary females received depended to a large extent on their relative proximity to the catching sites. The primary female's site was nearer on 26 occasions (72%) and she received 66% of the prey; the secondary site was nearer on 10 occasions (28%) and she received 34% of prey; one catching site was equidistant. Had the male taken prey to a given site regardless of the distance to that site, one would except some catching sites to have been much more than 200 or 300 metres further from the intended destination than the nearer destination.

Interesting implications arise from the situation described but providing prey is distributed fairly evenly over the hunting range and providing the hunting range is more or less mid-way between the two nest-sites then both females should receive a significant proportion of the males prey.

Prey

Assessing the relative proportions of prey species by finding prey remains at plucking sites and nests is open to bias due to size, palatability, digestibility and abundance of prey as discussed by Ratcliffe (1980) for peregrines and Schipper (1973) for harriers. Schipper concluded that, in the Camargue, frogs, unfledged birds, adult passerines and small mammals were under-represented at plucking sites compared with observations at the nest and that juvenile and adult ducks, moorhens and coots were over-represented. An examination of his data, however, shows that such errors generally amounted to only a few percent, occasionally 10 or 20%. He ascertained that remains of large mammal prey (rats and rabbits) gave a realistic idea of the true proportion being caught.

Secondary female's prey

Because the secondary female received from the male less prey than she and her young required she was obliged to hunt for the outstanding amount. In 1982 she hunted over grazing marshes (some converted to arable) and brought back prey to an area of rough, flattened grass, not far from the nest, where she dissected the prey before taking it to the young. At weekly intervals for nine weeks observers collected and removed prey remains from the grass area so that seasonal changes in prey type might be determined. This shows that mainly short-tailed voles were taken earlier in the season (May), moorhens in June and July and rabbits in July. The proportions of prey species for the whole period are shown in fig. 3 but an additional 12 items, of 11 different species of bird or mammal have been excluded.

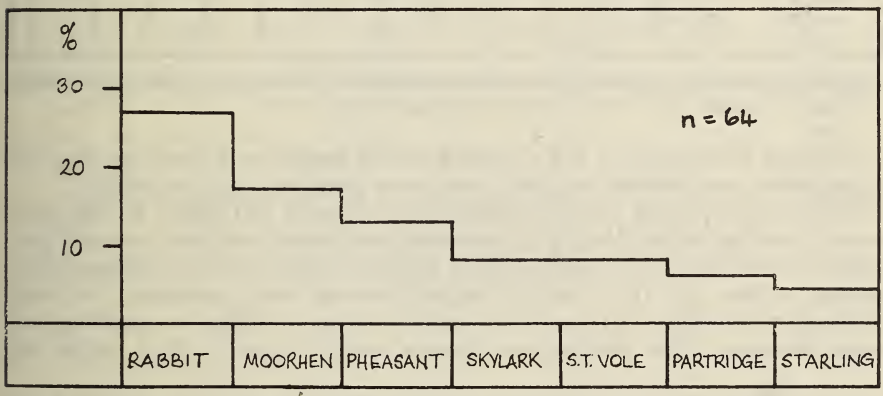


Figure 3: *Prey species frequency taken mainly by secondary female in 1982.*

The rabbits weighed 200 to 300 grams (based on molar teeth measurements) and the moorhens were fully-fledged juveniles. Pheasant remains were often either sternae or tarsi, the measurements of which showed that nearly all pheasant prey were 3 to 4 weeks old when caught.

Prey from males hunting range

From 1981 to 1983 the male (occasionally the female) was seen catching prey on the farmland range on 44 occasions. In theory these 'observed catches' should be free from bias because, whether prey remains were left at the nest or not, plucked feathers and the severed head or legs were almost invariably found at the catching site.

Prey taken by the male from the arable and marshland hunting ranges were taken

to either nesting area where, at the end of the season, their remains could be collected. Prey remains were discounted if they could have come from prey identified at the catching sites. Figure 4 shows the frequency of prey species based on observed catches and prey remains at the nest but the table does not include data from figure 3. It also excludes moorhen, song thrush, lapwing and blue tit all of which produced frequencies of 1% based on prey remains at the nest.

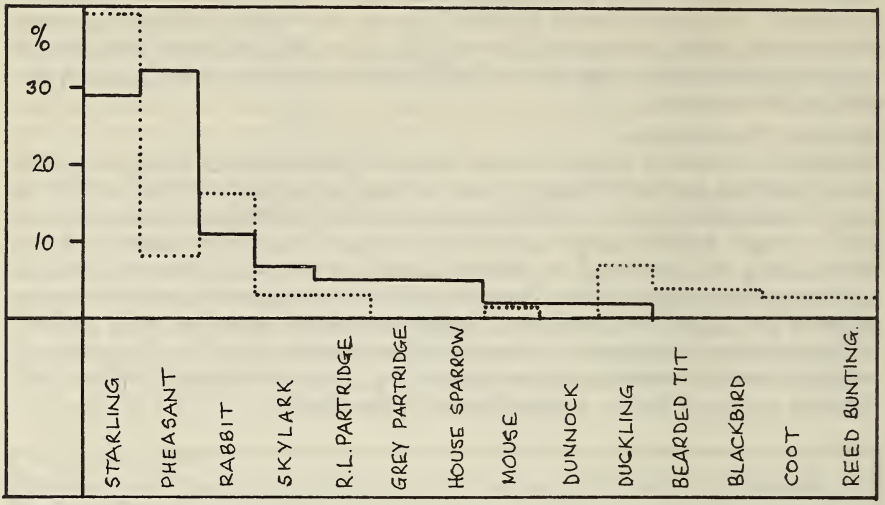


Figure 4: Prey-species frequency taken mainly by male and mainly from arable hunting range — observed catches (m = 44) . . . prey remains at nest (n = 71)

It is clear from figures 3 and 4 that the female caught more large prey than the male (rabbits and juvenile moorhens) and fewer passerines, such as starling.

The principal prey of the male were starling, pheasant and rabbit. In 1982 there were no starlings in the hunting range (except near farms) until mid-June and after that there were only a few flocks of about 50 birds. None of the observed catches included starlings but 11 of 16 such catches involved young pheasants. In 1983, however, the position was reversed. All but three observed catches were starlings and none pheasants. The starlings were almost entirely juvenile birds which had

undergone post-fledging dispersal into areas providing sufficient food. Several flocks — each containing 100 to 300 birds — were resident in the pea-fields from mid-June until the peas were harvested in early August. In addition to the insect population of the pea crop, food put out for reared pheasants also attracted many starlings to the extent that the male harrier was often seen hunting starlings close to the pheasant coups. It is interesting to note that the European and Asian breeding ranges of marsh harrier and starling coincide remarkably well so that the marsh harrier, as a species, may well be very used to catching starlings.

Young pheasants were taken from all parts of the arable hunting range. They were usually part of a brood which, including the hen pheasant, had wandered several metres into a field and away from the protection of a hedgerow. Bill and/or tarsus measurements of pheasant prey indicated their average age to be just over 2 weeks and weight about 130 grams.

Fewer rabbits were caught by the male than by the female and the measurements available suggest that the average weight was nearer to 200 than 300 grams, ie, young rabbits about 20 centimetres long from nose to tail tip. The few observed catches were in bare areas in the corners of beet or carrot fields or on tracks next to areas of scrub.

Total Prey Caught

Year	Young	Incubation phase	Nestling phase			post fledging phase
			1st 3rd	2nd 3rd	final 3rd	
1980	4	?		2.36 0.53		1.07 0.35
1981	4	?		2.10 —		1.21 0.86
1982	3	2.09 —	1.58 —	?	?	0.93 0.19
1983	4	1.61 —	1.25 0.25	?	?	1.49 —
hunting period (hours/day)		13	14	15	16	14
days		33	13	13	13	30m 13f
total prey		80	100	180	190	220

Table 7: Mean number of prey brought to the primary females nest per 10 hours (incubation phase) and per young per 10 hours (nestling and post-fleding phases) and estimated total number of prey in a typical year. Top line — male, bottom line — female.

Table 7 shows the rates at which the male and female brought back prey to the primary female's nest each year. The incubation and post-fledging phases both involved observation periods in excess of 100 hours but the nestling phase observations amounted to only 57 hours over the four years.

During the incubation phase the male caught an average of 1.9 prey per 10 hours and assuming be provided equal amounts for both females he caught a total of five items a day, compared with just over six per day in Altenburgs study.

The average prey-input by the male during the whole of the nestling phase was 1.75 per young per 10 hours, or 10.5 per nest per day. As the male took two-thirds of his catch to the primary female and one-third to the secondary female, his daily catch

was 15.75 prey per day which corresponds to Altenburgs average of 15.85 prey per day in similar habitat in the Netherlands. Schipper found both adults taking a total of 24.6 prey per day to two nests (assuming four young per nest) in Flevoland, but 20.16 prey to two nests based on four European sites. The Titchwell female provided an average of 1.56 items per day and as the secondary female had to catch roughly as much as the male provided for her (5.25 items per day) the total female input was 6.81 items per day which, when added to the males total input of 15.75 items per day, gives a total catch by the adults of 22.56 prey per day, a little above Schippers European average.

A similar calculation for the post-fledging phase indicated that the male was catching 7.62 items per day (to supply both nests) which compares with Altenburgs 5.9 per day.

So throughout the whole of the breeding season it seems that the Titchwell harriers were able to obtain at least as much prey as birds on the continent. During the four years the Titchwell birds produced 3.00 fledged young per nest and 3.43 per successful nest, whereas during a 17 year period in the Netherlands the equivalents were 3.33 and 3.44 (Schipper in Underhill — Day 1984).

Harriers and Pheasant Rearing

The males hunting range extended over all or part of three farm estates one of which reared pheasants during all four years. In one year (1981) the female hunted over a fourth estate — which also reared pheasants — beyong the males hunting range.

On both estates the rearing pens (containing pheasants up to 6 weeks old) were completely covered with netting to exclude all predators.

Both estates had at least one release pen in dense, mature woodland and these received the first batch of poults, usually in late June. Apart from one occasion there was no evidence of harriers attempting to enter the woodland during the four years.

Four other release pens were, however, regarded as being vulnerable to harrier predation. They were all in relatively open sites but as poults were released into them generally during August and as the male and juvenile harriers dispersed from the nesting areas and hunting ranges early in that month, the chances of the harriers attracted to the pens were slight. But there were exceptions. In 1981 the female harrier remained until early September so watches were made on the three vulnerable

pens being used that year. Two pens did not attract her attention but the third did. Poults were released on 30th July and the area was watched from a distance of 500 metres for 36 hours during August and early September. During that time she flew over the release pen area for a total of 21 minutes but did not attempt to catch prey. However, circumstantial evidence suggests that one pheasant was killed outside the watching periods.

In 1982 poults were released into the same pen on 26th July. The female harrier had left north Norfolk a fortnight earlier but the male remained until about 19th August. He was seen near the pen on only one occasion, possibly because the pen was well beyond his hunting range.

In 1983 poults were released into an area well within the males hunting range, on 12th July. As the site was in the centre of a pea field many of the starlings were attracted to the food put out for pheasants. From 20th July to 9th August the area was watched from a distance of 600 metres for 45 hours. During that time the male passed directly over the pheasant/starling feeding places on five occasions, but no attempt was made to catch prey during the 45 hours. However, because the harrier was a frequent visitor to the pea-field (where many starlings were caught) and because he no doubt passed over the release area on more than five occasions in practice the pheasant poults became very nervous when being called by the gamekeeper. Once the peas had been harvested (5th to 9th August) the starling population decreased dramatically and the marsh harrier ceased visiting the field.

So during a total of 108 hours watching on release pens from 1981 to 1983, harriers made no attempt at catching any type of prey, although their presence clearly made the poults very wary. It is understandable that keepers should be concerned at harriers flying over release pens but, in the most worrying case, the intended prey proved not to be pheasant. As a six week old pheasant poult weighs about 450 grams it would presumably stand a good chance of fending off a 500 gram male marsh harrier.

Acknowledgements

Sincere thanks are expressed to landowners Stephen Bett, Clive Ringer, the late William Parker and Major Hare for permitting access to their land; and to their respective keepers or managers John King, the late Frank Skipper, Harry Softley and Don Preston.

Work on the hunting range would have been impossible without enthusiastic assistance from various people, Colin Wells, Paul Holness, Steve Davies and Marc Jones being involved during the summers 1980 to 1983 respectively. Volunteers working at Titchwell also added much information to the study.

Dr Rhys Green kindly commented on the draft.

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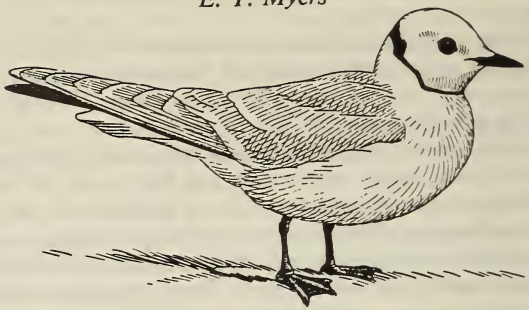
Ross's Gull, vagrant from the High Arctic

E. T. Myers



After a morning's birding at Cley on May 9th 1984 I decided to complete my visit by looking at Arnold's Marsh. I arrived there at 11 am finding three Little Gulls asleep on a sand bar in the centre. Each was in first-winter plumage. I then noticed a small pink gull in the far corner of the Marsh swimming with a group of Black-headed Gulls. Viewing with my telescope and to my great surprise I realised the stranger was a Ross's Gull: an adult in full summer plumage. After commandeering two passing non-birders to keep an eye on the bird, I raced to Walsey Hills to telephone the exciting news. Within the hour forty observers had arrived and by the end of the day 150 people from as far away as London had seen their first Ross's Gull. This is the first accepted record of this Arctic stray in Norfolk and one of the few mainland observations of an adult in breeding dress.

This rarity was similar in size to a Little Gull. Very buoyant on the water, it floated with tail and wing-tips pointing upwards. On the wing it appeared very graceful displaying long pointed wings and a diagnostic wedge-shaped tail. A broad area of white was revealed on the trailing edge of the wings which were dark grey below. The upperparts were palest grey, the underparts beautiful rose-pink extending to the black necklace which was thickest on the nape. The head was paler with red eye ring. The delicate bill was black and the legs bright red. The bird walked in the manner of a dove with short steps and nodding domed head.

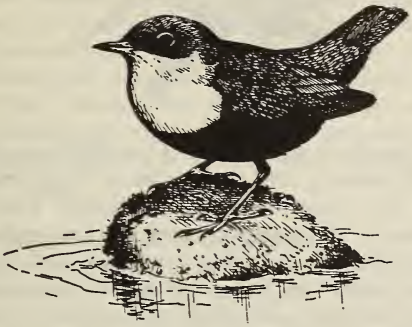
This fabulous gull spent the next day at Blakeney Point, returning to Cley (and to a large and appreciative audience) May 11th and 12th. Here, almost surrounded by Black-headed Gulls and Avocets, it was quite unmistakable. From time to time it fed while swimming against the current, rapidly picking at the surface in the manner of a phalarope. The flight was light and buoyant, periodically dipping to the lagoon to seize food, accompanied by foot paddling. Its final performance was at Titchwell on 13th/14th where it provided close-up views to many watchers from far and wide.

Day after day of strong north-easterly winds almost certainly drove this vagrant so far south. Formerly, to most bird-watchers, an almost mythical phantom, Ross's Gull now seems bent on becoming an annual winter wanderer — usually to Shetland and to north-east England. Latest information reveals 40 occurrences in Great Britain. Even so it remains exceptionally rare in north-west Europe.

The late James Fisher described Ross's Gull as "one of the most mysterious birds of the world". At the turn of the century evidence pointed to a high Arctic breeder perhaps nesting on some seldom visited island. One can imagine the surprise and in-

terest aroused when the secret of the breeding place was revealed in the summer of 1905 by a Russian explorer. He established that the secretive bird nested not on the frozen Arctic, but in well-wooded marshy river valleys in extreme eastern Siberia, sometimes nearly a hundred miles south of the tree line. No other large breeding sites have ever been discovered.

The precise winter range is still somewhat unknown, but it has been established from observations made in the Polar Basin outside the breeding season that Ross's Gull does not migrate southwards, but makes a contrasting shift northwards into the Arctic Ocean to one of the most desolate and forbidding areas of the world. Recent observations by a Swedish expedition discovered hundreds of Ross's Gulls among the pack-ice and drift-ice bordering the Barents and Greenland Seas north of Franz Josef Land and Spitzbergen. Here, this elusive bird was one of the most numerous species on the ice-floes, congregating about any dead whale or other windfall food source.



The Bawburgh Dipper

Richard Hobbs

When living in the north-east of England I often sat and watched Dippers at work in streams and rivers. Their curious behaviour is a joy to watch. I never dreamt that when I came to Norfolk I would enjoy the same pleasure peering out of the living room window! Normally Dippers visit Bawburgh Mill for just a few weeks in winter, but in 1983 we returned from holiday in mid-August to find a Dipper of the chestnut-bellied British race in residence. Over the months we got to know it and its habits quite well. Early in the morning the Dipper would be at the front of the house spending a lot of time feeding from the gravel shoals in the river. Later the back was favoured. During the night it roosted in the garage, perching on the rafters. Our Dipper became more and more brave, spending much time on the house roof and even the window sills. For a month from mid-January it was joined by another Dipper. The new arrival displayed the features of a bird of the north European race. But they were rarely seen together. For weeks the resident Dipper sang his heart out with no success. At first the porch roof was selected and later the telegraph wires. The song was very loud and could be heard quite clearly in the house.

We became very attached to our Dipper seeing it every day, and were very sad to find it dead on the garage floor one morning in November 1984. It had become one of the family and part of the village and must be one of the very few birds to have had an obituary in the Parish Magazine. Our long-staying guest rests in Norwich Castle Museum.

Parrot Crossbills: A New Breeding Species

Chris Davidson

In late October 1983 a group of eight Parrot Crossbills was identified in coastal pinewoods near Wells. By January 1984 the number of birds remaining consistently in the area had fallen to four: three males and one female. Two birds subsequently paired. During the last week of January promising signs suggesting the possibility of a breeding attempt were observed, including copulation and feeding of the hen by the attendant male. The female was also observed carrying suitable nest material. These encouraging signs prompted local watchers to suggest to the R.S.P.B. that an immediate protection scheme be arranged. This was launched February 4th when I took up residence in a caravan nearby. The following summary of activities describes the behaviour of paired birds during the breeding cycle, as well as the eventual disappearance of the male and his replacement.

Identification of the Breeding Male

This was established as soon as possible. Following close observations of each cock bird it was soon easy to distinguish them, primarily from the direction in which the lower mandible of each bird crossed the upper mandible. Two cocks had lower mandibles which crossed to the left; one of these was the breeding male, while the other had a conspicuous yellow throat, thus preventing confusion. The remaining cock had a lower mandible which crossed to the right of the upper. This distinction being made, observations relating to the movements of the breeding male were immediately ensured.

Nest Site and Situation

The tree selected for the nest was on a narrow south-facing bank of dunes, planted with Corsican Pines, adjacent to a busy public footpath and on the edge of the belt of trees. Consequently it received all available sunlight throughout the day, as were the nearby feeding trees, which were heavily laden with ripening cones. The nest-tree was flanked by taller pines, while behind it the dunes sloped fairly steeply upwards. Thus shelter was provided on all sides except South. The nest was built in a fork of a horizontal branch near the centre of the canopy at an estimated height of 48 feet, and in several respects was similar to those examined in Sweden by Olsson, (*British Birds* 57 118-23).

Nest Building and Nest Material

Only the female was observed taking material to the site, although the male often accompanied her; sometimes to the nest-tree, but generally to a nearby song-post. If at a song-post and the hen was collecting material nearby, the male would remain here until she had finished building activity. If the hen flew farther afield he would accompany her. The observations suggest a peak of building activity between 08.00-12.00 hrs., although the hen was occasionally seen with material in the early afternoon. Nethersole-Thompson noticed that the Scottish Crossbill hens "usually build in spasms each seldom lasting longer than half an hour", (*Pine Crossbills* 1975). Similarly, the hen Parrot Crossbill was not observed to involve herself with building for longer than twenty minutes, during which time she visited the nest six times spending between 10-55 seconds at the nest on each visit. However, although her visits were noticeably spasmodic on most days, on February 5th she took lining material to the nest throughout the day with irregular intervals between visits differing from 12 minutes to 2 hours. The nest material used was typical of the species. On January 30th the hen was observed taking twigs about 5" in length from a dead Silver Birch to the nest-site. Six days later she took several beakfuls of grass and moss. Between February 5th and 10th the hen continued taking material for the lining of the nest, including grass, moss, several feathers and a considerable amount of hair which, incidentally had been generously liberated from Bryan Bland's beard to aid completion of the nest!

Summary of Incubation Period (Feb. 11th-26th)

The hen began steady brooding February 11th, when she was on the nest continuously between 08.00-09.50 hrs. Despite the species' typical tolerance of human interference, observations inevitably had to be made without risking disturbance, therefore exact laying dates remain unknown. However Olsson and Valeur (1946) agree that the hen covers the first egg after laying, therefore it is probably safe to assume that the first egg was laid during the early morning of the 11th, and this assumption corresponds well with the eventual hatching dates: February 26th and 27th, the incubation period being 14-16 days.

The hen maintained consistent incubation for periods varying between 26 and 183 minutes (averaging 110 minutes). Predictably she brooded for longer continual periods during the second week of incubation. If the hen left the nest whilst brooding she would always go to a puddle to drink water, but would never go to feed. These breaks in incubation varied in duration from 2 to 14 minutes.

The male provides the hen with food throughout the incubation period. Olsson found that Parrot Crossbills in Sweden fed their mates every 2 to 2½ hours, and this is reinforced by Hilden and Linkola (Hilden 1974). Spjotvill (1972) timed intervals between feeds of 42 to 150 minutes. At Wells, the feeds increased in regularity towards the end of the incubation period. On February 25th seven feeds were observed with intervals of 41m, 47m, 63m, 54m, 71m, and 115m respectively. When several feeds were observed in one day the intervals between feeds increased during the day. Additionally, the hen was never observed calling to her mate for food as Olsson suggested, and it seems possible that this only happens when the cock is a poor provider.

Unusual behaviour was noted February 18th when the female left the nest at 09.55 and was observed drinking for six minutes before returning to the nest. At 09.59 the cock arrived at the vacated nest and proceeded to adopt a feeding position (on the rim of the nest), while practising a feeding action. Soon he settled on the eggs and remained there for approximately 30 seconds before the hen returned and displaced

him. Subsequently, the male immediately fed her. Nethersole-Thompson mentions several instances of Scottish Crossbill cocks acting similarly, but this was almost certainly an instinctive reaction caused by the unexpected absence of the female.

Positive evidence of hatching was first observed February 26th when the male went to the nest to feed the hen at 11.22. The female accepted food from the cock for 30 seconds before standing up on the brim of the nest to allow the cock to feed the young for 97 seconds, after which the hen resumed her brooding position.

Summary of Fledging Period (Feb. 26th-March 18th)

Unexpected behaviour by the male Parrot Crossbills arose during the fledging period. The breeding male bird inexplicably vanished March 11th; he was last seen feeding young at the nest with the female at 12.15. It is almost certain this bird was killed soon after the above visit. Nethersole-Thompson mentions Sparrowhawks and Merlins as possible predators of Scottish Crossbills in Britain, whilst in Norway the former are proven killers of Parrot Crossbills.

In the early morning of March 12th a different male accompanied the hen to the nest-tree. This male stayed near the hen for the rest of the day; eventually feeding her and attempting copulation. He remained in attendance until the young flew, but never fed the young directly. The activities of this bird are detailed in the following section.

Some interesting feeding routines were observed during the fledging period. The cock provided all the food for the hen and the nestlings until March 3rd, when the hen was first observed tackling cones for herself. Two days later a noticeable change in the feeding pattern developed. The hen's contributions to the nestlings rapidly increased and soon became equivalent to that of the male between March 6th and 11th. At this point, with the young between ten and fifteen days old, the parents were supplying 18 to 20 meals a day with an average interval between meals of 45 minutes. Consequently the disappearance of the breeding male March 11th put considerable pressure on the female to maintain a similar feeding rate. Despite fears that she might desert the young, her rate of feeding remained relatively constant for four days, rising to fifteen feeds in 8½ hours March 15th and reaching a peak of 20 feeds in 9½ hours on 17th. Remarkably, the hen had almost doubled her previous feeding rate to meet the demands of the young. The duration of the feeds, too, was only marginally less than when the male was present. The contribution of food to the female from the second male was negligible.

Fledging periods of all Crossbill species vary greatly. Parrot Crossbill young have recorded fledging periods varying between 15 and 25 days. The brood at Wells took only 21 days to leave despite being a relatively large brood with only one feeding parent during the third week of growth. A very plentiful food supply is obviously of importance to rapid fledgling growth.

The exact size of the brood remained unknown until March 12th (16 days after hatching) when four nestlings were clearly seen being fed by the hen. By this date the streaked breast feathers were well grown although grey down was still visible on the crowns of the young birds. When approximately fifteen days old they could readily be heard calling in high-pitched trills as a parent bird arrived at the nest. The more typical 'chit-er' or 'chit-oo' notes (common to both young Parrot and Scottish Crossbills) were not heard until the young were almost ready to leave the nest. Later, these calls assisted the hen to locate fledglings out of the nest. Faecal sacs were eaten by both parents, but there was no strict link between the clearing of droppings and the feeding of the young as Olsson found.

One of the young left the nest with the female March 17th and flew approximately

200 yards before perching. Here it was observed being fed by the female before returning to the nest at 11.37. This flight was relatively strong compared to the initial flights made by the other three fledglings the following day; obviously a result of respective fledglings maturing earlier due to hatching spread. By 15.30 March 18th the four young birds had all left the nest. The female continued to feed the young regularly, but it was very difficult to follow their movements as they were well camouflaged among the pine cones. Occasionally they revealed their whereabouts by calling loudly and continuously for food. It was later ascertained that only one of the brood survived.

Behaviour of the Unpaired Males

The observed behaviour of the two unpaired males was limited due to the vigilance being kept over the nest. In early February, however, they were often to be found with the breeding birds, especially whilst the pair was feeding. At this stage the presence of the unpaired males was certainly tolerated, unless a tree close to the nest was occupied by a stranger, when the cock would immediately chase the intruder away. Later, during the incubation period, the breeding cock also defended two favourite feeding trees against the unpaired males.

It became clear during the fledging period that one of the unpaired males was appearing more consistently than the other; often perching in trees adjacent to the nest-tree and being displaced from such perches by the breeding male. Following the disappearance of the paired cock this male bird assumed the role of mate to the hen, although he did not directly assist in the rearing of the brood. During the morning of March 12th he sang repeatedly near the nest and also performed 'butterfly' song flights: activities associated with courtship. At 16.15, (approximately 28 hours after the disappearance of the previous mate), he unsuccessfully attempted to mate the hen whilst feeding. The female always avoided copulation with her new mate, but readily accepted food from him on three or four occasions. Whilst the hen was avidly feeding, the new male appeared frustrated and often perched near the nest calling quietly or pecking at pine needles. He began collecting nest material March 15th which was carried to a fork of a nearby tree. This material (feathers, grass, twigs, flower-heads), was haphazardly arranged for several hours of each consecutive day, but was never consolidated to form a nest.

Voice

Sound recording was undertaken by myself and Dr Alan Knox. There is much still to be learnt about the subtle differences between the songs and calls of *Loxia* species, but Dr Knox noticed interesting aspects of the Parrot Crossbills' song and call-notes, particularly the curious Blackbird-like call frequently used by both sexes in various circumstances. These recordings are awaiting analysis and no attempt will be made here to enlarge upon this interesting subject.

Discussion

Crossbills of all species migrate each summer away from areas of poor cone crop. Occasionally, due either to widespread failure of the crop or over-population in the regular range, the birds have to migrate much farther and in greater numbers to find food. If a species succeeds in finding a sufficient supply of cones that it is able to exploit and where there is little or no competition from other *Loxia* species it may stay to breed. When this explanation of Crossbill movements is applied to the Wells Parrot Crossbills it reveals the necessary coincidental conditions required for British nesting attempts to occur: a massive failure of the pine-cone crop in their usual

range; the successful migration of adult birds; the location of suitable pine-cone crops and the absence of a dominant colony of Common (or Scottish) Crossbills.

The Parrot Crossbills at Wells found a bumper crop of exploitable Corsican Pine cones and no competition from Common Crossbills; consequently the birds remained to breed. The possibility of breeding in Yorkshire in 1983; proved breeding in Norfolk and Suffolk in both 1984 & 1985 suggest that such conditions may exist for several years resulting in temporary colonisation of new breeding areas.

Acknowledgements:
Many people helped to ensure the success of the protection scheme. Special thanks to Bryan Bland, Herbert and Mabel Ellis, David Henshilwood, Arthur and Eileen Jenkins, Joe Johnson, Mike Keene, John Kemp, Eddie Myers, Norman Sills and Roger Tidman. Also to the Titchwell volunteers: Jim Rowe, Simon Roberts, Chris Ward and Andy Warren.

Ringed Plover Survey

A. L. Bull

A survey of breeding pairs of Ringed Plover in the county was carried out during 1984. Thanks are due to all the observers taking park, particularly David Henshilwood who covered the whole of Holkham NNR from Burnham Overy to Morston and found 101 pairs — 'a conservative figure'. In the previous 1974 census, his predecessor found only 7 pairs. On nearby Scolt Head, where Bobby Chestney has studied the species for twenty years, numbers have varied between 160 and 180 pairs, the 1984 figure being the latter. It soon became apparent that the 1974 figures were far from complete, thus there is no intention in this note to make comparisons.

The totals of 119 pairs in East Norfolk and 410 for the West give a county total of 529 pairs, emphasising the national importance of Norfolk for this species.

Nesting habitat preference is largely sand/shingle round the coast, but 12 pairs nested on coastal farmland near the coast, 8 pairs inland at gravel pits, 2 pairs at Welney Wash, 2 pairs at Wisbech Sewage Farm, 3 pairs on Terrington Marsh, one pair at sugar-beet settling ponds, 15 pairs on artificial scrapes at reserves in East Norfolk, 3 pairs on salt-marsh at Breydon and 2 pairs on farmland in the Brecks. If any pairs have been overlooked, it is likely they were in the last-named area.

Shore-nesting totals were as follows: Snettisham-Heacham 45 pairs, Hunstanton-Holme 7 pairs, Holme-Thornham 20 pairs, Titchwell-Brancaster 35 pairs, The Nod 2 pairs, Scolt Head 180 pairs, Overy shingle bank-Morston 101 pairs, Blakeney Point 65 pairs, Cley 3 pairs, Salthouse 6 pairs, Waxham-Winterton 10 pairs and Winterton-Yarmouth 8 pairs.

At Scolt Head Island the Warden has shown that failures due to predation (including Black-headed and Common Gulls, Oystercatcher, Stoat, Weasel, Rat and periodic flooding) amount in any one year to some forty nests, or 25%. Thus at many sites where the public (and their dogs) have access the failure rate must be considerably higher. To balance this the Ringed Plover has a long breeding season with some pairs rearing three broods. Nesting starts in mid-April with the latest recorded hatching Sept 3rd and three young successfully fledged Oct 1st.

Origins and Movements of Norfolk Fulmars

Moss Taylor

The spread of the Fulmar as a British breeding bird is well known. Up until 1878 the only colony was on the island of St Kilda, however, in that year, breeding was first recorded on Foula and during the next one hundred years colonies appeared on the majority of suitable cliffs around Britain and Ireland.

Potential breeding sites are often prospected for several years prior to colonisation and this was the case in Norfolk. In 1939 the sandy cliffs of NE Norfolk were first visited by non-breeding adults during the summer months and this continued for several years. But it was not until 1947 that breeding first occured with 5 pairs at Weybourne. By 1956, the cliffs between Weybourne and Cromer held 40-50 breeding pairs. Although prospecting Fulmars were noted in W Norfolk as long ago as 1951, breeding was not proved until 1964. More recently the species has spread to Happisburgh where breeding first took place in 1978. Currently about 25 pairs breed at Hunstanton, 50-60 pairs between Weybourne and Cromer, and up to 3 pairs at Happisburgh. Thus colonies are now established on most of the suitable Norfolk cliffs.

In the late 1950's, 60 Fulmars were ringed in the Cromer area by the Cley Bird Observatory and between 1973 and 1984 a total of 154 have been ringed at Sheringham. In addition a few more have been ringed on a casual basis. Recoveries of these ringed Fulmars, as well as birds ringed elsewhere and found in Norfolk, form the basis of this paper.

Up to the end of 1984, a total of 21 Fulmars ringed outside the county had been found in Norfolk. The great majority were ringed at Scottish colonies (Shetlands 8, Orkneys 4 and the Scottish mainland 5), with singles from the Farnes, Iceland, Norway and the North Sea (see map). With the exception of the bird from Iceland, they all originate from colonies bordering the North Sea and it is almost certain that it was from this area that Norfolk's first breeding Fulmars originated. This is supported by an adult trapped on a ledge at Sheringham in March 1984, which had been ringed as a nestling on the Farne Islands, Northumberland, ten years earlier. 70% of those recovered in Norfolk were ringed as nestlings up to 14 years previously (but it must be remembered that in Britain only about 15% of all Fulmars are ringed as adults). This compares with the oldest British-ringed Fulmar to date of 27 years. All but a few have been found dead on the tide-line, not generally as a result of oiling, although the cause of death usually has not been apparent.

About 220 Fulmars have been ringed in Norfolk of which no less than 18 have been recovered, again mainly as tide-line corpses. This is a surprising number, when one considers that the average recovery rate for British-ringed Fulmars is only 1-2%. In addition a further 7 have been caught again in subsequent years at their original site of ringing. Foreign recoveries have been reported from Holland(2), Belgium and off the Norwegian coast, while single Norfolk-ringed Fulmars have been found in Durham and Ayr (see map).

In common with many species of sea-bird, Fulmars take several years to reach sexual maturity and are usually 6-12 years old before first attempting to breed. There have, in fact, been only two instances to date, of Norfolk-ringed nestlings being found again in Norfolk in subsequent years. Both were found dead on the beach in July below breeding colonies, not far from their natal ledges, seven and eight years respectively after hatching. Despite ringing over one hundred nestlings at Sher-

ingham in the last twelve years none have yet been caught again back on a breeding ledge. Thus there is only circumstantial evidence to suggest that the birds are returning to breed at or near their natal colonies.

Fulmars are monogamous and if breeding has been successful will return to the same ledge over several seasons. 7 adults ringed at Sheringham have been recaught subsequently up to five years after ringing. The unstable nature of the sandy cliffs often means that suitable ledges change annually. Despite this an adult ringed in 1977 was recaught on the same ledge in both 1979 and 1981. However, two adults ringed as breeding birds were found alive in July off the SW coast of Norway and on a Belgian beach, possibly suggesting changes in breeding area. The species is single brooded and lays only one egg. Apart from occasional cliff falls and human egg predation, most pairs successfully rear their offspring. There is, however, a significant mortality soon after forsaking the ledge and 8 ringed as nestlings have been found dead on Norfolk beaches, within a month of fledging.

The breeding colonies and inshore waters are deserted by the Fulmars in August. The adults leaving to moult at sea before returning again in November, whilst most of the young birds have moved well away from their colonies by mid-October, not to return for several years. This rapid dispersal is well illustrated by a Fetlar nestling ringed in July and found at Weybourne at the end of September and a Sheringham nestling recovered on a Durham beach in early October. The first few years after fledging are spent in the Atlantic or Northern Seas, before potential breeders begin to reappear during the summer months at the colonies. Even Norfolk-ringed nestlings can reach the Atlantic as shown by the recovery, three years after ringing, at Ardrossan in Ayrshire (see map).

Significant off-shore passage is generally only evident during northerly gales in spring or autumn, with peak counts of up to 2200 along the north Norfolk coast in March and September. An exceptional 'wreck' of Fulmars occured in February and March 1962, extending along the east coast of Britain from Aberdeen to Kent. During this period 200 were washed up on Norfolk beaches, but no ringed Fulmars were reported. In view of the life-cycle of Fulmars, the presence of non-breeding adults at colonies during the summer, must be taken into account when assessing the number of breeding pairs. Only those ledges known to hold an egg or nestling should be included in the count. This paper would not have been possible without the co-operation of the British Trust for Ornithology who kindly allowed unrestricted access to their Fulmar recoveries.

Distribution of Fulmar recoveries affecting Norfolk. Numbers refer to the number of individuals and areas of origin of ringed birds found in Norfolk, letters refer to the sites of recovery of Norfolk-ringed Fulmars — adults(a) and nestlings(n).

Greenshank movements in the Yare valley were on an impressive scale. At Breydon 35 assembled at high tide May 7th. During return passage, Cantley pools attracted 37 August 19th.

Added to the county list as recently as 1979, elegant Marsh Sandpipers appeared at Holme and at Cley. Finland is the nearest breeding station.

Spoonbills were often on show at favoured localities; at Titchwell two stayed over six weeks. A very late individual moved leisurely westwards passing Holme and Hunstanton between December 27th and 29th. Fifty pairs of Avocets nested in the county, including a new colony at Titchwell.

This juvenile Mediterranean Gull which remained at Salthouse six weeks during August and September regularly frequented the dyke alongside the coast road. 1984 was an excellent year for this former vagrant.

Rock Sparrow: A Bird new to Britain in Norfolk

S. J. M. Gantlett

In Norfolk, 14th June 1981 was clear and sunny with a very warm force 5 south-westerly wind. There was much visible migration in progress at Cley during the morning. Starlings were passing west at the rate of about 2000 per hour; Lapwings, Turtle Doves and Linnets were also passing west along the coast.

At 8.00 a.m. I was walking with R. G. Millington from the 'North Hide' at Cley towards the Coastguards' carpark. We noticed a small bird feeding in company with several Linnets under the Eye Field fence. It was a brown sparrow-like bird with a boldly striped head. At first we were puzzled as to its identity, but then it moved on to the fence and in flight it showed a shortish dark tail tipped with prominent white spots. This highly distinctive feature confirmed our suspicions that the bird was a Rock Sparrow, a south European species new to the British List.

For the next ten minutes, we watched the bird, at ranges of about 50-100m, as it fed along the ruts in the turfed gravel strip between the beach and the field. It alighted on the fence a few times and we both compiled detailed descriptions. I then left to alert other observers. J. McLaughlin, M. Eldridge and C. Jones were fortunate to arrive in time and joined RGM still watching the bird. At 8.30 am it flew up, for no apparent reason, and headed strongly westwards across the Eye Field. It was never seen again, in spite of much searching.

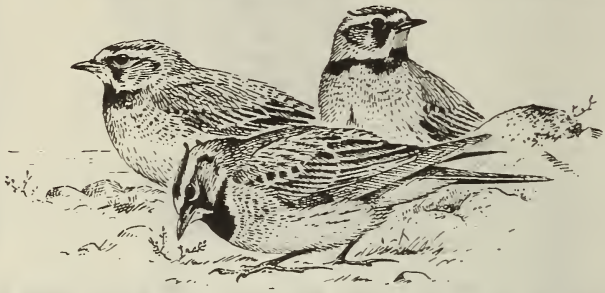
It was a sandy-brown sparrow similar in size to a House Sparrow, but plumper in proportions, with the strikingly striped head the most obvious feature. The following description summarises that compiled at the time (and published in *British Birds* 76:245):

Head: Broad creamy-white crown stripe. Dark brown lateral crown stripes. Broad buff-white supercilium. Broad but not sharply defined dark brown eye-stripe. Ear coverts and lores warm buffish-grey. Indistinct grey-brown malar stripe. Off-white sub-moustachial stripe and chin. *Upperparts:* Mantle buffish-grey streaked with blackish-brown. Pale cream-coloured braces down either side of mantle. Wing coverts dark brown centred, edged sandy-brown and with whitish tips forming narrow double wing-bars. Primaries and secondaries dark brown edged paler. Large tertials blackish-brown with pale edgings and tips. Tail shortish and notched, blackish-brown with prominent creamy white spot at tip of each feather, showing in flight as slightly broken white bar at end of tail.

Underparts: Off-white with subdued greyish-buff wash. Strong dark brown streaks on flanks. Small, oblong, pale clear yellow patch visible on centre of upper breast only when bird looked up when face-on, otherwise apparently obscured by throat feathers.
Bare parts: Pinkish-grey fairly large, conical, sparrow-like bill. Legs flesh-yellow and strikingly thick and sturdy.
Voice: The bird was not heard to call.

An active and nervous bird, it fed on the ground in a horizontal hunched posture. Though having a rather shuffling gait on the ground, it was bold and alert-looking when perched on the fence.

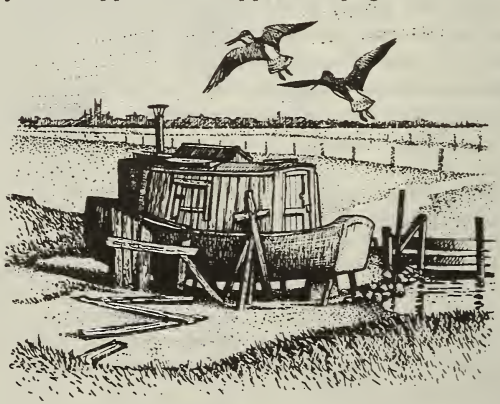
The species has wandered to Northern France, Belgium and the Netherlands (where most records have been in October) but this record is the first for Britain.



Arthur Patterson Remembered

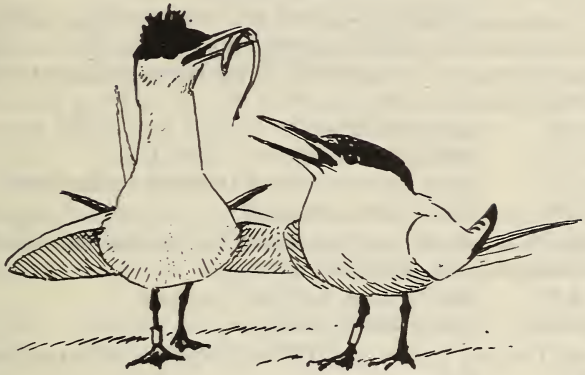
"The place had held vague romance for me since childhood. A rough wild spot I had imagined it: Valhalla of 'John Knowlittle' (A. H. Patterson) who, in his life, attracted there all the rarest wildfowl and wading birds: drawing oddly-humerous carricatures of those who studied them. When I saw the little square houseboats permanently anchored in the mud, I knew his spirit to be housed in one. I could see him sweeping the flats with his telescope, and then pushing off in his punt to the blue-stilted Avocets probing with their 'cobbler's awls' on the Lumps, or to the great white Spoonbills dredging in the ooze. They still come every year."

This extract from Richard Perry's "At the Turn of the Tide" vividly describes Breydon Water. The estuary and adjoining marshland feature in a series of fascinating books written by Arthur Patterson who died fifty years ago on 27th October 1935. A further appreciation appear on page 139.



Ringing Report

Moss Taylor



During the last couple of years there has been a welcome influx of new ringers into Norfolk. This has resulted in an encouraging increase in the number of passerines ringed annually, both at coastal and inland localities. In 1984 over 12,000 birds were ringed in Norfolk (excluding those on The Wash), a total which included 2100 Greenfinches, 1100 Blackbirds, 800 Blue Tits, 750 Swallows and 600 Reed Warblers, as well as the impressive total of 29 Kestrels. Amongst the less commonly handled species were Great Crested and Little Grebes, Jack Snipe(2), Nightjar(4), Wryneck, Black Redstart(8), Cetti's Warbler(6), Icterine, Yellow-browed and Pallas's Warblers, Firecrest(2) and Red-breasted Flycatcher(2).

Due to a steady increase in the volume of recoveries reported annually it is now necessary to be more selective. For this reason no Starling nor Blackbird recoveries are included this year and only 2 Black-headed Gulls. Without doubt the most impressive recovery of 1984 was the Helgoland-ringed White-tailed Eagle found dying at Wareham. Other 'firsts' for Britain were Whooper Swans in Iceland, Grey Plover in the Canaries, Long-tailed Tit in Belgium and a Belgian-ringed Chiffchaff.

The format and symbols used for the individual recoveries follow the style described in NBR 1983 p.367. This report would not have been possible without the enthusiasm of all the ringers in Norfolk including — D. Aidley, J. Bruhn, R. Dean, R. Gribble, A. Hale, Holme Bird Observatory, J. Houghton, R. Marsh, R. Nichols, A. Parr, D. Pelling, D. Sadler, W. Thrower, Mrs. M. Unsworth, G. Walford and the Wash Wader Ringing Group. Dr. N. Branson once again kindly commented on the wader recoveries.

Fulmar: For a full analysis of Fulmar ringing recoveries affecting Norfolk see p. 103.

4	2.8.84	Sheringham
x	10.8.84	Happisburgh 26km ESE
1	22.8.79	Sheringham
x	2.6.84	Terschelling, The Netherlands 270km E
1	21.8.74	Farne Islands, Northumberland
v	9.3.84	Sheringham 348km SSE
1	1.8.74	Foula, Shetland, Scotland
x	23.7.84	Sheringham 823km SSE

Gannet: Only the fourth British recovery of a Norwegian-ringed Gannet, from one of the most northern colonies in the Western Palearctic, well inside the Arctic Circle.

1	2.8.84	Skarvklakken, Nordland, Norway
x	31.10.84	West Runton 1954km SSW

Heron: Two contrasting recoveries, the first of a Norfolk-ringed nestling found dead within a few kilometers of its natal area, fifteen years later and the second confirming the Continental origin of at least some of the Herons recorded flying west along the north Norfolk coast.

1	5.6.69	Ranworth Broad
x	13.6.84	Brundall 8km SSW
1	30.5.82	Barsingerhorn, Noord Holland, Netherlands
x	9.5.84	King's Lynn 300km W

Mute Swan: An exceptionally long movement for this species, only 3% of ringed British Mute Swans moving more than 100km.

1M	29.8.82	East Fortune, Lothian, Scotland
v	23.8.83	Holme 400km SSE

Whooper Swan: The first British-ringed Whooper Swans to be recovered in Iceland.

6F	9.1.81	Welney
xF	15.9.81	Strong, Sudur-Thingeyjahr, Iceland 1755km NNW
6F	1.11.80	Welney
x	28.10.83	Stafafell, Iceland 1575km NNW
8F	11.1.83	Welney
v	1.8.84	Alftafjordur, Sudur-Mule, Iceland 1585km NNW

Bewick's Swan: More sightings of birds colour-ringed at Welney were reported from The Netherlands and further details are given of a Bewick's Swan first reported in NBR 1982 p.211. The species is only a straggler to Iceland and the later sighting in The Netherlands showed that it had rejoined the North Sea wintering population of Bewick's Swans.

5M	9.2.81	Welney
vv	31.5.81	Hvanna, Iceland
vv	19.2.83	Noordoostpolder, The Netherlands
5M	1.12.77	Slimbridge, Gloucestershire
xF	9.2.84	Welney

Brent Goose: An interesting change in wintering areas in subsequent years.

5	10.2.80	Farlington Marshes, Hampshire
x	22.2.84	Brancaster 264km NNE

Wigeon: These recoveries from Pensthorpe follow a similar pattern to those ringed at Snettisham in the 1970's, with autumn recoveries in Denmark and breeding season recoveries in the USSR.

3M	12.12.83	Pensthorpe
xF	21.10.84	Kalo Vig, Jylland, Denmark 724km ENE
3F	14.11.82	Pensthorpe
xF	5.9.84	Vostrup, Jylland, Denmark 593km ENE
4M	6.10.82	Pensthorpe
xF	13.5.84	Leshnkonskyoye, Arkhangelesk, USSR 2889km ENE
6M	2.3.84	Pensthorpe
xF	16.5.84	Trusovo, Komi ASSR, USSR 3167km ENE
5M	2.3.84	Pensthorpe
xF	28.5.84	Verikovisochnoye, Nenets No, USSR 3215km ENE
6M	27.1.75	Snettisham
xF	23.5.82	Ust-Tsil'Ma, Komi ASSR, USSR 3230km ENE

Shelduck: Details are given of a bird controlled in at least its 17th year, thus making it the oldest British-ringed Shelduck; while the other is only the second French-ringed Shelduck found in England, the majority coming from Germany.

4	27.8.68	North Wootton
v	16.1.84	Teesmouth, Cleveland 229km NNW
6M	6.1.77	Marquenterre, Somme, France
x	5.5.84	Breydon Water 252km N

Eider: This recovery provides further evidence of the limited winter contact in the North Sea between British and Continental populations.

1	6.7.83	Terschelling, Netherlands
x	24.11.84	Heacham

White-tailed Eagle: Post-mortem examination revealed shot-gun pellets in the body of this fine bird, which had been reported earlier from several Norfolk localities. Needless to say it was the first foreign-ringed White-tailed Eagle to be found in Britain.

1	5.6.83	Warder See, Schleswig Holstein, F. R. Germany
x	12.5.84	Warham 609km WSW

Marsh Harrier:

1	9.7.83	Norfolk
x	2.2.84	Catterick Camp, North Yorkshire 248km NW

Kestrel: Further evidence of the random dispersal of juvenile Kestrels.

1	22.6.84	Tottington
xF	6.8.84	Spalding, Lincolnshire 62km NW
1	5.6.84	Wembley, Greater London
xF	29.7.84	Downham Market 124km NNE
1	12.6.84	Rutland, Leicestershire
x	17.7.84	Brancaster 86km ENE
1	24.6.76	Rotstergaast, Friesland, Netherlands
v	9.4.84	Lakenham 311km W

Coot: 4 Coot ringed at Deeping St James, Lincolnshire in autumn/winter were found in west Norfolk in 1983/84.

Oystercatcher: The majority of foreign-ringed Oystercatchers come from Norway, but one would have expected this bird to be back in its breeding area by the end of May.

6	13.4.83	Hagoy, Rogaland, Norway
v	28.5.84	Snettisham 748km SSW

Ringed Plover: Part of a well-established westerly movement of local breeding Ringed Plovers.

5	14.8.77	Snettisham
x	10.2.84	Illauntannig, Kerry, Eire 710km W

Grey Plover: An example of a bird belonging to the 'passage' population which takes on food at The Wash in August/September before leaving for Africa. The first recovery of this species in the Canary Islands.

4	10.9.83	North Wootton
x	28.11.84	El Medano. Tenerife, Canary Islands 3097km SSW

Lapwing: A typical movement for this species.

1	30.5.83	Kelling Quags
xF	14.12.83	Boucey, Manche, France 525km SSW

Knot: These illustrate the general complexity of Knot movements. Individuals do not seem to follow the same pattern from year to year and there is considerable interchange between European estuaries in winter. The recovery in Morocco is the first for a British-ringed Knot.

4	8.10.72	Thornham
v	27.7.84	Teesmouth, Cleveland 231km NW
3	23.8.74	Wolferton
xF	10.6.84	Mohammedia, Casablanca, Morocco 2216km SSW
4	11.8.71	North Wootton
xL	12.8.84	Klanxbuell, Schleswig Holstein, F.R. Germany 587km ENE
6	20.1.80	Heacham
v	27.10.84	Normerven, Noord Holland, Netherlands 301km E
3	12.8.80	Hiddensee, Rostock, German D.R.
v	22.8.82	Wolferton 861km WSW

Redshank: Over half the Redshank wintering on The Wash are of the Icelandic race.

4	4.8.73	North Wootton
x	3.9.83	Djupilaekur, Norder Mule, Iceland 1702km NNW

Turnstone: The first bird was probably on return passage to Finland, there is almost no spring passage through The Wash, birds following a more Continental route than in the autumn when this bird was ringed. The breeding range of the Scandinavian population does extend into Finmark but the second bird should have been well on the way to Africa by the end of October.

6	16.8.70	Snettisham
x	19.5.84	Lesconil, Finistere, France 651km SSW
5	21.8.74	Wolferton
x	22.10.84	Vardo, Finmark, Norway 2502km NE

Black-headed Gull: Note the early return of the Polish nestling.

6	2.7.77	Holt
v	4.3.84	Stoke Bardolph, Nottinghamshire 143km W
1	30.5.79	Kokotek, Poland
x	16.7.84	Brancaster

Common Gull: The first recovery is further north than usual.

4	20.12.81	Norwich
x	31.8.84	Skogsoy, Nordland, Norway 1654km NNE
1	18.6.81	De Muy, Texel, Netherlands
xF	5.1.84	Snettisham 288km W
1	7.7.81	Utsira, Rogaland, Norway
x	20.3.84	Norwich 769km SSW

Herring Gull: Only a few Scottish-ringed nestlings have been found in Norfolk.

1	2.7.83	Isle of May, Scotland
x	17.9.83	Holme

Lesser Black-backed Gull: The first Dutch-ringed bird found in Norfolk.

1	9.7.82	Tweede Duintjes, Terschelling, Netherlands
x	27.7.84	Breydon Water 266km WSW

Great Black-backed Gull:

1	5.7.74	Sveslingan, Morog og Romsdal, Norway
x	25.9.84	Snettisham 1148km SSW

Sandwich Tern: Some early results from the recent ringing at the colony on Blakeney Point, including a strange northerly movement after fledging.

1	29.6.84	Blakeney Point
v	27.7.84	Seal Sands, Teesmouth, Cleveland 231km NW
1	29.6.84	Blakeney Point
v	26.7.84	Pegwell Bay, Kent 185km S
1	29.6.84	Blakeney Point
v	4.11.84	Luanda, Angola 6966km S

Swallow: A chance find by a non-ringer produced this long-distance recovery from southern Africa.

4F	5.3.84	Windhoek, Namibia
x	25.5.84	Long Stratton 8480km N

Sand Martin:

3JM	20.8.83	Weybourne
v	30.6.84	Abingdon, Oxfordshire 219km SW
2	29.7.84	Tottenhill GP
v	12.9.84	Ely, Cambridgeshire
2	27.6.82	Gillingham
v	24.8.84	Rochester, Kent

Nightingale: Very few Nightingales are recovered. The only previous one to affect Norfolk was as long ago as 1952.

4	12.8.83	Dartford, Kent
x	16.4.84	Walcott 178km NNE

Robin: Despite being tail-less when ringed this Scandinavian drift migrant still managed to reach its wintering area within a month.

3	18.09.84	Sheringham
xF	21.10.84	Alcala de los Gazules, Cadiz, Spain 1908km SSW

Fieldfare:

2	12.11.78	Watlington
x	16.1.84	Goole, Humberside 147km NW

Song Thrush:

3	28.10.83	Happisburgh
x	11.3.84	Uden, Noord-Brabant, Netherlands 305km ESE

Reed Warbler: A full analysis of Reed Warbler recoveries affecting Norfolk is planned for the 1985 NBR.

3	6.8.79	Earlham
v	26.4.84	South Lopham 32km SSW
1	15.7.84	Tottington
x	3.10.84	Attleborough 14km E
3	23.8.81	Buckenham
v	6.5.84	Rye Meads, Hertfordshire 136km SW
3	5.8.84	Hardley
v	26.8.84	Wicken Fen, Cambridgeshire 88km WSW
4M	4.8.84	Weybourne
v	6.9.84	Ria de Jaizubia, Guipuzcoa, Spain 1089km SSW
4	24.7.83	Tottington
xF	6.10.84	Sidi Allal Tazi, Morocco 2079km SSW

Sedge Warbler:

3J	10.8.84	Bolton, Greater Manchester
v	19.8.84	Hardley 290km ESE

Blackcap: Included is only the third foreign-ringed Blackcap to be recovered in Norfolk (the previous two were from Holland and Belgium).

2	1.10.81	Holme
x	15.10.82	Landes, France
3F	9.10.82	Sheringham
x	17.1.84	Ulldecona, Tarragona, Spain 1374km S
5F	26.3.83	Almonte, Heulva, Spain
x	24.4.84	Dersingham 1815km NNE

Whitethroat:

4	4.5.84	Landguard Point, Suffolk
x	3.7.84	Briningham 105km N

Chiffchaff: The first Belgian-ringed Chiffchaff to be found in Britain, presumably having overshot on its return migration in spring.

3	5.7.83	Lippelo, Antwerpen, Belgium
v	2.5.84	Sheringham 298km NW

Goldcrest: An extraordinary movement to Wales, at a time when the majority of migrating Goldcrests are returning to the Continent.

2F	26.9.83	Tottington
xF	29.4.84	Beccles, Suffolk 51km E
6F	20.4.84	Waxham
v	24.4.84	Bardsey Island, Gwynedd, Wales 432km W

Long-tailed Tit: The first foreign recovery for a British-ringed Long-tailed Tit. Thus at long last evidence of movement between Eastern England and the Continent, which had been suspected by several Norfolk ringers.

2	22.9.83	Happisburgh
v	5.2.84	Burlingham 21km SSW (3 birds)
3	3.11.81	Mucking, Essex
v	1.4.84	Burlingham 147km NNE
2	23.8.80	Rye Meads, Hertfordshire
xF	5.4.84	Norwich 129km NE
2	22.10.83	Happisburgh
v	8.9.84	De Panne, West Vlaanderen, Belgium 205km SSE

Blue Tit:

1	30.5.83	Gillingham
v	5.4.84	Strumpshaw
5	16.3.84	Sprowston
v	4.10.84	Lessingham 20km NE

Great Tit: An interesting series of recoveries associated with an unusually heavy early spring movement through this coastal ringing site.

3JF	10.7.83	Sheringham
v	22.3.84	Moulsoe Old Wood, Buckinghamshire 160km SW
5M	4.4.84	Strumpshaw
v	10.4.84	Sheringham 41km NNW
5F	29.1.84	Osterley, Greater London
v	20.3.84	Sheringham 194km NNE

Chaffinch:

4M	10.11.83	Wassenaar, Zuid Holland, Netherlands
v	26.1.84	Swaffham 248km WNW

Brambling:

4	1.1.84	Downham Market
x	25.1.84	Coveney, Ely, Cambridgeshire

Greenfinch: Very few recoveries were reported considering that over 2000 Greenfinches were ringed in Norfolk in 1984. However, all show a clear easterly movement as winter proceeds.

4	19.2.84	Pentney
v	8.4.84	Fakenham
5M	1.1.84	Tottington
v	20.3.84	Sheringham 55km NNE
5F	3.4.84	Handforth, Cheshire
v	19.5.84	Cley
3M	29.10.83	Fishtoft, Lincolnshire
v	20.12.83	Sheringham 79km E
4	18.2.84	Wellington, Shropshire
xF	13.4.84	Sheringham 251km E

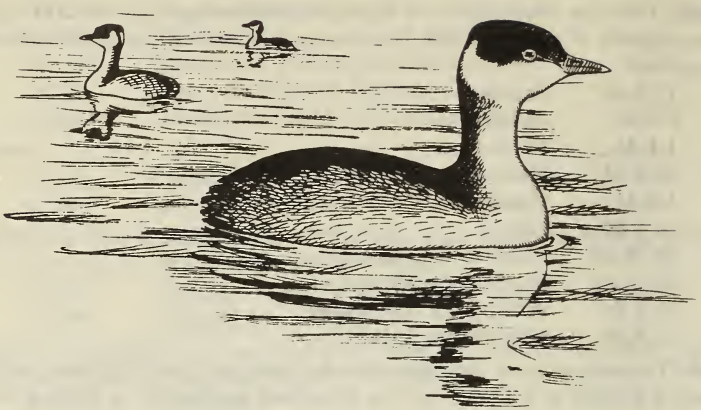
Goldfinch: The best series of recoveries for this species for several years, including a bird showing fidelity to a Dutch site on presumed passage to its Iberian wintering area.

5M	7.5.84	Swaffham Heath
x	15.5.84	Diss 46km SE
4	26.4.83	Sheringham
x	24.5.84	Wisbech, Cambridgeshire 76km WSW
4M	25.6.83	Ormesby
xF	12.7.84	Bury St Edmunds, Suffolk 77km SW
6M	11.5.78	Happisburgh
v	20.7.84	Kettering, Northants 152km WSW
6M	23.4.83	Sheringham
v	11.9.83	Oostkapelle, Zeeland, The Netherlands 222km SE
v	16.9.84	Oostkapelle
5M	9.5.84	Woodbridge, Suffolk
xF	19.5.84	Freethorpe 56km N

Siskin: Details are given of several birds involved in the late winter/early spring influx of Siskins into south-eastern England.

6M	4.4.82	Swaffham Heath
v	18.3.84	Nailsworth, Gloucestershire 223km WSW
5M	23.3.82	Sheringham
x	14.12.83	Meerkerk, Zuid-Holland, The Netherlands 283km ESE
4M	1.3.84	Haslemere, Surrey
v	10.4.84	Fakenham 222km NNE
5M	14.2.84	Woking, Surrey
v	27.3.84	Sheringham 217km NNE
4M	25.3.84	Guisborough, Cleveland
v	3.4.84	Sheringham 229km SE

Classified Notes



These notes are based on *Birds of Norfolk* (revised edition 1977) where fuller details regarding status, distribution, migration and ringing recoveries may be found. Fuller details of Fens records appear in the Cambridge Bird Club Report for 1984. Attention is also drawn to the wealth of migration observations appearing in Norfolk Ornithologists Association 1984 Annual Report; the coastal accounts extend from Snettisham to Breydon Water.

The order used is that of K. H. Voous (1977) List of recent Holarctic Bird Species. Observations refer to 1984, unless otherwise stated. To save space, all but the most essential initials have been omitted. Records are of single birds unless otherwise stated.

Red-throated Diver: No large numbers reported but usual coastal records till late April. May occurrences at Cley (14th and 20th), Blakeney Point and Horsey (23rd) and Paston (27th). An injured bird remained in Burnham Overy channel May 31st till mid-June. First in autumn Aug 10th (Titchwell) and Sept 10th (Cley and Holme). Inland birds at Filby Broad Feb 2nd, Martham Ferry April 10th and Horsey Mere April 22nd and Nov 17th.

Black-throated Diver: Over 150 records received, mainly from north coast (where some duplication) up to mid-April and from Aug 18th (Titchwell). A late bird at Paston May 30th. Mostly singles, but 4 at Cley Oct 5th and 28th and Nov 10th/11th, 4 at Wells Nov 18th and 5 at Hunstanton Nov 1st. Inland at Blickling Lake Dec 14th to 26th.

Great Northern Diver: Total of 87 records mostly from late Oct onwards and mainly singles although 3 in Holkham Bay Dec 15th. Majority from north coast where doubtless duplication. May birds at Sheringham on 12th and at Paston on 26th and 29th. First in autumn Oct 5th (off Waxham). One off Blakeney Point Nov 25th remained in breeding plumage.

Little Grebe: Impressive winter totals again at Snettisham (40 in Feb and 98 in Nov). Unusual sightings on the sea at Paston Oct 28th and Cley where 2 Oct 17th and 2 Nov 3rd.

Great Crested Grebe: Winter assemblies: Filby Broad 24 Nov 18th; Hunstanton 50 in Jan and 50 in Oct and Snettisham 65 Aug 14th and 89 Oct 9th.

Red-necked Grebe: Over 140 coastal records to May 10th (Paston) and from Aug 11th (Blakeney Point and Holkham). Mostly singles, but 4 Hunstanton April 2nd and 4 Holkham Bay Dec 2nd. Interesting observation of 2 summer-plumaged birds displaying off Hunstanton April 15th. In Broadland at Hickling 2 Jan 6th and singles 12th and Feb 8th; Hardley Flood Sept 8th, Waveney at Fritton Dec 6th-8th and lower Bure near Runham Dec 30th.

Slavonian Grebe: Remarkable numbers in Holkham Bay (and to a lesser extent off the whole north coast) throughout Nov/Dec. At Holkham first appeared Oct 20th increasing to 11 on 29th with up to 13 in Nov (18th) and 21 in Dec (8th). Elsewhere on north coast peaks of 4-5 Blakeney Point Dec 24th, 4 Brancaster Dec 4th, 5 Scolt Head Dec 30th, 5 Titchwell Nov 27th and 5 Hunstanton Nov 10th. Latest spring date April 18th (Holkham) and first in autumn at end of Sept (Holme).

In Broadland at Horsey Mere Jan 2nd; Hickling Jan 30th, Nov 21st. Dec 9th and 12th with 2 on 19th; Martham Broad Feb 25th to March 24th then 2 till April 20th and Filby Broad Feb 23rd, March 26th and April 10th with 2 on 13th/14th.

Black-necked Grebe: Hunstanton April 6th, Cley Sept 24th and Scolt Head 3 Dec 9th are the only records.

Fulmar: Breeding records received only from Sheringham-Weybourne (14 occupied ledges and first birds back Nov 5th) and Hunstanton (50 pairs Jan 1st, 117 occupied ledges mid-Feb and 28 young on ledges Aug 22nd — first returned Oct 12th) and 70 pairs in residence by end of Dec).

Large scale movement during Sept gales including 300-400 east off Sheringham (4th) and 700 north-east off Hunstanton (5th). Small 'wreck' in May along north/east coasts including 9 dead Blakeney Point on 13th and singles inland at Ten Mile Bank on 28th and at Saham Hills on 29th.

Cory's Shearwater: Horsey May 9th, Blakeney Point 2 Aug 26th, Holme May 7th and Sept 9th and Hunstanton Aug 5th and Sept 4th.

Sooty Shearwater: First county spring record: Holme May 22nd. Typical autumn movements recorded following northerly winds: Yarmouth Oct 5th, Horsey 6 Aug 26th, 18 Sept 5th, 2 on 15th, Oct 6th; Waxham Aug 5th, Sept 4th, 2 on 10th, 15th and Oct 5th; Paston 3 Sept 4th, 3 on 15th, 4 Oct 5th, and 3 on 6th; Sheringham Aug 19th, 2 Sept 4th, 3 on 5th and 12 Oct 5th; West Runton Sept 15th; Cley Aug 5th, 16th, 2 Sept 4th, 2 15th and Oct 20th; Blakeney Point Aug 15th, 3 on 25th and 2 Oct 5th; Titchwell Aug 5th and Sept 9th; Holme Aug 25th, 2 Sept 5th, one on 24th and 2 Oct 5th and Hunstanton 2 Sept 4th and one Oct 21st.

Manx Shearwater: Spring easterly movement restricted to a single day (May 26th) when 30 off Holme and 20 off Cley. Strong north-westerly winds June 28th brought over 250 east off Cley in 20 minutes (ETM). In autumn most impressive totals Aug 25th (56 Blakeney Point and 39 Holkham) and Sept 4th (72 Hunstanton, 100 Titchwell, 80 Cley and 200 Sheringham).

Remains scarce off east coast, but 37 Horsey Sept 5th.

Inland dead on road at Ditchingham Sept 19th.

Storm Petrel: Waxham Oct 5th in north-east gale (AWS).

Leach's Petrel: Cley Sept 4th and 15th; Lynn Point Sept 5th and Oct 21st.

Petrel: sp. Yarmouth July 2nd (JM) and Mundesley Sept 15th (JA).

Gannet: Most impressive autumn totals off Cley/Blakeney Point (250 east Sept 16th), Paston (367 east same day) and Sheringham (1000 east in 7 hours Oct 5th).

Inland: South Pickenham dead in wood May 17th, Holkham Park third-year exhausted in corn field July 17th and Welney immature Sept 17th.

Cormorant: Welney roost (using overhead power cables) continues to increase with monthly winter maxima as follows: Jan 68, Feb 72, March 65, Oct 46, Nov 64 and Dec 80. At Ranworth end of year estimate of 400. Fifty roosting Narford Dec 27th; 77 east at Scolt Head Oct 11th making for Holkham Park roost-site.

Shag: Many more coastal records than usual and monthly maxima as follows: Jan 8 Hunstanton, Feb 7 Blakeney Point and 12 Hunstanton, March singles Paston, Wells and Lynn Point, April singles Cley and Brancaster, May singles Yarmouth, Paston, Salthouse and Hunstanton, Aug 2 Cley, Sept 4 Cley/Blakeney Point, Oct 8 East Runton, Nov/Dec 9 Blakeney Point.

Inland occurrences: Denver Sluice 2 Feb 16th and 4 on 28th; Middle Level Main Drain 2 Feb 29th; Fowl Mere long dead April 13th and Mileham exhausted and later died Nov 14th.

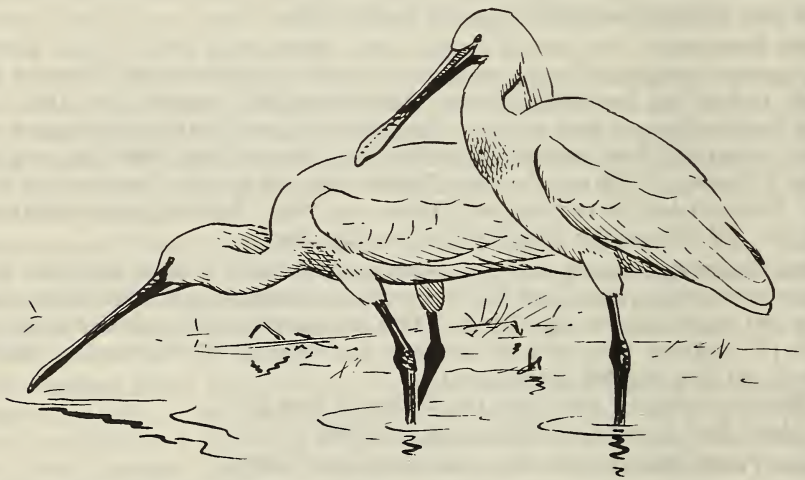
Bittern: In Broadland 7 regular boomers compared with 8 in 1983. On north coast 5 boomers compared with 6 in 1983. Winter records from East Ruston (dead Feb 5th), Waxham (where one crossed main road in front of the Editor's parked car!) and Westacre (died after becoming trapped in netting).

Little Bittern: Norwich (Eaton) May 31st to June 2nd visiting a garden pond (EW).

Grey Heron: Heronry records include Snettisham 9 nests, Islington 82, Hilgay 46, Sturston Carr 8, Shadwell 3, Narford 3, Tottington one, Hunstanton Park 4, Holkham Park 12, Buckenham Carrs 10, Surlingham 4 and Wheatfen one.

White Stork: One observed at several north coast localities including Lower Bodham, Cley, Stiffkey, Warham, Wells, Holkham, Burnham Overy and Wolferton April 13th to 17th.

Elsewhere 2 at Hickling April 11th/12th (SL), at Hemsby on 17th (RJP) and at Horsey on 20th (PRA).



Spoonbill: Breydon May 17th-30th, Horsey May 23rd-26th, Hickling April 21st-25th, 2 May 16th, 2 May 26th, one May 27th and 2 Sept 2nd, Cley 2 April 20th-25th, and singly April 27th, May 8th-28th, June 7th, July 15th and Oct 21st, Blakeney Point May 19th-23rd, Wells Dec 29th, Brancaster 2 Aug 5th, Titchwell 2 April 21st-24th, one May 5th-7th, 2 July 17th-Sept 1st, and one Oct 13th, Holme Dec 27th, Hunstanton Dec 29th and Heacham Oct 14th.

Bewick's Swan: Recorded to April 29th and from Oct 18th. Largest concentrations on the Washes where total counts (Denver to Earith) as follows: Jan 3364, Feb 2513, March 1131, Nov 2202 and Dec 4549 (a new record). Three injured birds summered.

Elsewhere winter totals include: Breydon 103 March 20th, Geldeston 74 Feb 7th, Horsey up to 120 roosting Jan/Feb, 101 March 11th, 42 Nov 22nd, Martham Ferry 50 March 7th, Potter Heigham 25 Nov 4th, Hickling 62 Feb, 20 Oct, 40 Nov and 45 Dec, Acle Marshes 110 Jan 8th, 54 March 21st, 70 March 29th, Stracey Arms 165 Jan 18th, Haddiscoe 97 Feb 29th, Lower Bure/Halvergate 132 Jan 10th, 100 March 24th, Muckfleet Levels 63 Jan 15th, Cley Marsh 72 March 13th, Warham Marshes 67 Nov 13th, Titchwell 45 March 11th, Pentney GP 41 March 22nd and Snettisham 60 Jan 14th and 41 Nov 19th. Doubtless considerable duplication in East Norfolk records.

Easterly exodus: Hickling 208, Downham Market 95, Marham 160, Barnham Broom 80 and Hethersett 40 all March 11th.

Autumn westerly movements: Winterton 31 Nov 13th, Blakeney Point 30 Nov 3rd and 26 Nov 18th, Brancaster Staithe 74 Nov 13th and Holme 76 Nov 14th.

Whooper Swan: Recorded to March 7th and from Oct 13th. Largest herd at Welney where 92 Jan, 208 Feb, 64 March, 100 Nov and 115 Dec; one injured bird summered. In addition: Wintering group in Hickling/Horsey/Martham, Potter Heigham area where 46 Jan/Feb and 17 Nov. At Snettisham 17 Jan, 10 Feb/March and 8 Nov.

Westerly movements: Blakeney Point 5 Oct 28th, Paston 6 Nov 3rd and Cley 8 Nov 3rd.

Bean Goose: Yare Valley 198 in Jan increased to 236 in early Feb with the last 100 Feb 18th; 16 returned Nov 14th increasing to 118 by month end and to 196 by end of the year.

Elsewhere: Brancaster Staithe 3 Jan 4th, Holkham 1 to 10 (and once 17) Jan 30th to March 20th. Also ones and twos among Pink-feet in north-west Norfolk Jan 1st to March 20th.

Following the virtual loss of the Taiga Bean Geese *(fabalis)* formerly wintering in the Dee valley in south-west Scotland, the East Norfolk flock is now of national importance being the last regular wintering population in Gt. Britain. In winter quarters *fabalis* favours grazing meadows, whereas the Tundra Bean Goose *rossicus* selects winter cereals, ploughed potato and sugar-beet fields and stubbles.

Pink-footed Goose: The impressive numbers in north-west Norfolk again provided winter spectacles. In The Wash (Snettisham area) 7000 till Feb 11th, 4500 till March 7th, with the last 500 April 4th and 9 stragglers till April 17th; first 9 returned Oct 9th increasing to 500 by 23rd and to 4500 by Nov 19th with 9500 by Dec 16th.

In North (Brancaster/Docking area) up to 13,000 at beginning of Jan remaining in reduced numbers (up to 4000) till mid-Feb with 400 Nov 15th rising to 6000 by end of month and to 8700 (perhaps even 10,000) by the year end.

White-fronted Goose: As usual largest gaggle at Holkham where 246 Jan, 280 Feb, 210 March (with last 60 on 23rd), 33 Nov (from 5th) and 176 Dec. Elsewhere: Breydon 76 Jan 20th, 247 Jan 28th and 28 Feb 12th, Horsey 31 March 1st, Hickling 144 Jan 30th, Potter Heigham 25 Feb 21st, Yare Valley 44 Jan; 20 Feb, 2 Nov and 22 Dec, Burnham Norton 218 March 11th, Snettisham 13 during March and 2 April 4th.

Five adults of Greenland race *flavirostris* at Welney Oct 27th to Dec 2nd.

Canada Goose: An example of the smallest form (from western Alaska) known as the Cackling Goose *B.c. minima* was in association with the Pink-feet wintering in north-west Norfolk Jan 9th to Feb 5th. Used as a 'pointer' it indicated — together with an intermediate phase snow Goose — their considerable wanderings.

Barnacle Goose: The summary indicates a notable influx into Norfolk from Jan 23rd: Breydon 14 Feb 1st, Martham Ferry 2 Jan 30th and one Feb 25th, Horsey/Hickling 15 Jan 20th to Feb 3rd with 3 March 11th, Buckenham 3 Nov 27th, Sheringham 10 Jan 24th, Salthouse/Cley 155 Jan 23rd/24th, 145 Jan 26th, 150 Jan 27th-29th, 92 Jan 31st, 100 Feb 1st, 22 Feb 13th, 12 March 31st to April 8th, 4 April 11thto May 9th and one remained all summer, Wiveton 116 Jan 23rd, Holkham 30 Jan 25th, 68 Jan 26th, 72 Jan 29th, 97 Jan 30th, 95 Jan 31st, 94 Feb 2nd, 99 Feb 5th, 88 Feb 7th, 50 Feb 8th, 4 March 4th to 14th, Brancaster (in association with Pink-feet) 3 Jan 8th, one Jan 14th, 28 Jan 30th, 49 Feb 5th, 4-5 Feb 5th to 12th, one Feb 20th to 26th, 9 March 3rd/4th, 8 March 20th and 8 April 2nd, Burnham Overy 18 Jan 29th and 90 Feb 2nd, Burnham Norton 32 Feb 5th, Holme 6 Feb 24th to March 4th, Heacham 9 March 12th, Snettisham 12 Jan 26th, and 8 Feb 24th to March 3rd, Lynn Point singles Feb 20th and 26th and 8 April 2nd, Babingley 15 Jan 27th and West Rudham (with Pink-feet) 4 Feb 5th/6th.

Brent Goose: 1984 breeding season results were very low indeed, under 5% of the wintering flocks were birds of the year. Recorded monthly and 400 still at Wolferton May 14th. Maximum numbers at main localities (counts not co-ordinated): Cley/Salthouse 2750, Blakeney/Morston 6000, Holkham/Wells 3000, Burnham Overy 3000, Burnham Norton 3000, Scolt Head/Brancaster 5000, Burnham Deepdale 4000, Holme 1000, Hunstanton 1200, Admiralty Point 6000, Snettisham 2000, Wootton 5000 and Lynn Point 1500.

Largest westerly autumn movement Oct 5th: Paston 524, Sheringham 700 and Cley 812.

Pale-bellied *hrota* at Cley/Salthouse Jan 30th, March 10th, 21st and 24th; Blakeney Point 3 early Jan; Stiffkey Feb 26th; Holkham Feb 12th and 27th; Burnham Norton Feb 4th; Lynn Point April 2nd; Terrington Marsh Feb 6th, 3 March 13th and 3 April 14th.

A Black Brant *nigricans* at Cley/Salthouse Dec 1983 remained until March 25th and one reappeared Nov 6th; it was joined by a second Nov 17th and one remained till year end. Also singles reported at Stiffkey Feb 25th and at Burnham Overy Jan 30th.

Red-breasted Goose: The first-winter bird first seen at Stiffkey in Nov 1983 with newly arrived Brents then moved to Holkham (in company with Pink-feet and White-fronts). Later in the winter it joined forces with Brents in the vicinity of Brancaster Staithe before staying ten days at Holme. Finally it resorted to Wells Quay marsh and harbour until March 23rd.

Egyptian Goose: Peak counts: Babingley 46 Feb, Holkham Park 90 June and 60 Dec, Flitcham 50 Aug, Narford 66 Sept and Hillington 37 Oct.

Shelduck: Wash counts: Snettisham 2836 Feb, 3273 March, a peak of 5762 July, 1057 Aug, 3000 Sept, 3456 Oct and 2628 Dec. Ouse Mouth 1700 Feb. Lynn Point 2000 July. Wootton Marsh 4000 Oct.

Mandarin: Horsey April 16th; Mundesley Mill pond pair during Jan; Snettisham Sept 29th; Lynn Point Sept 5th; Pentney GP Oct 2nd/3rd and Narford 4 (3 drakes) Nov 10th with one drake to Tottenhill GP next day.

Wigeon: Total Ouse Washes counts (Welney figures in brackets): Jan 20197 (5220), Feb 25456 (10500), March 25163 (6480), Sept 2754 (2510), Oct 6069 (4000), Nov 18277 (8230) and Dec 23328 (9400).

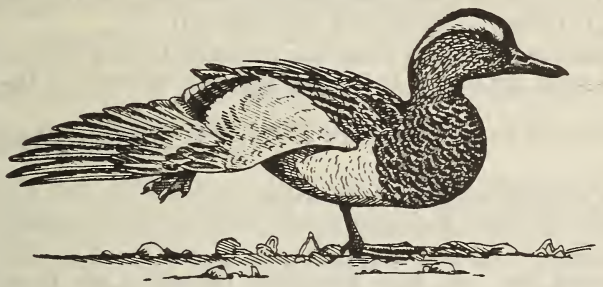
Elsewhere highest assemblies in Yare Valley: 4000-5000 Jan/Feb and 3500 Dec.

Gadwall: Largest counts: Horsey 100 Jan/Feb, Gunton Park 113 Sept, 144 Oct, Titchwell 120 Jan, 118 Feb, 127 March, 132 Aug and 129 Dec, Snettisham 131 Jan, 152 Feb and 167 Nov, Stanford 105 Sept and Hillington GP 135 Nov.

Teal: Highest counts: Welney 1120 Sept and Snettisham 1865 Oct.

Green-winged Teal: Drake at Welney April 27th-29th (JBK *et al*).

Pintail: Highest totals: Cley 450 Dec, Blakeney up to 1000 during Jan cold spells, Terrington Marsh 500 Feb, Snettisham 740 March, Lynn Point to Wolferton 1800 Dec, Welney 422 Feb and 430 Oct and Narford 54 Sept.



Garganey: Spring arrival from March 13th (Cley) followed by 1-6 at Breydon, Hardley Flood, Cantley, Strumpshaw, Surlingham, Ranworth, Horsey, Salthouse, Holkham Lake, Burnham Norton, Titchwell, Holme, Snettisham, Tottenhill GP, Weeting, Welney and Wisbech SF. Last Oct 25th. No proof of successful breeding, but probably achieved at Welney.

Blue-winged Teal: Titchwell June 11th-15th (MJK JBK *et al*) and Welney Sept 30th -Oct 5th (JBK).

Shoveler: Highest counts: How Hill 132 Jan 11th, Titchwell 82 Nov 8th and Welney 334 Nov 19th.

Red-crested Pochard: Single drakes at Horsey Mere Nov 18th to Dec 31st (PRA JJB *et al*) and at Welney Nov 29th and Dec 14th/15th (JBK).

Pochard: Largest winter assembly at Welney where 1150 during Feb. Breeding records submitted include total of 49 pairs on Flegg Broads.

Ferruginous Duck: Hardley Flood, drake May 13th to June 19th (JCE *et al*).

Tufted Duck: Winter counts include Tottenhill GP 102, Narford 100, Snettisham 98 and Colney/Bawburgh GP 245. Breeding: Apart from Brecks, 36 pairs on Flegg Broads, 10 pairs at Welney, 4-5 pairs at Titchwell and 8 broods Colney/Bawburgh GP.

Scaup: By far the highest count was 80 off Holme Nov 18th. Mid-summer records at Lynn Point July 2nd (2), July 16th and Sept 6th (flightless drake).

Eider: Peak totals: Scolt Head 200 Oct, 70 Titchwell Aug, Holme 400 Jan and 300 April, Hunstanton 400 Feb and 150 Dec and Heacham 100 Dec.

Long-tailed Duck: Most regular off Hunstanton/Holme where monthly peak totals as follows: 60 Jan, 44 Feb, 46 March, 9 April and 20 Dec. Elsewhere off north coast up to 10 recorded with 15 Holkham Bay in Nov and 21 in Dec. On Wash 1-4 off Heacham and Snettisham Feb and Oct-Dec. Single east coast occurrence: Yarmouth Dec 20th.

Inland records from Horsey Mere Oct 27th to Dec 31st and from Narford Lake Nov 4th.

Common Scoter: Coastal counts: Hunstanton 300 April/May; Horsey 120 May, Paston 140 July and Heacham 1200 Dec.

Inland: Tottenhill GP 7 May 4th.

Velvet Scoter: Recorded each month. Largest parties: Holme 60 May 6th-16th, Hunstanton 30 during April/May, Snettisham 22 March 17th and Heacham 40 March 4th and 40 Dec 23rd.

Goldeneye: Recorded monthly. Peak counts: Hickling 58 Feb, Blakeney up to 100 Jan, Brancaster 50 Feb and 40 Dec and Snettisham 58 Feb and 58 Dec.

Smew: Noted to March 24th and from Nov 18th including 8 at Hickling. Otherwise at How Hill (2), Tottenhill GP (3), and Snettisham (1).

Red-breasted Merganser: Highest totals: Snettisham 54 Jan and 57 Dec, Hunstanton 35 Feb and 34 April, Brancaster 24 Dec and Blakeney/Morston 30 Jan/Feb and 50 Nov.

Inland occurrences of ones and twos at Hickling, Downham Market and Saddlebow.

Goosander: A disappointing year with winter records from only 8 sites. Largest groups totalled 5- on lower Bure near Stracey Arms and at Antingham.

Ruddy Duck: Breydon Jan 23rd and April 12th, Hardley Flood May 23rd-June 2nd, Postwick Jan 29th-Feb 11th, Filby Broad and Ormesby Little Broad May 17th, Strumpshaw May 21st, Surlingham June 2nd-11th, Hickling Nov 9th, Snettisham 2 Sept 12th/13th, Leziate July 23rd/24th, Pentney GP 2 Nov 4th-28th with one remaining till year end, Narford 2 Sept 9th with one till 18th and Welney Nov 30th-Dec 1st.

Honey Buzzard: Four records: Brancaster GC to Scolt Head June 2nd, Sheringham in from sea July 29th; Titchwell Sept 16th and Wells/Holkham bird of the year Oct 6th-9th.

Red Kite: Egmere March 27th, April 1st and 4th (AB) and Outwell Nov 9th (RAI).

White-tailed Eagle: Wareham, one found mortally wounded May 11th died next day. Post-mortem revealed it had been shot. Ringed as a nestling 5th June 1983 at Warder See, Schleswig-Holstein F.R. Germany. The first county record since 1962.

Marsh Harrier: County total of 14 males and 18 females in summer and 33 young reached the flying stage. Many coastal records throughout autumn including up to 4 daily at Welney. 2-3 again wintered in Broads area with one on the north coast (roosting with Hen Harriers) for first time.

Hen Harrier: Many observations, mainly coastal, to May 23rd (Hickling) and from Sept 14th (Titchwell) and 15th (Winterton, Horsey, Waxham and Cley).

Maximum monthly totals roosting sites as follows: Broadland (2 localities): Jan 19, Feb 12, March 11, Nov 13 and Dec 15. North coast (7 localities): Jan 29, Feb 23, March 21, April 10, Oct 10, Nov 30 and Dec 32. Wash (one site): Jan 7.

Montagu's Harrier: Bred successfully in county for third year in succession. In addition over 30 records of migrants between April 14th (Holme) and Sept 20th (Hickling).

Goshawk: Singles recorded on 11 dates in Jan, April-July and Nov-Dec at 7 localities. In addition, 2 displaying in mid-May but no evidence of successful breeding. One at Paston April 11th carried jesses.

Sparrowhawk: Recorded at over 100 localities, but only 6 pairs known to have bred successfully. Total includes breeding season occurrences at 9 sites. Again no notable spring movements described.

Buzzard: Pair summered at one site (one bird originally possessed jesses) and nest-building observed. Migrants reported at Alderford Dec 4th, Brancaster Jan 8th, Feb 25th and Dec 22nd, Brundall Oct 25th, Cawston Dec 9th, Bayfield Dec 1st. Hardley Flood Dec 30th, Holkham Jan 15th, Holme Dec 14th, Holt 2 Dec 1st and one on 13th/18th, Horsey April 16th, River Ouse near King's Lynn Aug 18th, Scolt Head March 19th-22nd, Snettisham April 10th and 20th, Tittleshall Feb 19th, West Tofts April 20th and Winterton April 21st.

Rough-legged Buzzard: Very scarce. Recorded only at Massingham Heath Feb 21st and April 5th-11th and Wells March 30th.

Osprey: Over 30 recorded March 25th to Oct 15th. Sites included Alderfen Broad, Barnham Broom, Blakeney Point, Cley, Cockley Cley, Denton, Fakenham, Glandford, Hardley Flood, Hickling, Holkham, Holme, Horsey, Hunstanton, Lound, Morston, Pentney GP, Roydon, Sparham, Strumpshaw, Surlingham, Titchwell, Watlington, Waxham, Winterton and Wroxham. All singles.

The 1983 Lound bird in fact remained until Oct 6th.

Kestrel: Autumn build-up along sea walls between King's Lynn and Wolferton peaked at the exceptional total of 96 Aug 28th.

Red-footed Falcon: Holme male May 22nd-24th (HBO).

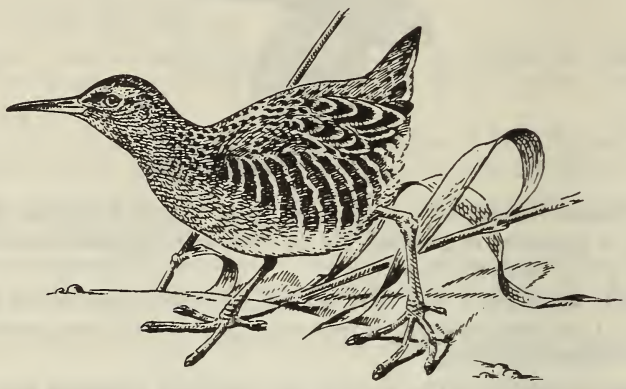
Merlin: Records from 33 sites till May 5th (Paston) and 7th (Holme) and from Sept 6th (Waxham). Mostly singles but 3 at Roydon Common Jan and 4 there Dec when 3 at Scolt. At one Broadland locality up to 3 roosting in reeds in Feb and 4 in March. Interesting records include a tired migrant at Blakeney Point Sept 18th and one in off sea at Yarmouth Oct 5th.

Hobby: Fifty-nine records with extreme dates April 21st (Cley) and Oct 2nd (Horsey). All singles apart from 2 at Hickling Sept 20th. Four April records, 11 May, 9 June, 8 July, 10 Aug, 16 Sept and one in Oct. One, presumably the same bird in Winterton/Horsey area Sept 8th to Oct 2nd.

Peregrine: Singles (and once 2) up to April 21st and from Sept 7th. Localities include Sheringham, Cley, Blakeney Point, Wells, Holkham, Burnham Norton, Scolt, Titchwell, Holme, Snettisham (14 sightings Sept-Dec with 2 Oct 10th), Ouse Mouth and Welney.

Quail: Calling at Salthouse Heath and Costessey. In autumn one at Wells Sept 5th.

Golden Pheasant: Recorded at West Tofts, Cockley Cley, Weeting, Didlington, East Wretham, Hockham Belt, Narford, Thompson, Wayland Wood, Sandringham and Wolferton. Largest groups: 10 and 17.



Water Rail: Single breeding season record: calling at East Walton Common June 4th. Two migrants at Blakeney Point Oct 19th and another there Nov 12th. Most together 5 at Hillington Jan 15th. Usual Broads winter occurrences.

Spotted Crake: Cley Aug 27th-31st and Sept 8th; Blakeney Quay Sept 6th-15th; Holme May 5th and Oct 31st and Wisbech SF Aug 10th.

Corncrake: Happisburgh May 11th (MH).

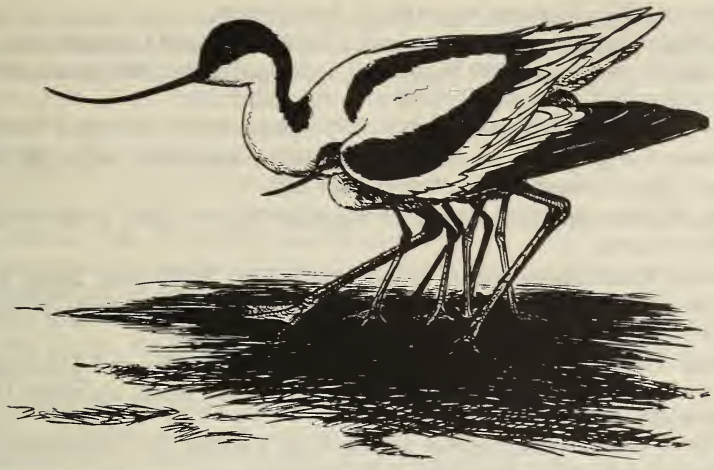
Crane: In Broadland up to 4 present throughout the year. These birds doubtless provided majority of the following records: Holkham March 28th and April 15th (AB); on latter date also recorded Burnham Overy (DH) and Stiffkey (ND); Blakeney 2 June 1st (ETM), Cley/Salthouse April 12th (ETM) and 15th (AS RS), May 17th (SE RM) with 2 June 1st (BB) which were also seen at Weybourne (MAB), Mundesley (dead on beach) April 7th (RC), Paston (in from sea) April 15th (JA MF), Yarmouth 2 very high over town later spiralled down over Breydon April 3rd (PRA), Strumpshaw 2 April 14th (MB), Barnham Broom April 23rd (BD) and Great Hockham April 1st-10th (GJ).

Oystercatcher: About 150-175 pairs bred at Blakeney Point. Inland sites were at Welney (4), Pentney GP, Hillington GP, Beetley GP, Fakenham, Flitcham, Sennow GP and Saxthorpe. A pair of Breydon bred on a channel marker post.

Peak counts at Snettisham were 11,050 Feb, 14,860 Sept and 12,200 Dec.

Avocet: Recorded each month of year. Forty pairs nested at Cley rearing about 60 young, most of these nests were on the newly extended north scrape. At Titchwell 4 pairs reared 5 young, first breeding for the site. Holme: Three pairs managed to rear only one chick. Wash: None bred, though birds recorded in 7 months of the year with 11 in Nov at Snettisham. Hickling: 2 pairs but no successful breeding.

A few birds recorded from other sites especially Breydon where there was a maximum of 7 in early June.



Stone Curlew: Little information apart from usual breeding at Weeting Heath where 6 pairs bred. Only one pair known to have nested in TF70 where usually 10 or more. Autumn concentration of 32 birds in Sept in TF70. One very surprised Breck observer witnessed a Stone Curlew eating 2 Ringed Plover chicks.

Little Ringed Plover: Thirty-four pairs summered in county, including a pair which bred on a factory roof in King's Lynn (The 3 young perished in heavy storms when 5 days old. Full details appear in the 1984 Report of NARVOS). Earliest bird at Brancaster March 13th. Last at Holme Oct 19th. Autumn (Aug) maxima 12 at Holme and 11 at Surlingham Church marsh.

Ringed Plover: Breeding season survey produced a county total of 529 pairs. Several inland sites including a pair in dry north Breckland fields.

Strong passage of *tundrae* from Breydon where a peak of 413 May 30th. Several high autumn counts including 250 Cley Aug 30th, 250 Scolt Head Sept 2nd including one completely white bird, 480 Snettisham Aug 13th and 200 Lynn Point Aug 28th.

Kentish Plover: Breydon: Single May 14th/15th with another on 17th; Hickling: single July 27th; Cley: Recorded April 28th to May 22nd and again Aug 4th; Holkham Beach: Female May 2nd-4th; Titchwell: Sept 14th-15th; Snettisham: Female April 21st and Pentney GP: Female May 8th — very rare inland.

Dotterel: Poor spring passage: Only records being 2 early birds at Snettisham beach April 20th-22nd and singles at Holme May 19th and 27th. Autumn records from Holme Sept 2nd and Blakeney Point where 2 Aug 18th-Sept 2nd and last bird Sept 7th.

Additional 1981: Fourteen May 14th at Reymerston.

Golden Plover: Largest concentration was 1500 Welney April 12th all Northern race. Other sizeable flocks were 800 Burnham Deepdale Oct 2nd, 800 Burnham Norton Dec 3rd and several gatherings of 500+ in the county.

First moulting adults returned early in July with juveniles following a month later.

Grey Plover: Largest flocks recorded on the Wash at Snettisham where 530 May and 1718 Sept. Single inland report: Welney Sept 25th.

Lapwing: The leucistic bird arrived at Scarning Fen Oct 20th to spend the third winter in the area.

Knot: Wash (Snettisham) counts include 19650 Feb, 23000 Aug, 26460 Sept and 20600 Nov. Up to 5900 Dec Wells-Warham Flats. Inland birds at Welney May 1st/2nd and at Pentney GP May 6th-8th.

Sanderling: Highest counts were at Snettisham with 385 May and 536 Aug. Large counts also from Hunstanton 220 Feb, Scolt Head 110 April, Burnham Overy 73 Aug and Blakeney Point 80 Sept.

A series of inland spring passage records from Pentney GP: single April 22nd, 4 May 8th and singly May 18th, 22nd, 28th and 30th.

Little Stint: Only small numbers on spring passage at Breydon, Cley, Titchwell, Holme, Pentney GP and Welney though up to 10 at Hickling June 17th.

A light autumn passage, largest gatherings being 20 Wisbech SF end Sept, 30 Cley Oct 2nd and 30 Titchwell Oct 13th. Winter records from Cley Feb 19th and Dec 31st, Titchwell Dec 16th, Wisbech SF Dec 22nd and Snettisham (2) Dec 29th.

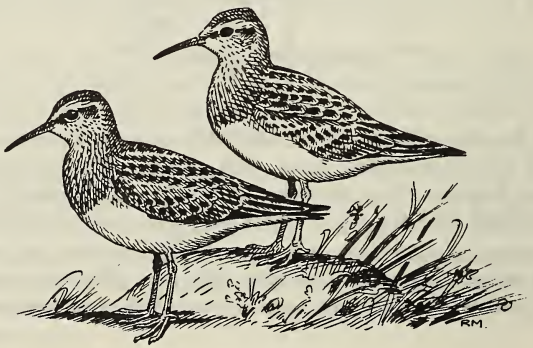
Temminck's Stint: Rather widespread spring passage no doubt aided by prevalent NE winds. Reported from Horsey (2) May 17th-23rd and June 25th-July 3rd; Hickling May 16th, (2) 18th, (4) 30th and 31st; Cley May 6th-10th and 18th/19th; Titchwell May 9th and 26th; Welney May 26th/27th; Lyng Easthaugh May 16th and another on 23rd-29th and Colney GP May 7th/8th.

On autumn passage reported from Cantley BF Aug 25th-Sept 1st; Hickling Aug five dates; Cley Aug/Sept five dates; Titchwell Sept 3rd-23rd a juvenile close to main causeway; Holme Sept 3rd and Wisbech SF Aug 24th-27th.

It is worth drawing attention to the annual problem of the very grey Stint as at Titchwell in Sept/Oct which was in fact an adult winter plumaged Little and not a Temminck's as frequently reported.

White-rumped Sandpiper: Single adults at Titchwell July 23rd-30th (AG BG *et al*) and Snettisham July 28th-30th (PJG).

Additional 1983: Breydon July 14th (PRA).



Pectoral Sandpiper: A record year being reported at Cantley BF Sept 2nd, 5th, 13th-15th, 3 16th-22nd, 4 23rd/24th, 3 up to 28th and 2 up till Oct 4th; Hickling Sept 16th/18th; Horsey Aug 31st/Sept 2nd; Salthouse Aug 8th; Cley Sept 21st/22nd, Snettisham July 22nd; Wisbech SF adult July 25th-Aug 3rd, juvenile Aug 31st-Sept 6th, 2 Sept 7th, 3 Sept 8th and single up to Sept 14th and Welney Sept 17th.

Additional 1981: Cantley Sept 19th-26th.

Additional 1982: Cantley Sept 4th/5th.

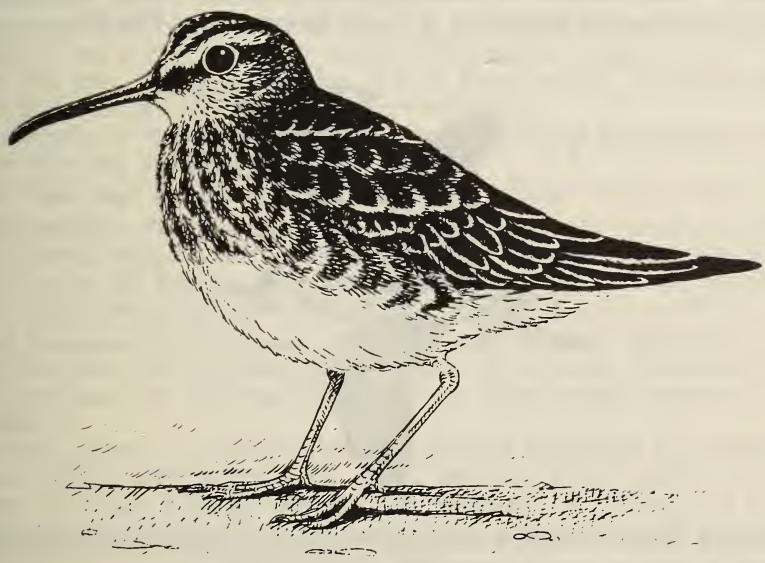
Curlew Sandpiper: Light spring passage, mostly singles, in May from Breydon, Cley, Swanton Morley GP, Wisbech SF and Welney.

Early autumn passage of adults from July 10th at Breydon where peak of 11 Aug 1st and Snettisham 44 July 29th. Other later peaks, including juveniles, of 36 Titchwell Sept 10th and 13 Wisbech SF Sept 19th. Also reported from Cley, Blakeney Point, Lynn Point, King's Lynn BF and Welney on autumn passage with last Titchwell Nov 11th.

Purple Sandpiper: Reported up to June 1st (Titchwell) and from Aug 11th (Salthouse). Records scattered widely along coast though main assembly at Heacham-Hunstanton where 18 in Jan, 16 in March, 17 in April, 10 in Oct, 8 in Nov and 13 in Dec (the birds noted at north beach Heacham are in fact the Hunstanton birds — HHR). Other signtings of parties include a peak of 4 in Feb and 3 in Dec at Yarmouth, 8 at Paston March 30th and 5 at Waxham Oct 6th.

An interesting inland record of a single at King's Lynn BF Aug 29th to Sept 19th.

Dunlin: The largest counts come from the Wash off Snettisham where there were 3200 March 16th, 6900 Sept 26th, 7390 Oct 27th and 4100 Nov 25th. High count of 1320 May 14th at Breydon, delayed by persistent NE winds.



Broad-billed Sandpiper: One present at the almost regular haunt at Breydon May 18th-22nd (PRA *et al*).

Additional 1983: Titchwell Sept 10th (DJB *et al*).

Buff-breasted Sandpiper: The third county spring record occurred at Cley May 27th (SG RM).

Ruff: No evidence of breeding. Large spring gatherings again at Hickling: 52 Feb, 87 March, 65 April and also Cley 50 April 8th.

Highest autumn passage counts from Cley 55 Nov 28th, 70 Titchwell Aug 25th, 48 North Wootton Aug 29th and 70 Wisbech SF Aug 31st/Sept 1st. At Welney peak counts of 100+ in Sept and Nov with 200 Dec — these birds feeding on arable fenland fields (often on fresh plough) during day and flighting into Washes to roost at dusk. Other wintering groups were 30+ Hickling Jan and Dec, 24 Glaven Valley Feb 5th and 79 Welney Jan.

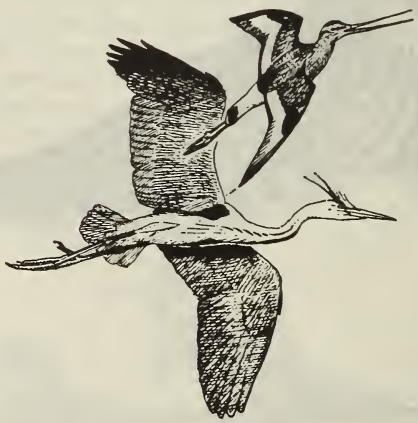
Jack Snipe: Seen up to April 15th (King's Lynn BF) and from Sept 18th (Weybourne). Widespread (over 20 localities) in small numbers, mostly singles, but up to 5 Colney/Bawburgh GP Nov 18th and 4 there Dec 9th and 30th.

Common Snipe: Main concentration of breeding birds at Welney where 129 drumming birds in May; also several drummers in Nar Valley area. Ten pairs bred Fleggburgh Common and 5 drummers at Buckenham Carrs.

Several sizeable autumn/winter concentrations, most impressive being 500 Cantley Oct 14th with 450 there on 30th, 275 Chedgrave Feb 24th, 150 Wisbech SF Sept 7th and 140 Burnham Norton Nov 27th.

Dowitcher *(scolopaceus* or *griseus):* Additional 1983: One at Hickling Oct 24th-26th (SL) was the first county record for fifteen years.

Woodcock: Widespread 'roding' birds in Breckland and at East Tuddenham, Swanton Novers, Roydon, Holkham, Foulden Common (where breeding confirmed) and Horstead. Concentrations of 20 Massingham Heath Jan during shoot, 8 East Wretham March and 7 flushed out of suaeda Blakeney Point Nov 6th.



Black-tailed Godwit: Possibly 9 pairs bred Welney, but no chicks survived to flying stage due to flooding and thunderstorms at critical stage.

Main spring concentrations on the Wash between Lynn Point and Snettisham where 90 March 18th and 80 April 9th but only smallish autumn totals. Largest autumn counts from Cley 37 Aug 4th, Titchwell 70 Oct 3rd and Holme 22 Oct 6th (when following plough) to 22nd.

Bar-tailed Godwit: Wash counts at Snettisham of 5000 Feb, 3000 Aug and 1800 Dec.

A marked spring passage with high numbers on coastal lagoons in April/May and many inland records. The largest inland counts being 19 Pentney GP April 27th, 50 Welney April 27th followed by 40 May 5th, 10 Colney GP April 29th and 18 flying north East Tuddenham May 1st. Numbers at Breydon peaked at 462 April 29th (followed by 132 May 7th) while 500 were on the Cley lagoons at the same time together with 400 Blakeney Point.

Whimbrel: Extreme dates April 17th (Cley) and Nov 6th (Blakeney Point). Main spring concentrations: 32 Holkham April 24th, 40 Scolt Head/Deepdale April 27th, 41 north-east Strumpshaw May 1st and 126 Breydon May 9th.

Autumn flocks of 21 Titchwell July 26th, 25 Hunstanton Aug 6th, 120 Overy Marshes Aug 7th and 170 west at Cley Aug 13th-15th. A few inland sightings from Tottenhill GP, Pentney GP, Blackborough End, Toftwood and Welney.

Curlew: No reports of breeding though pairs in the west at Vincent Hills and Roydon. Counts at Snettisham of 382 March and 1500 Sept.

Spotted Redshank: Winter records from Cley (Jan, Feb and Dec), Snettisham (Feb), Warham (Dec), Brancaster (Dec) and Breydon (Dec).

Widely reported on both spring and autumn passage with highest counts coming from Hickling 18 April 27th, Cley 29 Aug 25th and 28 Sept 20th, Snettisham 65 Sept 27th. The first juvenile of the autumn Aug 5th (Cley).

Redshank: Largest counts from the Wash at Snettisham: 870 March, 1800 Aug, 1670 Sept and 1150 Oct.

Marsh Sandpiper: The recent run of sightings continues with the county's sixth and seventh records when an adult appeared at Holme May 26th-29th (VE GFH *et al*) followed by a juvenile at Cley Aug 14th-Sept 2nd (NCM JPM *et al*).

Greenshank: Small numbers at several sites on spring passage, the exception being Breydon where 35 May 7th and 34 May 9th. Peak autumn counts include 27 Brancaster Aug 18th, 37 Cantley Aug 19th, 17 Lynn Point Sept 4th, 38 Snettisham Sept 14th, 22 Holme Sept 15th and 27 Titchwell Sept 23rd.

A scattering of wintering records from Cley (Jan, Feb and Dec), Blakeney (Dec), Holme (Jan) and Snettisham (Feb).

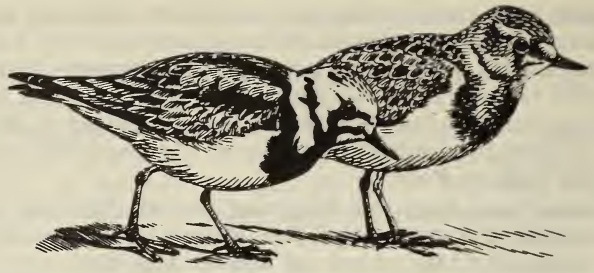
Lesser Yellowlegs: Snettisham Aug 28th (AJM). The fourth county record.

Green Sandpiper: Wintering birds seen at over 15 sites, usually singles. An unspectacular spring passage as usual. Widespread on return passage, largest gatherings being 26 Cantley BF Sept 1st, 18 Hickling Aug 8th, 13 Burnham Overy Staithe Aug 9th, 12 Holme early Aug, 12 Wisbech SF Sept 14th and 8 King's Lynn BF July 13th.

Wood Sandpiper: Quite a prominent spring passage between April 26th and May 28th (both Cley), with records from Surlingham (4), Hickling, Colney/Bawburgh, Lyng Easthaugh (2), Swanton Morley, Cley (2), Wells, Holme, Pentney GP and Wisbech SF.

Autumn counts even more widespread with birds at Surlingham (6), Hickling (3), Cantley BF (2), Cley-Salthouse (3), Wells, Burnham Overy Staithe, Titchwell, Holme (5), King's Lynn BF, Pentney GP, Tottenhill GP, Wisbech SF (6) and Welney (2). Peak passage in Aug but some latish birds in Oct at Welney on 2nd, Cantley BF on 14th and Wisbech SF on 15th.

Common Sandpiper: Reported between April 23rd (Pentney GP) and Nov 10th (Holkham Lake). Some autumn concentrations noted: 36 Colney/Bawburgh July 15th, 18 Holme Aug 4th, 26 Snettisham Aug 24th and a tight flock of 31 Lynn Point Aug 25th at dusk in a noisy excitable pre-migratory gathering.



Turnstone: Largest Wash counts: 348 Feb, 800 Aug and 580 Oct. Also counts of 160 Brancaster Harbour wintering and 80 Heacham Oct 3rd.

Red-necked Phalarope: Salthouse female June 20th/21st followed by a male there June 25th/26th.

Grey Phalarope: A rather rare spring sighting at Holme May 7th flying east. Two autumn records: Cley Dec 2nd and Narford Lake Nov 3rd-10th.

Pomarine Skua: Numbers well down on the bumper autumn of 1983. A county total of 62 birds between Aug 25th and Nov 12th scattered around most of the coast. A lack of gales at Oct weekends could be the main cause for lower numbers reported.

Arctic Skua: Unseasonal records include singles at West Runton March 28th and in the Holme/Hunstanton/Heacham area Dec 25th-30th.

Some of the larger autumn sea movements were as follows: *Aug 25th:* 44 Holkham Bay. *September 4th:* 46 east Paston, 100 east Sheringham, 100 east Cley, 150 Titchwell, 40 Hunstanton and 35 Lynn Point. *October 5th:* 70 Holme.

Long-tailed Skua: The usual small scatter of records: Blakeney Point Aug 4th and Sept 4th/5th; Breydon immature Aug 12th; Sheringham adult and immature Sept 4th and Cley Oct 6th.

Great Skua: Autumn passage observed July 1st (Paston) to Dec 15th (Cley), also single off Sheringham Jan 24th.

Largest movements: *September 4th:* 160 east Sheringham, 150 east Cley and 100 Titchwell. *September 23rd:* 103 Hunstanton where 109 next day. *October 5th:* 75 Holme.

Mediterranean Gull: Another mass of reports with the east of the county again having the bulk of the birds.

At Yarmouth 1-2 adults up to April 3rd, but 4 Jan 23rd during strong southerly winds. Adults again present from July 15th to Dec 31st with 2 between Aug 3rd and 10th. Second winter birds Jan 21st, Feb 4th with a first summer bird July 2nd to Aug 3rd.

Breydon held first summer birds May 6th to 24th with 2 June 2nd/3rd and another bird on 7th.

Also seen at Yarmouth South Denes first summer Aug 6th, Waxham second winter Oct 25th; Paston first winter Oct 17th; Sheringham adult Jan 21st and first summer June 9th; Salthouse first summer June 16th and a juvenile very young mottled brown bird Aug 12th to Sept 22nd; Cley 2 June 2nd/3rd, Sept 16th and second winter Nov 3rd; Blakeney Point adults Aug 12th, Sept 12th and Oct 13th; Brancaster-Scolt-Deepdale first winter April 16th, adult Aug 25th and adult Oct 10th and 27th; Hunstanton adult Oct 8th-11th and second winter Nov 11th; Heacham adult July 31st and Snettisham June 16th, 18th-20th.

A Black-headed x Mediterranean hybrid reported from Cley May 12th.

Little Gull: A number early in the year: Yarmouth Jan 21st with 43 Jan 23rd; Paston 23 Jan 22nd; Cromer 7 Jan 14th and single Feb 9th; Sheringham Jan 15th, 3 Jan 17th, Jan 23rd/24th; Hunstanton Jan 1st, Feb 8th and Lynn Point Jan 24th.

Rather small spring passage with adults at Pentney GP April 25th to May 8th maximum 7; Colney GP April 27th to May 4th maximum 14; Filby Broad May 3rd and Titchwell 6 April 19th.

A few first summer birds between April and July with a peak of 24 Cley June 10th and 8 Hickling May 30th.

Autumn passage peaked in Oct/Nov with a very late movement at the end of the year: 32 Horsey Nov 18th, 12 Waxham Oct 12th, 30 Cley Oct 4th and 25 there Nov 5th, 40 Scolt Head Dec 31st, 15 Holme Nov 29th, Hunstanton 17 Oct 1st, 15 Nov 6th and 30+ Dec 31st, Snettisham 18 Nov 11th with 38 next day and 9 Lynn Point Nov 26th.

Sabine's Gull: An adult at Paston May 20th (MF). The species is extremely rare here in spring. Another adult was at Blakeney Point Aug 25th (AS RS SB) with a partial summer-plumaged bird Sept 5th to 12th.

Additional 1983 off-shore observation of an adult feeding close to Arpet A gas platform Sept 12th/13th 15 miles north-east of Bacton; photograph produced (CS).

Black-headed Gull: Counts of 'pairs' at selected colonies are Blakeney Point 700+, Wells Marshes 650, Stiffkey Binks 53, Scolt Head 200 and Snettisham 782.

Up to 6000 roosting off Bacton Gas Terminal during winter and 10,000 Welney in Dec.

An albino at Lynn Point Sept 9th and Nov 4th.

Lesser Black-backed Gull: Two pairs bred Blakeney Point with 2-3 pairs Wells Marshes behaving as if breeding. Scarce in west Norfolk, peak count of 35 Lynn Point July 16th.

Herring Gull: Breeding reported from Blakeney Point (2 pairs), Scolt Head (1 pair) and 2 pairs behaving as if breeding Wells Marshes.

Yellow-legged birds at Winterton July 7th and at Strumpshaw Tip June 30th.

Iceland Gull: Especially abundant in Britain (relatively speaking) early in 1984: Strumpshaw Tip (first winter) Jan 14th/15th, (second winter) Feb 12th to 23rd, (third winter) Feb 7th and near adult Jan 10th-14th and again Feb 25th. Wells (second winter) March 10th. Titchwell April 2nd to 4th. Heacham/Hunstanton/Holme, individuals ranging the whole area: (second winter) Feb 11th to 19th, (third winter) March 4th to 11th and an adult March 9th/10th.

No sightings in second winter period.

Glaucous Gull: Large number of reports received especially in the first winter period. Observed at Breydon Jan 8th to March 10th; Winterton April 8th; Paston Jan 8th, March 11th and Nov 9th; Sheringham Feb 18th and Oct 6th; Cley-Blakeney Point regular bird up to March 4th with another April 8th, early return Aug 26th and seen to year end, also an immature May 19th; Wells-Holkham Bay May 19th, Oct 6th/8th and Nov 25th; Scolt Head immature July 19th; Titchwell occasional sightings up till May with 2 April 16th, again in Aug and Sept 15th; Heacham/Hunstanton/Holme birds freely range throughout this area and at least 9 (4 adults 3 first-winter, 1 second winter and 1 third-winter) on many dates up to May 6th with up to 4 a day, first autumn bird Aug 21st with a few scattered sightings till year end.

Snettisham June 1st, 4th and July 4th; Lynn Point at least 5 birds in first winter period up to April 10th, one of these regular at South Quay King's Lynn during March, only 2 sightings in second winter period: Aug 26th and Dec 25th.

An increase in inland sightings and all from rubbish tips as follows: Strumpshaw

singles Feb 12th, 23rd and 25th; Beetley Dec 15th and Blackborough End March 26th and 29th and Dec 15th and 18th (2).

Ross's Gull: One of the spring highlights was undoubtedly the county's first Ross's Gull, a full pink summer-plumaged adult at Cley May 9th, Blakeney Point on 10th, returning to Cley 11th and 12th (ETM *et al*) and moving to Titchwell May 13th/14th.

Kittiwake: Some idea of the numbers present in the North Sea in winter may be gained from the impressive easterly movement of 3000 off Sheringham Jan 24th. More typical autumn movement of 2500 east Blakeney Point Nov 4th and 500 Hunstanton same date.

Gull-billed Tern: Additional 1983: Holme May 11th (PRC).

Sandwich Tern: Reported between March 24th (Cley) and Nov 10th (Hunstanton). A fairly successful breeding season with 2500 pairs Blakeney Point rearing 1700 to 1900 chicks. At Scolt Head 1700 pairs reared 1600 young.

A concentration of 310 at Breydon July 24th.

Roseate Tern: Observed in six months of 1984, a contrast to the more typical June/July records of a few years ago: Breydon May 24th and July 4th (PRA): Cley/Blakeney Point/Salthouse May 30th, Aug 26th, Oct 14th and Oct 21st (AV FAW SW); Holkham Sept 2nd (PGK) and Snettisham June 19th (PJG). The Oct records are exceptional.

Common Tern: Reported between April 13th (Blakeney Point) and Nov 26th (Cley) though a 'Comic' Tern was off Heacham Dec 31st.

A county total of 795 pairs reported breeding, mostly with good success. Main concentrations Blakeney Point 240 pairs, Scolt Head 200 pairs and Snettisham Pits 120 pairs. In addition bred at Breydon 44 pairs, Hardley Flood 23, Hickling 13, Martham 1, Ranworth 30, Hoveton Great Broad 9, Ormesby Broad 10, Stiffkey Binks 20 Wells area 27, Titchwell 55, Swanton Morley GP 2 and Colney/Bawburgh GP 1.

Arctic Tern: Reported between April 29th (Colney/Bawburgh) and Nov 5th (Cley). Breeding reported from Blakeney Point 6 pairs and Scolt Head 1 pair.

A poor spring passage with only a handful of reports probably due to lack of northerly or north-westerly gales and rain at end of April. Most movements occurring on a broad front in sunny/windy conditions the day after strong northerly winds and rain in the latter half of the month.

Widespread on autumn passage mostly in very small numbers though 22 west at Paston Sept 24th.

Little Tern: Noted between April 15th (Blakeney Point and Brancaster) and Oct 5th (Blakeney Point). It is pleasing to report a substantial increase in breeding pairs to a county total of 468 with most having good success.

Inland records from Colney GP April 30th, Welney May 4th, Swanton Morley GP (3) Aug 8th and St. Germans Sept 6th.

Black Tern: Extreme dates April 12th (Cley) and Nov 3rd (Cley and Sheringham). A widespread influx between April 22nd and May 1st with birds reported from Hickling (6), Filby (3), Ormesby (2), Martham, Colney GP (20), Rockland (6), Lyng Easthaugh, Cley (7), Holkham Lake (3), Titchwell (2), Holme (2), Pentney GP (4), Tottenhill GP (6) and Welney. Later movements of 9 Rockland May 15th and 4 Holme June 3rd.

Widespread, mostly in small numbers, on autumn passage with peak counts of 12 Wisbech SF Aug 2nd where 26 Aug 5th, 13 Lynn Point Aug 24th and 10 next day, 7 Waxham Sept 14th, 5 Cley Sept 16th and 11 Hunstanton Sept 18th.

White-winged Black Tern: A mini influx into the west of the county with a juvenile at Lynn Point Aug 24th-27th (JBK *et al*), moulting adult Lynn Point Sept 5th (NB *et al*) and a juvenile Denver Sluice-Downham Market Sept 6th-10th (MR *et al*).

Additional 1982: Titchwell June 6th (KD MD).

Razorbill: Blakeney Point/Sheringham: Exceptional movement of over 2000 moving east Oct 5th.

Black Guillemot: Hunstanton Dec 15th (HR).

Little Auk: Snettisham 3 Nov 6th and 2 Nov 7th to 24th; Hunstanton Nov 16th; Titchwell Oct 29th; Scolt Nov 7th; Holkham Nov 12th; Wells Jan 24th; Blakeney Point Sept 29th, Oct 28th, 2 Oct 29th and 13 Nov 6th; Cley 4 Sept 21st, one Oct 28th, 26 Nov 6th and singles Nov 7th and Dec 10th; Salthouse Oct 16th; Sheringham Jan 24th and 34 Nov 6th; Mundesley 3 Nov 5th; Paston 4 Sept 15th, 2 Oct 28th and 3 Nov 5th/6th; Walcott (dead) Dec 9th; Waxham 3 Nov 6th and one Nov 18th; Yarmouth 21 Nov 6th.

Inland Mannington (died later) Nov 7th.

Puffin: Twenty-one coastal observations in all months except May and Aug. Mainly singles, but groups of up to 6. In addition 2 on Ouse at King's Lynn March 3rd following strong winds.

Collared Dove: Few assemblies reported, but 90 Shipdham airfield March 20th and 75 King's Lynn docks Dec 28th.

Turtle Dove: Extreme dates April 13th (East Winch), 17th (Lynn Point), 19th (Snettisham and Hunstanton) and 20th (Holme) and Nov 3rd (Marham Fen).

Westerly passage May 19th (103 at Sheringham and 94 at Hunstanton) and June 2nd (70 at Sheringham, 90 at Cley and 139 at Snettisham).

Ring-necked Parakeet: Singles at East Walton Common, Yarmouth and Burnham Deepdale.

Cuckoo: 1983 Acle New Road record to be deleted.

Barn Owl: Recorded at over 140 sites.

Little Owl: Recorded at over 60 localities, but confirmed breeding at only 3 sites.

Long-eared Owl: No detailed breeding information available although a pair bred in North. At least 2 small winter roosts in North-west (total of 9 Dec), one in South (3 Feb/March) and another roost in Fens (7 Jan and 3-4 Dec).

Spring migrants: Lynn Point March 5th, Caister 4 March 27th and Cley April 8th. Autumn migrants: Blakeney Point Nov 16th, Waxham Dec 8th and West Lynn Dec 29th.

Short-eared Owl: Only winter concentrations 5 each at Lynn Point and Warham. Summer records from Wash including one breeding pair.

Nightjar: Autumn migrants at Holme Aug 15th/16th and on the extraordinary late date of Nov 13th.

Swift: First recorded Rockland Broad April 26th. At Paston 1100/hour eastwards June 17th. A leucistic bird Pentney GP June 22nd. Having been largely absent for several weeks warm southerly winds saw the reappearance of individuals at 8 coastal localities between West Runton and Snettisham Nov 10th-12th with one at Cromer Nov 16th.

Kingfisher: A pair bred successfully within ½ mile of Norwich Cathedral. One over the sea Sheringham Nov 3rd.

Hoopoe: Four spring records: Holme April 14th, near Sheringham April 19th, Burnham Overy April 20th and Hickling May 7th.

Wryneck: Total of 14 spring migrants: Yarmouth April 16th/17th, Burnham Market April 22nd, Hickling April 27th, Roughton April 29th, Cley April 30th, Holme April 30th-May 4th and further birds May 6th-9th and May 21st/22nd, Wells May 3rd/4th, Narborough May 9th-12th, Salthouse May 10th and 26th, Hunstanton GC May 19th and Lenwade Water May 27th. Autumn passage Aug 12th-Sept 22nd with largest number of arrivals towards end of August including 4 Blakeney Point on 26th. Inland records during this period from Bressingham Common, Brundall, Burnham Thorpe, East Tuddenham, Egmere airfield, Filby, Flitcham, Hickling and Reepham.

Short-toed Lark: Wells May 26th (SJB).

Woodlark: Away from Brecks (where 23 singing males recorded — RH) one singing Burnham Overy March 8th, three west Holme Sept 26th and one north Waxham Oct 12th.

Shore Lark: Only regularly recorded at Blakeney Point (where up to 15 in first winter period with latest May 4th and again from Oct 27th increasing to 27 by Dec 19th) and Holme (where up to 12 Jan-March and 8 until early April with one May 18th; only one autumn record Oct 25th). Elsewhere 2 Titchwell April 18th, 7 Sheringham Nov 4th and occasional records of 1-2 Salthouse and Cley (where an early bird Oct 9th) during winter months.

Sand Martin: Recorded between March 23rd (Cley) and Oct 27th (Sheringham). The national trend was reflected in the county with many observers reporting a noticeable decline in migrants and breeding numbers decreasing well over 50% in many areas compared with previous years.

Swallow: Only one March record received, Framingham Earl 31st. Birds still present in Nov at Hickling 2nd, Wells 5th, Snettisham 8th, Brundall 14th and Holkham 25th.

House Martin: An unusual number of December records: Old Hunstanton 6 on 1st and one 3rd, Holme 2nd, Cley 3rd, Coltishall 7th and Cromer from the beginning of the month until the 18th.

Richard's Pipit: Seven autumn records: West Runton Oct 7th (MPL TW), Snettisham Oct 13th (AGH AH), Morston Oct 18th/19th (PRM), Cley Oct 22nd (NOA), Waxham Oct 27th (ADB), Paston Nov 10th (MF) and Kelling Quags Dec 2nd (GSB JC).

Tawny Pipit: Paston June 9th (JA MF *et al*).

Red-throated Pipit: Salthouse May 16th (SJMG) and East Winch Oct 2nd (NB *et al*).

Rock Pipit: Birds of Scandinavian race continue to be increasingly identified in the spring: Yarmouth March 23rd, Breydon April 7th and May 17th, Winterton April 12th, Cley April 1st and 3rd, Wells 10 March 19th, Burnham Norton 6 March 19th and April 8th, Titchwell 3 March 12th, 4 March 19th and March 31st and Lynn Point 2 April 2nd.

Water Pipit: Largest numbers at Hickling in first part of year with maximum of 14 Jan 29th and at Cantley BF later in year where also maximum of 14 Oct 31st. Elsewhere Haddiscoe 2 Dec 29th, Horsey Dec 2nd, Cley April 1st-14th with 4 April 16th, Wells March 25th, Holkham March 4th, Titchwell March 18th-April 11th and Nov 24th and Lynn Point April 2nd.

Yellow Wagtail: Late migrants at Horsey and Paston Nov 3rd.

Blue-headed Wagtail: Spring records as follows: Strumpshaw April 16th and 30th, Cley April 16th and 20th, 2 May 12th and May 25th, Snettisham April 20th, Winterton April 27th and May 9th, Pentney GP 2 April 29th and May 9th, Salthouse May 1st and 6th and 2 May 25th, Holme 3 May 3rd, Welney May 18th and Horsey May 23rd. One autumn record: Cley Sept 23rd.

Grey-headed Wagtail: Three typical May records: Cley 16th and 30th and Horsey 23rd.

Grey Wagtail: Breeding records from Aylsham Mill, Stanford Battle Area (Buckenham and Stanford), Costessey Mill, Great Ryburgh, Gressenhall, Lyng, Narborough, Norwich (Duke Street) and Taverham Mill. Several pairs also reported in breeding season from River Nar in the Westacre area; elsewhere noted in summer at Bintree, Buxton, Keswick and Marlingford Mills, Coston, Honingham and Rushmeadow (E. Dereham).

Pied Wagtail: At the Scarning Fen roost maximum of 430 mid-Sept.

Waxwing: Singles at Blakeney Nov 17th-20th, Horsey Nov 27th, Cley and Hickling Nov 28th and a well-watched individual Old Costessey Dec 21st onwards, which was unfortunately found dead Jan 3rd 1985.

Dipper: The bird of the British race at Bawburgh Mill in 1983 remained at the same locality until found dead Oct 24th. A Black-bellied Dipper also present at this Mill Jan 16th-Feb 12th and possibly the same bird at Honingham Feb 19th-March 25th. Elsewhere Continental birds Cley (Snipe's Marsh) April 7th and Corpusty Mill July 8th.

Nightingale: Coastal passage migrants at Wells Aug 26th and Blakeney Point on the amazing date of Nov 17th/18th.

Bluethroat: A total of 9 May migrants, the largest number seen in the spring since 1970: Horsey Mere 13th, Holme 16th-18th and 21st-24th, Cley 17th/18th, Blakeney Point 20th/21st, Bacton 21st, Thornham 22nd and 27th/28th and Salthouse 29th. No autumn records.

Black Redstart: Spring passage commenced March 24th. In breeding season singing males at Norwich and 9 at Yarmouth where 5 pairs bred. Birds still present Hunstanton/Heacham Nov 16th until end of year and at Sheringham Dec 29th/30th.

Redstart: A late autumn migrant Blakeney Point Nov 6th.

Whinchat: Breeding noted at 4 Breck localities.

Stonechat: Breeding records from Caister, Hemsby (2 pairs), Winterton (4 pairs), Horsey, Sea Palling, Weybourne, Salthouse Heath and 5 Breck localities. A small-scale autumn influx including 3 Blakeney Point Oct 6th and 4 Heacham Oct 9th.

Siberian Stonechat: Birds of one of the distinctive eastern races on Blakeney Point Sept 12th (JR *et al*) and Oct 5th (GED SCJ) and at Sheringham Oct 6th (DHS MPT). Only 3/4 previous county records.

Wheatear: First recorded Snettisham March 22nd. Large influx April 13th when 113 between Heacham and Holme. In addition to Brecks (including 24 pairs at Weeting), breeding noted at Paston and Wolferton. An unusual number of migrants still present in second half of November — Blakeney Point 15th, Holme 18th/19th, Snettisham up to 21st and Old Hunstanton up to 25th.

Ring Ouzel: A widespread and prolonged spring passage with many records from 50 coastal and inland localities. First recorded March 31st at Weybourne. Main influx April 14th-21st with maxima during this period of 8 Winterton, 8 Horsey, 8 Bacton, 11 Cromer, 7 Sheringham, 7 Holkham Meals, 15 Holme and 8 Hunstanton. Many birds remained for several weeks presumably because of the generally cold east/north winds during this period. Total of 18 still between Winterton and Waxham May 5th. Passage continued until June 1st with one Winterton June 9th. In contrast only small autumn passage: Holkham Meals Aug 22nd-Sept 12th, 4 Blakeney Point Sept 16th then total of 10 further coastal migrants with latest Cley Oct 26th and Nov 16th.

Fieldfare: Many May records with small numbers still present at 5 localities on 19th. One Holkham Meals June 3rd and two at Hickling June 4th. Individuals summered at Langham and Welney; elsewhere Holme June 20th and Catfield June 21st-July 5th. First in autumn 3 Holme Aug 19th then no more records received until Sept 15th.

Redwing: Latest spring records Gunton and Winterton May 19th and Blakeney Point May 20th/21st. One at Winterton July 22nd. Return passage commenced Sept 24th.

Cetti's Warbler: County total of 63 singing males as follows: *Waveney* (Lopham Little Fen 1, Herringfleet 1, Fritton 2, St. Olaves 1, Somerleyton 1 and Burgh St. Peter 1). *Chet* (Hardley Flood 1). *Yare* (Cantley 1, Buckenham Carrs 2, Buckenham river 1, Strumpshaw 6, Rockland 5, Surlingham Broad 6, Surlingham Church Marsh 2, Wheatfen 2, Brundall Parish 1, Brundall Gardens 1 and Thorpe St. Andrew 1).

Bure (Filby 1, Horning Ferry 2, Hoveton Little Broad 1, Horning Hall 1, South Walsham Broad 1, Woodbastwick Fen 1, Ranworth 1 and Cockshoot 2). *Ant* (How Hill 4, Irstead Staithe 1, Barton Broad 1 and Barton Turf 1). *Thurne* (Hickling — Catfield Dyke 4, Martham Ferry 1, Martham Broad 2 and Horsey 1).

Elsewhere, Edgefield Green Pond June 1st to July 21st; Weybourne Nov 13th to Dec 11th.

Grasshopper Warbler: A migrant Blakeney Point Sept 16th.

Savi's Warbler: Singing males at Filby, Hickling (where first noted April 19th) and Martham Broads.

Reed Warbler: Extreme dates April 15th (Heacham) and Nov 1st (Cley).

Great Reed Warbler: One at Titchwell May 20th (AD MJK NS *et al*). The sixth county record and the first since 1969.

Icterine Warbler: An unprecedented number of spring records in May: Titchwell 21st-24th with two 23rd, Happisburgh (ringed) and Blakeney Point 23rd and Yarmouth (in song) 27th. The largest number of autumn migrants since 1977: Waxham Aug 18th/19th and 29th, Cromer Sept 24th, Sheringham Aug 23rd, Weybourne Aug 22nd, Salthouse Aug 9th/10th and 12th, Cley Aug 12th, Blakeney Point Aug 9th (2), 10th/11th, 24th/25th (2) and 26th-29th, Morston Aug 23rd, Stiffkey Aug 20th and another 21st, Holkham Meals Aug 10th/11th, 26th and 28th (2), Sept 6th-18th with two 8th and 22nd-24th, Brancaster Sept 17th, Holme Aug 12-15th and 24th-25th, Sept 14th, 16th (2) and 17th and Hunstanton Aug 25th.

Barred Warbler: A good autumn for this species: Horsey Sept 18th, Waxham Aug 30th, Cley Aug 14th, Blakeney Point 2 Aug 20th, Aug 25th, Sept 9th and 23rd, Stiffkey 2 Aug 20th, Wells (Lodge Marsh) Aug 22nd, Holkham Meals Aug 15th and 2 Sept 18th, Titchwell Aug 23rd/24th, Holme Aug 16th and 26th with two 27th and Sept 2nd, 8th and 28th and Hunstanton Aug 23rd-28th and Sept 6th.

Lesser Whitethroat: A bird at Welney, possibly of the Siberian race, feeding at a bird table on suet, bones and scraps from at least Dec 11th until Jan 14th 1985.

Garden Warbler: Late migrants on Blakeney Point Oct 27th and Nov 6th.

Blackcap: Wintering birds at Rushmeadow (E. Dereham) Jan 2nd, Rockland St. Mary Jan 26th and Feb 16th, Great Hockham Jan 29th/30th with 2 Taverham and one Holkham Meals Dec 15th and 2 Holme throughout December.

Greenish Warbler: Singles at Scolt Head Aug 25th (PF SCJ NW) and a well-watched bird Hunstanton GC Sept 16th-18th (HR *et al*).

Pallas's Warbler: One trapped and ringed Happisburgh Nov 1st remained until the 4th (BMEU *et al*). Another Blakeney Point Nov 10th (GED *et al*).

Yellow-browed Warbler: The best showing since the 'classic' autumn of 1975: Yarmouth Sept 29th and Oct 7th, Sheringham Sept 25th and Oct 4th, edge of Salthouse Heath Oct 16th, Cley Sept 26th-30th with maxima of 3 Walsey Hills and 2 Marsh Lane, and again 3 Walsey Hills Oct 16th, Blakeney Point Sept 16th/17th, Oct 4th/5th and Nov 3rd/4th, Stiffkey Sept 28th-30th, Holkham Meals 2 Sept 18th/19th increasing to 4 from Sept 23rd with influx of up to 10 Sept 29th-Oct 1st, up to 6 Oct 6th/7th (further influx?) last 9th, Holme Sept 18th, another 19th-22nd, 26th-28th and Oct 28th and Hunstanton Sept 17th. Also the first inland county record, Strumpshaw Oct 21st (AJL). Surprisingly many of these migrants arrived following north-westerly winds.

Wood Warbler: Spring migrants at Blakeney May 4th, Wiveton May 5th and 1-2 Holkham Meals May 24th and 27th. As usual a number of singing males in breeding season at well scattered localities in the county: Aylmerton, Buckenham Carrs, Cockley Cley (2), Felbrigg Woods, Fritton, Hevingham, Holkham Meals, Horsford, Leziate, Little Plumstead, Narborough (2), Norwich (Earlham Park and Mousehold Heath 2), Old Hunstanton, Ringland, Rushford, Roydon Common, Sandringham (2), Sheringham Hall, Snettisham (2), Swanton Abbot and West Runton (3). Autumn migrants at Cley Aug 27th and Holkham Meals Aug 16th, Sept 8th/9th (2), 18th and 22nd-24th.

Chiffchaff: One at King's Lynn BF Jan 15th. Birds showing characteristics of eastern race at Paston Sept 16th, Horsey Sept 22nd and Nov 7th-10th, Holkham Meals Oct 6th and 16th with 4 Nov 5th and Blakeney Point Nov 16th-18th. At Holme 6 birds of northern race Dec 1st, at least one staying until mid-month. Other December records from Didlington 1st, Horsey 9th, Burnham Deepdale 18th, Waxham up to 23rd and Holkham Meals 24th.

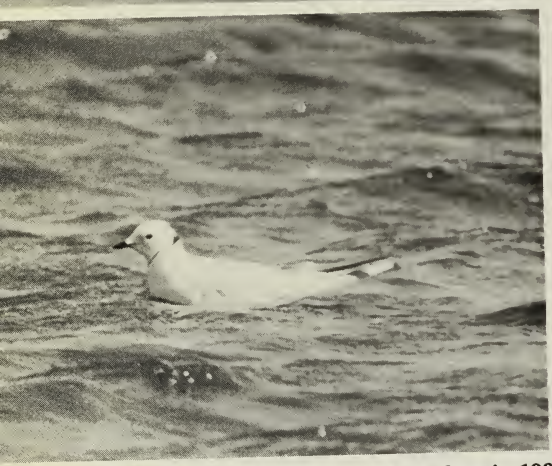
Willow Warbler: A bird of northern race ringed Sheringham May 15th. Another showing same characteristics Holkham Meals May 29th.

Firecrest: Spring migrants as follows: Yarmouth May 2nd, Caister April 1st, 16th and 20th, Waxham May 5th/6th, Paston April 11th, Sheringham April 20th-22nd, Cley April 20th/21st and 30th, Blakeney Point 4 April 15th, Holkham Meals April 17th, Holme April 14th, 3-4 20th/21st with one until 25th and Snettisham April 20th.

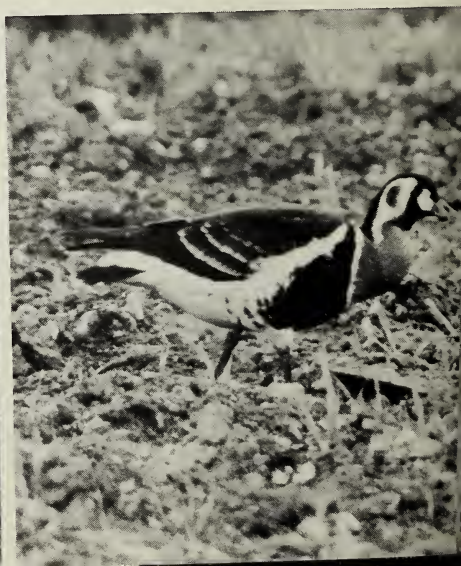
In breeding season male in song Sheringham Hall May 30th and in Norwich a pair present mid-May onwards, with possibly an additional male end May. The birds were observed carrying food into the same tree on several occasions thus providing satisfactory evidence of breeding. Very few autumn records received: Waxham Sept 16th and Holkham Meals Sept 16th, 24th-26th and Oct 18th.

Spotted Flycatcher: Noted between April 21st (Holme) and Oct 7th (Yarmouth).

Although no large-scale movements were recorded, Black Terns passed through between April 12th and November 3rd.
At Costessey this lone Waxwing gave many birders their first opportunity of seeing this one-time regular winter visitor. Sadly it succumbed early in the New Year.

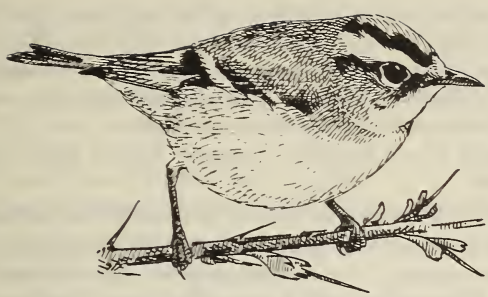


These visitors provided red-letter days in 1984: The splendid Ross's Gull (photographed at Titchwell) attracted hundreds of bird-watchers to Norfolk in mid-May. An addition to the county list, this Arctic wanderer was in deep pink array. This Red-breasted Goose remained at Wells until March 23rd. A spring-time surprise was this Bluethroat filmed at Cley.



This female Pipistrelle Bat with its unusual coloration — white wing membranes and biscuit-coloured pelage — was found with a nursing colony at Colney in August. This appears to be the first recorded colour variation of this kind in Britain.

Close-up of male European Otter showing harness with transmitter attached.



Red-breasted Flycatcher: An exceptional year for this species. In spring females at Holkham Meals May 22nd-28th and Horsey May 23rd/24th and 28th (same individual?). In autumn Yarmouth Oct 7th, Waxham Sept 5th, Happisburgh (trapped) Sept 24th, Salthouse Heath Oct 18th, Cley Sept 24th, Blakeney Point Aug 22nd, 2 Sept 11th and 2 Sept 18th, Stiffkey Oct 6th, Holkham Meals Sept 5th-9th and at least 3 individuals Sept 18th-Oct 1st, 2 Oct 6th/7th with one 8th, Overy Dunes Sept 18th, Scolt Head Sept 16th, Holme Sept 5th/6th, 2 Sept 14th-19th, one until 22nd, Oct 6th/7th and 2 Oct 28th and Hunstanton Sept 17th.

Additional 1983 record: a late migrant Blakeney Point Nov 12th.

Pied Flycatcher: Small-scale spring passage April 18th-May 30th with maxima of 3 Holkham Meals May 7th. Inland records at Hickling April 29th, Norwich (Earlham Cemetery) May 27th and Buckenham May 30th. Fall of over 30 Holkham Meals Aug 22nd.

Bearded Tit: Only incomplete breeding records received: Breydon one pair, Burnham Overy one pair, Hickling over 100 pairs, Horsey 20+ pairs, How Hill 6 pairs, King's Lynn BF 3 pairs (2 pairs double-brooded) and Strumpshaw 6 pairs.

At Titchwell complete counts of 55 mid-Feb and 30 mid-March; maximum of 60 estimated Cley Sept 27th. At King's Lynn BF 50 throughout Jan, 30 Dec 6th and 40 Dec 27th. Elsewhere records include 19 Fritton Jan 19th, up to 12 Norwich (Earlham) until mid Feb, 6 Snettisham Sept 27th and small numbers there Oct including maximum of 17 on 10th, 5 east Brancaster Staithe Oct 4th and 3 west Holkham Meals Oct 7th.

Golden Oriole: Males at Horsey May 15th/16th and 30th, East Tuddenham June 3rd (singing) and Strumpshaw June 24th (singing). One in garden at Ten Mile Bank July 6th.

Red-backed Shrike: More spring records than in recent years: Horsey May 21st-25th, Holme May 26th-31st, Blakeney Point May 29th and 2 May 31st, Scolt Head May 31st, Salthouse Heath June 3rd and Cley and Paston June 10th. Breeding now precariously confined to Brecks where 3 pairs reared 7 young in Norfolk section. Total of at least 23 autumn coastal migrants from Aug 12th (Waxham) with a late individual Holme Oct 12th-17th.

Great Grey Shrike: Wintering birds at Wayford Bridge Jan 7th, West Rudham Feb 5th/6th and 11th, Gooderstone mid-March and Barnham Cross March 19th-31st. In Hickling/Martham/Horsey area one from Jan 21st-April 12th with two birds present in March; at Horsey observed feeding on a female Bearded Tit in reedbed on one occasion. A departing migrant Burnham Norton April 6th-10th. Only one record in second winter period, Horsey Nov 7th.

Woodchat Shrike: Kelling Heath April 25th (RC KD). The first record since 1979.

Jay: Following the unprecedented numbers in 1983 smaller movements noted March-July with most records May and June. In May birds travelling mainly eastwards along north coast and southwards along east coast where maximum of 47 in small groups in 4 hours at Horsey on 23rd. In June movements mainly westwards along the north coast with maximum of 14 at Paston on 12th.

Magpie: A gathering of 47 Roydon Common March 12th and a flock of 46 Tottington Aug 18th.

Carrion Crow: A maximum of only 100 at the Roydon Common roost Jan 1st.

Hooded Crow: Records received from more localities, especially inland, than in recent years but most relate to occasional sitings of ones and twos. Maxima of 5 at Roydon Common March 3rd and 5 west Brancaster Staithe April 13th. Two summered at Horsey.

Starling: A roost at Marham estimated to contain 2 million birds March 1st.

Rose-coloured Starling: Additional 1983 record: a juvenile Blakeney Point Aug 22nd (JD EMR).

Brambling: Largest flock reported, 300 Santon Downham Dec 23rd.

Serin: A female at Holme May 23rd and an elusive singing male at Holkham Meals July 4th-18th.

Additional 1981 record: a singing male Holkham Meals June 3rd (RP).

Siskin: An interesting mid-September immigration with several coastal observations including large numbers south Waxham 14th (largest party 40) and 30-40 very tired birds Blakeney Point 16th. Largest concentration 160 Tottington Dec 30th.

Twite: Autumn arrivals Holme Oct 1st and Horsey Oct 2nd. Inland records 9 Ten Mile Bank Feb 6th, Welney Oct 3rd, 8 Nov 1st and one Nov 2nd and Hickling 30 Oct 31st. Largest concentrations 300 Warham November and 300 Ongar Hill December.

Mealy Redpoll: Two Holkham Meals Jan 9th. A noticeable small-scale influx from Nov 7th at many coastal localities and subsequently inland, including several 'Arctic-type' Redpolls still under consideration by British Birds Rarities Committee.

Crossbill: Only regularly seen in Brecks (where largest flock 35 in Battle Area Dec 30th) and West Newton area. Elsewhere only occasional records of 1/2 birds at Holkham Meals.

Parrot Crossbill: Having only been previously recorded in the county as a vagrant on a handful of occasions a pair bred at Holkham Meals; full details appear on page 98. At beginning of year 3 males and a female present. One pair bred, 4 young left the nest but only one survived. A second brood of 2 recently fledged young May 20th.

Hawfinch: In Brecks breeding colony 5-6 pairs at one site and at another 35 assembled Dec 28th onwards. This shy and retiring species could be regularly seen in Holkham Park where peak of about 25 March 25th, although normally only up to 8 birds seen. Also several spring records from Holkham Meals. Elsewhere mostly isolated records from Attlebridge, Brooke, Cranworth/Woodrising, Didlington, East Tuddenham, East Wretham, Hillborough, Lynford, Martham Broad, Merton, Pentney, Salthouse, Santon Downham, Strumpshaw, Thompson and Weybourne.

Lapland Bunting: In first winter period only regularly seen at Burnham Norton where maximum of 35 Feb 4th. Elsewhere singles at Salthouse Jan 30th, Cley Jan 2nd and April 1st, Morston Jan 14th and Holme April 27th. Recorded again from Sept 26th (Holme) with largest numbers again at Burnham Norton where maximum of over 40 Nov/Dec. Elsewhere regularly recorded in small numbers at a variety of coastal localities especially Sheringham, Cley, Blakeney Point and Holkham/Burnham Overy. Inland 3 south How Hill Oct 26th and one Wisbech SF Oct 31st.

Snow Bunting: Recorded up to April 8th and from Sept 22nd (both Blakeney Point). Flocks of 300 Titchwell Nov/Dec and 250 Blakeney Point December..

Ortolan Bunting: Four spring records: female Cley (Walsey Hills) April 21st (MC), Blakeney Point male May 6th (SCJ), Horsey male May 17th (DM) and female May 19th (PAG *et al*). Only one autumn record, Blakeney Point Aug 25th (SJMG RM *et al*).

Additional 1983 record: male Paston May 8th (MF).

Little Bunting: Singles at Holkham Meals Oct 5th (DF JMcC) and Nov 11th (PF SCJ).

Corn Bunting: At Lynn Point large numbers early in year with maximum of 250 Feb 7th. Also 100+ Burnham Deepdale Feb 10th.

The following, not mentioned in the Classified Notes, were recorded in 1984 *(breeding species in italics): Mute Swan, Mallard, Red-legged Partridge, Grey Partridge, Pheasant, Moorhen, Coot,* Common Gull, Great Black-backed Gull, Guillemot, *Stock Dove, Woodpigeon, Cuckoo, Tawny Owl, Green Woodpecker, Great Spotted Woodpecker, Lesser Spotted Woodpecker, Skylark, Tree Pipit, Meadow Pipit, Wren, Dunnock, Robin, Blackbird, Song Thrush, Mistle Thrush, Sedge Warbler, Whitethroat, Goldcrest, Long-tailed Tit, Marsh Tit, Willow Tit, Coal Tit, Blue Tit, Great Tit, Nuthatch, Treecreeper, Jackdaw, Rook, House Sparrow, Tree Sparrow, Chaffinch, Greenfinch, Goldfinch, Linnet, Bullfinch, Yellowhammer* and *Reed Bunting.*

Arthur Patterson Remembered

"In the first days of September I came to rest at last in a black cottage at the foot of a black windmill with white turret and grey-slatted sails. A strangely desolate place, only six minutes from an East Coast holiday resort by the rail running past the windmill, and yet in some ways the loneliest of the many lonely places I know — no road, no water, no milk, no lighting, no living beings but occasional wildfowler or marshman; noise only in the trains thundering past to the Races, in the distant sirens of beet factories, in the chugging of the pleasure boats and tramp steamers up and down the river that cuts through two thousand acres of bare tidal mudflats."

Richard Perry stayed in the marshman's cottage adjoining Tall Mill on the north shore. Today the cottage has gone, the once splendid mill is derelict and many marshes are under the plough. Yet Breydon estuary retains its wildness and fascination as it did in Patterson's time. A further appreciation appears on page 106.

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Wash Wader Ringing Group
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Wildfowl Trust
N. WILLIAMS
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D. WILLIS
MR. & MRS. E. WILSON
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T. WRIGHT

Photographs: Greenshanks, Marsh Sandpiper, Avocets, Spoonbills *(R. Vaughan)*; Mediterranean Gull *(B. J. Wingrove)*; Black Tern *(R. Vaughan)*; Waxwing *(M. Raines)*; Ross's Gull, Bluethroat *(S. Young)*; Red-breasted Goose *(P. Wheeler)*, Pipistrelle Bats *(Presstige Pictures)* and Otter *(Otter Trust)*.

Line-drawings: 89, 92 & 94 Marsh Harrier *(N. Arlott)*; Front Cover: Nesting Parrot Crossbills and 123 Avocet family *(G. M. S. Easy)*; 106 and 139 Breydon scenes, 143 Mole, 144 and End Cover: Otters, 152 Roe Deer, 158 Badgers and 160 Hare *(J. Last)*; 96 Ross's Gull, 98 Parrot Crossbills, 105 Rock Sparrow, 114 Slavonian Grebes, 119 Garganey, 121 Hen Harrier, 122 Water Rail, 124 Pectoral Sandpipers, 125 Broad-billed Sandpiper, 128 Turnstones, 132 Wryneck, 136 Yellow-browed Warbler and 137 Firecrest *(R. Millington)*; 97 Dipper, 102 Ringed Plover, 106 Shorelarks, 113 Red-breasted Flycatcher, 116 Spoonbills, 107 Sandwich Terns; 83 Bearded Tits, 118 Shelduck, 123 Kentish Plover, 126 Heron/Black-tailed Godwit; 131 White-winged Black Terns, 134 Black Redstart, 140 Bearded Tit and 141 Grey Plover *(the late R. A. Richardson)*.

NORFOLK MAMMAL REPORT 1984

Editorial

The Editor is pleased to present the 29th Norfolk Mammal Report.

A mere ten year period in the millenial history of Norfolk mammals should have little long-term significance in a balanced state of nature. Species act and interact, fluctuations in numbers cancel out and more or less keep to an average level over the term. Changes in climate bring about changes in fauna yet even natural catastrophes do not necessarily have an immediate impact. Now we no longer live in a natural environment and the hand of man can so easily upset the checks and balances and unwittingly trigger drastic changes in flora and fauna, dramatic in the brevity of their time-scale.

It is ten years since the present Editor compiled his first report. From the historic point of view the ensuing decade has been a period of spectacular rises and falls for some species.

Certain introductions have found present-day Norfolk very much to their liking. Only a determined and expensive control programme has reduced the Coypu population. The Grey Squirrel ten years ago was an exciting rarity but is now seen almost everywhere. Few fortunates saw a Muntjac deer. Now they can be produced almost to order for visitors in some Breckland localities and others pop up in the most unexpected places. The Rabbit, an introduction, appears to have fought a draw with myxomatosis whilst the commonplace Hare has a query after its name. Few of us realised how soon we were to miss the mass dusk patrols of flittering bats. Grey Seals were expanding their breeding range southwards and we became proud of our own off-shore colony. Thankfully, it wasn't a man-made disaster that ended that brief episode.

When the decade began we were beginning to take the plight of the Otter seriously and later reached a point close to despair. Yet the story of this species may point the moral for wildlife in general. Our main article expresses more hope than we have heard for some time. This has come about by people going beyond the collection of data and discussion of issues to work in a practical manner towards positive achievement. One of the better aspects of the decade has been the ever-widening interest shown in Natural History. Our next aim must be to marshall this potential force into supporting positive goals. The Otter Trust would agree that there is hard work involved but have proved that it can be done. This main article is by Dr Rowena Jessop, Conservation Officer, The Otter Trust.

Dr Jonathan Reynolds continues his study of Red and Grey Squirrels. We are again fortunate in being able to publish his latest summary. Please note all squirrel data collected in Norfolk is passed to Dr. Reynolds for analysis.

Dr L. M. Gosling, Coypu Investigation Centre, usually writes a note on Coypu for the year under review for inclusion in the Classified Notes. This year he has given us a summary of a much longer period so we are publishing his contribution as a separate article.

We thank the forementioned authors and other specialist contributors. They include Percy Trett for his information on sea-mammals, Rex Whitta, Wildlife Ranger of Thetford Forest and John Goldsmith, Bat Group Leader and purveyor of every kind of help and encouragement from his Castle Museum Headquarters.

We also thank the growing band of contributors for their support. Without them the Report would be a pale affair.

We do apologise if a name cannot be found on the contributors' list. We are grateful for every scrap of information and any omission is entirely accidental.

This year we are publishing the first section of what we hope will be a series of distribution maps of Norfolk Mammals. To publish a full set in one issue would be an enormous task and take up too much of our limited space and probably not achieve our full aims. A distribution map is a diagramatic summary of information received during the stated period of time. It is also an implied hope that what may appear to be an inadequate representation will inspire further work and observations, and submission of data. To publish a group at a time should focus attention and stimulate more than the normal quantity of information on those species. We should then have a reasonable base for comparison when the exercise is repeated in the future. An important point to bear in mind is that one individual in a square has the same mark on the map as hundreds!

Contributions for the Mammal Report come in many forms, from the merest scrap to lengthy, detailed records giving full map references. There is often a liberal sprinkling of anecdotes which go on to liven the classified notes. However presented, all information is valued but it would be a great assistance to the Editor if a particular method is adopted by anyone contributing lengthy reports. Transfer to the index cards is easier if each species is detailed for the full year in the order of the Classified Notes. Norfolk is a large county and many names are still unfamiliar! Ordnance Survey reference numbers are very precise and it would help if at least 4-figure references are used. To be able to give exact location using this system is a skill all naturalists should acquire and can be learned quite easily from the instructions on the maps themselves.

Notes for the 1985 report should be with the Editor as soon as possible in the New Year. Please send to: R. C. Hancy, Ardea, 124 Fakenham Road, Taverham, Norwich NR8 6QH.

Urgent queries by 'phone can be taken by the Editor on Norwich 860042 or by the ever-helpful John Goldsmith on Norwich 611277, ext. 287.

Status and Conservation of the Otter in Norfolk and Suffolk

Rowena M. Jessop, M.A., Ph.D.,
Conservation Officer, The Otter Trust

Introduction

The European Otter *(Lutra lutra lutra)*, common in East Anglian waters until the 1950s, was by 1982 in danger of extinction on all of the few rivers where it still survived. The rich eutrophic waters of the East Anglian rivers and broads are potentially one of the best otter areas in Britain, with an estimated carrying capacity in Norfolk alone of 52 to 77 pairs (MacDonald and Mason, 1976). Estimated numbers of otters, 18 pairs in Suffolk in 1969 to 1972 (West, 1975) and 17 pairs in Norfolk in 1974 to 1975 (MacDonald and Mason, 1975) serve to illustrate the alarming decline.

Status of the Otter, 1950-1980

In the early 1950s the otter population of East Anglia may be assumed to have been at a normal level. Stephens (1957) reported that otters were numerous in Lincolnshire and the catchments of the Welland, Nene and Great Ouse, and very numerous in East Suffolk and Norfolk where numbers were thought to have increased in the past few years. In Bedfordshire, however, otters had become depleted in numbers (Pike, 1952) and a survey in 1982 and 1983 revealed no signs of otters and very little suitable habitat (Green, 1983). By the time of the England otter survey, 1977 to 1979, (Lenton, *et al.*, 1980) the otter had disappeared from Lincolnshire and the Nene catchment. Evidence suggested that otters might still occur on the Gwash and Chater, tributaries of the Welland, and only one positive site was found on the Great Ouse.

The start of the otter decline in Norfolk and Suffolk has been dated using the Eastern Counties Otter Hunt records (Chanin and Jefferies, 1978). During the years 1950 to 1955, the Eastern Counties Hunt killed 125 otters, 50% of the number found during hunts, an average of over 20 each year. This represents a considerable proportion of the otter population of Norfolk and Suffolk which must have stood at bet-

ween 140 and 200 individuals (Cranbrook, *et al.*, 1976; MacDonald and Mason, 1976). Hunting success declined significantly after 1957, indicating a reduction in the otter population.

The last record of otters on the River Gipping was in 1955 and on the River Lark in the 1960s. By the time of the Suffolk survey, carried out between 1969 and 1972 (West, 1975), otters had become extinct on the Gipping, Lark and Black Bourn. Populations considered to be viable were recorded on the Alde, with an estimated 4 otters, the Deben, with 3, the Minsmere River with 2 otters and also in the area of Easton, Covehithe and Benacre Broads and the Kessingland Level which supported an estimated 3 otters. Population considered to be endangered occurred on the Blythe, 3 otters, Stour, 4 otters, Waveney with an estimated 10 otters and Thorpeness Meare and the Hundred River with 2 otters (West, 1975).

In Norfolk, by 1974 otters had disappeared from the Nar, Great Ouse and the Waveney (MacDonald and Mason, 1976). Only the populations on the Bure and Wensum were considered viable, all others facing the danger of extinction. The otter survey of England, 1977 to 1979, (Lenton *et al.*, 1980) showed that otters were still found on the north Norfolk coast from Snettisham to the Stiffkey, on the Wensum and Wissey and on the lower reaches of other Norfolk rivers. In Suffolk, otters were still found only on the Deben and the Hundred River, Thorpeness, on both of which signs were sparse (Weir, 1984).

Status of the Otter in the 1980s

By the 1980s further declines were apparent, both in Norfolk (Clayton and Jackson, 1980) and in Suffolk (Jessop, in prep.). Only on the Stiffkey and Glaven in the north and the River Wissey had the numbers of signs of otters increased over the previous survey. Otters had become extinct on the little Ouse, Tiffey (a tributary of the Yare) and all the Suffolk rivers except the Waveney, where otters, which may have escaped detection in previous surveys, were resident downstream of Beccles.

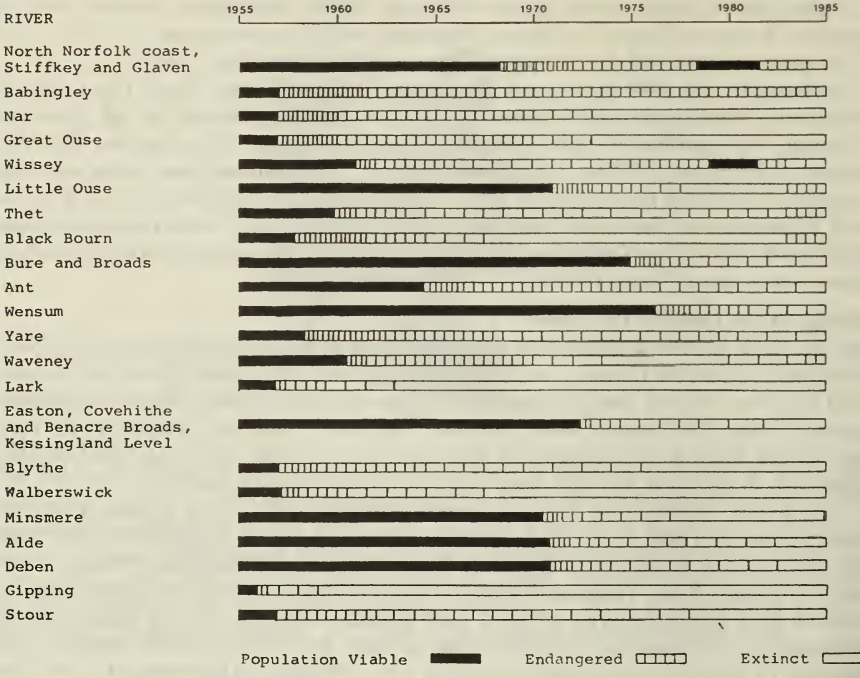
The trends, culminating with the present situation, of the otter in East Anglia are summarised in Table 1. By 1982 the population was highly fragmented, with small groups of otters surviving on the north Norfolk coast, the Babingley, Wissey, Bure, Ant, Wensum, Yare, Thet and Waveney. The low density of signs on these rivers indicated that few otters were present, with possibly only one on the Thet, Ant and Babingley. The isolation of these small groups from other otters reduces their chances of survival and ultimately reduces the probability of the survival of the East Anglian population.

The Decline

The documented decline of the otter in Norfolk and Suffolk was initiated in 1957 by the widespread introduction of persistent organo-chlorine insecticides, particularly Dieldrin, in agriculture (Chanin and Jefferies, 1978). The use of these chemicals decreased during the 1960s and 1970s, but the otter population continued to decline. Riparian clearance and river 'improvements' denied the otter some of its former haunts and the drainage of marshland for increased agricultural productivity had a major impact in some areas. The resultant distribution of suitable habitat was fragmented, contributing to the isolation of remaining otters by discouraging dispersion through areas which lack cover and lying-up places. This erosion of suitable habitat is continual, despite changing attitudes in the water authority which must now have regard for wildlife.

In some places increased disturbance by such activities as boating and angling may have reached critical levels. The Broadland otters are inevitably at risk from disturbance, but equally detrimental is the vast increase in effluent from sewage treatment

Figure 1. Estimated trends in the otter population of Norfolk and Suffolk from 1955



which has polluted the Broads and raised concentrations of phosphates and nitrogen to unacceptable levels.

By the 1980s, the population had declined to the extent that the death of any individual was a serious loss. In this situation, accidental drownings of otters in eel fyke nets present a real threat to the survival of the population. Otters can easily enter these conical nets, either out of curiosity or in an attempt to remove the eels, but they frequently fail to find their way out in time to surface and breathe. In East Anglia over nine otter deaths in commercial fish traps have been reported in recent years (Jerreries, *et al.*, 1984). The most recent record, an otter drowned in a fyke net on Breydon Water, supports the reports of otters on the lower Waveney. Even more disturbing were the deaths of two otters on the north Norfolk coast in 1984, which suffered obvious symptons of poisoning. Analysis of the bodies implied that organochlorines might still be a contributary factor in curbing the population, despite the voluntary ban on their use, with PCBs (polychlorinated biphenyls, a product of industry) an additional hazard.

Conservation — The Return of the Otter

In 1978 the otter became protected by law. Now under the Wildlife and Countryside Act, 1981, it is an offence to kill, trap or injure an otter, or to attempt to do so, or even to disturb it in a known resting or breeding place. Apart from reducing disturbance by the prohibition of otter hunting, this legislation came too late to have much impact on the steadily declining population of Norfolk and Suffolk. The Otter Trust had, by this time, been contacting riparian landowners throughout the region in an effort to protect remaining otters and otter habitat. Consequently protected areas, termed Otter Havens, were established on over 450 km of river (Wayre, 1979).

However, with such a fragmented population, expansion into the gaps, now protected areas in many cases, was precluded as the populations were too small to be viable. A practical solution, that of re-introducing the otter using captive-bred stock, was put forward by Philip Wayre, Chairman of the Otter Trust. The potential for this project was investigated and the necessary research initiated (Jefferies and Mitchell-Jones, 1982; Jefferies and Wayre, 1983).

Suitable sites for release are located initially by habitat assessment. Male otters are known to utilise over 30 km of waterway as a home range (Green, *et al.*, 1984), so that only sites with a substantial proportion of cover, in the form of damp woodland or reed-bed, over a considerable length of river could be contemplated. A site without resident otters, but relatively near to wild otters, is necessary in order to fulfill the aim of increasing the population to viable proportions. Good fish stocks are essential, preferrably with large numbers of eels and coarse fish. Water quality is a prime consideration and this is gauged through taking fish samples for chemical analysis and by scrutinising water authority data. In order to ensure protection for the re-introduced otters, the co-operation and assistance of the landowners is sought. Only with this support can the project proceed.

When the Otter Trust was founded in 1972, one of its principle aims was to breed the European otter in captivity in sufficient numbers to be able to make regular re-introductions into the wild where suitable habitat remained. It was not until 1983 that the stock of breeding otters at the Trust's headquarters at Earsham, near Bungay, was considered large enough to allow the aim to be fulfilled. The young otters awaiting freedom in a large semi-natural enclosure away from the public gaze, were eighteen months old at the time of release. This was thought to be an ideal age (Jefferies, *et al.*, 1983).

The first release took place on a Suffolk river on July 5, 1983. Three otters, a male

and two females, had been transferred to a pen on the chosen site 20 days prior to the release. In order to facilitate monitoring, the male otter was fitted with a harness, carrying a radio-transmitter, designed to fall off leaving the otter unencumbered after a few weeks (Jefferies and Mitchell-Jones, 1981; Mitchell-Jones, *et al.*, 1984). Details of the release are discussed in Jefferies, *et al.*, (1983).

In 1984 two further releases took place on rivers in Norfolk, adjacent to wild otter territories. In July a dog and two bitch otters were released and in September a pair was re-introduced to the wild. Regular monitoring shows that all eight otters have adapted well. The dog released in 1983 regularly covers over 30 km of main river and the 1984 males both use about 20 km of main river, possibly utilising the extensive network of ditches and tributaries to fuller extent. The success of the project was confirmed in August 1984 when footprints of an otter cub were found in the area of the 1983 release. Thus at least one of the captive-bred females had mated and produced young in the wild.

The future

The future outlook for the otter in Norfolk and Suffolk is beginning to appear more hopeful. Although the re-introduction programme is in its infancy, the otter distribution map is already showing growing nuclei which, with the birth of a new generation, may spread and coalesce. Two releases are planned for 1985 to further enhance the picture and if breeding continues on schedule at the Otter Trust, the future of the East Anglian population may well be secured.

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Squirrel Distribution in Norfolk

Jonathan C. Reynolds

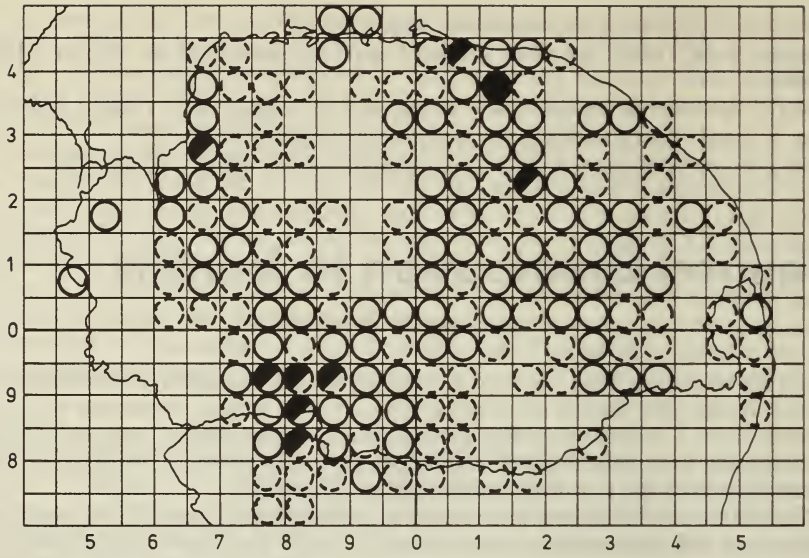
Generally speaking, there has been a much higher level of squirrel recording in the county during 1984 than in other recent years, with a greater proportion of all grid squares covered by those submitting information. Consequently, fewer grid-squares are suspected to contain squirrels that escape unrecorded. The information for 1984 is summarized in the first map accompanying this article.

The picture of red squirrel distribution is probably fairly accurate. In most cases where local red squirrel populations appear to have disappeared since 1983, grey squirrels have been recorded from the same 5 x 5 km grid square, implying that red squirrels had a good chance of being recorded if present. (Can anyone supply information about TL8095 and TG1535?) Sadly, then, we note the apparent loss of red squirrels at Holkham Meols, Lexham, Edgefield Woods, Blickling and Horsford Woods. This contrasts with rumours from other parts of Britain (notably NE England) that red squirrels have enjoyed a succession of good years and are increasing modestly in both numbers and range.

Although it is quite certain that records do not cover the full range of grey squirrels for 1984 (I have 'ghosted in' probable omissions in Fig. 1, based on previous years' experience), a couple of extremely interesting points are emerging. For one thing, records of grey squirrels have been received for 13 grid squares never previously known to have them. Does this represent continued range expansion of grey squirrels or of recorders? At this stage it is difficult to decide; but some of these grid squares have never been known to hold red squirrels either. I have indicated these in my second figure, and would be extremely interested to hear from people with local knowledge of these areas. Do they contain newly-planted woodland habitat? What were existing woodlands like? Can anyone remember when grey squirrels first appeared on the scene? Do older inhabitants have any recollection, when questioned, of red squirrels in the area. Do please write if you can offer any information (Dr J.C. Reynolds, The Game Conservancy, Fordingbridge, Hants.).

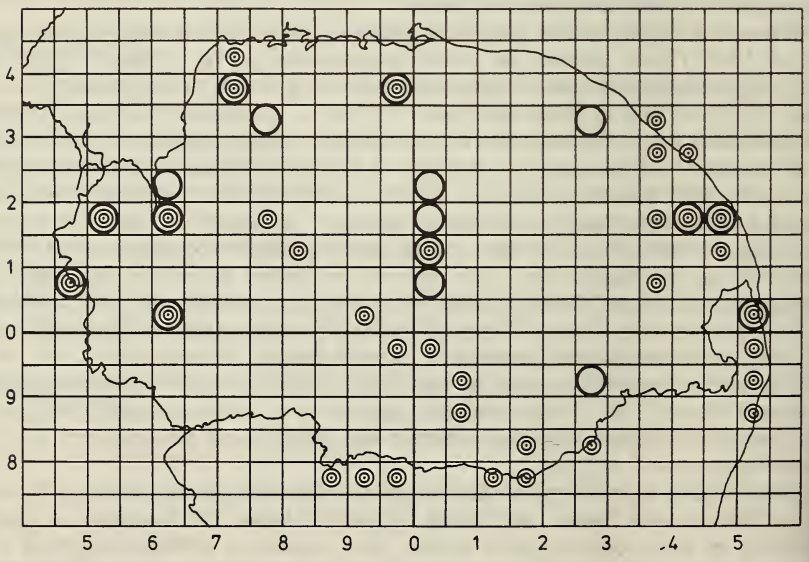
If anyone is interested to see the use I have made of squirrel records gathered between 1960 and 1981, I have available reprints of an article published recently in the Journal of Animal Ecology, which I will gladly send on receipt of a s.a.e. measuring at least 7 x 10 ins.

Finally, please do continue to send records of squirrels seen anywhere in Norfolk during 1985 to Rex Hancy. As I have suggested before, the tradition of squirrel recording in the county is quite unique, and represents a fascinating and very valuable document of a changing natural situation. Each year that passes refines and consolidates our understanding of what has happened, and this knowledge is relevant not only to squirrels elsewhere in Britain, but to any pair of closely similar mammal species anywhere in the world.



red squirrels in 1984 grey squirrels in 1984 both species

grey squirrels recorded in previous years, though not in 1984 - still present ?



recent range expansion? - squares first recorded for grey squirrels since 1981

squares recorded for grey squirrels, but never for red squirrels

Coypus in East Anglia (1970 to 1984)

L. M. Gosling

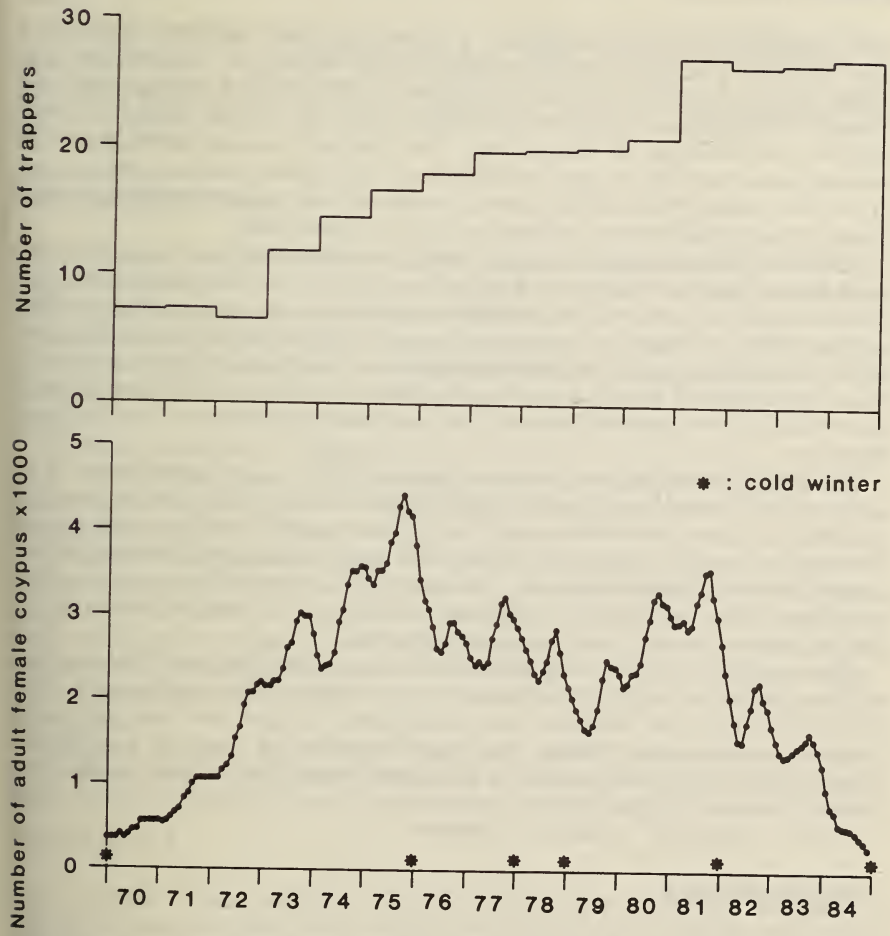
Coypus *(Myocastor coypus)* were introduced into Broadland in the 1930s and the damage which they can do to land drainage systems, crops and native plants communities was dramatically shown when their numbers were very high during the 1950s. Their population is believed to be mainly limited by cold weather and trapping intensity. Over the last fifteen years both of these factors have shown marked variation and, together, they appear to explain the major changes in the coypu population over this period. Between 1970 and 1985 the number of trappers varied between six and twenty-seven and winter severity has ranged from the exceptionally mild winter of 1974/75, with only one freezing night, to that of 1984/85 which was the coldest winter for over twenty years. However, no winter in this period came close to the severity of that in 1962/63. 1962/63 was truly exceptional, not least in its effect on coypus. The decline in numbers trapped suggested that about 90% of the population died and large numbers, including adults, were seen wandering about in an emaciated condition. Many were unable to dig up roots and rhizomes in the deeply frozen ground and starved to death; others finally perished from diseases such as pseudotuberculosis. A few adults may have died in this way during more recent cold winters (asterisked in the graph) but their numbers were probably insignificant. The main effect of cold weather on the population is to reduce the food supply of pregnant females so that they lose their litters. The gestation period is around 132 days and so when a female loses its litter in the coldest part of the year, it is often June or July in the following summer before it can produce its next litter. Juveniles are more vulnerable to cold weather than adults and, in addition to the losses of embryos, many young also die of cold and starvation. Thus, in cold winters, very few young animals are added to the population and, under these circumstances, trapping can make a large impact on the number of adults. The extent of this impact depends on the number of trappers working and the decline of the population was thus relatively large in the recent cold winters of 1981/1982 and 1984/85 when there were twenty-four trappers.

Fully grown coypus reach 6-7 kg in weight and adults are often too big to be tackled by native predators although many juveniles are probably killed by foxes, harriers and herons, amongst others. A few adults are killed by shooting or by dogs but the great majority of adults are probably killed by trapping. Assuming this, it is possible to reconstruct the numbers in the population by counting the number killed, aging a sample and projecting their lives back into the past. Coypus can be aged from the weight of their eye lens, which increases throughout life. The numbers at large each month between 1970 and 1985 have been estimated in this way and are shown in the graph together with the mean number of trappers working each month. In fact the graph of coypus is restricted to adult female, which in demographic terms, are the most important sector of the population.

The rapid increase in the early 1970s gives a clear illustration of the potential for increase in the population with an inadequate trapper force and a run of mild winters. By 1972 a major population increase was clearly underway and, late in the year, the Coypu Research Laboratory recommended an increase to eighteen trappers. In the event only fifteen were employed and the population increase was slowed but not stopped. The 1975/76 winter was the first cold winter in this period although, perhaps surprisingly, the cold period that had most effect on female

reproduction was a run of only twelve freezing days. This shows how vulnerable coypus are to cold weather and explains why introduced coypu populations do better in our mild oceanic climate than in the colder continental weather of Holland and Germany. Between 1975 and 1980 there was a reasonably high trapping intensity but this would not have stopped coypus increasing if a run of mild winters had occurred. By luck, cold winters were sufficiently frequent to prevent further increase. In 1978 the Coypu Strategy Group recommended that an attempt should be made to eradicate coypus and this was adopted as policy in 1981. The trapper force was increased to the level that research had shown would bring down the population and a reconstituted Coypu Control Organisation adopted the aim of eradicating coypus within ten years. This decision took into account that coypus are an alien species and that, although their range has been greatly reduced in South America, they are not an endangered species in their native range. By 1984 adult female numbers had been reduced by almost 90% from about 3,500 in autumn 1981 to about 400 in autumn 1984. However coypus become more difficult to detect and catch at very low densities and this factor will be increasingly important in the remaining years of the campaign.

Monthly changes in the number of adult female coypus and in trapping effort between 1970 and 1984



Classified Notes

INSECTIVORA

The Hedgehogs *Erinaceus europaeus* of Taverham may have learned their road drill since only two were found along a regular accident black-spot. It was in the same village that the sound of someone eating crisps turned out to be a hedgehog enjoying a snail. The half-grown youngster at Winterton was out very late indeed — twelve minutes after midnight on January 8th. This popular mammal has been so well recorded we are not printing the distribution map. All squares have been filled except in the areas North-West of King's Lynn, the coastal strip from Overstrand to Great Yarmouth and south-eastern borders to Diss and Kenninghall.

The Mole *Talpa europaea* is equally well documented but more notes from the south-eastern quarter from Great Yarmouth to Harling would be appreciated. It is now more generally realised that extensive mole runs can be used regularly without obvious surface evidence but when a new system is being excavated the consequences can be extremely annoying. A Snettisham garden erupted with 66 hills in six days in May. As number 67 began to rise the exasperated gardener rapidly applied his 17 stone weight in the opposite direction. The result was one dead mole — and no more hills!

The Water Shrew *Neomys fodiens* is the least likely of our three shrews to be observed so it is gratifying to see it so well represented on the distribution map. It is possible that closer observation could bring in more records. This is certainly true of the other two species. Shrews are often found dead and all should be carefully examined for identification purposes. The maps for Common Shrew *Sorex araneus* and Pigmy Shrew *Sorex minutus* reveal gaps where we would assume them to be present so we must conclude they are under-recorded.

Many stories of both the latter species did come in during the year. At Itteringham a Pigmy Shrew was caught in a frame and later another in the greenhouse. It could be that they had been attracted in by invertebrate life that can build up in such sheltered environments. Perhaps we should advertise the shrew as a gardener's friend? Cats reject shrews as food. A Saxthorpe Spaniel had no such qualms. Fortunately he wasn't present when a family party of two adults and up to five young were seen 'playing tag' on Beeston Common.

CHIROPTERA

John Goldsmith would be pleased to enrol new members into the Norfolk Bat Group. Interest counts, not previous knowledge! These creatures have their special fascination but it is difficult to provide bat sightings to encourage further study. In spite of the difficulties and deteriorating habitats, observations are still coming in. Late records are also indexed on the cards, e.g. the possible Serotine *Eptesicus serotinus* over Filby Broad in 1982 and 1983.

Pipistrelles *Pipistrellus pipistrellus* naturally provide the bulk of the records and the odd tales. Bedingham churchyard saw one flying at 11.45 a.m. in August. The very next day, another, or the same one, was flying inside the reporter's lounge and very reluctant to leave. At East Tuddenham they flew from April to December which

is not an unusual span of activity. The school store cupboard at Taverham was the chosen hibernation site by an individual which caused great excitement when it fell onto the caretaker's head. The unusual colour variant found at Colney is featured in our illustrations.

Regular checks of roosts are an important part of bat work, exemplified by the annual return of one or two Natterers *Myotis nattereri* in the East Tuddenham ice-house.

Noctules *Nyctalus noctula* were seen at Ludham, Barnham Broome, U.E.A., Horstead-Belaugh, Costessey and Strumpshaw. Many of these have become annual confirmations and the observors are gathering valuable records. A further report came from East Tuddenham where early evening Noctules were flying with late Swifts and Martins.

LAGOMORPHA

Great efforts to control Rabbit *Oryctologus cuniculus* numbers in parts of Breckland suggest myxomatosis is less of a force. Hugh numbers succumb but the rabbit is widely reported as numerous and often a nuisance.

Domestics go astray and startle observers. The ginger and white caught at Oulton probably had recent associations with man either directly or in its near ancestry. The warily tame garden rover in Taverham has been reported to be returning its genes to the wild.

The feral population on 'Rabbit Island' in the Wash was featured in February's press. Both the island and its rabbit population were originally brought about by Man. It seems numbers grew beyond food resources and the population collapsed to extinction. A tale with a moral!

The distribution map building-up for the Hare *Lepis capensis* shows widespread distribution and continues to be widely reported, yet at the same time is an increasing enigma. J.E.G. saw more live hares in 1984 than any year since 1975 but others report the opposite. Regular annual hare shoots have been discontinued while others continue with traditional bags. Breckland records over 20 by G.J. show a decline. There are good and bad areas for hares but the full set of factors involved are not yet understood.

A leverett entered a barn at Whissonsett and watched the workers eating their lunch before gently ambling away. We wonder if such a trusting soul is still surviving?

RODENTIA

Red Squirrels *Sciurus vulgaris* in Thetford Forest hold on to their redouts but references from other parts of the county just trickle in. Dr. I. Keymer reports on 8 dead specimens referred to him for investigation and these outnumber the live sites outside the stronghold. Care must be taken not to confuse russet-backed greys with genuine red squirrels.

The increase in Grey Squirrels *Sciurus carolinensis* is well summarised by the Hunworth situation where they didn't arrive till '82, were scarce in '83 and very common in '84. Our Breckland correspondent sees two or three dozen a day and they are 'all over Norwich', even surmounting telegraph poles according to a press photograph. The pressure on other species, nesting birds for instance, is worthy of study. The Squirrel story is continued elsewhere in the Report.

Bank Voles *Clethrionomys glareolus* were reported from only five localities but

were seen repeatedly in each. Six were caught in a mouse-trap in Watton. They use the Editor's bin of autumn leaves each year and can be seen when the lid is lifted. At least till the composting process begins.

Short-tailed Field Voles *Microtus agrestis* were again common at Edgefield. We have to thank the cat there and the couple at Hempnall for providing so many rodent references. The cat at Snettisham had a miserable summer. Voles were present in its hunting pasture but in much reduced numbers. Sheep had greatly reduced the suitable habitat. A plentiful supply at Breydon brought in Short-eared Owls to delight bird watchers. Predators were thankfully well in the back-ground at Walsey Hills on September 2nd when a vole was watched eating blackberries.

Water Voles *Arvicola terrestris* need a plentiful supply of bank-side and water plants. Where they grow these animals can charmingly entertain the quiet water-side watcher. A Dilham water-vole climbed into a pondside willow and bit through several twigs which it later stripped of leaves then cut the twigs into small pieces. It is not an animal designed for climbing and the comparative security of a garden may have contributed to its adventurousness. The distribution map being compiled shows widespread Norfolk sites. Confirmatory evidence would be appreciated.

The Wood Mouse *Apodemus sylvesticus* was plentiful where found and widely reported yet is probably severely under-recorded. A topic of the year was its eagerness to take advantage of protein-packed insect food when opportunity arises helping in the process of survival. It's a two-way process for the Wood Mouse is prey to every possible predator. Not that the aggressive blackbird seen chasing one was likely to swallow it. Nor was there any suggestion that the six trapped in a Snettisham wine cupboard were seeking solace.

Wood Mice often seek inside shelter during winter as does its larger relative the Yellow-necked Field Mouse *Apodemus flavicollis*. Most of our records of this scarce species come from such visits. There was great excitement when specimens were found at Great Moulton, nearby the previously known site at Forncett, but also in an entirely new area when one entered Dr. E. A. Ellis' house at Surlingham. Finally, on the other side of the county and so remote from all previous records, at Hilborough.

The Harvest Mouse *Micromys minutus* data continues to grow but not generally fast enough according to Mrs. M. A. Brewster, who with her daughter Jane, really has her eye in for finding old nests when vegetation has died back. They continue to find large numbers in the Saxthorpe and North Norfolk area. Clumps of Cocksfoot grass provide most old nests. We are recommended to search suitable habitats.

House Mice *Mus musculus* were reported from very few places and appear to be losing ground to the Wood Mouse. Improved building methods and maintainance as well as food storage may have contributed to the comparative decline.

The Brown Rat *Rattus norvegicus* was 'abundant' in Saxthorpe and Corpusty, 'quite common' in Buxton but elsewhere was described as low. 'Very few' from Breckland, 'unusually low' in N. W. Norfolk and 'the lowest record in 10 years' says J.E.G. It is interesting to speculate on the number of Brown Rats that could survive without the unwilling aid of man on which large local populations of this unloved rodent depend.

The Coypu is dealt with separately.

CARNIVORA

Foxes *Vulpes vulpes* were seen in many localities though the map being compiled shows some large gaps. Are they to be filled or remain genuine blanks? A determined

squatter in 1983 left the last remnant of standing corn but then sat by the field hedge making no attempt to slink away. What appeared to be a very old fox on the Stanford Training Area was harried by a crow which went on to strike the fox's back. Several contributors say they are common in that area. Two males were seen marking on the edge of Stanford Water within a few minutes of each other. Mute Swans and Black-headed gulls swam towards that bank as soon as they spotted the first fox and stayed until after the second had left. Both foxes ignored the birds!

The continued success in N. W. Norfolk shows that Badgers *Meles meles* can be re-established given initial assistance and continuing good-will. From their point of view it is unfortunate that they arouse such intense yet contrasting emotions. From the number of requests to the Editor for information they must be one of the most popular mammals yet the ills of the world are laid at their door. We have to be very cautious with specific information.

Otters *Lutra lutra* are dealt with more than adequately in our main article.

Stoats *Mustela erminea* and Weasels *Mustela nivalis* were widely reported. It may be these small carnivores have the advantage over their larger counterparts in that their hunting territories are on a less obvious scale so can utilise quite small pockets of wilder land where they can go unnoticed and unharrassed. A stoat at Bintree fascinated two moorhens which came to watch it chase round and round after a small rodent. Their massive determination is described by contributors who saw stoats dragging wood pigeons and rabbits. White stoats (ermine) were seen at Great Hockham, Wells Wood and West Tofts, all in the spring.

American Mink *Mustela vison* are infrequently sighted but, judging from the evidence of the relatively tame individual found at Fowlmere on September 7th, they are likely to turn up in any suitable waterway.

CETACEA

The only positive cetacean records in 1984 were of Common Porpoises *Phocoena phocoena*. 8 were seen in the water from Paston on April 8th, 5 from Bacton on Aug 5th and others noted in November. Cley bird-watchers saw them pass by on several occasions in that same month. Two unfortunate adults were trapped and died in fishing nets at Holme in July, having ventured very close to the shore-line. A young porpoise was found dead at Titchwell in June. Another youngster at Weybourne in June was measured before it was removed from the beach and found to be 77 cm, about the average length at birth. Both it and its mother appeared to have been in good condition.

Six days before Christmas a school of 7 or 8 unnamed whales swam southwards about 3 miles out from Yarmouth. The length of the largest was estimated as nearly 24 feet.

PINNIPEDIA

Common Seals *Phoca vitulina* were found all round our coast throughout the year, often pulling out onto the shore along quieter stretches. About 120 were focused on Scroby where 10 to 12 pups were produced. The estimate is probably on the low side as it is extremely difficult to count the young of a creature that can swim from birth.

The Grey Seal *Halichoerus grypus* colony of up to 450 had another unsuccessful breeding season and will continue to do so while Scroby is covered at high tide. Some adults moved round to Morston. Some vainly tried beaches south and north of Great

Yarmouth but the vulnerable young and the disturbance-sensitive mothers need the peace and protection impossible to provide.

Both species foray up-river and cause all sorts of confusion. An old motor tyre on Breydon turned out to be a mature bull Grey Seal.

ARTIODACTYLA

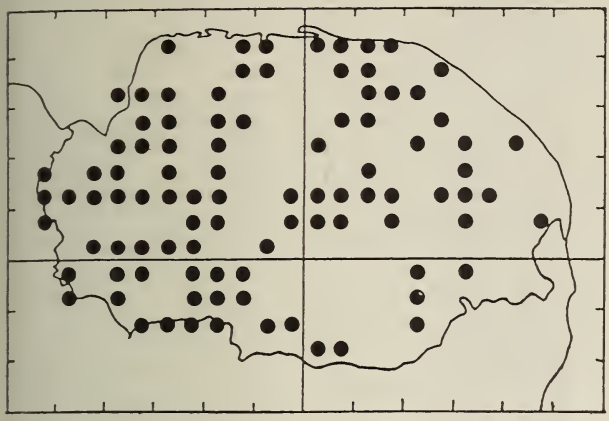
The Red Deer *Cervus elephus* of Thetford Forest proved too elusive for most of our contributors in 1984. It is probably just as well they have learned to be even more than naturally wary of the human species in recent years. Other, smaller groups have been observed, sometimes on a fairly regular basis, by contributors in other parts of Norfolk, particularly in the enormous area covered by the term Wensum Forest.

The small herds of Fallow Deer *Dama dama* in the far west and to the north of Norwich appear to be holding on but for another year it is the Roe Deer *Capreolus capreolus* that is most frequently reported. The deer normally stays within a comparatively short radius of its place of origin for most of its life but it seems that colonists will travel considerable distances and make use of any suitable habitat.

Chinese Water Deer *Hydropotes inermis* were seen at Ranworth, Catfield, Hickling Broad and Strumshaw Fen, all within their Broadland base. How they were affected by the severe winter of early 1985 will be a very difficult question to answer in view of the small amount of data we have to work on. Perhaps contributors in Broadland could seek out as much information as possible from all sources during this year.

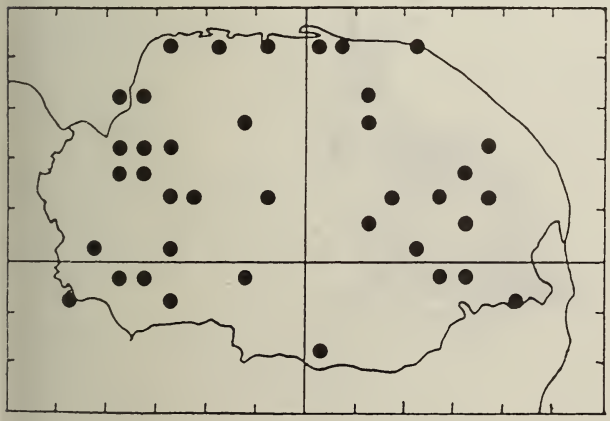
Muntjac *Muntiacus reevesi* continue to do well. One was pulled out of the river Wensum at Norwich and another fed during daylight hours off fallen apples in a small Swaffham garden, within 10 metres of the glass doors. This supposedly shy and elusive creature has been recorded as a garden visitor in other counties but this is the first recorded incident in Norfolk. Perhaps it is a sign of things to come?

Shrew species in Norfolk 5 km square distribution maps based on information received from Contributors to the Mammal Report, 1974 to 1984.



a) Common Shrew
Sorex araneus

b) Pigmy Shrew
Sorex minutus



c) Water Shrew
Neomys fodiens

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