Norfolk Bird & Mammal Report 1989

Norfolk Bird Report — 1989

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Norfolk Mammal Report — 1989

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NORFOLK BIRD REPORT 1989

Editorial

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

Review of the Year:

January was mild as in 1988, but large congregations of wildfowl frequented the county, notably 13,500 Pink-footed Geese in the north-west and over 12,000 Brent Geese along the north coast. Single Black Brants concealed themselves in the Brent flocks at Cley and Lynn Point. The Norfolk section of the Ouse Washes held over 2,000 Bewick's Swans and 500 Whooper Swans while East Norfolk contained a peak of 370 Bean Geese on the 5th together with 310 White-fronted Geese. Large numbers of Lapwing remained to overwinter as they did again in the mild 1989/90 winter. A few Waxwings were observed and rarities included a long-staying Arctic Redpoll and a Ferruginous Duck both on the outskirts of Norwich together with an American Wigeon at Welney.

February continued mostly mild with a colder spell towards the end of the month. Berney/Halvergate area held over 600 Bewick's Swans while up to 95 Long-tailed Ducks were off Hunstanton/Holme. Only a few Smew were recorded in this mild period, but a Rough-legged Buzzard wintered on Massingham Heath and 700 Twites were at Brancaster.

March was unsettled, but warm towards its close when many summer migrants began to appear. Migrant Black-tailed Godwits were very evident with over 1,000 at Welney and 600 at Ousemouth. A wintering Iceland Gull at Yarmouth remained until the 19th. Unusual were a Richard's Pipit at Gillingham, wintering Black-bellied Dipper at Lyng until the 27th and Green-winged Teal at Welney.

An exceptionally cold start to **April** slowed down any early large-scale movements of migrants. A heavy Ring Ouzel passage developed later in the month with other species of note being 2 Hoopoes, a Richard's Pipit and the second county record of Rock Thrush — found at Waxham on 30th.

May was mostly dry and hot and produced the expected movements of Black Terns, Temminck's Stints and Dotterels along with more exotic delights such as several Broad-billed Sandpipers — mostly at Breydon, Pectoral Sandpiper at Holkham, a much appreciated Semi-palmated Sandpiper at Cley and Little Egret, Night Heron and Whiskered Tern all at Welney. Passerines included a singing Icterine Warbler at Cromer, Subalpine Warbler at Weybourne, Ortolan Bunting at Horsey, Red-throated Pipit at Blakeney Point, Thrush Nightingale at Walsey Hills, Cley for three days, but only one Bluethroat. There were also three sightings of female Red-footed Falcons.

A very hot **June** had unsettled spells at either end of the month. Oddities included Dipper, Purple Heron, Long-billed Dowitcher, Red-footed Falcon and the beginning of large numbers of Quail sightings. Both Marsh and Montagu's Harriers enjoyed a good breeding season while in the Norfolk Brecks 135 pairs of Nightjars were found, although for the first time no Red-backed Shrikes were proved to breed. Cormorants bred in the county for the first time in 70 years. Large increases in predators during recent years (notably Foxes and Corvids) have caused serious problems, especially to vulnerable colonial nesting birds. Some of the North coast breeding results for 1989 are a catalogue of disasters. Urgent control measures are required to ensure the safety of the tern and wader breeding sites. These species have already suffered severely over the years from increasing human pressure on beaches, loss of habitat and pollution.

The hottest **July** since 1976 produced the first Pacific Golden Plover for the county at Holme/Thornham, a Broad-billed Sandpiper at Breydon, Hoopoe at Weybourne and an obliging and long-staying singing River Warbler in the west of the county.

August was warm and dry although a poor month for passerines with no substantial falls. The sea began producing its usual quota of Sooty Shearwaters, Sabine's Gulls and Long-tailed Skuas while the 27th saw a huge passage of 1,200 Manx Shearwaters off Cley and 2,000 Gannets off Blakeney Point. A Little Egret frequented Ousemouth for two days and several Pectoral Sandpipers were identified. In contrast to 1988 only small numbers of Curlew Sandpipers appeared.

A warm beginning to **September**, but more unsettled later. A spell of easterlies in the first half of the month produced a varied fall of passerines including impressive numbers of Whinchats, Redstarts, Pied Flycatchers along with Wrynecks, Red-backed Shrikes and a few Red-breasted Flycatchers, Icterine and Barred Warblers. More exotic species were also involved notably Pied Wheatear at Winterton 13th/14th, Siberian Stonechat, Eastern race of Redstart and Bonelli's Warbler at Wells and Little Bunting at Yarmouth. A strong sea passage on 9th produced lots of skuas and shearwaters and also record numbers of Leach's Petrels. More Puffins than normal were recorded. The month also contained a Hoopoe at West Runton, Little Egret at Welney and female Red-footed Falcon at Waxham.

Dry and clear conditions prevailed early in **October**, but it became wetter and windier from mid-month. Exceptional numbers of both Black-throated and Great Northern Divers appeared off the coast and grebe numbers built up in Holkham Bay. Scrutiny of returning Brent Geese showed a complete breeding failure. Passerines in the month included Richard's Pipit, Yellow-browed Warblers, 4 Pallas's Warblers, Little Bunting, Red-breasted Flycatchers and a late Barred Warbler at Holkham on 26th. An influx of Water Pipits occurred especially at Cley. Bird of the month and probably the year was a most unexpected Red-breasted Nuthatch — the first for Britain. Frequenting Holkham pines, it was generally frustratingly difficult to observe as it roamed through the tree-tops in company with tit flocks.

Although cold towards its close, **November** was mostly dry, calm and mild. A quiet month birdwise, but a few Asiatic rarities were seen, notably Dusky Warbler on Blakeney Point, Pallas's Warbler at Waxham and a late Yellow-browed Warbler at Winterton resembling the race *humei*. A late Hoopoe was at Taverham and as usual small numbers of Little Auks hurtled offshore during northerly blows.

Strong winds and generally unsettled weather with heavy rain occurred in **December**. Wildfowl numbers built up to over 20,000 Pink-footed Geese in north-west Norfolk and

over 3,000 Bewick's Swans at Welney after a good breeding season. A late Spoonbill roamed the coast and an American Wigeon appeared at Welney. A small Waxwing influx brought the year to a close (Summary by JBK).

Recording: Records should be submitted to Michael J. Seago, 33 Acacia Road, Thorpe St. Andrew, Norwich NR7 0PP *by the end of January*. It is regretted that some observers are still failing to comply with this deadline which is essential to meet printing schedules. All observations should be prepared in the order followed by the 'British Birds' *List of Birds of the Western Palearctic*. It will be appreciated that notes submitted in diary form cannot be considered. In order to minimise the work involved records will not normally be acknowledged, but names of all contributors will be published.

Records of national rarities considered by 'British Birds Rarities Committee' need to be submitted to the Editor with full details *as soon as possible after observation* and not left until the year-end. There are a number of omissions in the 1989 Classified Notes of national rarities as decisions are still awaited. A full list of semi-rarity species and subspecies for consideration by the County Records Committee appears in the Editorial section of the 1988 Report.

Acknowledgements: Thanks are due to the following artists and photographers: N. Arlott, N. Borrow, D. Bryant, R. Chittenden, D. M. Cottridge, C. Donner, E. A. Fisher, A. Greensmith, A. L. Howes, B. W. Jarvis, R. Jones, J. B. Kemp, C. R. Knights, C. Lansdell, J. R. McCallum, R. Millington, R. Powley, M. S. Read, the late R. A. Richardson, J. P. Smith and A. M. Stoddart. Details appear on page 479.

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Red-breasted Nuthatch in Norfolk — a New British Bird

A small Nuthatch tentatively identified as a Corsican and showing a black crown and white supercilium was reported by Mr. and Mrs. R. Aley from the west end of Holkham Meals on the evening of 13th October 1989. It was feeding on a grassy path 20 feet ahead of the highly surprised observers. It quickly flew into an adjacent pine and then away through the trees.

At 8 a.m. the following morning only a handful of birders was present and nobody had encountered the bird; in fact some were already leaving! After an hour a strange call was heard from the tops of pines at the so-called 'crossroads' near the Royal Summer-House. It was a fairly quiet nasal trumpet-like call noted as '*neh, neh, neh, neh*'. Paul Varney commented to the four people present that Red-breasted Nuthatch (which has a similar head pattern to Corsican) is described in the National Geographic Society *Field Guide* as having a call 'like a toy tin horn'. This fitted the call fairly accurately. The bird was not seen, however, and the calling ceased. A short while later Peter Hayman heard the call and thought he saw the bird in flight, thus initiating a detailed search through a nearby tit flock. At 9.40 a.m. the observers were near the summer-house when a bird appeared on a pine trunk 20 yards away. It displayed a strikingly white supercilium with contrasting black eyestripe and complete black crown and nape. Upperparts were typical Nuthatch blue-grey and underparts rusty orange-brown. This combination of plumage feathers and the bird's small size confirmed its identity as a Red-breasted Nuthatch *Sitta canadensis*, a first for Britain and Ireland.

Peter Hayman and Allan Lewis both obtained brief views. Although the bird had been in view for less than a minute all were in agreement concerning identification. Despite intensive searching by others it could not be found in the immediate area of the first sighting. It was then relocated by call ten minutes later about 400 yards away.

The bird continued to be extremely elusive; some observers had a three-hour wait before it showed again. Rob Morris then arrived equipped with a tape of the species calling. When this was played the bird responded immediately, calling back and flying out of the canopy to alight in elder bushes only fifteen feet ahead and giving breathtaking views. It then performed excellently in the vicinity of the main path for a quarter of an hour before returning to the pine tops where it was difficult to see for the remainder of the day. It was feeding, clinging to the undersides of pine cones and also investigating the main track itself.

The small size of the bird was especially apparent in flight when it was judged to be about the size of a Blue Tit. The pure black crown (with no grey tones), the underpart colour intensity (compared with skins) and the response to tape are suggestive of an adult male.

And so to the bird: a charming highly active little Nuthatch displaying very sharp plumage features and an extremely distinctive call. It is very small and very mobile and Holkham Meals is extremely large. Normally it was best searched for around the summer-house and often in association with a tit flock. Once the Tits were located ears strained for the usually quiet but distinctive high-pitched call. But catching the call offered no guarantee of seeing the bird: it normally travelled with a sociable band of Tits and Goldcrests. On many occasions a group of observers would be enjoying views of the Nuthatch while others were finding Marsh, Coal and Long-Tailed Tits, Goldcrests and even Chiffchaffs and a Lesser Spotted Woodpecker.

Then it was gone! Occasionally the Tit flock was located but not a sound from the Nuthatch, yet casually raised binoculars could focus immediately on the elusive prize — before it again vanished.

It seemed to be a creature of varying habits. Although often roving with the tit flock it occasionally lingered in a favoured spot. On fine days it would feed along the sunny edge of the pines steadily moving with the tits, but generally remaining in view for some moments. It often behaved like a typical Nuthatch moving up and down trunks and along branches of large pines. Pines were generally favoured although in its first days it was found in track-side sycamores and even in small elder bushes. Less typically it fed in exposed sprays of pine needles in both large trees and rather small ones, delicately picking at the base of the needles.

Throughout its stay the Nuthatch showed a definite variation in its calls. The most typical was a nasal '*beep, beep*' usually uttered in flight or when agitated. Another shorter, fainter, version of this call was often heard when the bird was feeding with the Tit flock. From time to time the calls merged into a rapid series of short musical notes rising in pitch towards the end.

After the news was announced on Birdline Information Service an estimated 2,000 birders assembled for the grandstand viewing on Sunday 15th October. The quarry initially wandered widely being first located only just short of the far western end of the pines. Most viewing has been in the area of the summer-house (where it has come to drink) and the nearby crossroads, but many have stumbled across it well to the east of Meals House. One fortunate observer saw it as he stepped out of his car in Lady Anne's Drive! Another couple, on 15th October, having seen it near the summer-house decided to visit the Dell at the Wells end and stumbled across the bird again there. For the remainder of the year this highly unlikely New World vagrant continued to either delight or frustrate an endless procession of birders.

The Red-breasted Nuthatch is plentiful in the evergreen forests of North America. In most winters part of the population migrates east and south depending on the conifer seed crop. The species has been seen to fly 60 miles offshore in the Gulf of St. Lawrence. Numbers of Red-breasted Nuthatches passing through Cape May Bird Observatory this September were exceptionally high with a peak day-count of 120 on 30th September which was ten times higher than recent autumn maxima. The species, given a very low trans-Atlantic vagrancy potential, is at least as surprising a find as previous British records of Varied Thrush or Golden-winged Warbler.

If accepted this will be the second record of Red-breasted Nuthatch for the Western Palearctic, the first being of an adult male on the Western Islands (Iceland) on 21st May 1970.

This summary has been compiled from the extensive accounts kindly provided by A. I. Bloomfield, D. Hatton, D. Holman, and P. Varney. Acknowledgements are also due to P. Colston, A. Desrochers, S. Whitehouse; the finders Mr. & Mrs. R. Aley for additional information; and the anonymous observer who provided the Nuthatch with ample drinking water.

Pink-footed Goose Movements and Distribution

M. J. Seago

The Pink-footed Geese wintering in Britain represent the whole of the population breeding in Iceland and East Greenland. Another population numbering some 30,000 birds breeds in Svalbard (Spitsbergen), migrates through Norway to Denmark where the birds spend the autumn and spring, and winters in Holland and Belgium. In Britain the bulk of the population winters in Scotland with substantial numbers in Lancashire and in Norfolk. Those wintering in the latter county represent the most southerly assembly in the country.

Most British pink-feet breed in Iceland. There must have been an enormous expansion in numbers for the population to have changed so markedly in recent years. Many nest on rock-fall slopes in deep gorges and take their offspring to oases in the bleak lava desert. Others including those at the major Thjosarver site — where large numbers both nest and rear young in islands of vegetation — are often far from suitable cliffs. Both on a local and on a regional scale Pink-feet exhibit major shifts in distribution and they are among the most wary and intelligent of geese. This article contains details of the principal haunts of Pink-feet in Norfolk and the adjoining Fenland areas since their first documented appearances.

Holkham fresh-marshes: The first Norfolk specimen, shot at Holkham, was identified in 1841 'since which time this goose has proved to be by far the most common species frequenting Holkham Marshes'. This situation continued for at least a century, the skeins roosting on Stiffkey High Sands. A peak of between 5,000 and 8,000 was attained in the 1930s. However, following the establishment of an anti-aircraft firing range at Stiffkey the numbers decreased rapidly after 1938. War-time ploughing of the fresh-marshes followed and very few geese appeared after 1941.

Dr. B. B. Riviere's *History of the Birds of Norfolk* (1930) records the scene: 'The first flocks begin coming in during the latter half of September, the earliest date being the 10th. The main body has usually arrived by the end of October. Throughout the winter ... the numbers run into many thousands. The return journey to northern breeding grounds takes place in March. When they can do so undisturbed and particularly early in the season, Pink-feet will feed upon stubbles and new leys at some distance inland, but for many years

Holkham Marshes — where they are never disturbed — have been the favourite feeding ground. There are few more wonderful sights or sounds than their arrival from the sea at dawn or their return at dusk. Here, lying up before daylight behind the range of sand-hills, generations of Norfolk gunners have shot at them as they pass over and instinctively as they cross the danger zone the flocks lift high in the air. But from time to time in wild or foggy weather the gunners reap their reward'.

The late Sir Peter Scott's *Morning Flight* describes a 'pilgrimage to Mecca' when he first visited north Norfolk. The volume includes a painting of skein upon skein of Pink-feet over Holkham fresh-marsh against a superb sunset. The original — on display in Norwich Castle Museum in 1989 — formed part of an exhibition of the great artist's work soon after his death.

Pink-feet remained almost absent from Holkham until the 1976/7 winter when 250 made a brief appearance in December. The two succeeding winters provided a similar pattern, but during 1980/1 regular wintering began. Following controlled flooding of part of the grazing marshes from late 1986 this National Nature Reserve has again become more attractive to wildfowl. In the 1989/90 winter a post-war peak of 4,620 Pink-feet was attained. Despite the nearness of Scolt Head, the Holkham contingent has remained attached to an area off Lodge and Warham Marshes and on Stiffkey High Sands as a night-time roost thus continuing the habits of the pre-war battalions.

Peak winter counts at Holkham since 1980/81

1980/81	206	1983/4	1,500
1981/2	90	1984/5	1,500
1982/3	300		

More recent counts appear on page 419

Lower Bure and Halvergate Levels: Pink-feet began wintering in south-east Norfolk during the 1913/4 winter when 30 to 40 were using the marshes to the west of Breydon. It was about this time that Scroby Sands off Yarmouth began remaining high and dry at high tides, thus offering a safe roost. Numbers increased annually and 1,500 were present in January 1937. The impressive skeins passing over the town of Yarmouth as the birds came in from sea in early morning and returned at night became an expected winter feature. The birds normally favoured the marshes adjoining the lower Bure, although Halvergate levels were also visited. It was not unusual to see both Pink-feet and White-fronts feeding together. The maximum numbers were attained between 1938 and 1946 despite a wartime network of tubular steel barriers erected on the marshes to prevent an airborne invasion. The final peaks were obtained in 1943 and 1946; on both occasions 3,000 were estimated by R. H. Harrison. The earlier total was recorded 26th December 1943 on Mautby-Runham marshes. Earliest autumn arrivals were recorded during the latter part of September, but the first parties seldom stayed any length of time. There was then a gap until late October when the main flights arrived. In 1936, for example, 1,000 Pink-feet were feeding on the lower Bure marshes on 30th October.

After spending the short winter day on the marshes, the Pink-feet normally returned to Scroby to roost. During periods of fog, exceptional high tides and gale-force winds however, the birds avoided heading to sea. In these conditions Breydon estuary was favoured despite disturbance. Normally diurnal feeders, at the times of full moon the Pink-feet regularly fed at night.

After 1947 Halvergate and the lower Bure marshes steadily declined as a wildfowl resort. The introduction of electric pumps resulted in the old drainage mills falling into decay. Each succeeding winter saw less and less flooding and greater disturbance. Inevitably pink-

feet numbers fell each winter and had declined to 450 in 1950/1, 150 in 1952/3 and 100 in 1955/6. During the following decade winter totals did not excede 40 birds. Since then small groups have put in only very brief and occasional appearances. Higher up the Yare Valley Pink-feet continue to be detected amongst wintering Bean Geese, but apart from a gaggle of 60 briefly on 17th December 1988 only ones and twos have been reported.

West Wash/Fens: Withdrawal from north Norfolk by 1941 and from the Broads grazing levels during the 1950s was fully offset by an increase along the Lincolnshire shore of The Wash. This was a new tradition; at the same time feeding habits changed completely. The pattern of these movements is included for the sake of completeness and because it also sheds light on today's habits. Research by Cambridge Bird Club confirms that during the late 1940s and 1950s a regular Pink-foot arrival and build-up to 7,000 and even 10,000 birds took place each autumn on the West Wash at Wainfleet from October before a move was made to Holbeach by mid-November or December. From here over 5,000 moved inland to the Cambridgeshire Fens from January until early spring. This pattern varied little up to 1962. The Pink-feet used the Nene Washes (some 20 miles inland) as an overnight roosting area, moving out to farmland to feed during daylight hours. Luckily farmers welcomed these wandering flocks. These geese gathered on fields of harvested potatoes, where the tubers left formed a major part of their diet; otherwise they grazed winter wheat. The first activity greatly reduced the number of potatoes growing in following cereal crops as weeds. Feeding on main shoots of growing corn produced more side tillers, beneficially thickening the crop.

Just how important the Nene Washes had become was all too clear in 1963 when much of the grassland along the eastern half was ploughed and the geese failed to return. This sudden conversion to arable came at the time The Wildfowl Trust was negotiating the possibility of setting up a wildfowl refuge on the Nene Washes. The inland roosting habit which had developed on the Nene has rarely extended to the Ouse Washes. At the latter site a combination of unpredictable flooding covering feeding areas on the washes themselves and shooting pressure levelled against geese using arable for feeding (and the washes for roosting) has prevented any traditional use becoming established. Hence parties usually move on after a short while.

East Wash/Snettisham: There are scattered reports of geese visiting the East Coast of the Wash from the early years of this century including an intriguing reference by Dr. Riviere to 2,000 Pink-feet and White-fronts feeding on Snettisham fresh-marshes during very hard weather in February 1929. Then in 1956 329 Pink-feet were recorded in January. During later years flocks of 200 to 300 were frequently seen. But it was not until the 1968/9 winter that monthly figures first became available including a peak of 843 birds in February.

Peak counts at Snettisham

1969/70	1,348	1974/75	2,400	1980/81	2,450
1970/71	1,093	1975/76	2,731	1981/82	10,500
1971/72	1,274	1976/77	3,700	1982/83	5,400
1972/73	1,816	1977/78	4,572	1983/84	7,000
1973/74	1,784	1978/79	2,370	1984/85	9,500
		1979/80	3,720		

More recent counts appear on page 419

Scolt Head: A full decade after the commencement of the Snettisham build-up, 90 Pink-feet began roosting at the western end of the island between 20th November 1979 and

19th January 1980. As the site became more 'traditional' so the numbers rapidly increased.

Peak counts at Scolt Head

1981/2	3,500	1983/4	13,000
1982/3	5,600	1984/5	9,300

More recent counts appear on page 419

Effect of the Moon: When undisturbed Pink-feet feed during the day and flight to their roost any time from near sunset until an hour or so afterwards. On occasions, however, departure may be delayed until conditions of practically total darkness as far as the human eye is concerned. The only time navigating ability breaks down is in mist and fog. Gales do not deter them. For example on 25th January 1990 the geese — despite being swept well off-course — continued battling against WNW storm-force 12 winds to reach the Scolt roost at dusk.

At periods when the moon is of any extent and is riding in the night-time sky the geese may be heard flying to and from the roost throughout the night, often flighting in as the moon rises in the evening. Particularly in mid-winter when the moon is full they are liable to stay in the fields all hours of the night only returning to the roost when it pleases them. Moonlight feeding sites need to be very secure having almost always been used during the previous days. The birds are well aware which flight paths and farms are 'safe'.

Overnight Roosts: The Pink-feet roost-site off Snettisham occupies the centre of a 3,000 acre wildfowl refuge and offers relative safety and no enemy can approach undetected. The high tides at night cause the geese to float on the water before settling later on the mud and sandbanks. Ever wary, they may stand up to a mile offshore on Peter Black Sand and Ferrier Sand. At Scolt Head the most regularly used area is amongst the sand and shingle ridges at the extreme western end of the Island. Depending on the tide, the geese remain on the ridges avoiding the dunes. The muddy Cockle Bight area is occupied during strong northerly winds when the dunes provide shelter. During calm conditions the birds are content to roost on the open sea off the Far Point and Cockle Bight.

The Wells roost is situated on very exposed sandbars and shingle ridges off Lodge and Warham Marshes and on Stiffkey High Sands. This roost-site attracts the 'meadow' feeders from Holkham fresh-marshes and also the Pink-feet attracted to inland fields west of Wighton.

As the light fades the evening flight commences and small and large formations begin arriving — often from more than one direction. On windy nights arrival is often more prolonged than on calm ones. Each flight turns upwind before side-slipping and tumbling out of the sky to the estuary. After the first geese are settled, later arrivals fly in without the hesitation often displayed by the first arrivals. Coming in to roost there is usually a great clamour, redoubled whenever a fresh assembly arrives with greeting calls from the new arrivals. Some time after the last flight comes in the chorus steadily falls to a low level which is often maintained until an hour or so before dawn flight when it increases again.

At daybreak the geese return to the fields chosen as feeding grounds. The vanguard alights usually as near the centre as possible after circling several times and after more than one 'failed' attempts to settle before actually doing so. The build-up then becomes rapid with a succession of newcomers settling without hesitation. Roosting Pink-feet usually separate into several feeding flocks travelling at varying distances and directions from the roost. During the day groups move between flocks and also between feeding and roosting places, following disturbance inland during pheasant shoots and movements of farm vehicles.

The birds feed least around mid-day.

Morning flight usually lasts between 30 and 45 minutes, but may extend for well over an hour depending on the state of the tide and the moon. Delay in departure from the Scolt Head roost following moonlight feeding is most noticeable on a rising tide at high water. These conditions enable the geese to bathe readily and to preen. Off Snettisham they may be observed splashing in the creeks before flighting. In addition there are occasions when birds are still returning to roost at dawn. These late arrivals perhaps 'encourage' the main assemblies to linger.

Feeding: Newly arrived, Pink-feet favour feeding on spilt grain in stubble, but the principal diet between October and January/February is discarded sprouting sugar-beet tops. This habit was first recorded locally in February 1966, but surprisingly no reference is made to it in *Wildfowl in Great Britain* (1986). After the remaining beet-tops are ploughed-in (usually by mid-January) the Holkham-based birds feed mainly on permanent grassland and on winter cereals. At Snettisham during February/March the Pink-feet have favoured old water meadows for feeding. But early in 1990 following the close of the wildfowling season up to 8,000 regularly fed on salt-marshes.

Usually the most extensive fields are favoured and especially those nearest to roost-sites. Small fields and also tall hedges which restrict the view are avoided. The un-easy co-existence with the farming community invariably results in some disturbance. Fortunately, individual farmers are extremely tolerant and prepared to considerably delay ploughing-in beet-tops so that they may enjoy one of winter's finest wild life spectacles: flighting geese.

The main feeding area in north-west Norfolk extends eastwards as far as the Holkham Estate. Normally, the southern limit is the main A148 Fakenham to King's Lynn road, but during the 1989/90 winter regular flights appeared towards the B1145 in the vicinity of Peddar's Way. Pioneer groups of Pink-feet are beginning to visit cleared beet fields much further to the east.

Severe Weather: At the onset of a heavy snowfall the vast majority of Pink-feet depart, failing to return until the following autumn. During the 1986/7 winter, for example, severe frost on 9th January quickly followed by snowfalls and with drifts in the Brancaster district of 10 to 15 feet caused complete abandonment of the Scolt roost. Yet at Snettisham up to 2,300 Pink-feet continued roosting until mid-March.

A Pink-foot disaster took place soon after dawn on 3rd January 1978 when a violent storm complete with thunder, lightning and hailstones, crossed East Anglia. In its wake 140 wild geese (mainly Pink-feet) lay dead in fields, along hedgerows and on roads. It is highly probable that the birds involved formed part of the Snettisham flock. The most likely sequence of events was that the geese were flighting along the southern perimeter of The Wash at dawn — or panicked into the air by the approaching storm — were overtaken by a tornado or funnel cloud and forcibly sucked upwards to a considerable altitude like toy balloons. Death or unconsciousness quickly followed. Their involuntary return to earth became only a matter of time and occurred along a 30 mile-path extending from near Castle Acre to just south of Norwich. The numbers of Snettisham-based Pink-feet declined that day from 4,540 to 640 thereafter, dispersed by the high winds.

A similar incident was recorded by J. H. Gurney on the north Norfolk coast on 8th February 1906: 'About 2 pm a violent storm of snow and hail accompanied by 20 minutes of incessant lightning blew up from the north-west. This combination caused a stampede among nearly 4,000 Pink-footed Geese at Holkham fresh-marshes. Flying resulted in fatal results in several cases. Nineteen geese (15 Pink-feet and four White-fronts) were picked-up in the adjacent parishes of Bayfield, Holt, Kelling and Weybourne all struck by lightning'.

Co-ordinated Counts: The presence of very substantial numbers of Pink-feet in north-west Norfolk warranted co-ordinated counts at dawn followed by feeding estimates. These arrangements commenced in December 1985.

Peak totals of Pink-footed Geese at Snettisham, Scolt and Holkham

1985/6	19,900	1987/8	18,800	1988/9	13,500
1986/7	19,800			1989/90	26,920

Reference to papers in the Annual Reports of The Wildfowl Trust confirms that Pink-foot roosts within Britain are not self-contained. A continual shifting of birds from roost to roost around the country has been confirmed by counts, by numerous ringing results and by radio tracking work carried out by Aberdeen University. In fact recoveries of geese ringed near particular roosts during the period 1951 to 1959 came within the following three months from all parts of the winter range. Movement may take place on any date and not only in response to hard weather or food shortages. As might be expected inter-change is greatest between adjacent roosts and in Scotland groups of roost-sites function as one. There is evidence that this is the situation locally, particularly as the Snettisham and Scolt Head roosts are only 12 miles apart. Observation has shown that the Snettisham-based Pink-feet feeding at Babingley may be joined by others flighting in from the north and presumably from Scolt. During the 1989/90 winter a morning flight count at Scolt on 10th November, for example, revealed a one-off total of 7,000 birds compared with 2,200 geese there the previous day. Peak numbers at Scolt were attained during the second and third weeks of January 1990, but by the 29th a high proportion had shifted allegiance to Snettisham where 19,000 assembled. During the same winter interchange was first noted between the Pink-feet roosting on Scolt and those spending the night off Wells/Stiffkey; at 4 p.m. on 26th December a flight of several thousand south of Burnham Market separated with 1,500 heading towards Wells and the remainder alighting on the Far Point at Scolt. In addition the 1989/90 winter has seen the first Pink-feet feeding on Burnham Norton fresh-marsh in association with Brent Geese.

The factors that influence roost preference must remain a matter of speculation. But a spring tide and a strong northerly wind certainly makes The Wash uncomfortable for wildfowl. It may well be that the relative shelter offered by the shingle ridges of Scolt Head's Far Point provides calmer conditions. Very occasionally Pink-feet have been observed to roost elsewhere. One report cites an inland lake and another inland fields.

Throughout the 1950s The Wildfowl Trust ringed large numbers of Pink-feet both in Iceland and in Britain. But it was not until 28 years later that a new marking programme commenced. One of the early results was that the long suspected link between the Lancashire geese and the Norfolk gatherings was confirmed by a goose ringed in April 1987, resighted at Martin Mere in December 1987 but which subsequently moved to spend the mid-winter period at Holkham. The 1989/90 winter has resulted in further evidence that the group centred on Martin Mere in late autumn contains many birds staging before moving northward to Scotland and also to Norfolk for part of the winter. A total of nine Pink-feet caught and ringed at Martin Mere between 31st January 1987 and 28th October 1989 has been reported in north Norfolk, together with two individuals both shot on the east shore of The Wash. All the Martin Mere birds have been caught using cannon-nets fired over them whilst feeding on waste potatoes. They were fitted with a standard BTO ring on one leg and a white plastic ring bearing a unique three-letter code on the other.

Arrival and Departure: A decade ago the first arrivals did not put in an appearance until the last week of October. Nowadays, parties appear shortly after mid-September followed by main arrivals by late November. Peak numbers are attained during December often

remaining until well into January. Provided the weather continues open the assemblies may still be high during February and exceptionally until late March.

Few remain in April although a remarkable 500 were on The Wash on 4th April 1984. And a party of eleven was reported there 1st May 1982 with three lingering until the 11th. These late stayers resort to the most isolated and distant saltings.

Acknowledgements: Special thanks are due to John Brown, Dr. Tony Fox (Wildfowl & Wetlands Trust) and Dr. Michael Petch. In addition the following observers have assisted in a variety of ways: Colin Campbell (Nature Conservancy Council), Edward Cross, Graham Easy, Paul Fisher (RSPB), David Henshilwood (NCC) and John Kemp (W & WT).

Yellow-browed Warblers in Norfolk

A. M. Stoddart

The Yellow-browed Warbler has long been known to wander to Western Europe. For example Gatke recorded 80 individuals on Heligoland between 1846 and 1886. The race involved, (*P. i. inornatus*) breeds in northern and central Siberia, extending as far west as the Urals in the northern part of its range, as far east as the Sea of Okhotsh, and wintering in south-east Asia. Its history in Norfolk is less well established although there were seven autumn birds at Cley and one at Yarmouth in the period up to 1961.

Since then, however, recorded numbers have escalated dramatically and the last thirty years have produced a minimum of 343 or 98% of the all-time total. The purpose of this article is to document the occurence of this species in Norfolk and 1989 falling as it does at the end of a decade seems an appropriate point at which to do so. The annual totals of Yellow-browed Warblers in the county over the last thirty years are tabulated below. In each year the number is an absolute minimum as true numbers are hard to assess with total accuracy where there is a continuous presence over a long period at one site and where arrivals and departures may go undetected as a result.

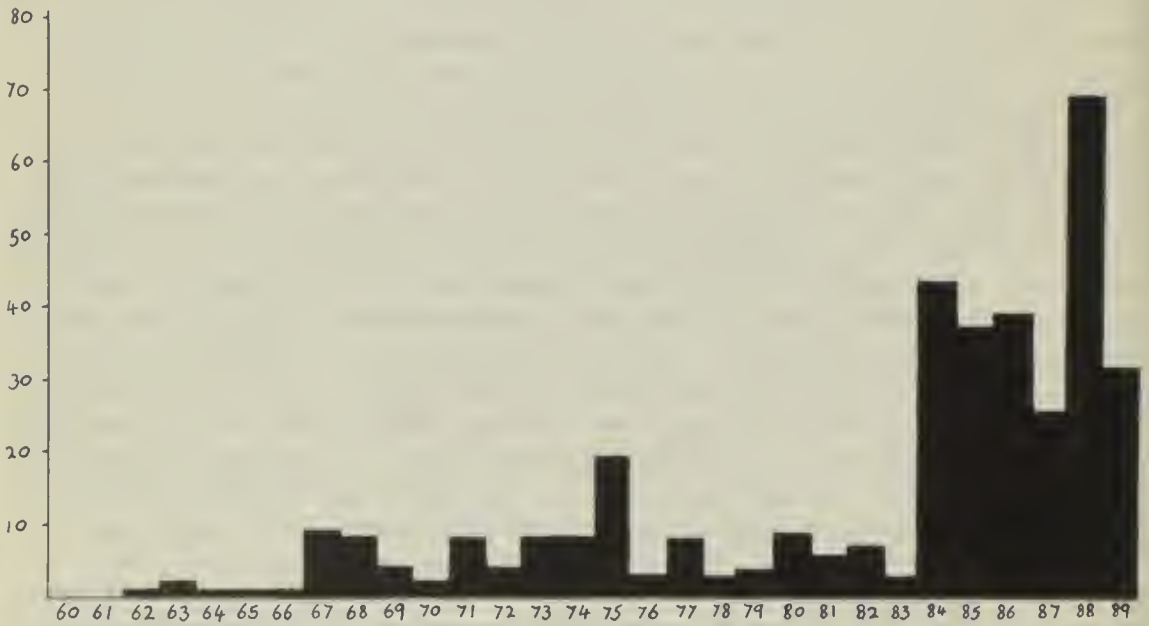
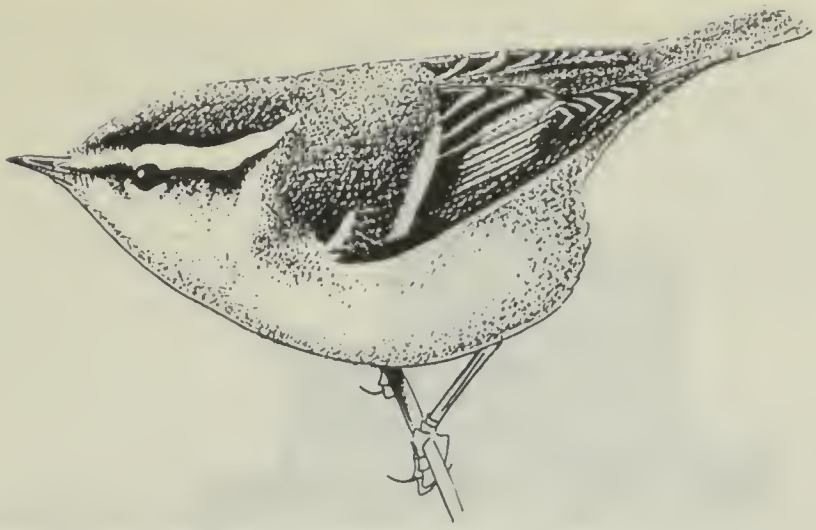


Figure 1. Annual totals of Yellow-browed Warblers in Norfolk 1960-89.



The recent change in status is dramatically illustrated here. Both 1960 and 1961 were typical years for their time with no records but 1961 was to be the last completely blank year. The total of nine in 1967 was extraordinary at the time and numbers did not exceed this for another sixteen years with the exception of 18 in the 'classic' autumn of 1975. The recent upsurge is clearly seen as beginning in 1984 since when numbers have never fallen even to the 1975 level. Not surprisingly, the Norfolk histogram matches very closely the national picture presented in *Rare Birds in Britain and Ireland* (1989)

The influxes of the mid and late 1980's, accounting for 66% of the all-time total, have all been very similar in nature and have produced an occurrence pattern which is matched by no other species. Their arrival is now expected on or soon after 15th September (although the occasional bird elsewhere in south-east England has turned up as early as the 12th) with a scatter of records superimposed upon 'pulses' or waves' of occurrence. A typical example of one of these mass arrivals occurred in early October 1986. On the 4th only 2 birds were present in the county: at Holme and at Holkham Meals. Several hours searching at this latter site from dawn on 5th produced only one, but the prevailing calm anticyclonic conditions led to a strong arrival during the day and by the close of play ten were in Holkham Meals and 7 others had been found elsewhere in the county. This type of arrival has now become quite common with a sudden mass influx followed by a fairly rapid decline in numbers. For example, in the most impressive year to date — 1988 — the influx of at least 21 new birds to Norfolk on 12th October dwindled rapidly and none was present anywhere after the 24th despite further small arrivals during the intervening period. New arrivals are rare after 10th November and almost unknown after 15th and have no correlation with the years providing the largest numbers as illustrated by 1988. The very few late birds which do occur tend to linger for longer as they arrive outside the main westward movement. Thus a bird at Holkham 3rd November 1968 remained until 1st December, one of only three ever to be recorded in this month. Another of these arrived at Walsey Hills on 3rd December 1967 and stayed until 7th January 1968 when hard weather set in and put a premature end to the only attempted wintering on record. Finally a bird remained at Winterton from 1st to 8th December 1989. This individual was noteworthy in that it showed voice and plumage characters typically associated with the race *humei* of south central Asia. The small number of these to have been documented in Britain have all occurred noticeably late in the autumn, in a time-slot more typically occupied by the partly sympatric Pallas's Warbler. The histogram below profiles the presence of Yellow-browed Warblers during the 1980's:

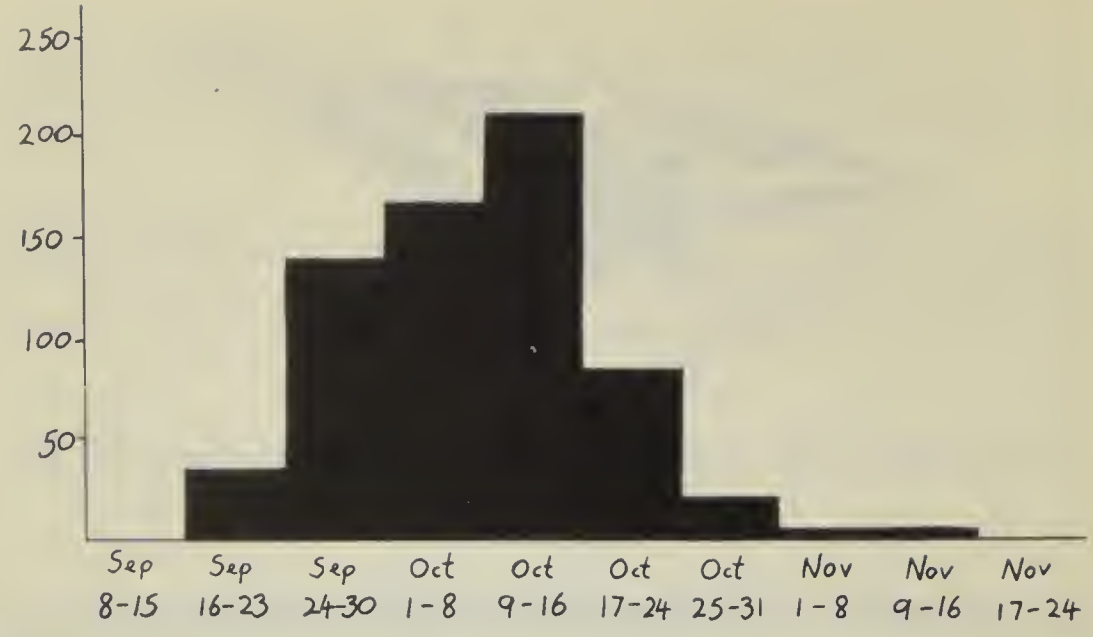


Figure 2. Profile of Yellow-browed Warbler presence in Norfolk during the Autumns of 1980-89 as shown by bird-day totals for each 'week'.

Such a profile is typical of the whole of East Coast England as shown by Baker and Catley (*British Birds* 80:93-109). Their tables, however, attempt to show new arrivals while the table here shows a cumulative presence across the ten autumns and so reflects more the build-up and decline in numbers. For example, an imaginary bird staying from 16th September to 16th November in one of the years would be recorded once for every day of its stay and would count as eight bird-days in each histogram column. Norfolk's profile fits neatly into the national picture showing a pattern intermediate between the far north-east of Scotland where a much greater proportion of Yellow-browed Warblers occurs in September and south-west England where September arrivals are few, the peak occurs in the second and third weeks of October and a greater proportion occur later than this. This doubtless reflects both onward filtration of birds through the country as well as a shifting centre of gravity of new arrivals from north-east to south-west as the autumn progresses.

This rapid onward movement through Norfolk and through Britain gives this species' arrivals an almost irruptive quality. Certainly their single-species arrivals more closely resemble, in some respects, those of say Waxwing than other small Palearctic passerines. All this is evidence of a continuing strong migratory urge. Newly-arrived Yellow-broweds are usually highly active and vocal and many, particularly at less suitable sites, may move on very quickly indeed. This implies that perhaps the numbers involved are being under-recorded, not only at such sites where short-stayers may get missed altogether, but also at prime sites — particularly Holkham Meals — where a sustained high number over several days probably masks departures and new arrivals. Each year bears witness to the apparent amazing ability these birds have for finding these optimum habitats with Holkham Meals and its sallows and tit flocks always taking the lion's share, whereas other traditionally productive migrant spots such as the suaeda of Blakeney Point always fare particularly badly, this site having produced only 4% of all Norfolk's Yellow-broweds. This must suggest that either a degree of 'coasting' goes on after an initial landfall or that birds hitting the coast in a random scatter rapidly move inland if no good coastal cover is encountered. Once past the coastal strip such birds would become near-impossible to locate

as evidenced by a total of only four inland records ever.

It is perplexing to speculate on the factors which, in the space of thirty years, have turned Yellow-browed Warbler from a longed-for vagrant into an anticipated sub-rarity. To a great extent we observe but we cannot explain. Observer coverage clearly plays some part and in the early years they must have been greatly under-recorded in Norfolk as they were in the rest of Britain compared with the steady numbers reaching Heligoland. Even as recently as the period 1958 to 1967 discussed by Sharrock (1974) Norfolk only recorded 15 out of the 275 known to have reached Britain. However, if observer numbers and expertise were the only factors affecting recorded numbers then a steady and even increase might be expected and not the dramatic explosion of sightings which took place to a limited extent in 1967 and 1975 and then more fully in 1984 onwards.

Weather patterns must have some influence too. It has now been well demonstrated that the persistence of large anticyclones over the Siberian breeding range in early autumn produces a gentle easterly airflow conducive to westwards drifting of Yellow-browed Warblers on post-juvenile dispersal. Penetration then ensues into Europe and birds have traditionally reached Norfolk in falls of Continental migrants, for example Redstarts and Sylvia Warblers in September or Thrushes and Goldcrests in October occasionally alongside Siberian counterparts, as in 1975. The influxes of the 1980s have fitted less easily into this pattern and waves of birds now arrive on any weather pattern, unless it is totally unsuitable. Anticyclones centred over Britain, the southern North Sea or the near-Continent with their resultant calm settled conditions have proved to be especially suitable for birds to jump the North Sea and arrivals on north-westerlies no longer raise eyebrows.

Weather patterns in Norfolk in late September and October, however, merely facilitate the final stages of a process which commenced several weeks earlier and thousands of kilometres away. More fundamental factors must be at work to explain recent events, perhaps linked to high population levels or range expansion. The answer must be found at the species level for arrivals of Yellow-browed Warblers show little correlation with any other species and rarely bring other Siberian birds with them. It is perhaps significant that the only species to share a similar history is one of Yellow-browed's closest relatives: Pallas's Warbler. Their breeding ranges do not wholly coincide, Pallas's arrive consistently later and their peak years do not coincide either, but they do have a history of gross rarity coupled with a recently established new plateau of occurrence and a remarkable 'big' year (1982 in the case of this species). Maybe we are entering, therefore, a new era of activity from this complex and dynamic genus. Data concerning ranges and numbers will not be readily forthcoming from such a vast and birdwatcher-less area as Siberia so we will have few clues about Yellow-browed Warbler's future status here unlike the more fully documented westward expansion of Greenish Warbler.

One can only guess whether these Asian waifs will continue to visit Norfolk in such numbers. I, for one, will be eagerly anticipating each September 15th and straining for their familiar calls from amongst the sallows and sycamores.

Publication of this feature has been subsidised by a donation from Mr. Christopher Cadbury

Yellow-browed Warbler showing characters of the race *humei*

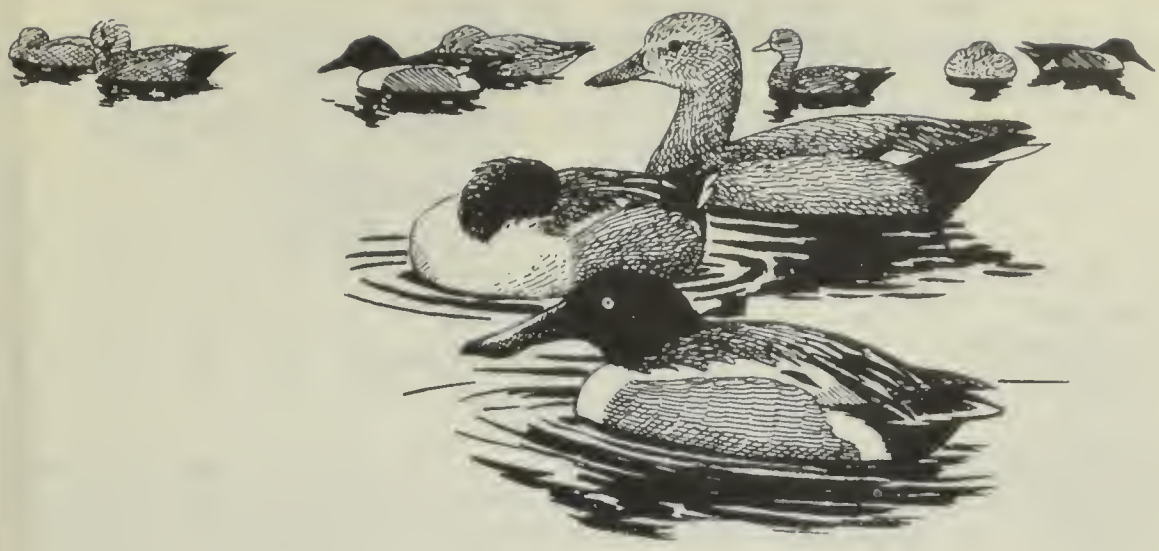
A. M. Stoddart

Between 1st and 8th December 1989 Peter Cawley observed a Yellow-browed Warbler in Winterton village. In company with P. Heath and A. Lewis I visited the locality on the 3rd. The bird was soon located in a small stand of oaks where it fed very actively with much hovering and 'parachuting' through the foliage. After several unsatisfactory views it started calling and I was very surprised to hear what was apparently the typical call of the south-western race *humei* — a disyllabic note with the accent on the first syllable and falling in tone on the second, sometimes slurred into more of a monosyllable. It can perhaps best be transcribed as swee-oo, lower in tone than *inornatus* and with a slight harsh or rasping quality reminiscent of House Sparrow and therefore totally unlike the familiar *inornatus* call.

Close attention to the bird's plumage showed that the plumage was consistent with *humei*. Upperparts were a dull olive with a subtle grey tone, looking quite pale in strong light and similar to a pale *abietinus* Chiffchaff. The buffy-white supercilia did not bridge the base of the bill and they were ill-defined with no darkening at the crown-sides and a rather diffuse eye-stripe particularly on the lores. Ear-covers appeared almost unmarked. Underparts were again somewhat Chiffchaff-like with a dingy greyish-white ground colour with grey diffuse streaking across the breast and buffy flanks. Median covert wing-bar was buffy-white and short and thin, but the greater covert-bar was typically bright and prominent. The tertial fringes were white, but rather narrow and the white primary tips were small but intact. Bill looked thin and dark on all but the closest views when at least the basal third of the lower mandible was seen to be flesh-coloured. Legs looked consistently dark and Chiffchaff-like.

Although usually described as an eastern race, *humei* actually has a south-western distribution, occupying the great mountain ranges of south central Asia and wintering in the Indian sub-continent. Racial diagnosis always brings the danger of 'wishful labelling' as distinctions tend to be clinal in nature. For example, birds resembling *humei* have been collected from areas outside their supposed range. There is also a third race *mandellii* to consider which, although unlikely to reach Europe, shares many *humei*-type characters and can be regarded as intermediate between *humei* and *inornatus*. It can be said, however, that very small numbers of Yellow-browed Warblers showing *humei*-type characters do reach Britain. These birds possess a consistently dull appearance, dark legs and — most importantly — a distinct and unvarying call which readily sets them apart in the field. Their appearance and call are therefore clearly at variance with typical examples of the more northerly and easterly Siberian *inornatus* and their origins are presumably different too. Their true national status is somewhat clouded but a pattern of late autumn occurrences has emerged, not surprising as *humei* is at least partly sympatric with other now expected late autumn vagrants such as the increasingly obvious Pallas's Warbler.

The only previous reference to a bird showing *humei* characters in Norfolk concerns a bird at Wells from 19th to 27th October 1974.



1988/89 Norfolk Wildfowl Counts

National wildfowl counts are organised by the Wildfowl and Wetlands Trust under contract to the Nature Conservancy Council. Swans, geese and ducks are covered, together with certain additional wetland species, at as many wetlands (coastal and inland) as possible from September to March. The figures include that section of the Ouse Washes extending from Welney to Welmore.

	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Sites Counted	29	29	30	29	29	28	25
Little Grebe	26	38	73	37	50	69	60
Great Crested Grebe	124	164	92	82	104	95	96
Cormorant	183	686	581	686	740	685	321
Mute Swan	246	194	446	375	448	456	277
Bewick's Swan	7	6	1442	2200	3902	2543	65
Whooper Swan	3	31	291	582	524	552	538
White-Fronted Goose	0	0	30	302	407	673	72
Greylag Goose	1717	2112	2212	1713	1564	1869	1323
Canada Goose	1017	915	1152	1169	934	755	342
Brent Goose	16	2377	8510	9913	11174	8752	5510
Egyptian Goose	66	75	77	36	26	46	17
Shelduck	946	1792	1156	1085	914	2588	2083
Wigeon	3078	9677	22996	24263	25721	17673	13319
Gadwall	721	481	362	510	460	415	291
Teal	3170	3537	3444	3863	5493	2488	2992
Mallard	5186	5479	5533	6174	6499	4930	1918
Pintail	517	1044	1208	618	748	1534	263
Shoveler	285	257	340	442	483	368	505
Pochard	168	383	965	1561	1340	1860	1309
Tufted Duck	412	636	764	567	944	736	888
Scaup	3	0	1	0	0	15	0
Eider	3	7	12	142	61	93	204
Long-Tailed Duck	0	0	32	22	23	27	37
Goldeneye	0	61	132	115	174	210	171
Red-breasted Merganser	4	74	118	70	71	43	85
Coot	1248	1208	1480	1402	1413	1413	1066

Birds of Estuaries Enquiry, 1989 Complete Wash Counts
(organised by BTO Estuaries programme staff)

	15 JAN	12 FEB	12 MAR	9 APR	7 MAY	23 JUL	20 AUG	17 SEP	15 OCT	18 NOV	17 DEC
Little Grebe	8	13	11	6	—	3	—	9	23	55	24
Great Crested Grebe	37	24	17	15	25	33	65	35	96	8	9
Cormorant	235	175	206	100	51	68	213	160	201	157	108
Mute Swan	20	20	24	30	46	16	5	21	6	21	11
Bewick's Swan	12	28	1	—	—	—	—	—	—	9	23
Pink-footed Goose	9382	4246	820	1	—	1	1	1	1204	8505	8500
Brent Goose	24396	22196	14240	14078	11496	9	4	22	5192	13887	14379
Shelduck	15613	14147	5734	5010	2231	4809	2649	2026	5306	19091	8977
Wigeon	1331	740	231	4	—	—	128	643	674	1910	1130
Gadwall	59	60	49	23	7	—	1	12	—	40	51
Teal	362	261	131	58	5	24	879	633	218	838	967
Mallard	2975	2665	643	454	290	149	414	1335	1864	3068	2161
Pintail	6541	3959	93	16	2	—	66	559	146	2053	1053
Pochard	46	77	22	—	—	2	2	3	29	17	24
Tufted Duck	79	64	23	48	34	32	13	21	19	41	38
Scaup	4	12	3	—	—	—	1	—	—	—	1
Eider	276	148	107	98	280	330	135	88	36	51	68
Long-tailed Duck	127	24	63	40	3	—	—	—	—	—	—
Common Scoter	80	372	510	33	541	1	7	—	—	—	225
Goldeneye	111	105	86	41	—	—	1	—	28	47	92
Red-b Merganser	119	49	142	108	16	—	—	5	42	28	63
Hen Harrier	7	7	5	2	—	—	—	2	3	8	7
Merlin	3	7	5	—	2	—	—	1	4	1	3
Oystercatcher	46912	37090	25235	17175	8878	11668	36719	44947	32920	30628	17183
Avocet	1	1	46	53	64	6	117	32	1	5	1
Ringed Plover	97	135	239	265	595	515	2409	475	374	142	49
Golden Plover	3568	2673	1023	721	40	1014	2816	1335	1621	1048	1057
Grey Plover	7322	5115	9054	8441	10804	4296	9493	8047	7304	4712	2968
Lapwing	4821	4943	129	95	133	502	917	1556	1306	4303	3472
Knot	72541	66041	49374	28922	10818	11030	39324	76697	157594	82503	54305
Sanderling	411	255	435	467	643	3148	786	1277	49	248	110
Purple Sandpiper	22	20	11	12	—	—	1	—	—	10	—
Dunlin	45610	51061	48720	58248	50241	44531	24362	29995	47732	20954	24172
Ruff	4	1	—	7	24	22	33	6	—	—	—
Snipe	9	47	34	22	12	34	66	32	21	31	15
Black-tailed Godwit	—	90	26	290	18	436	448	292	840	664	91
Bar-tailed Godwit	5682	5604	1726	1114	1209	7083	6966	2088	6052	1104	4102
Whimbrel	—	—	45	—	192	336	310	30	51	1	—
Curlew	3080	3796	3254	3701	1173	7334	11663	7875	5973	2664	1442
Spotted Redshank	—	—	3	2	13	2	16	70	28	1	—
Redshank	4003	4069	4619	5218	1246	4093	8043	9641	5070	2271	2332
Greenshank	—	—	—	2	44	272	137	132	29	4	1
Common Sandpiper	—	—	—	—	18	59	67	20	—	—	—
Turnstone	645	666	1282	1643	1200	859	822	874	786	553	456
Short-eared Owl	12	18	18	32	14	2	—	6	18	5	2
Twite	1761	2112	989	329	—	—	—	12	737	2854	2003
Snow Bunting	261	131	—	—	—	—	—	—	—	21	47

Birds of Estuaries Enquiry, 1989

North Norfolk Coast

The monthly counts Jan to March cover Titchwell, Brancaster/Scolt, Wells harbour and Warham/Stiffkey. The Oct/Nov figures exclude Holme, Overy Harbour, Holkham Bay and Salthouse, but are otherwise complete. The Dec count is complete Holme to Salthouse excluding only Holkham Bay.

	JAN	*FEB*	*MAR*	*OCT*	*NOV*	*DEC*
Great crested Grebe	—	—	8	17	5	6
Cormorant	23	19	10	107	38	68
Mallard	660	238	41	691	1007	1661
Teal	680	285	42	1482	2244	7290
Wigeon	—	36	2	6865	5327	6078
Pintail	—	3	—	301	1090	561
Shoveler	—	—	—	33	63	64
Goldeneye	60	56	32	22	54	105
Eider	101	191	195	51	41	30
Red-breasted Merganser	18	14	12	30	29	51
Shelduck	603	360	256	529	1350	1861
Greylag Goose	—	—	—	153	352	391
White-fronted Goose	—	—	—	—	19	224
Brent Goose	4162	5197	809	4141	8186	5973
Canada Goose	—	—	—	99	47	93
Mute Swan	22	1	3	46	28	55
Oystercatcher	3526	3169	2371	5132	5302	3909
Lapwing	—	355	—	517	2130	6023
Ringed Plover	78	131	142	313	154	158
Grey Plover	320	315	117	601	664	548
Golden Plover	45	—	—	443	976	224
Turnstone	245	252	141	344	291	234
Common Snipe	—	—	—	81	39	42
Bar-tailed Godwit	236	423	171	442	1598	519
Curlew	422	502	573	691	672	408
Redshank	313	366	379	776	532	685
Spotted Redshank	—	—	—	4	1	—
Greenshank	—	—	—	5	—	2
Knot	2980	1075	—	1124	6523	2235
Dunlin	1226	1503	501	2715	2123	2628
Sanderling	37	60	12	114	90	157
Ruff	—	—	—	17	29	1

Birds of Estuaries Enquiry, 1989

Breydon/Berney Marshes Monthly Maxima

	JAN	FEB	MAR	APR	MAY	JUL	AUG	SEP	OCT	NOV	DEC
Great Crested Grebe	4	4	7	9	30	25	42	39	18	21	33
Cormorant	71	85	69	51	34	61	131	180	121	97	95
Spoonbill	—	—	—	1	1	1	1	1	—	—	1
Mute Swan	119	110	79	61	71	43	39	41	89	180	197
Bewick's Swan	196	698	402	—	—	—	—	—	16	128	189
Bean Goose	2	46	—	—	—	—	—	—	—	—	—
Greylag Goose	73	72	65	46	37	55	77	83	84	86	128
White-fronted Goose	16	270	—	—	—	—	—	—	—	12	21
Brent Goose	1	5	3	—	—	—	—	—	12	7	10
Barnacle Goose	—	11	—	2	7	—	—	—	—	—	—
Canada Goose	29	26	8	4	4	25	6	11	9	10	26
Shelduck	174	203	241	301	346	308	43	123	225	201	198
Garganey	—	—	—	1	5	—	—	—	—	—	—
Wigeon	1000	1500	700	49	3	—	2	46	72	600	400
Pintail	163	143	21	8	2	—	—	11	36	70	105
Teal	202	120	271	136	7	6	42	34	52	200	101
Mallard	173	261	52	30	41	15	28	24	87	115	218
Gadwall	52	54	33	32	15	—	2	3	4	32	37
Shoveler	60	66	120	75	22	25	4	7	14	22	17
Tufted Duck	2	3	3	5	6	1	9	8	1	1	5
Pochard	10	10	9	6	3	1	—	6	11	1	4
Goldeneye	7	7	—	—	—	—	—	—	1	2	12
Curlew	424	343	321	254	80	153	410	452	437	530	524
Bar-tailed Godwit	—	—	1	11	59	11	12	13	7	8	7
Black-tailed Godwit	—	1	2	18	20	17	2	1	—	1	1
Knot	262	237	69	22	20	15	30	37	23	51	84
Sanderling	51	41	38	10	7	1	1	1	4	46	41
Turnstone	21	19	17	29	18	7	26	12	15	23	20
Snipe	150	89	40	20	2	4	16	30	33	200	117
Dunlin	1200	1100	950	870	1100	312	1200	1050	900	1100	1400
Ruff	21	26	28	13	50	13	30	22	10	18	28
Redshank	420	570	600	400	37	550	730	700	430	580	800
Spotted Redshank	—	2	1	5	3	6	5	4	2	1	2
Greenshank	—	—	—	3	15	12	45	12	3	—	—
Green Sandpiper	1	—	1	1	—	4	5	2	2	2	1
Common Sandpiper	—	1	—	5	10	7	20	4	3	1	—
Wood Sandpiper	—	—	—	—	6	1	—	1	—	—	—
Ringed Plover	91	74	37	56	262	20	261	259	188	88	77
Grey Plover	46	49	37	28	28	2	5	20	18	17	14
Golden Plover	45	80	12	36	2	1	240	600	450	800	900
Lapwing	5000	6000	1000	70	36	77	106	300	570	500	5500
Avocet	—	1	2	5	4	6	8	3	2	1	—
Whimbrel	—	—	—	42	18	11	6	1	—	—	—
Curlew Sandpiper	—	—	—	1	1	1	3	1	—	—	—
Little Stint	—	—	—	1	3	—	4	1	1	—	—
Temminck's Stint	—	—	—	—	6	—	—	—	—	—	
Oystercatcher	101	160	237	218	102	121	64	59	29	55	63
L. Ringed Plover	—	—	—	2	1	2	1	—	—	—	—

Over 26,000 Pink-footed Geese wintered in north-west Norfolk; peak numbers were attained during January. Nesting Shelduck continue spreading inland in the Brecks and Fens.

Following two mild winters Kingfishers have become widespread. Booming Bitterns were restricted to three Broadland sites, but eight were recorded along the North coast including one at a new locality.

This River Warbler remained two weeks at Boughton Fen. Five Pallas's Warblers were recorded including this gem on Blakeney Point. Yarmouth cemeteries provided a refuge for this Little Bunting.

Northern Golden Plover (*left*) and Norfolk's first Pacific Golden Plover (*right*) which visited Thornham and Holme. Dotterel were a May-time feature including this fine example at Blakeney Point.

Pacific Golden Plover — New to Norfolk

A. M. Stoddart

A summer-plumaged American Golden Plover was reported from Holme late on 20th July 1989. It was still there the following morning until disturbed by a Marsh Harrier so that on my arrival in the early afternoon it was nowhere to be seen. It was eventually relocated at great range in Thornham harbour among Curlew, Whimbrel, Redshank, and Grey Plover. Strategic wading produced further views but these were mainly distant or in flight and not sufficient to disillusion me of the bird's supposed identity. Eventually it settled into a large creek near Thornham village and the closer, though brief, views afforded here came as something of a surprise for it showed no elongated primary extension, strikingly long legs, extremely bright and extensive gold mantle spangling, contrasting with white-spangled wing-coverts and a white flank line. This was all completely wrong for American Golden Plover — surely it had to be a Pacific Golden Plover? Views reverted to being poor for the remainder of the day, but I saw it closer the following morning on Holme wader scrapes. Any remaining uncertainties were quickly eliminated.

I was able to add further details to my notes: It was a very small, bright 'Lesser' Golden Plover, looking tiny and fragile even when standing next to a Green Sandpiper. The body was small (with no elongated rear-end of strongly projecting primaries), slim and flat-bellied when alert, but more rounded and dumpy when relaxed. The head, bill and eye were proportionally all quite large-looking. The legs were very long, the exact length of exposed tibia varying according to posture, but looking grotesquely long whenever the bird was alert or running. Close views showed that the tip of the largest tertial fell level with the tail-tip, with a short primary projection beyond, only three primary tips being visible. The bird looked tiny in flight, with narrow wings and a slim torpedo-shaped body.

It was an adult, presumably a male, in virtually full summer plumage with black underparts. The only trace of moult was some buff flecking on the lores and in the malar region. The forehead was extensively white, practically reaching the base of the culmen. This continued into a broad white supercilium and ear-covert surround and led into a moderate-sized breast-side patch and a white flank line of uniform width separating the black underparts from the folded wing. This flank line was identical on each side and inlaid with a few scattered black chevrons. The undertail-coverts were patched black-and-white. The lateral and longest undertail-coverts were white with black running down the central feathers for two-thirds of their length. Sparse white flecking was present around the vent and there was single gold feather on each flank. The upperparts were very heavily spangled with very large bright notches and tips to each feather, mainly bright golden on the mantle and scapulars, but contrastingly white on the wing-coverts. There was less spangling on the crown, nape and hindneck, making these areas slightly darker. The tertials, some of which were quite faded and worn, were blackish-brown barred whitish-buff and the primaries were dark brown. Legs were a dull greenish-grey. In flight the dusky underwings and axillaries were most striking. The upperparts in flight were uniform golden with a thin white wing-bar.

The bird remained very flighty and mobile in the Holme/Thornham harbour area for the remainder of the 22nd, but most observers who arrived that day managed to see it. It then went missing, presumed to have gone, but was finally reported briefly at Holme on 26th July. Pacific and American Golden Plovers were until recently treated as conspecific under the name of Lesser Golden Plover. Pacific Golden Plover breeds in northern Siberia and extends across the Bering Straits into western Alaska wintering around the shores of the Indian Ocean, in south-east Asia, Australasia and the Central and western Pacific Islands and a few even reach California. Such a bird would seem a prime candidate for vagrancy, but they are surprisingly rare in Britain with only six accepted previous occurrences: in Lincolnshire, Humberside (2), Lothian (2) and Shetland. The expected East Coast bias to the records so far hopefully means that Norfolk is well-placed to receive another of these supremely attractive Asian plovers. On the evidence so far, July would seem to be as likely a month as any for the next one . . .

The Barn Owls of North Norfolk

Paul. N. Johnson
Conservation Officer, The Hawk Trust

In 1988, following the results of its national Barn Owl survey, which showed that many areas throughout the United Kingdom had suffered a major decline over the past fifty years, The Hawk Trust established an intensive conservation programme in north Norfolk, intended to monitor the distribution of Barn Owls in different environments. The current study area extends from King's Lynn in the south-west, across to Aylsham in the south-east, with the A47 trunk road defining the southern boundary and north to the coast as far east as Cromer.

As conservation officer, I am currently surveying the natural distribution and density of Barn Owls within the study area, mapping the habitats supporting breeding and non-breeding pairs and promoting and carrying-out practical conservation work to secure and expand the existing population on farms and estates. The Barn Owls on a sample of estates are being monitored to study the year-round behaviour and interactions with other raptors and agricultural and game-rearing land management. With the co-operation of the National Trust, the National Centre for Owl Conservation was established in 1988 at Blickling Hall, near Aylsham, to further promote the conservation of all birds of prey including owls.

In the field, I quickly noted the broad variety of habitats, ranging from intensive arable in the north-west to coastal marsh and the historic parklands in the north-east, all supporting Barn Owl populations. When investigating the density of breeding sites throughout the study area, I soon realised the importance of large tree cavities which the birds select as breeding sites. In the north-west of the study area, Ash and Beech trees offer suitable cavities and are often located along minor roads. In the North East, the majestic stands of parkland Oaks provide abundant cavities. To date, over 80% of confirmed breeding sites are in tree cavities. These are found in trees in a state of some decay, but they are particularly prone to storms and clearance operations. Eight known breeding sites were lost in the gales early in 1990, though fortunately with the co-operation of the land-owners two were re-erected and three have been trimmed and nesting boxes mounted on the remains of each stump. Buildings may be selected as nesting sites if straw bales are still stored in them during the summer, the birds nesting amongst the bales. However several instances of disturbance have occured to incubating Barn Owls, when bales have been moved in the early summer. If nesting-boxes have been erected in quiet, dark, corners,

of old barns some birds have quickly utilised them, thus avoiding the risks of disturbance and predation throughout the year, as Barn Owls often roost in the same location. By providing nesting-boxes in trees if natural cavities are not readily available as well as in barns it will be possible to evaluate their selection over the next two breeding seasons. As the natural trend is to nest in trees, the population may select for tree-mounted boxes. Unfortunately the increasing trend to convert old agricultural buildings into holiday homes is removing the winter roost sites for many birds and possibly forcing the population into tree sites.

Mortality is an important factor in any population and is being monitored through historic records, current reports and taxidermists' diaries. In the case of Barn Owls, road traffic mortality is especially widespread and worrying. Rough grassland verges with their associated small mammal populations attract owls to the close proximity of fast moving vehicles. Most deaths recorded in the study area have been reported along the more improved sections of Norfolk's roads the A47 and A149. Interestingly birds are frequently reported drowned in water tanks, old baths and in wells, easily avoidable if the tanks are netted over or floating plastic mats are placed in the water troughs.

Indigo Bunting: An Addition to the County List

J. R. Williamson

A male Indigo Bunting was present in Wells Woods from 21st to 30th October 1988. The bird could be very skulking in brambles, but over the period of its stay it provided many hundreds of birders with excellent views of what was for the majority their first encounter with this completely unexpected vagrant from the New World. In North America it breeds in woodland clearings and abandoned farms, wintering in the West Indies and Mexico to Panama.

The amount of blue in the plumage indicated the bird to be a male. However, the debate over its age continues, leaning towards a first-winter in advanced plumage. The fact that the species has a complex and variable moult confused matters further, but this individual was apparently moulting from a brown to a blue plumage. General size was slightly larger than Redpoll, larger-billed but structurally similar appearing large-headed, short-necked and stocky, the occasionally erected crown feathers emphasised this appearance. The head, nape and upper mantle were greyish-brown interspersed blue, the latter having an iridescent sheen. Lower mantle, rump and uppertail coverts were iridescent blue and likened to 'kingfisher blue'. Tail was broad, fairly short and slightly notched, the feathers being bluish-black with bright blue outer fringes except the central pair which were apparently darker. In flight the rump and tail appeared bright blue with a darker central bar. Primary coverts and alula were fresh and crisp, bluish-black edged brighter blue. Median and greater coverts were brownish with a single wholly blue greater covert on each wing, appearing new and contrasting with the worn looking brown greater coverts. Primaries and secondaries were bluish-black, edged bright blue, and showing no signs of abrasion. Tertials were dark blue, fringed buff-brown and heavily worn. Underparts were bright blue, spotted grey-brown. At times the breast in particular appeared wholly blue. On other occasions the flanks, notably towards the vent, appeared almost wholly grey-brown. Indeed the whole plumage, particularly the underparts changed quite considerably with the intensity of light. Bill was horn-coloured, more yellow towards the base and likened in proportion to that of a Chaf-

finch. Eye was black, quite small in comparison with head size. Legs were dark, probably black. No call was heard.

The possibility of the bird being an escape cannot be dismissed although research has revealed no such indication. Ageing as a first-year greatly enhances the probability of genuine vagrancy. Pyle *et al* (*Identification Guide to North American Passerines* 1987) states that first-winter and first-summer male Indigo Buntings have brown inner primaries, primary coverts and alula. The Wells example clearly did not fit this description, all these feathers being bluish-black, fringed brighter blue and indicating adult plumage. But the variability and complexity of moult in this species and the presence of a single blue greater covert on each wing (amongst predominantly grey-brown feathers) would tend to indicate the bird was in advanced first-winter plumage. The debate will doubtless continue.

Allied to the case for genuine vagrancy are the coincidental arrivals of Cliff Swallow at South Gare Cleveland on 23rd October, Northern Waterthrush at Gibraltar Point Lincs 22nd/23rd October and Northern Mockingbird across the North Sea in Holland. Weather systems at the time indicated transatlantic crossing on strong westerlies was possible. Original landfall may of course have been to the north, the bird subsequently filtering down the East Coast. Such behaviour would be normal for birds moving down the eastern seaboard of North America.

Previous British records of Indigo Bunting all fall between August and October: Cape Clear Island an immature 9th to 20th October 1985 (accepted into Category A); Fair Isle 3rd-7th August 1964 and Walton-on-the-Naze 8th September 1973 (both the latter in Category D). Remarkably, subsequent British and Western Palearctic records could conceivably relate to birds from a multiple arrival returning north in spring having over-wintered in southern climes: Amsterdam Holland male 14th to 20th March 1989; Utsjoki Finland sex unknown 13th to 15th May 1989; Yli-Tornio Finland sex unknown May 1989 and Flamborough Head Humberside male 23rd May 1989.

Controversy over ageing and escape or vagrant issues may never be resolved. But all those fortunate enough to see the bird could not fail to be impressed by its remarkable iridescent plumage. We can at least be confident we enjoyed it, even if we shall never be sure of its origins. Thanks are due to Michael Saunt for comparison of field notes (and for finding the bird) and to Richard Millington for comments on ageing and moult; both invaluable in the preparation of this article.

This record remains subject to acceptance by British Ornithologists' Union Records Committee.

Woodlarks in Breckland

C. G. R. Bowden (RSPB)

In Norfolk and other parts of lowland Britain, large-scale planting of conifers occurred early this century on areas of heathland that would have supported species such as Stone Curlew, Nightjar, Red-backed Shrike and Woodlark. Although such species initially disappeared from the afforested areas, many, including Woodlarks have recolonised plantations after felling. The birds breed on these areas for a limited period until the young crop is well established. Thetford Forest is currently the largest area of lowland conifer plantation in Britain and covers 133,000 ha. The majority of this area is in Norfolk in a block delineated by Thetford, Brandon, Methwold, Mundford, East Wretham and Croxton. In addition there are outlying blocks near Swaffham, Didlington, Great Hockham and East Harling.

Other traditionally heathland species that occur on these young plantations of Thetford Forest include Nightjar, Whinchat, Redstart, Curlew and very large numbers of Tree Pipit. In addition, important populations of Goshawk, Long-eared Owl and Crossbill occupy the same areas at later stages in the rotation as well as the introduced Golden Pheasant.

Woodlark Population changes

Plantations of young conifers now hold over 50% of the British Woodlark population which was estimated to be 210-230 pairs in 1983. Although numbers have fluctuated widely this century, since the 1950s the trend has been downward to the lowest levels recorded. As population size has declined, so has the bird's geographical range, which formerly included most of Wales and extended as far north as southern Scotland. It is now primarily confined to five counties in South-east England. The reasons for the decline relate at least in part to the loss and fragmentation of heathland to agriculture and development, and due to habitat changes such as the invasion by self-sown pines from adjacent plantations, and increasing sward length of the grassy heaths as a result of reduced grazing pressure from declining numbers of rabbits due to myxomatosis.

On Norfolk Breckland heaths there have been no breeding records since 1983 when the last pair bred on the Stanford Training Area, following a steady decline there over the previous ten years. Numbers occuring on the heaths have been poorly recorded in the past, so how many occurred on these areas earlier this century is unclear.

Habitat requirements

Woodlarks require areas of short vegetation or bare ground (normally on light soils) for foraging, and taller vegetation for nest sites as well as something that can be used as a song post. Detailed work on Thetford Forest has shown that the areas within the territory used for feeding are those with more bare ground, short grass and moss. The proportion of these features is therefore likely to be critical. The diet comprises spiders, weevils, Lepidoptera larvae and a wide range of other small invertebrates in the breeding season, and these are gleaned from low vegetation and the soil surface. They eat mainly seeds in winter.

Woodlarks and conifer plantations

Over 20% of Breckland on the Norfolk/Suffolk border was planted with conifers after World War I, and now covers over 200 km^2. The combined effect of the uneven spread of original planting and the 50 to 60 year optimal felling period for pines, means that, according to current harvesting predictions, over 50% of the total area will have been

felled between 1980 and 2000. The increased amount of planting in the 1980s is shown in Figure 1.

This increase in the amount of new plantations has resulted in higher Woodlark numbers and these have, in contrast to the heathland population, been well documented (mainly by R. A. Hoblyn) and have increased steadily over the past 20 years (Figure 1).

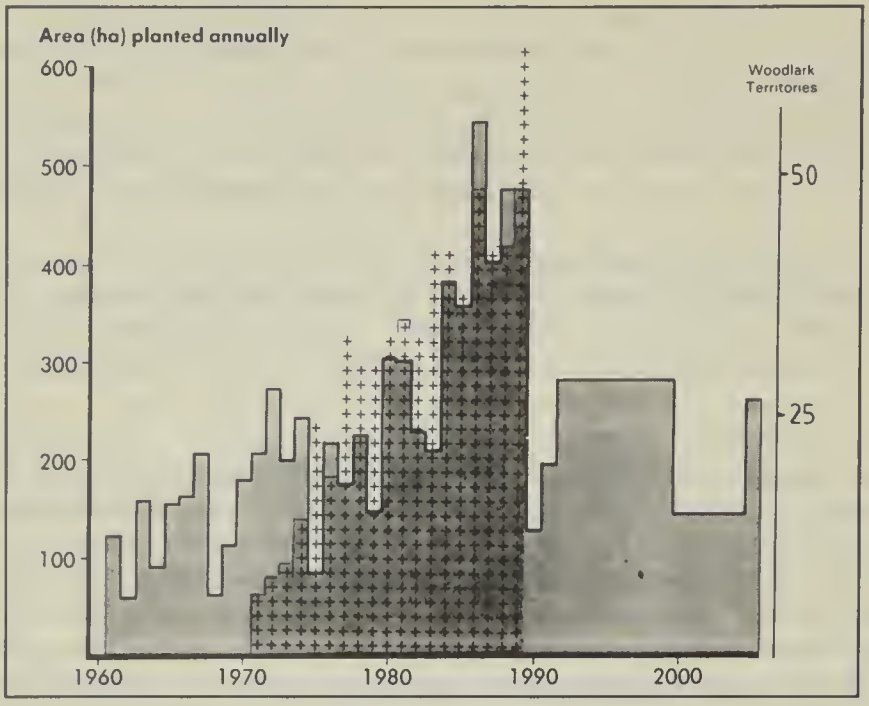


Figure 1: Area planted in each year since 1960, with current projection of future planting to 2005, and Woodlark territories since 1971 on plantations of Thetford Forest.

The increase in the forest woodlark population has largely followed the increasing area that has been planted in more recent years (Figure 1). Annual fluctuations indicate that there are other factors involved; these are likely to include variations in winter survival perhaps caused by weather. However, the wintering grounds of Thetford Forest woodlarks are unknown, the only indication we have is one sighting of a colour-ringed bird at Margate, Kent in early March, which has subsequently been seen back on the forest.

Woodlarks tend to occupy the younger plantations, those planted one and two years previously are most favoured. Once the trees are over three years old, woodlarks usually vacate the area, moving on to areas planted more recently (Figure 2). Exceptionally they have occupied areas for longer where rabbit grazing has been heavy and the density of young pines low. The reason why Woodlarks occupy these age-classes are related to the proportions of bare ground, short grass and other categories of short vegetation that have been found to be the important features of feeding areas.

There are two important features to note from this; the dependence of the Woodlarks on young plantations for a relatively short period of the rotation; and that the current forecasts for markedly reduced felling programmes from the year 2000. Without some action being taken, this will mean a significant decrease in the amount of available habitat at times and a consequent reduction in Woodlark numbers.

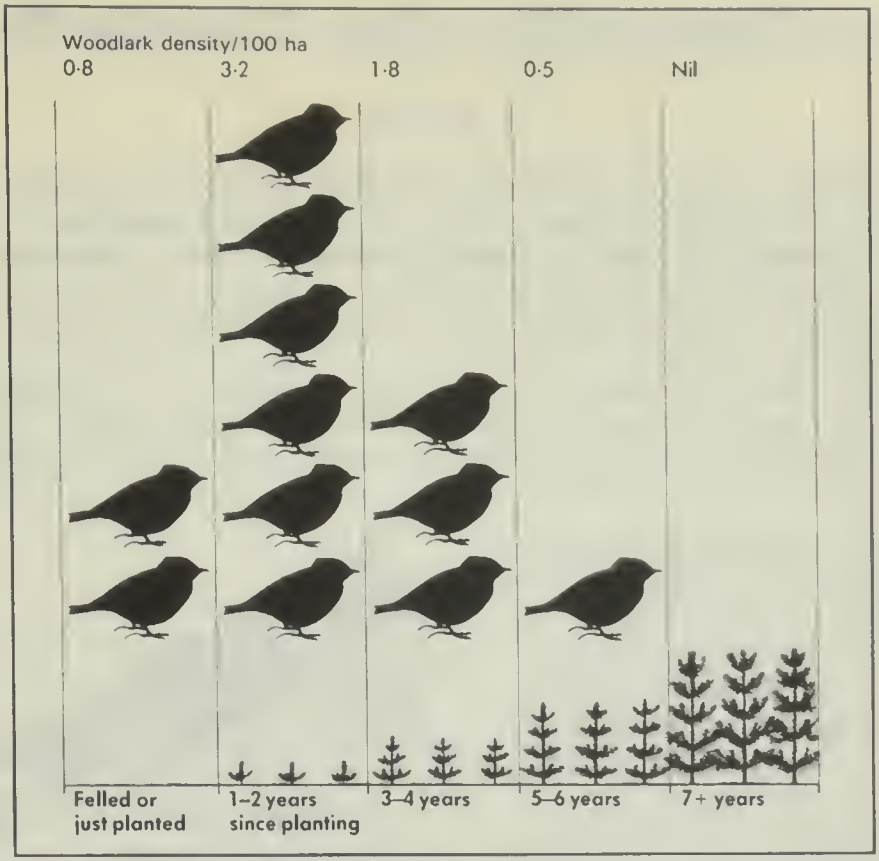


Figure 2: Densities of Woodlarks found in each age-class of plantation in Thetford Forest (reproduced with permission from RSPB *Conservation Review*).

One way to alleviate the problem is to achieve a more equal spread of planting within the forest. Another would be to leave some areas unplanted and managed specifically for Woodlarks. Both would involve some loss of revenue to the Forestry Commission but are currently under consideration, and indeed on the East Suffolk forests where the balance is far less even following the massive wind-blow in 1987, these measures have been agreed to, with Woodlarks in mind. A third option to maintain the population through the 'bottleneck' periods is to maintain the suitability of plantations for one or two extra years by managing the ground vegetation between the young trees. Ground disturbance and herbicide trials are currently in progress in an attempt to achieve this. It is hoped that results from this work will be equally applicable to heathland as well as forestry areas so that this very important population of Woodlarks will continue to thrive in the Brecks.

Acknowledgements: The study is funded by the Forestry Commission with support from RSPB. I thank everyone who has contributed records, but I am particularly grateful to Rhys Green and Ron Hoblyn.

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RSPB Conservation Review is available from RSPB, The Lodge, Sandy, Beds, SG19 2DL.

Yellow-browed Bunting: First for Britain

J. B. Kemp

October 1975 was a vintage month for Siberian vagrants at a time when far fewer observers were actively seeking migrants than nowadays. The wind had veered north-easterly on the 9th as an anticyclone became established over the Baltic. This weather system remained for most of the month and the associated easterly airstream across the whole of central Europe resulted in a most exciting period in the annals of local ornithology.

Holkham woods scored heavily in this period 'providing the best ever mainland rarity watching'. The wave of eastern birds included Dusky Warbler, 2 Radde's Warblers, 2 Pallas's Warblers (they were still major rarities), Black-throated Thrush and the county's first Olive-backed Pipit and Isabelline Shrike.

During the late afternoon of October 19th M. Parker located what he believed at the time to be a Rustic Bunting in a scrubby area near the caravan site. He found D. J. Holman and myself nearby and together we soon re-located what was clearly a very unusual bunting. Fortunately the views over a period of half-an-hour were very good and at times within ten feet. The bird's most striking feature was its bold head pattern showing a white central crown stripe bordered black with yellow on the supercilium between the bill and eye. Rather smaller than a Reed Bunting, it gave a classic bunting *tick* call rather resembling a Robin at a distance. It was very much in the Little/Rustic Bunting mould showing whitish underparts with black breast streaking and sub-moustachial stripe, warm brown ear-coverts with a small white spot and narrow white double wing-bar formed by pale tips to greater coverts and median coverts. The question was identity. Rustic Bunting was eliminated on several points especially a lack of rufous flank streaking, but it was only after examining a selection of skins at the Castle Museum Norwich that we felt confident that our bird was a Yellow-browed Bunting.

The record was accepted by *British Birds Rarities Committee* and published in their *Rare Birds in Great Britain 1975* report in *British Birds* (1976) Vol 69: 358. The delay by the BOURC to accept the record until very recently revolved round several factors including 'loss of paperwork' and 'discrepancies between descriptions'. Fortunately a Fair Isle record of 1980 added enormously to our knowledge of the identification of this species and is I believe partly responsible for the full acceptance of the Holkham bird. Further details of the Norfolk occurrence will appear in *British Birds.* A comprehensive account of the Fair Isle individual (which closely resembled the Holkham bird) may be found in *British Birds* Vol 76: 217-225.

Very little is known about the Yellow-browed Bunting. Apparently only a single nest has been described. Shrub thickets and taiga forest are inhabited. It is almost certainly the most easterly distributed passerine to have occurred in this country. The wintering area is in eastern China.

A Knot Catch to Remember

P. L. Ireland

The Wash Wader Ringing Group celebrated its thirtieth anniversary in 1989. In the early years much of the group's work was driven by the threat of the Wash water storage proposals, but since the mid-1970's action has focused on assessing the importance of the Wash for waders throughout the year. In the last three decades the group has done much to clarify the importance of the area to the vast flocks of waders which occur in the autumn, winter and spring (see 'The Wash — Mecca for Waders' *Norfolk Bird and Mammal Report* 1987). However, there remain many questions to be answered about the waders of the Wash. Knot is one of the species for which the area is especially important. The group were fortunate to make a large catch of Knot at Holme on October 15th. This article tells the story and puts the catch into context.

It was a bright moonlit night when the team rose at 3 a.m. to set nets on the outer spit and to be in a camouflaged hide two hours before the dawn high tide. The early start was well worthwhile when in the first light and silhouetted against the full moon great swirling flocks of Knot began to arrive. As the tide rose, pushing the birds ever closer, and as it became fully light it was apparent this was an exceptionally large flock of Knot. And still more arrived, the newcomers squeezing into the seething mass already on the ground. By high tide there was a carpet of birds, nearly all Knot, stretching from the outer end of the spit to within a few metres of the hide.

This number of birds gave a problem as, in addition to attempting to make a catch, the group had volunteered to do the official count and how does one count such a vast flock? Fortunately several of the group's most experienced wader counters were in the hide, but even they decided it would be difficult to use normal methods to assess a flock of this size. To begin with the odd Oystercatchers dispersed through the flock were used to split the birds into small sections and then an estimate was made of the number of Knot in each section. Adding all the sections together gave a total of between 90,000 and 100,000 birds. Seeing how tightly packed they were with each almost touching its neighbours it was felt this could be a conservative estimate. Hence a second method of counting was attempted. This was to work-out the average number of birds per square metre at high tide and then to multiply this by the area covered by the flock. Estimates of the density of Knot in various parts of the flock were made and these varied from 50 per square metre to over 150. The area completely covered by Knot at high tide was later measured and found to be 170 metres by 10 metres (1700 square metres) so even the lowest density gives an estimate of 85,000 birds being present. That is about a quarter of the Greenland/Canadian breeding population, the population from which the birds would have originated!

One doesn't lightly come up with counts which double previous highest counts for a site, but no one who was in the hide on that occasion is ever likely to forget the sight and size of that flock. One striking feature was that although densely packed the birds were constantly on the move swarming backwards and forwards as small waves moved them on the edge of the flock.

If there were 90,000 Knot at Holme, how many were in the whole Wash? The Birds of Estuaries Enquiry counts show there were a further 45,000 at Gibraltar Point, 5,000 at Snettisham and including a variety of other sites a grand total of 157,000 Knot using the Wash in October 1989. At the time of the November counts the total number of Knot

Publication of this feature has been subsidised by a donation from Mr. Jason Partner

in the Wash had dropped to 82,500 although it seems most of the East coast flock had still been present earlier in the month as 80,000 were counted at Snettisham. The large numbers in October followed by a decline from November onwards is typical as birds which have moulted on the Wash move on.

Returning to the catching attempt on October 15th, the sheer number of Knot present and the need to get an accurate count prevented any attempt to catch until the tide started receeding. As sand became uncovered some birds moved away and this gave a brief opportunity to catch what seemed a minute proportion of the birds that had a few minutes earlier been present. The initial impression on reaching the fired net was that only a few hundred had been caught but the birds were so tightly packed that it soon became apparent that it was a large catch. When all the paperwork had been done and the totals added-up the catch was found to be 1,478 Knot and just 2 Oystercatchers. This total would mean that one in 60 of the Knot estimated to have been present at high tide had been caught; a much higher proportion than anyone felt possible. This evidence reinforces the belief that the estimate of 90,000 was low and the real total may well have been in excess of 100,000.

What did we learn from 1,478 Knot? Taking measurements on a small sample revealed a mean wing length of 171 mm and a mean bill length of 33.2 mm which fall in the range expected for the Greenland/Canadian breeding population and confirming the origin of the birds. The mean weight was 134 gm which is the normal for Knot in the early autumn before they gain weight to take them through the winter. The state of moult of the primary feathers was recorded on the same sample and revealed that the majority were still in active wing moult. Only one in every 35 of the birds caught were birds-of-the-year giving an indication of a poor breeding season in 1989. This contrasts with the previous year's good breeding season when a third of the Knot would have been birds-of-the-year. It is likely that the reason for the large flocks of Knot in the autumn of 1989 is that many of the 1988 young have survived although it was not possible to prove this from the birds caught as it is not possible to determine second-year birds from older ones.

Of the birds caught 6% already wore rings from previous captures. Details of foreign-ringed birds take some time to become available so at the time of writing it is only possible to record that Knot were already wearing rings from Germany (4 birds), France (2), Iceland (2) and Norway (2). As indicated above, counts have shown that birds move away from the Wash after completion of moult in October. What the counts do not show is where the birds go. Among the recoveries were ten Knot originally ringed elsewhere in Britain at Teesmouth, Mersey, Ribble, Solway, Firth of Forth, Moray Firth and Dornoch Firth. All were ringed during the winter or spring and clearly indicate, perhaps surprisingly, that many of the Knot using the Wash to moult are at estuaries further north later in the winter. Of the 68 birds caught which were originally ringed at the Wash, nearly half were over ten years old and the oldest was ringed in 1968, making it at least 21, confirming the longevity of waders and Knot in particular.

This day will be remembered for many years to come by all those present for the sheer spectacle of the number of birds present and as an occasion which has also added substantially to the understanding of the importance of the Wash for Knot.

Ringing Report

Allan Hale

During 1989 over 21,000 birds of 121 species were ringed in Norfolk. This is more than in any previous year and included 1,950 Dunlin, 1,200 Blackbirds, 440 Blackcaps, 2,736 Greenfinches and 173 Siskin. Interestingly the Sparrowhawk total was greater than that of the Kestrel. Amongst the less commonly ringed species were Curlew Sandpiper, Jack Snipe, Pallas's Warbler and Red-backed Shrike. Again the embarrassment of recoveries has resulted in many records being omitted because of lack of space.

Normally a recovery illustrates but two points in time in the life of a bird. This year however there are an encouraging number of 'multiple recoveries' demonstrating unusually complete life histories. Also included are no less than four individuals trapped at the same French ringing site.

The format of the ringing recovery section does, as usual, use the codes developed by the organisation of European ringing schemes. The interpretation of these codes is as follows:

Age when ringed:	1 pullus (= nestling or chick)
	2 fully grown, year of hatching quite unknown
	3 hatched during calendar year of ringing
	4 hatched before year of ringing, exact year unknown
	5 hatched during previous year
	6 hatched before previous year, exact year unknown
Sex:	m = male; f = female
Manner of recovery:	v caught or trapped, released with ring
	vv ring number read in field
	vB breeding where recaptured

+	shot or killed by man
x	found dead
xF	found freshly dead
xL	found long dead
( )	caught alive but not released
?	manner of recovery unknown

Thanks are extended to all Norfolk ringers from whose data this report has been extracted. Thanks also to Steve and Alison Wakeham for the Wash Wader Ringing Group recoveries and their interpretation.

NORFOLK RECOVERIES NOTIFIED IN 1989

Great Crested Grebe: The first foreign recovery from British ringing, although it should be noted that very few Great Crested Grebes are ringed.

3	2.9.88	Pensthorpe, Fakenham
xL	16.1.89	Calais, France. 218 km SSE

Shag: There is no precedent for two Shag recoveries in Norfolk within such a short period of time.

1	13.6.87	Craigleith, Lothian, Scotland
x	6.6.88	Sandringham. 420 km SSE
1	25.6.87	Isle of May, Fife, Scotland
x	2.4.88	Methwold Hythe. 454 km SSE

Spoonbill: Vlieland is the next to most south-westerly of the West Fresian Islands and the Spoonbill colony there is of recent origin.

1	11.6.86	Bomenland, Vlieland, Netherlands
vv	28.4.88	Cley-next-the-Sea. 270 km W

Bewick's Swan: A post-mortem revealed the cause of death as lead poisoning. From 8.12.71 until 9.12.73 this bird was always sighted in the company of its mate, named 'Ace' (who was found dead at Lake Vepshozero, Karelia, U.S.S.R. on 11.11.76). A fascinating series of sightings for both birds; it is unusual that life histories are so complete.

4f	8.2.71	Slimbridge, Gloucester (named 'Spades' and stayed until 24.1.72)
vv	20.11.72	Slimbridge (until 11.1.73)
vv	13.1.73	Welney (until 13.2.73)
vv	9.12.73	Slimbridge (with one cygnet)
vv	20.2.76	Sirjansland, Zeeland, Netherlands
vv	8.4.78	Elbe Estuary, West Germany
x	7.1.89	Filby Broad

Shelduck: The Wash is an increasingly important moulting area for Shelduck.

1	8.7.89	North Creake, Fakenham.
x	28.8.89	Terrington Marsh. 35 km WSW.

Teal: A remarkable coincidence that both birds were shot in Finland on the same day!

5m	29.1.85	Pensthorpe, Fakenham
+	20.8.89	Kronoby, Vaasa, Finland. 1,766 km NE
4m	22.11.88	Pensthorpe, Fakenham
+	20.8.89	Haukipudas, Oulu, Finland. 1,944 km NE

Pintail: The first Russian Pintail recovery to result from Norfolk ringing.

4f	21.9.87	Pensthorpe, Fakenham
+	15.5.89	Shomoksha, Arkangelisk, U.S.S.R. 2,515 km ENE

Pochard:

6m	11.1.89	Pensthorpe, Fakenham
+	19.8.89	Kreba, Dresden, East Germany. 956 km E

Oystercatcher: The 13th movement from The Wash to The Faeroes.

6	28.3.82	Terrington, King's Lynn
x	1.8.89	Koltur, Faeroes, 1,108 km NNW

Golden Plover: Only the second British-ringed Golden Plover to be reported from Holland.

4	13.8.87	North Wootton, King's Lynn
v	18.3.89	Friesland, Netherlands. 338 km E

Knot: Two birds, caught together in West Germany, and again together at Holme.

6	22.4.86	Foehr, Nord Inseln, West Germany
v	8.11.87	Holme-next-the-Sea. 553 km WSW
6	22.4.86	Foehr, Nord Inseln, West Germany
v	8.11.87	Holme-next-the-Sea, 553 km WSW

Curlew Sandpiper: This bird increased its body weight from 63.0 g to 72.5 g during the 11 day period, suggesting that it had been on The Wash for several days prior to its recapture. It represents only the second Swedish-ringed Curlew Sandpiper to be found in Britain.

3f	20.8.88	Nidingen, Halland, Sweden
v	31.8.88	Terrington, King's Lynn. 890 km SW

Dunlin: The selected recoveries show the 5th Wash bird from France, the 8th and 9th from the French ringing effort in Mauretania, the 5th from north of the Arctic Circle and a rapid movement from Norway.

4f	16.4.85	Charente-maritime, France
v	30.7.88	Terrington, King's Lynn. 773 km N
6	16.4.85	Baie du Levrier, Mauretania
v	31.7.88	Terrington, King's Lynn. 3,933 km NNE
5	12.4.86	Baie du Levrier, Mauretania
v	1.8.88	Terrington, King's Lynn. 3,933 km NNE
3	22.8.88	Farsund, Vest-agder, Norway
v	28.8.88	Terrington, King's Lynn. 711 km SSW
3	16.9.78	Wolferton, King's Lynn
v	27.6.89	Gamvik, Finnmark, Norway. 2,460 km NE

Bar-tailed Godwit: The 7th movement from The Wash to the U.S.S.R. and the 5th to this particular region.

6m	22.8.74	Wolferton, King's Lynn
+	17.5.88	Arkangelsk, U.S.S.R. 2,808 km ENE

Redshank: A traveller along the regular flyway to Iceland and a bird from Holland not necessarily attaining its apparent age ('ringed leg only' found).

4	24.10.76	Snettisham, King's Lynn
v	17.5.89	Nordur Thingeyjar, Iceland. 1,766 km NW
2	5.8.74	Kroonspolders, Vlieland, Netherlands
xL	15.3.88	Hunstanton

Turnstone: The first British-ringed Turnstone to be found in The Gambia. Reported as (direct translation): 'Alive on ship, found sleeping in canoe'!

6	3.8.77	Terrington, King's Lynn
v	19.10.89	Sarra Kunda, Gambia. 4,584 km SSW

Black-headed Gull: Winter-ringed birds in Norfolk were reported from The Netherlands (4), Denmark (6), Finland (2) and Poland. There were further reports resulting from the nestling ringing at Cantley from Glamorgan, Dorset, Cornwall, Nottinghamshire and Yorkshire. The selected recoveries show an unusual Norfolk 'resident' and an example of site fidelity during successive winters.

5	12.1.85	Thorpe St. Andrew, Norwich
x	20.6.89	Hickling Broad. 18 km NW
1	27.6.87	Jarvenpaa, Uusimaa, Finland
v	22.1.89	The Mere, Diss. 1,721 km WSW
v	29.1.89	The Mere, Diss
v	26.12.89	The Mere, Diss

Common Gull: The ring was found in an Eagle Own nest!

5	19.1.85	Norwich
x	3.8.89	Holmavatn, Rogaland, Norway. 772 km NNE

Guillemot: It is difficult to believe that the bird was in good condition when captured, but note distance travelled and time taken.

4	30.3.89	Den Helder, Noord-Holland, Netherlands
xF	8.4.89	Great Yarmouth. 206 km W

Barn Owl: This is the longest movement from Norfolk ringing. There were an additional four recoveries during 1989, the furthest travelled being 32 km.

1	26.6.88	North Norfolk
x	25.12.88	M11 near Harlow, Essex. 143 km SSW

Tawny Owl: Note age reached which was extremely close to a new British longevity record.

4	9.7.70	Rackheath, Norwich
x	11.7.89	Norwich. 6 km SW

Swift: Note the unusually late recovery date.

4	28.6.81	Rockland, Norwich
x	12.10.89	Thurton, Norwich. 2 km SSW

Sand Martin: There have been numerous movements from Norfolk to Llangorse over the years. In addition to the published recoveries there were four movements between Haddiscoe and Icklesham (Sussex) and another between Sedgeford and Icklesham (the Sand Martin passage ringing effort there is intense). Note that Haddiscoe, Icklesham and the two French sites are almost exactly in a straight line.

3	1.8.85	Llangorse, Powys, Wales (at roost)
vB	12.7.87	Loddon. 337 km E
vB	18.7.89	Haddiscoe, Beccles
3	9.7.89	Haddiscoe, Beccles
v	30.7.89	Nevoy, Loiret, France. 536 km S
3	27.8.87	St-Seurin-d'Uzet, France
v	4.8.88	Haddiscoe, Beccles. 798 km NNE
3	9.7.89	Haddiscoe, Beccles
v	30.8.89	St-Seurin-d'Uzet, France. 798 km SSW

Pied Wagtail: The distance travelled by this bird is equivalent to the distance between Norwich and north-west Switzerland.

3	27.10.88	Earlham, Norwich
x	1.5.89	Cromarty, Scotland. 652 km NNW

Robin: These reports show where some of our autumn migrants spend the summer, and give an indication of the route taken to get there.

2	21.10.88	Holme Bird Observatory
x	20.4.89	Sanderbusch, Weser-Ems, West Germany
3	6.10.87	Weybourne
x	22.6.88	Vatn-Vatnet, Nordland, Norway. 1,760 km NNE

Redstart: Having arrived safely in Holland it seems strange that this bird then chose to cross the North Sea.

3m	14.9.88	Kroonspolders, Vlieland, Netherlands
x	22.9.88	Colby, North Walsham. 250 km WSW

Blackbird: Foreign recoveries were from Sweden (3), Norway, West Germany and The Netherlands, plus two from Wales. The movement published in full demonstrates the date of return passage north-eastwards.

3f	12.11.88	Norwich
v	21.3.89	Helgoland, West Germany. 474 km ENE

Fieldfare: An autumn migrant moving through Norfolk on its way to winter in France.

4f	3.11.88	Weybourne
x	18.12.88	Ribagnac, Dordogne, France, 911 km S

Sedge Warbler: Remarkably two Norfolk Sand Martins were involved in movements to the same French location as these two Sedge Warblers.

4	1.5.88	South Lopham, Diss
v	2.8.89	St-Seurin-d'Uzet, France. 775 km S
3f	1.8.88	St-Seurin-d'Uzet, France
v	10.6.89	Earlham, Norwich. 807 km N

Reed Warbler: Only the second British record from Guinea Bissau. Strangely the first was ringed at the same place (and on the same day) and was subsequently recovered in Glamorgan during 1987. Other Norfolk Reed Warblers were recovered in Belgium and France. The September Cantley bird would not have been expected to turn up in France in mid-June.

5	2.2.87	Ilha das Areias, Fulacunda, Guinea Bissau
x	21.7.88	Cley-next-the-Sea. 4,822 km NNE
3	19.9.86	Cantley
v	17.6.89	Marais du Quellen, France. 553 km SW

Blackcap: Was this bird a failed breeder, making its way prematurely southward?

5m	27.5.84	Helgoland, West Germany
v	28.7.87	Burnham Market. 492 km WSW

Chiffchaff: An incredible series of retraps. This is the first time a Chiffchaff has been shown to both winter and breed in Britain, and remarkable in that it wintered and bred at the same locality — effectively Britains first ever resident Chiffchaff!

2	12.11.88	Weybourne
v	3.12.88	Weybourne
v	18.3.89	Weybourne
vB	2.6.89	Weybourne
v	13.9.89	Weybourne

Starling: This shows a bird spending successive winters either side of the North Sea. Other wintering birds in Norfolk came from, or went to, The Netherlands, East Germany and Sweden.

5m	1.1.87	Mierlo-Hout, Noord Brabant, Netherlands
v	23.1.88	Norwich. 325 km WNW

Golden Oriole: A nestling ringed on 17.6.88 was found dead on 28.9.89, 11 km SE of its natal wood. This is the first recovery resulting from the Golden Oriole breeding population in Britain.

Greenfinch: The Norwegian bird represents only the second movement between Norfolk and that country. Indeed during the last 30 years there have only been 10 international Greenfinch movements concerning Norfolk. All movements in excess of 100 km have been detailed; there were an additional 10 of between 50 km and 100 km. Additionally there were two local recoveries interesting in that the rings were found in Hen Harrier pellets at Roydon Common.

6m	10.4.88	Bryneheia, Vest-Agder, Norway
v	23.10.88	Ormesby St Margaret. 681 km SSW
5m	13.4.89	East Winch
x	10.5.89	Driffield, North Yorkshire. 169 km NNW
5f	15.1.84	Wellington, Shropshire
x	20.12.88	Elsing, Dereham. 243 km E
3f	24.10.87	Weybourne
x	11.5.89	Warboys, Cambridgeshire. 101 km SW
6f	5.3.89	Great Missenden, Buckinghamshire
x	28.5.89	Mundham, Loddon. 172 km ENE

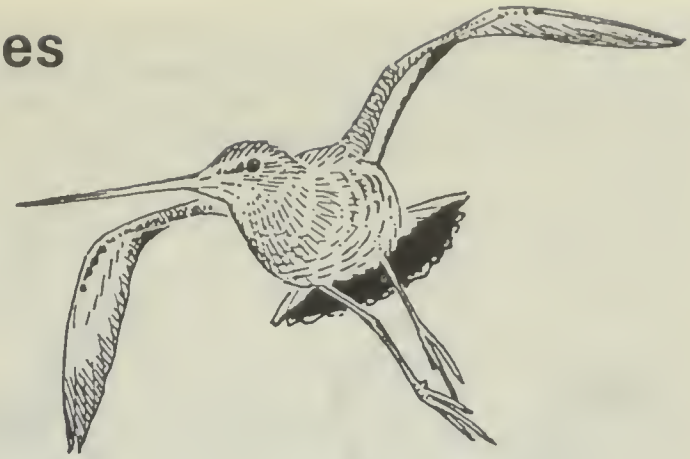
Goldfinch: Ringing has shown that large numbers of British breeding Goldfinches move to and from winter quarters in Iberia via the Low Countries.

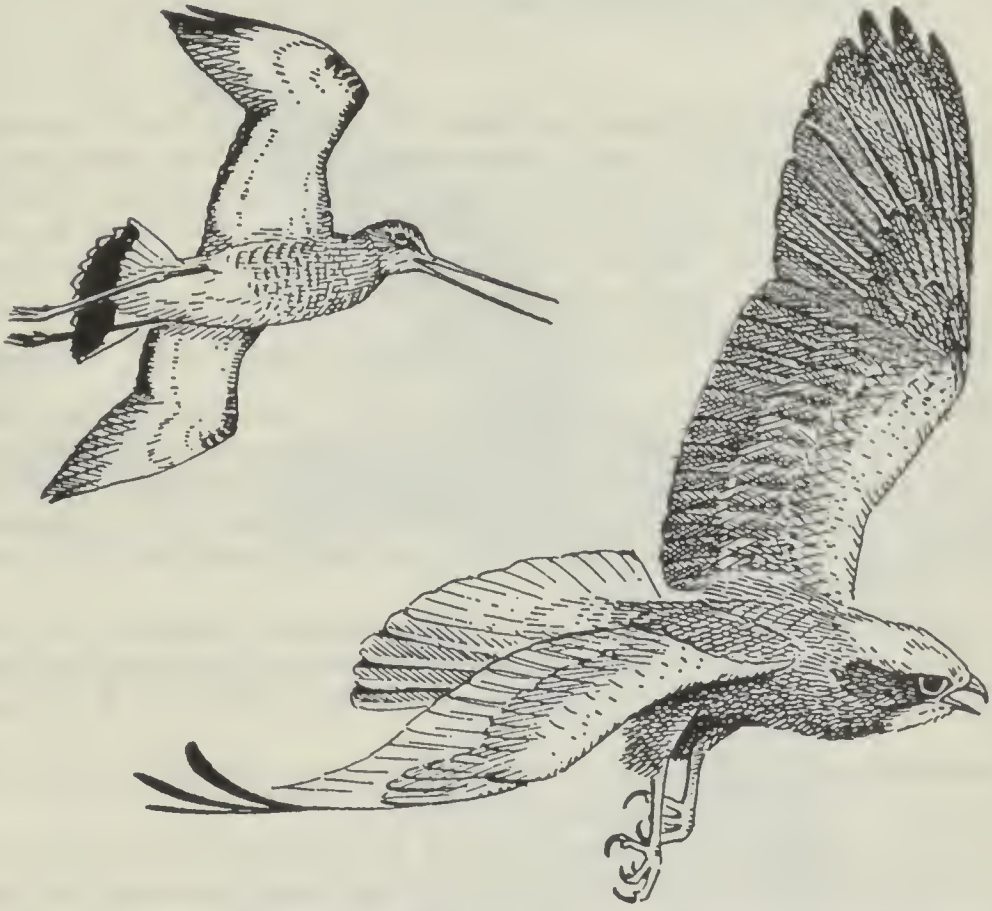
4f	19.4.88	Leper, West-Vlaanderen, Belgium
v	30.4.88	Weybourne. 260 km NW
5m	23.4.88	Weybourne
v	21.4.89	Middelkerke, West-Vlaanderen, Belgium. 225 km SSE

Siskin: There were unprecedented numbers of Siskin feeding in gardens throughout much of Norfolk during March 1989.

3f	24.9.88	Clochan, Buckie, Grampian, Scotland
v	11.3.89	Beechamwell, Swaffham. 602 km SSE
6m	16.3.87	Bridgnorth, Shropshire
v	5.3.89	Thetford. 211 km E
5m	29.3.88	Stirling, Central Region, Scotland
v	18.3.89	Thetford. 523 km SE

Classified Notes



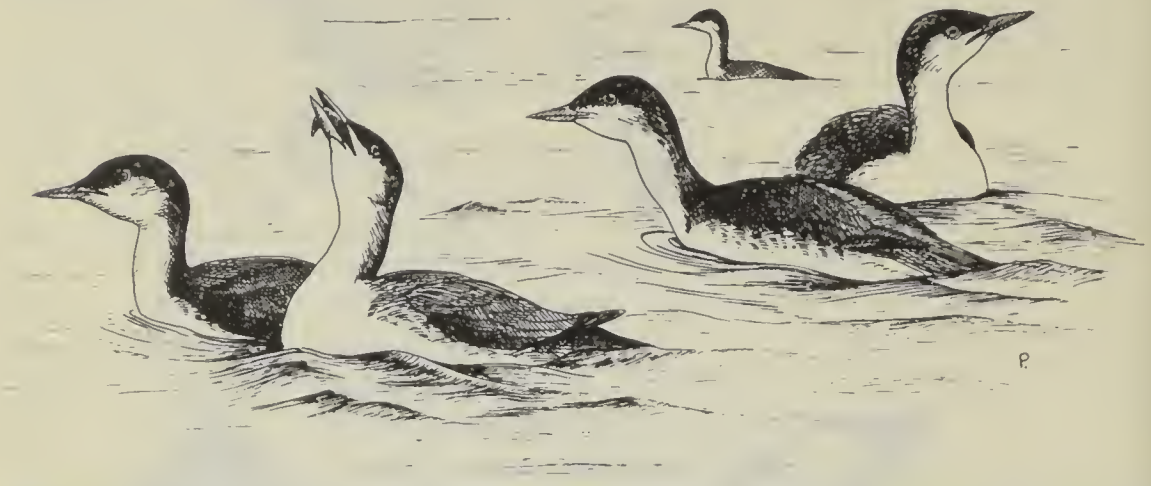


These notes are based on *Birds of Norfolk* (1977 revised edition) where information regarding status, distribution, migration and ringing recoveries may be found. Attention is drawn to migration observations appearing in the bulletins of Cley Bird Club and also featuring in NOAs Annual Report. In addition NARVOS Report for 1989 contains great detail regarding distribution in west Norfolk.

The order used is that of K. H. Voous (1977) List of Recent Holarctic Bird Species. Observations refer to 1989, 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: Coastal records until May 14th and from Aug 22nd. Rather scarce for the second consecutive year and consequently peak counts low: 100 Cley Jan 21st, 77 Cromer Feb 12th and 80 east Sheringham Nov 19th.

Inland: Downham Market Relief Channel (oiled) Jan 14th-Feb 8th and Breydon Dec 23rd-31st.



Black-throated Diver: Seventeen reports until March 19th; mainly singles but 3 Hunstanton Jan 18th and 3 Salthouse March 5th. Also one Ouse Mouth May 18th. The heaviest autumn passage ever recorded in the county commenced with a summer-plumaged adult Cley Sept 17th-18th. Then almost daily reports Oct 6th-Nov 29th including 10 Holkham Bay Oct 22nd, 4 Holme Nov 1st and 4-7 daily between Sheringham-Blakeney Point Nov 1st-12th. Few winter records however; singles on only 5 dates in Dec. Of the 92 reports in total 9 from The Wash, 74 North Coast (Holme to Cromer) and 9 East Coast (Paston to Yarmouth).

Great Northern Diver: Eight singles reported Jan 1st-March 22nd with a first-year bird Paston June 4th. Much larger numbers than ever before recorded in autumn/winter particularly between Cromer and Blakeney Point where singles on scattered dates in Oct from 4th, *daily* sightings of 1-3 birds Nov 1st-Dec 31st and 6 off Sheringham Nov 9th. Elsewhere up to 4 Holkham Bay Nov 4th-19th, singles reported on 7 dates Hunstanton to Titchwell and one Paston Nov 15th.

Little Grebe: Notable breeding concentrations: 20 pairs Holkham NNR and 12+ pairs Breydon/Berney. Largest winter gatherings: 24 Snettisham Pits Dec 2nd and 22 Burnham Overy harbour Dec 8th. Migrants on the sea: Cromer Nov 4th, Cley (5) and Weybourne Nov 12th.

Great Crested Grebe: Largest gatherings: 42 Breydon in Aug, 50 Holme Oct 18th, 70 Holkham Bay Nov 6th and 58 Snettisham Nov 12th.

Red-necked Grebe: Apart from 3 Hunstanton Jan 1st, 26 coastal reports of 1-2 birds until April 18th with one Blakeney Point May 16th. 59 coastal reports from Aug 9th (Aug 3, Sept 12, Oct 18, Nov 22 and Dec 4) including 4 Holme Sept 14th, 4 west Sheringham Nov 9th and 5 Holkham Bay Nov 19th. Inland: Pentney GP Jan 15th-20th and Sept 18th/19th and Strumpshaw Nov 25th.

Slavonian Grebe: Observations in early part of year involved small numbers wintering on The Wash although singles Holkham Bay Jan 1st and Cley Jan 8th and 28 reports of 1-6 birds between Heacham and Titchwell until March 29th. Also one Holme/Thornham Point May 2nd-7th.

Autumn records from Sept 9th with almost daily coastal reports throughout Oct-Dec.

The usual build-up in Holkham Bay began with 4 Oct 10th, peaked at 20 Nov 5th-12th with 9 still present Dec 17th but no reports thereafter. Other notable counts 5 Holme Oct 25th, 10 west Cley Nov 9th and 5 Blakeney Point Nov 12th. One south Yarmouth Oct 29th was the only coastal report away from The Wash and North coast. Inland: Horsey Mere Jan 2nd-6th and Horning Jan 5th-Feb 10th.

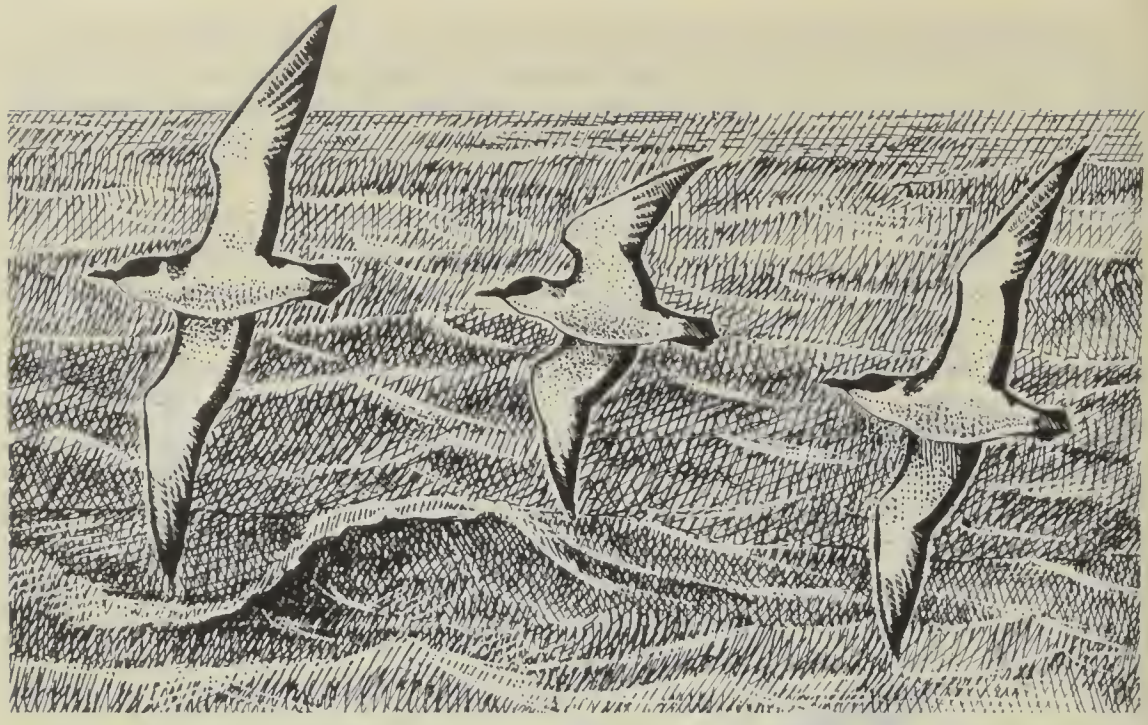
Black-necked Grebe: Brancaster harbour Feb 15th (JB), Tottenhill GP May 9th-20th (CD *et al*), 3 Thornham Point June 9th (MLW), Cley Sept 16th (MDR), Pentney GP Sept 22nd-27th (AC *et al*), Holkham Bay Nov 5th-16th (JBK *et al*), Blakeney Point Nov 12th (AMS) and Holme Dec 16th (WJAB GFH).

Fulmar: Further increases in numbers of chicks fledged at regularly monitored sites indicate a continued expansion of the county breeding population: 48 chicks fledged Weybourne-Sheringham (KBS) and 68 fledged Hunstanton (CS). Largest passages 1,800 east Sheringham Sept 9th and 600 east Cley Sept 19th. Single blue-phase birds at Cley Sept 9th and 19th, Cromer Sept 10th and Sheringham Oct 8th. Inland: Taverham June 21st.

Cory's Shearwater: A remarkable series of occurrences at Sheringham where one east Aug 27th (KBS *et al*), 2 west together Aug 28th (KBS *et al*), one east Sept 11th (RGC) and another east Oct 8th (LTH KBS). The first was also observed passing Weybourne Camp a few minutes earlier (MPT JW).

Sooty Shearwater: Three east at Holme on the very early date of July 9th (CD MTE). Main autumn passage July 30th-Oct 14th when birds recorded passing on 25 dates, the largest numbers off Sheringham: 9 Sept 8th, 15 Sept 9th and 33 Oct 8th when 22 off Paston. A very late bird Hunstanton and Blakeney Point Dec 30th (AB PJH AMS).

Manx Shearwater: A better than average showing with regular spring, summer and autumn movements May 7th to Oct 30th and very late birds at Sheringham (4) Nov 22nd Sheringham-Paston Nov 23rd. Largest movement ever witnessed in the county took place



Aug 27th (when strong northerlies) with 640 Hunstanton, 1,200+ east Cley, 880 east Sheringham and 265 east Paston. Other notable passages 102 east Cromer July 30th, 350 Cromer-Cley Aug 25th, 300 Ouse Mouth and 250 Sheringham Sept 9th and 106 Holme Oct 8th.

Additional 1988 record: Breydon Sept 4th (PRA).

Yelkouan Shearwater: Singles passed Cley Aug 6th (CL), Sept 8th (JDG PAG) and Nov 22nd (RM) and Sheringham Aug 27th (KBS *et al*).

Storm Petrel: Sheringham west Oct 8th (LTH KBS *et al*). A remarkable series of occurrences during a very severe SW gale Oct 29th when birds recorded at Holkham Bay, Blakeney Point, Cley (2), West Runton and Cromer (4).

Leach's Petrel: The exceptional passage of this petrel, the largest ever recorded in the county, was one of the main autumn events. Observations were made all along the coast from Yarmouth to Ousemouth, although the majority came from the well-watched traditional seawatching points between Blakeney Point and Cromer. Birds were recorded on the following dates (singles unless otherwise stated when site with maximum count given): Aug 25th, 26th, 27th (6 Sheringham) and 28th, Sept 2nd (5 Cley), 3rd (4 Cley), 8th (6 Cley) 9th (75 Sheringham) 10th (14 Sheringham), 11th, 12th (2 Titchwell), 28th (5 Sheringham) 29th and 30th, Oct 2nd, 7th, 8th (5 Sheringham) and 10th and Nov 22nd.

The amazing 75 (to the east) off Sheringham Sept 9th during NE gale appears to be the highest count of this species made in the North Sea.

Gannet: Peak passages 1,500 east Holme and 2,000 east Blakeney Point Aug 27th, 1,500 east Blakeney Point Sept 9th and 520 east Sheringham Sept 28th. Inland: East Tuddenham sub-adult trailing fishing line Sept 9th.

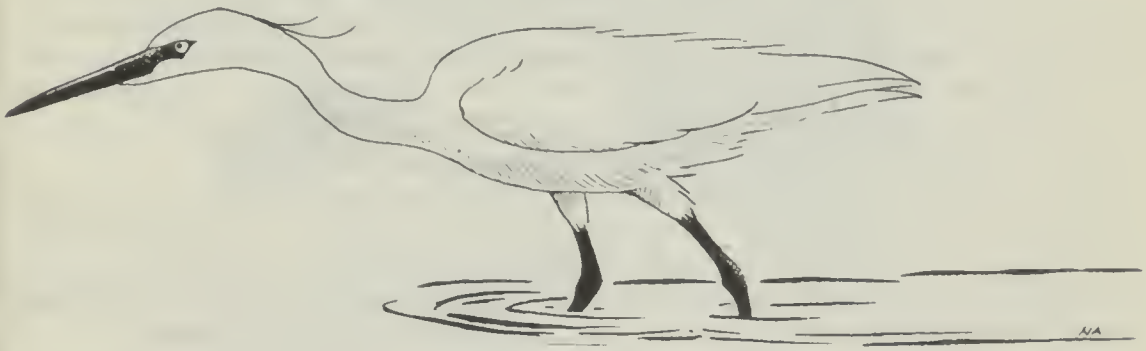
Cormorant: Bred successfully in the county for the first time since 1916 when a pair raised young at Black Dyke near Feltwell; 3 pairs nested at Narford and 3 young fledged.

Largest gatherings 320 Ranworth Jan, 165 Welney (on power lines) March, 180 Breydon Sept and 214 Holkham Park Oct. Additional roost-sites: Thornham Point, Gore Point and Seamere.

Shag: Recorded regularly only at Heacham/Hunstanton where 1-4 Jan 1st-March 19th, Wells harbour where 4 early Jan with one till March 17th and Sheringham where 3-4 present and roosting on cliffs and groyne markers Sept 7th-Dec 31st. Otherwise scattered reports of singles from many coastal sites. Unseasonal records at Holme June 16th and Paston July 30th. Inland at Brundall Sept 26th and Rockland Broad Dec 3rd.

Bittern: Only 11 males booming regularly; 8 from the reedbeds along the North Coast, only 3 in the Broads. Winter sightings from Berney, Burnham Norton, Burnham Overy, Cley, Filby, Hickling, Holme, Horsey, Lynn Point, Pensthorpe, Salthouse, Snettisham, Stanford Water, Strumpshaw, Thompson Water, Titchwell, Tottenhill GP and Welney.

Night Heron: Welney, a second-summer bird May 11th-14th (JBK *et al*).



Little Egret: An adult at Welney May 10th-14th (JBK *et al*) and singles Ouse Mouth Aug 16th-17th (GMSE) and Welney Sept 19th (LB).

Grey Heron: Heronry details include Barton 6, Buckenham Carrs 12, Burgh Castle 3, Cley 5, Cockshoot 2, Didlington 8, Fishley 1, Fleggburgh Common 3, Fritton 12, Guist 4, Hickling (Sounds Wood) 9, Hilgay 54, Holkham Park 7, Islington 82, Narford 4, North Elmham 9, Old Hunstanton 4, Quidenham 5, Ranworth 5, Reedham Church Wood 2, Shadwell 1, Snettisham 8, Surlingham 3, Sparham 20, Sturston 10, Upton 1, Wheatfen 1, Wiveton Woods 1 and Woodbastwick Fen 1.

Purple Heron: Cley, an adult June 14th flew in from the east, settled in the reedbeds only for a few minutes before carrying on westwards (HPM).

Spoonbill: A first-year bird over-wintered at Holme/Titchwell/Brancaster and remained until at least April 20th. Other than 3 Hickling June 4th additional records of ones and twos March 26th-Sept 23rd at Berney, Breydon, Cley, Edgefield, Hickling, Holkham, Holme, How Hill, Ouse Mouth, Reedham, Strumpshaw, Surlingham, Terrington, Titchwell, Welney and Weybourne.

Later records from Cley, then Titchwell and then Snettisham Nov 18th-Dec 8th and probably the same bird Breydon Dec 11th-18th and 26th-31st. A seven-day visit to Gillingham coincided with its absence from Breydon.

Bewick's Swan: Largest concentration at Welney where 2,211 (3,700 total on Washes) Jan 16th, 1,700 Feb 13th, 300 Feb 26th, 70 March, 3 Oct 10th, 986 Nov 15th and 3,145 (4,981 total on Washes) Dec 18th when 24.8% young birds. Four injured birds summered.

Most impressive totals elsewhere (and doubtless duplication in numbers): Berney/Breydon/Halvergate 196 Jan, 698 Feb 15th, 402 March 4th, 128 Nov and 189 Dec; Ludham Bridge/St. Benet's Level 205 Jan, 230 Feb, 126 March and 126 Dec; Horsey 165 Jan and 85 Feb; Gelderston 185 Feb 18th.

Whooper Swan: Recorded to April 18th and from Oct 9th. Largest herds at Welney where 510 (603 total on Washes) Jan, 476 Feb, 538 March, 13 April, 8 Oct, 428 Nov and 462 (508 total on Washes) Dec; 11.7% young in Nov. Two injured birds summered.

Broads (Hickling/Horsey/Waxham) up to 40 Jan, 46 Feb and 40 Nov/Dec.

Bean Goose: Coded blue neck-banded individuals first appeared in the 1987/88 winter. A total of 36 birds had been marked during the moult at Vasterbotten (Sweden) on 20th July 1987 and 22 appeared in the Yare Valley that winter. The total included one bird carrying a ring code which was partly obstructed. Two others in this series stopped over in central Sweden and two more were seen in southern Sweden. In addition 15 of 'our' geese were found in north Denmark during Feb/March 1988. That summer at least ten birds returned to the moulting area where they had been neck-banded.

1988/89 winter: First arrivals in the Yare valley were 10 on Nov 18th with 138 next day, 210 by Dec 7th, 356 by Dec 17th and a peak of 370 Jan 5th; 348 remained on Jan 24th reducing to 260 next day and almost all had left before the end of Jan; an unusually early departure and probably due to exceptionally mild weather. Final observation was 22 at Haddiscoe Feb 1st. No neck-banded birds were accompanied by juveniles. Only one of the 22 marked individuals failed to return, showing a high degree of fidelity to the wintering site. One had been detected in central Sweden in Oct.

1989/90 winter: Yare Valley first arrivals (17) Nov 15th increasing to 101 next day, 227 by end Nov, 326 by end Dec and peak of 360 by Jan 27th; 310 remained till Feb 3rd declining to 182 by Feb 5th with final sighting (120) Feb 9th. A total of 14 carried neck-bands placed on them in July 1987 and, remarkably, each of these marked birds was traced to North Jutland (Denmark) Feb 25th-28th 1990. (Summary by MP-O).

Elsewhere: Berney 14 Feb 6th and 46 Feb 12th; Belton 18 Feb 2nd; Breydon 2 Jan 29th; Burgh Castle 23 Feb 10th; Holkham 3 Feb 20th to 28th and 6 Dec 14th; Martham Ferry area up to 28 Jan 29th to Feb 28th; Paston 3 Feb 4th/5th and Snettisham Dec 2nd with 14 Nov 20th.

Pink-footed Goose: Co-ordinated dawn counts on the Wash and on the North coast indicated the following figures for the NW Norfolk population:

1988/89 winter: Peak of 13,500 Jan 8th declining to 7,600 Feb 5th; last 10 at Holkham till April 12th then 2 till May 20th.

1989/90 winter: Autumn arrival from Sept 22nd (Holkham), 27th (Scolt) and 29th (Snettisham) and 200 in Brancaster area Oct 2nd, 12,250 Nov 26th, 20,000 Dec 24th, peak

of 26,920 Jan 16th, 25,430 Jan 30th, 13,960 Feb 6th and 3,500 Feb 24th.

White-fronted Goose: Largest numbers in Yare Valley where recorded to March 9th and from Nov 16th with 310 Jan, 215 Feb, 46 Nov and 220 Dec.

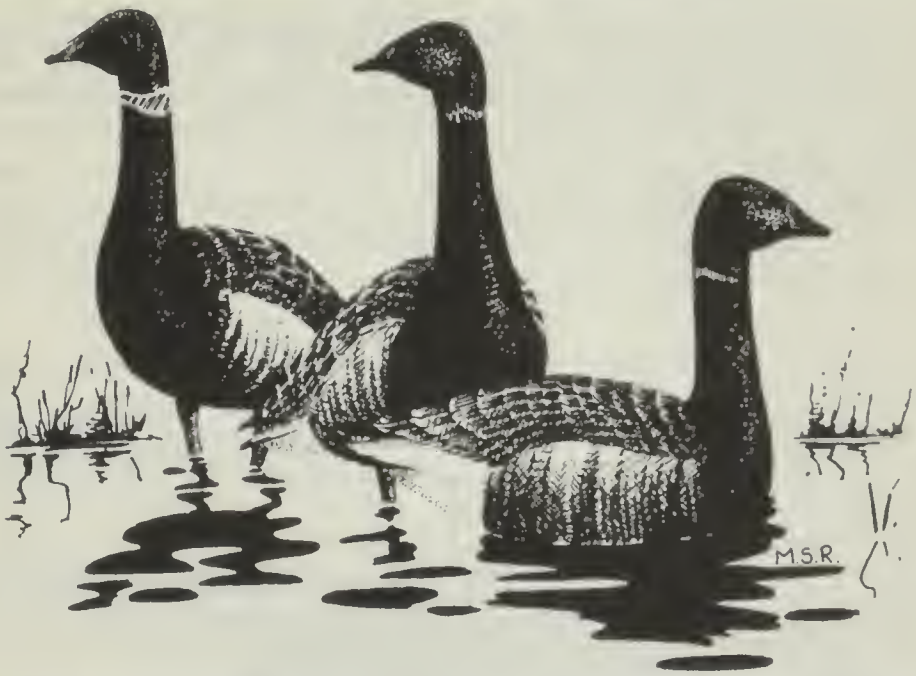
Elsewhere: Berney 16 Jan, 270 Feb, 12 Nov and 21 Dec; Heigham Holmes 12 Jan, 250 Feb/March; Holkham 206 Jan, 281 Feb, 170 March, 70 Oct, 81 Nov and 200 Dec; Welney 20 Feb, 42 March and 4 Dec.

Barnacle Goose: Following considered non-feral: Berney 11 Feb 5th with 10 next day; Cley 16 west Oct 9th and Brancaster one among Pink-feet during Dec.

Brent Goose: Recorded each month. Co-ordinated counts along the North Coast (Holme-Salthouse) gave the following totals: 12,711 Jan and 10,300 Feb. Wash: Snettisham 1,000 Jan, Ouse Mouth 2,500 Feb, Lynn Point 2,000 March and Terrington still 580 June 5th. No young observed.

The Dutch Brent Goose Research Group reports that among 45,000 Brents moulting on the delta of the Taimyr river this year no young birds detected indicating a complete breeding failure. Spring was two/three weeks late and the coastal sea remained ice-covered at the end of July. As a result the breeding islands were readily accessible to ground predators.

Ones and twos of the pale-bellied race *hrota* at usual localities.



Black Brant: Birds of the race *nigricans* at Blakeney/Cley/Salthouse Jan 1st-March 12th and at Lynn Point Jan 29th-Feb 12th.

Egyptian Goose: July counts in north Norfolk, Wensum Valley and Broads produced a total of 348 adults and 60 young with largest counts at Holkham Park 127, Sennowe Park 60, Lyng Easthaugh GP 42, Hoveton 31 and Blickling 30.

Shelduck: Ouse Mouth counts included 1,950 Jan, 2,112 Feb, 1,160 March, 1,575 April, 370 May, 4,200 July, 1,325 Aug, 350 Sept, 750 Oct and 3,100 Nov.

Peaks elsewhere: Snettisham 845 March, 1,175 Oct and 1,780 Nov; Breydon 702 June 24th.

Breeding sites away from coast: Cantley (133 juveniles), Filby/Fleggburgh, Flitcham, Gooderstone, Gunton Park, Hilborough, Hillington, Ranworth, Stanford, Thompson and Wissington BF.

Mandarin: Ones and twos at Cley, East Walton, Felbrigg, Gayton, Gunton (female with small duckling), High Kelling, Hillington GP, Holme, Letheringsett, Little Thornage, Sandringham, Seamere and Wereham.

Wigeon: Fens: Welney 10,492 Jan, 6,631 Feb, 7,920 March, 2,095 Sept, 3,214 Oct, 7,735 Nov and 14,285 Dec (when 53,000 total on Washes).

Peaks elsewhere: Buckenham/Cantley 8,950 Jan and 7,130 Dec and Holkham 1,300 Jan, 1,600 Feb, 1,380 Nov and 2,200 Dec.

American Wigeon: Welney: a drake first identified Dec 10th 1988 remained until Jan 16th (JBK JLN). Another drake there Dec 19th (JBK KW).

Gadwall: Highest numbers at Gunton Park: 496 Sept and 83 Oct. In addition Stanford 118 Sept; Martham 120 Nov; Surlingham 147 Dec and Strumpshaw 210 Dec.

Teal: Largest counts: 2,010 at Welney March with 2,950 there in Dec.

Green-winged Teal: Welney: A drake March 9th to April 7th (JBK) and on county boundary April 8th (GMSE).

Pintail: Highest counts: Breydon 163 Jan; Cley 510 Jan and 974 Dec 23rd of which 294 headed west; Narford 300 Sept; North Wootton 1,200 Jan; Snettisham 930 Feb; Tottenhill GP 280 Sept, 300 Oct 2nd and 570 Oct 13th; Welney 165 Jan, 200 Feb, 108 March, 670 Sept, 932 Oct, 450 Dec.

Garganey: Spring arrival from March 27th (Hockwold Washes) followed by 1-7 at Bayfield, Berney, Blakeney, Burnham Norton, Cantley, Cley, Hardley Flood, Hickling, Holkham, Holme, Pentney GP, Salthouse, Snettisham, Titchwell, Tottenhill GP and West Acre. Largest party 7 Cley May 4th. Breeding only confirmed at Welney where a brood of 4. Latest Welney Oct 8th.

Shoveler: Largest totals: Berney 120 March; Hickling 111 Feb; Hoveton Black Horse Broad 180 Nov; Narford 150 Oct and Welney 146 Jan, 157 March, 153 Nov and 141 Dec.

Red-crested Pochard: Beetley 3 (2 drakes) Dec 24th; Cley duck Dec 14th-27th; Titchwell duck Jan 21st-March 26th. Status confused by escapes from collections.

Pochard: Highest counts: Pentney GP 425 Jan; Welney 843 Jan, 1,108 Feb, 738 March, 357 Nov and 830 Dec. At Welney 3 Tufted × Pochard hybrids.

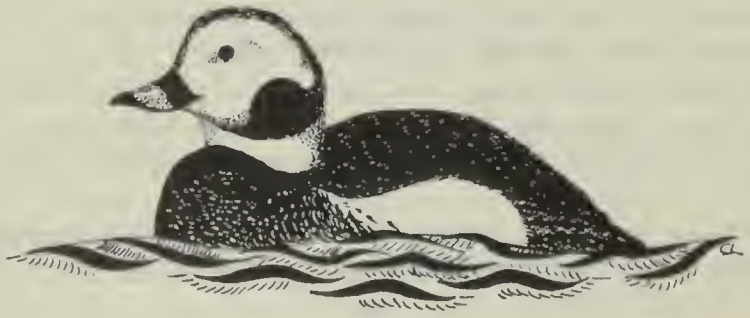
Breeding confirmed at Barton, Filby/Fleggburgh, Fowl Mere, Hickling, Horning, Holkham, How Hill, Ranworth, Sparham, Stanford, Strumpshaw, Thompson, Thurne Dyke, West Mere, West Tofts and Wroxham.

Ferruginous Duck: UEA Broad Jan 12th (PJD RSL).

Additional 1988: Pensthorpe 2 Feb 1st (SH) were in addition to the collection birds.

Tufted Duck: Most impressive winter counts: Flegg Broads 180 Feb; Stow Bardolph GP 608 Jan; Tottenhill GP 130 March and Welney 101 March.

Scaup: Apart from up to 9 moving between Stow Bardolph, Tottenhill and Pentney Pits Jan-Feb the largest group was 15 off Snettisham Feb 11th. Elsewhere scarce reflecting the mild winter.



Eider: Peak counts: Brancaster harbour 210 Feb 21st and March 21st; Cley 214 Nov 18th; Holme/Hunstanton 280 Jan 11th, 200 Jan 21st and 240 Nov 16th; Scolt 200 March and Sheringham 180 Nov 17th and 120 next day.

Long-tailed Duck: Most regular off Hunstanton/Holme/Thornham where monthly totals of 65 Jan, 95 Feb, 58 March, 16 April, 6 May, 4 Oct, 17 Nov and 19 Dec.

Elsewhere along North coast 1-25 at Blakeney, Brancaster, Cley, Holkham Bay, Overstrand, Scolt Head, Sheringham and Titchwell. Series of counts in Blakeney harbour: 3 Jan, 8 Feb, up to 8 first half April, 14 April 15th and 20 April 22nd.

Only two East Coast observations: Breydon where 1988 bird remained till Jan 18th and Horsey where 3 Feb 12th.

Common Scoter: Inshore counts included Hunstanton/Heacham 300 Feb 21st, 300 March 6th, 400 May 27th and 540 June 3rd; Thornham 400 Dec 27th.

Inland records: Breydon April 9th-26th; Bure (near Cockshoot) April 17th; Filby/Ormesby Broads Jan 2nd to 28th; Fowl Mere 5 July 13th and Welney 6 April 29th.

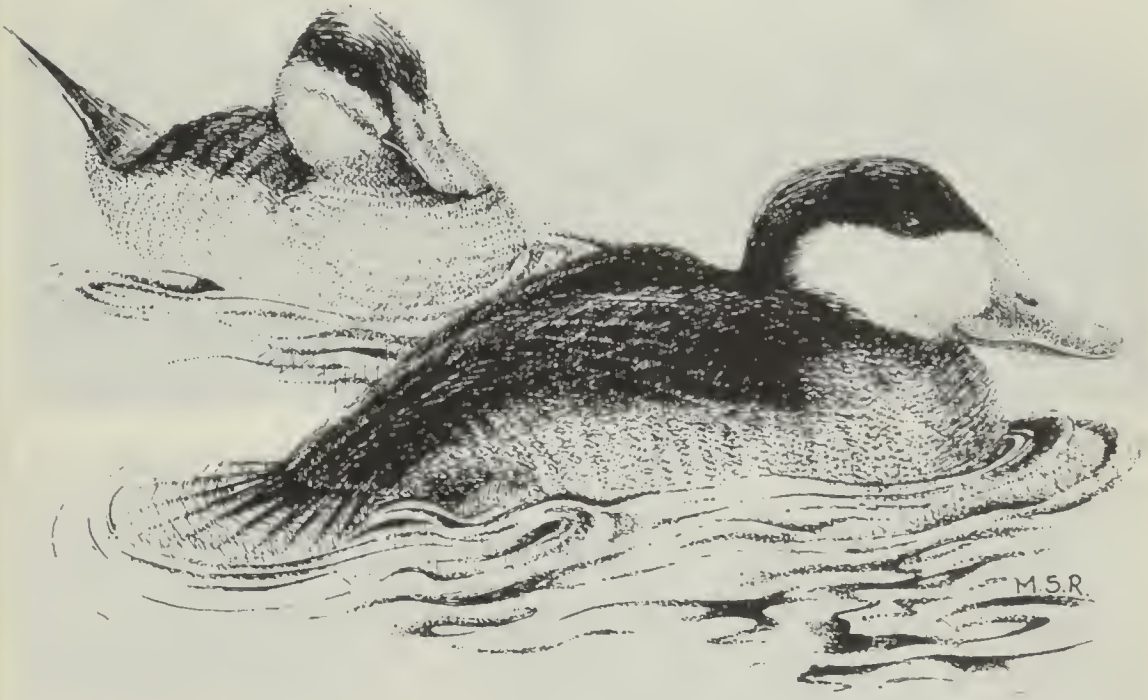
Velvet Scoter: Recorded each month. Largest parties: 25 Heacham Jan 10th and 27 Jan 22nd with 10 still present March 27th.

Goldeneye: Peak numbers: Blakeney 83 Feb 4th; Brancaster harbour 60 Jan 22nd and Snettisham 43 March 9th.

Smew: As expected in such mild conditions only singles reported up to March 17th and from Dec 28th at How Hill, Hickling, Holme, Snettisham and Welney.

Red-breasted Merganser: Largest groups: Snettisham 82 March; Hunstanton 47 Nov and Brancaster 55 Nov. Inland: Tottenhill GP Jan 22nd and Ten-mile Bank 2 Dec 31st.

Goosander: Winter groups recorded at 13 localities with maximum of 10 at Stow Bridge Jan 18th. An injured bird summered Lynn Docks Area May 7th-Aug 19th. Unusual record of one wintering at sea off Sheringham Nov 3rd-Dec 31st.



Ruddy Duck: 1-3 recorded from Blickling, Filby, Gunton Park, Heacham, Hickling, Horsey, How Hill, Martham, Narford, Ormesby, Pentney GP, Ranworth, Rollesby, Snettisham, Stanford, Thompson, Tottenhill GP and Welney. No evidence of breeding.

Honey Buzzard: Displaying birds at two sites: (1) male displaying regularly late May to early Sept and (2) records from late May with a pair displaying early June. May have bred successfully as a juvenile nearby Aug 21st.

Elsewhere: 15 records of migrants April 28th-Oct 19th with 6 in June when one over Norwich on 20th — the only one away from the coast. Of the remainder one over Holme/Thornham/Titchwell May 14th was an interesting 'chain' sighting and another in Weybourne/Kelling area Sept 14th-24th was the only lingering bird to be noted.

Black Kite: Kerdiston June 24th (SB).

Additional 1988: Dersingham May 12th (KPE).

Red Kite: Shereford Feb 11th (JL) was the only record.

Marsh Harrier: 62 adults raised 88 young. Six of the young fledged at three sites were strikingly patterned in white; similar birds were raised at three Suffolk sites.

Main winter roost in Broads (shared with Hen Harriers and Merlins) held 2 in Jan, 3 in Feb, 5 in March and Oct, 6 in Nov (not including 2 additional females on 1st) and 4 in Dec. At Welney a juvenile attacked and killed by drowning a drake Wigeon Sept 20th.

Hen Harrier: Last of spring at Cley May 28th; first of autumn at West Acre Aug 18th. Reports of roosting birds at 8 sites, but records covering both ends of year from only 3 localities. Counts for the main roosts: Broads: 6 in Jan, 7 in Feb, 6 in Nov/Dec and in the North: 9 in Jan, 10 in Feb, 8 in March, 5 in Nov and 6 in Dec.

Montagu's Harrier: Recorded April 15th-Sept 21st. Five females attempted to nest with the assistance of 3 males; 4 successful and 13 young fledged — a record number since wardening began in 1982. Away from the breeding area 3 records in April (involving at least 2 birds on 29th at Titchwell, Cley and Winterton), 6 in May, 3 in June and Aug and one in Sept.

Goshawk: Records from 3 main areas, but display reported from only one and no other evidence of breeding. Elsewhere singles at Lyng May 2nd (SB) and in off sea at Waxham

Nov 4th (GED).

Sparrowhawk: Spring peak of 7 migrants at Winterton March 30th and April 30th. Among more interesting observations: Female dashing into a group of 15 Jays at Frettenham, one attempting to catch a Ring Ouzel at Eccles and another taking Stock Dove and Collared Dove at Flitcham.

Buzzard: At Holkham one Jan 1st and then 2 at Bayfield 24th/25th one of which stayed until Feb 28th. Seven singles in March all but one in North and East; only 2 in April but 5 May 1st-13th again all in North/East. Last of spring at Brancaster May 29th.

In autumn from Aug 4th with 5 in North and West that month (including 2 at Heacham on 5th) and 7 in Sept. After 23rd only 5 records to year-end with a resident at Ryston mid-Oct to early Nov and 2 at Massingham Heath Dec 22nd.

Rough-legged Buzzard: Massingham Heath Jan 1st-Feb 25th with 2 March 14th-20th and one staying in area until 27th. Elsewhere: Horsey Jan 13th; Breydon Feb 10th; West Raynham 20th; Berney Marshes March 8th-28th; Cley March 26th; Weybourne (2 west together) 26th; Titchwell 27th; Horsey 29th and Winterton 30th.

No autumn records received.

Osprey: Spring records April 7th-May 28th from Blakeney Point, Brancaster, Briston, Cley, Cockley Cley, Hillington, Holme, Horsey, Holkham, Lyng area (April to May 14th), Salthouse, Sandringham, Snettisham, Titchwell, West Acre, West Runton and Wolferton.

Another Cley July 1st and then in Autumn from Aug 11th to Sept 26th at Blakeney Point, Edgefield (where a bird roosted at least Sept 21st-24th and presumably provided cluster of records along North coast around this time), Holme, Holt, Thornham and West Harling.

Kestrel: 33 young from 9 nest-boxes ringed in Stanford Training Area; also bred in 2 boxes erected on telegraph poles at Ten-mile Bank. No particularly high counts received and only 15 at Snettisham Aug 14th.

Red-footed Falcon: Single females at Winterton May 14th (DH RP), Sheringham 23rd (SJMG *et al*) and Winterton 24th/25th (PC) possibly all relate to same individual. Also immature male Cley June 17th-19th (LGRE SJMG DJH *et al*) and female Waxham Sept 14th (MF).

Merlin: Widely reported until May 16th (Blakeney Point) and again from Sept 9th (Cley). Roosting birds recorded at 4 sites with highest counts from Broads roost where up to 7 in Jan/Feb, 8 in Nov and 7 in Dec.

Hobby: Frequent and widespread reports April 24th-Oct 13th and at least one pair bred in Brecks. In addition adults seen carrying prey at 2 sites and 2 adults observed together at another 3. Good number of juveniles in autumn with 2 well-watched birds at Holme Sept 21st-29th and one at Holkham Meals Sept 22nd-Oct 13th which was joined by another 1st-7th.

Peregrine: Recorded on 15 dates to May 1st with 14 occurrences from Aug 18th. All coastal apart from adult Welney Jan 18th; male North Walsham April 7th and immature Welney Nov 18th. In addition a 1st winter female resident in Breydon/Berney area from Dec 19th until found dead riddled with shot in Jan 1990. Most productive site was Snettisham where reported 9 dates including the only sighting of 2 — Jan 14th. A bird at Cley March 18th was wearing jesses.

Red-legged Partridge: Overstrand: a juvenile July 27th landed on a calm sea, sinking after a few minutes and was later washed-up dead.

Quail: A remarkably good year following the warmest May for many years with widespread records from late in the month through to Aug. Localities are as follows: Blakeney, Boughton Fen, Brancaster Staithe (Deepdale), Brancaster (Barrow Common), Choseley/Ringstead (where peak of 12+ calling July 2nd with 4 additional birds calling within 2 miles July 13th-17th; family parties there in late July included one of 8 birds), Cley Walsey Hills, Cley Eye, Cawston (Eastgate), Docking, East Mere Farm (Stanford 'Battle Area'), East Walton, Feltwell/Hockwold, Flitcham, Glandford, Holme, Holkham, Kelling Heath, Langham, Marham, Mautby, Merton, Reedham marshes, Roydon Common, Southery Fen, Stoke Ferry Sluice, Salthouse, Stanhoe, Terrington (Admirals Farm), Thompson, Thornham Marsh, Ten-mile Bank (Manton's Farm), Tunstead, Welney, West Acre, Weybourne, Wood Norton, Wootton Marsh and Wissington BF.

In addition single migrants at Scolt May 25th and Weybourne Oct 5th.

Golden Pheasant: Records from Broughton, Dersingham, East Wretham, Harling, Hockham, Lynford, Sandringham, Santon Downham, Thompson, Wayland Wood, Weybourne and Wolferton. Best counts: 12 Drymere Jan and 10 males and 3 females together East Wretham Dec.

Water Rail: Bred at Cley, Surlingham and Welney.

Spotted Crake: Heard at Strumpshaw April 13th-15th and 23rd; Hickling June 9th-14th and Welney July 8th-13th. Also singles at Holme May 29th and Cley Aug 25th-Sept 9th.

Crane: Two disappeared early in the year, but an immature joined the Broadland group in June, staying until the end of the year and bringing numbers up to 8.

Not a particularly good year for birds outside the Broads although the distribution of dates is not untypical: Holkham April 2nd; Yarmouth 17th; 2 Holme and Titchwell 26th; 2 Strumpshaw May 5th; Thornham May 18th; Breydon June 14th and Cley Nov 11th.

Oystercatcher: Large concentrations in Wash at Snettisham where 11,830 Jan 10th, 12,270 Feb 8th, 7,720 March 10th, 2-3,000 summered, 4,410 July 22nd, 9,000 Aug 4th, 12,950 Sept 19th, 13,250 Oct 17th and 7,900 Nov 17th. Single white bird returned there Aug 2nd.

Breeding pairs: Cley 11, Blakeney Point 200+, Holkham Reserve 37, Scolt 78, Thornham 20 and Holme 14, but low success with heavy predation at some sites by Foxes and Carrion Crows. At least 12 inland breeding pairs.

Avocet: A disastrous breeding season with a county total of 170 pairs rearing less than 40 young. A combination of predation by Stoats, Foxes, Carrion Crows and humans being the main reasons for this low success rate. Largest colonies at Cley 75 pairs and Titchwell 45 pairs.

Tidal Ousemouth again favoured during the autumn with a peak of 122 July 31st; also 32 Snettisham Sept 19th. Recorded at Breydon (maximum 8) all months apart from Jan and Dec while 1-2 inland birds at Welney and Lakenheath Flashes in March. Feb records from Blakeney, Cley and Titchwell and a single wintered with Oystercatchers at Snettisham. Most birds gone by Nov.

Stone Curlew: Little information available. First seen at Weeting Heath March 29th with a small concentration of 12 Sept 5th. Birds present at 5 sites in Stanford Battle Area, but none nested. Following the decline of the Rabbit population the ground vegetation has become too long in recent years. Ploughing would undoubtedly assist the species here.

A total Brecks population (including Suffolk) of 90 pairs raised a minimum of 65 young.

Little Ringed Plover: Reported between March 20th (Horsey) and Sept 1st (Welney). County total of 30 pairs on territory, several noted as successful.

Autumn passage peaked in July when 10 Gillingham 13th, 27 Cantley BF 22nd, 11 Surlingham in July followed by 10 in Aug, 8 Cley 4th, 7 Wissington BF 13th and 8 Welney 17th.

Ringed Plover: Largest breeding concentrations on Blakeney Point (100 pairs), Holkham Reserve (46 pairs) and Scolt (90 pairs), but heavy predation at the latter site by Foxes, Stoats and Kestrels. At least 15 inland pairs at 12 sites.

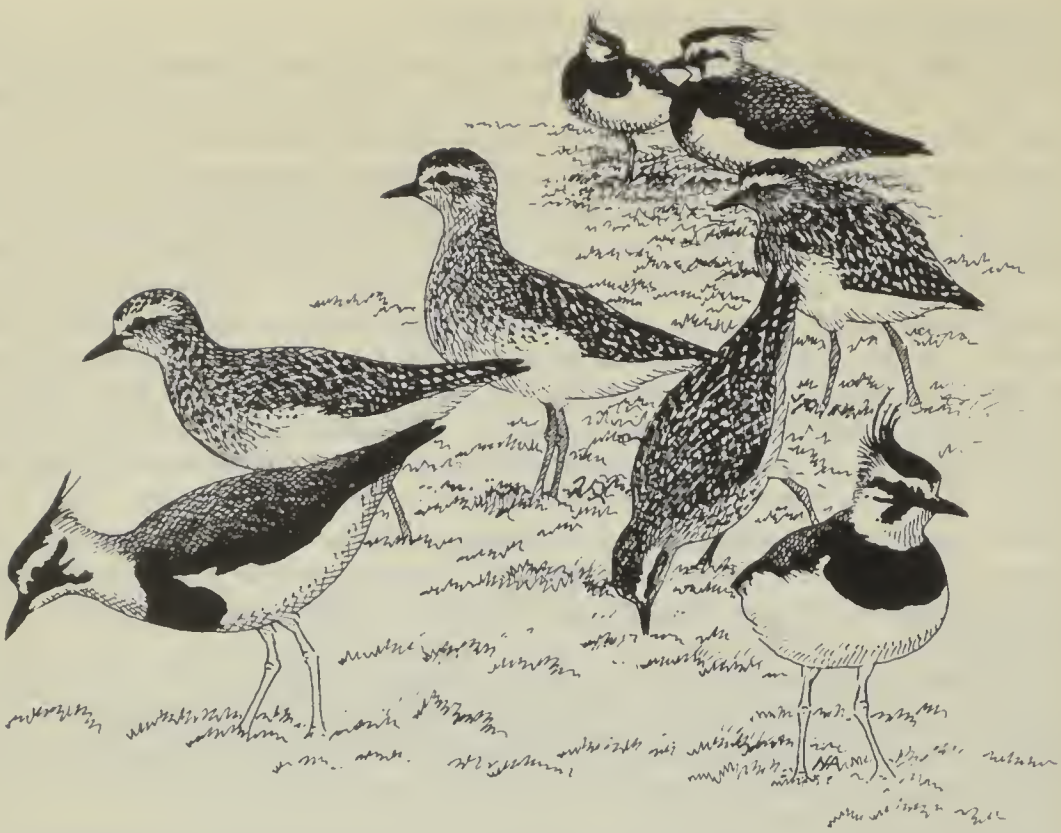
Highest counts of passage migrant *tundrae* include 180 Lynn Point and 30 Welney during May. Autumn gatherings of 350 Overy Dunes Aug 19th, 195 Snettisham July 22nd followed by 170 Aug 21st and 132 Lynn Point Aug 20th.

Kentish Plover: An early inland male at Pentney GP March 29th followed by records from Breydon of a male April 10th, Berney May 16th and Cley male April 8th and female April 27th-29th.

Dotterel: May passage first noted at Holme where 2 flew east May 2nd followed by 8 Happisburgh 7th, 5 Cley 9th, Paston 13th, Weybourne 14th, 2 Winterton 19th and 3 on 20th-22nd, up to 3 Blakeney Point 24th-31st and 6 Choseley 25th.

Autumn passage involved single Cley/Blakeney Point Aug 26th-Sept 2nd, 2 Choseley Aug 29th and 2 juveniles Weybourne Sept 21st-23rd.

Pacific Golden Plover: An elusive summer-plumaged individual frequented the Holme/Thornham Creek area between July 20th-22nd and again on 26th (GFH PJH AMS *et al*). A county first.



Golden Plover: Largest flocks were at Shipdham where 3,000 Jan 10th and 5,000 Dec 27th; Cley where 2,000 Jan 3rd and 2,300 Feb 11th and West Raynham airfield where 1,200 Feb 20th. Several other concentrations around the 1,000 total. Earliest returning autumn bird July 5th at Welney.

Grey Plover: Large gatherings on Wash at Snettisham where monthly peaks were 607 Feb 10th, 580 March 11th, 762 April 9th, 1,840 May 7th, 300 July, 710 Aug 21st, 1,205 Sept 19th and 800 Dec 17th.

Other notable flocks included 1,197 Lynn Point April 9th where 500 May 27th, 1,200 Titchwell Aug 20th, 269 Blakeney Harbour Aug 28th and 250 Brancaster Harbour Sept. High tide roosts of up to 160 birds also at Holme and Thornham Point in May.

Inland records from Welney mostly of singles March/April, May (3), Sept and Nov.

Sociable Plover: The Titchwell/Holme 1988 bird was in fact observed Sept 24th not 25th.

Lapwing: Mild weather in both winter periods saw large numbers remaining in the county rather than continuing to the south-west. Some of the largest flocks were at Breydon/Berney 5,000 Jan, 6,000 Feb and 5,500 Dec; Ludham 3,000 Feb; Shipdham 7,000 Jan and 5,000 Dec; Cley 3,400 Jan; Welney 2,000 Jan and Dec with many smaller assemblies elsewhere.

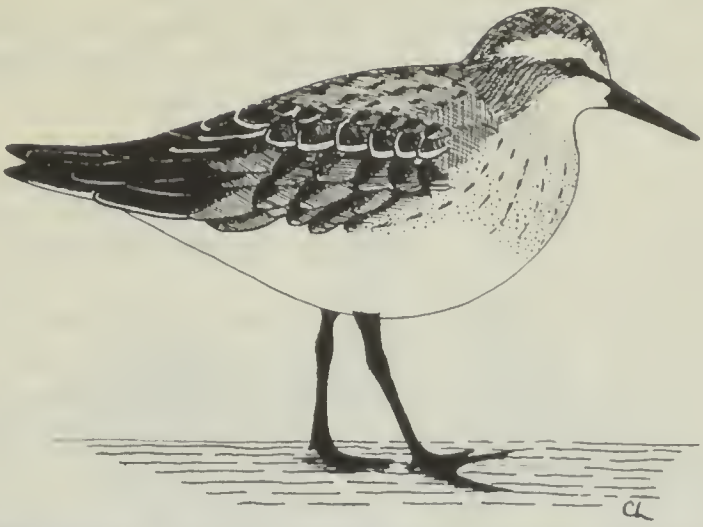
Knot: Largest flocks at Snettisham with counts of 28,000 Jan, 20,500 Feb, 5,000 March, 13,500 April, 1,000 June, 7,200 July, 19,250 Aug, 20,000 Sept, 80,000 Nov and 15,000 Dec.

A huge high-tide concentration of 90,000 Holme (Gore Point) Oct 15th while 6,000 Titchwell Aug 4th/5th and 9,000 Sept 17th.

Welney: an inland record of a single April 15th.

Sanderling: Wash counts at Snettisham of 325 June 3rd, 450 July 22nd, 1,315 Aug 4th, 365 Sept 18th and 190 Nov 15th. Also 170 Titchwell May 20th/21st and 100 Overy Dunes Aug 19th.

Inland sightings at Welney April 25th, 2 Pentney GP May 14th and Lakenheath Flashes May 30th.



Semipalmated Sandpiper: Cley: an adult summer-plumaged bird May 14th-17th (ME SJMG *et al*). The third county record.

Little Stint: Unseasonal records from Gillingham Flood where the wintering individual from Dec 1988 remained until Jan 25th. A late bird was again there Dec 19th-28th.

Spring passage commenced with an early bird at Cley March 26th followed by regular sightings of up to 3 birds April to early June. Also present at many other sites including Berney maximum 3, Hickling maximum 5, How Hill, Holkham maximum 4, Snettisham, Lynn Point, Pentney GP 2 and Lakenheath Flashes 2.

A flurry of pre-autumn migrants in late June when birds appeared at Gillingham up to 4, Hickling up to 9, Cley up to 8, Holkham up to 9, Welney 2 and Pentney GP 2.

Only small numbers of migrants on autumn passage July to Nov 10th from usual areas; largest count 10 Cley July 27th.

Temminck's Stint: A typical spring passage from May 7th (Cley). Recorded at 10 sites: Berney (maximum 6 May 17th), Hickling from May 10th (maximum 3 on 22nd), Cley (maximum 3 May 11th and 22nd/23rd), Holkham (maximum 4 May 22nd), Titchwell May 19th/22nd, Holme (maximum 3 May 22nd), Snettisham June 4th and 16th, King's Lynn BF May 18th, Lakenheath Flash May 16th and Welney May 19th-23rd. Possibly 35 birds in all.

A light autumn movement preceded by a mid-June passage when 3 Hickling 19th, Cley 10th-13th, Snettisham 16th. Otherwise noted at Cley July 2nd-4th and 16th, Holme July 21st-25th and Sept 9th and Snettisham July 4th and 21st. About 8 individuals.

Baird's Sandpiper: Additional 1988: Lodge Marsh Wells July 27th (MA JRMcC).

Pectoral Sandpiper: A spring migrant at Holkham May 11th-16th (BRS).

In autumn recorded at Cley Aug 31st then presumably the same Sept 3rd/4th joined by another bird Sept 5th-7th. This second individual, a juvenile, briefly at Weybourne and Salthouse (PDK TCD *et al*); a single remaining until 17th and 2 juveniles Sept 20th-22nd. Others at Lakenheath Flashes July 13th-15th (PJH DJH), Titchwell Aug 26th, Colney GP Sept 17th (CR) and How Hill Oct 2nd-5th (RA MJS SFS *et al*).

Curlew Sandpiper: Spring passage at Cley commenced with 2 April 25th followed by mostly small numbers into mid-May peaking at 12 May 13th and 16th. Occasional birds throughout June. Small numbers (1-3) also at Breydon (April 24th-25th), Berney, Holkham, Titchwell, Thornham Point, Lynn Point, Snettisham and Welney.

Only reported from 7 sites in autumn mostly at Cley where peaks of 11 July 27th and

Aug 11th and 15 Aug 18th. Autumn passage mostly involved returning adults with juveniles practically non-existent and few birds remaining after Sept.

Purple Sandpiper: Noted up to June 9th (Cley) and from Aug 25th (Titchwell). Highest counts as usual from Heacham-Hunstanton where 22 Jan, 14 Feb, 11 March, 18 Nov and 12 Dec. Small numbers regularly at Yarmouth harbour (maximum 5), Paston-Walcott (maximum 17 in March) and Cromer-Overstrand (maximum 5).

Dunlin: Wash counts: Snettisham: 11,000 Jan, 12,650 Feb, 12,000 March, 11,800 April, 5,920 May, 8,100 July, 11,450 Aug, 4,710 Sept, 14,970 Oct, 3,300 Nov and 5,000 Dec. Wolferton: 6,000 March, 4,000 April, 6,000 May, 500 Sept and 700 Nov. Ouse Mouth: 2,500 Jan, 3,000 Feb and 1,800 March.

Also 500 Cley Marsh July 28th and an inland peak of 110 Welney March 17th.

Broad-billed Sandpiper: An unprecedented May influx when a single Lynn Point on 7th (CD) followed by a series of records from Breydon/Berney where singles May 18th/19th, 2 May 20th/21st, 3 May 22nd, single May 23rd with another May 27th (PRA *et al*). Another bird commuted between Holme and Titchwell May 13th-24th (GFH PJR *et al*) and yet another was at Cley May 31st-June 4th (GA CL AMS *et al*).

One on autumn passage visited Breydon July 31st-Aug 1st (PRA PJH AS).

Ruff: The winter months produced records from Berney 21 Jan, 26 Feb and 28 Dec; Hickling 11 Feb; Strumpshaw 46 March; Salthouse 5/6 Feb; Blakeney 9 Jan; Titchwell 6 Jan and at Welney 1-4 Jan/Feb, 25 March and 120 Dec.

Spring passage peaked in early May with most birds quickly moving on. Largest counts: 50 Berney May 8th; 125 Cley May 5th; 46 Holkham May 5th followed by 59 May 22nd; 23 Holme May 5th; 22 Lynn Point May 7th and 80 Welney May 6th.

Largest groups in autumn: 80 Cley July 17th/19th with few in Aug but increasing to 58 Sept 4th; 23 Holkham July 10th; 23 Holme July 18th-25th while monthly peaks at Welney were 60 July 30th/31st, 97 Aug 28th, 108 Sept 26th, 120 Oct 23rd and 145 Nov 30th.

Possible breeding at Berney where a juvenile present in June. No other evidence of breeding although lekking observed at Welney and Cley.

Jack Snipe: Noted up to April 26th (Welney) and from Sept 11th (Blakeney Point) when an early bird was in suaeda. Otherwise ones and twos reported from 25 sites.

Snipe: County total of 242 drumming birds though no counts received from some areas. Largest concentrations from Norfolk section of Ouse Washes (164 drummers), Holkham (25) and Strumpshaw (22). Winter counts included Berney 150 (Jan) and 190 (Nov) with 200 Cley Aug 12th.

Long-billed Dowitcher: A summer-plumaged bird briefly at Titchwell June 18th (AMS NS JT RW *et al*). The fourth county record.

Woodcock: A concentration of 15 roding birds in Holkham Park area, but the handful of other display records received give no indication of true status.

Several freshly arrived coastal birds in Oct/Nov from Winterton, Cley and Blakeney Point; also one off the sea at Holme on the odd date of Jan 11th.

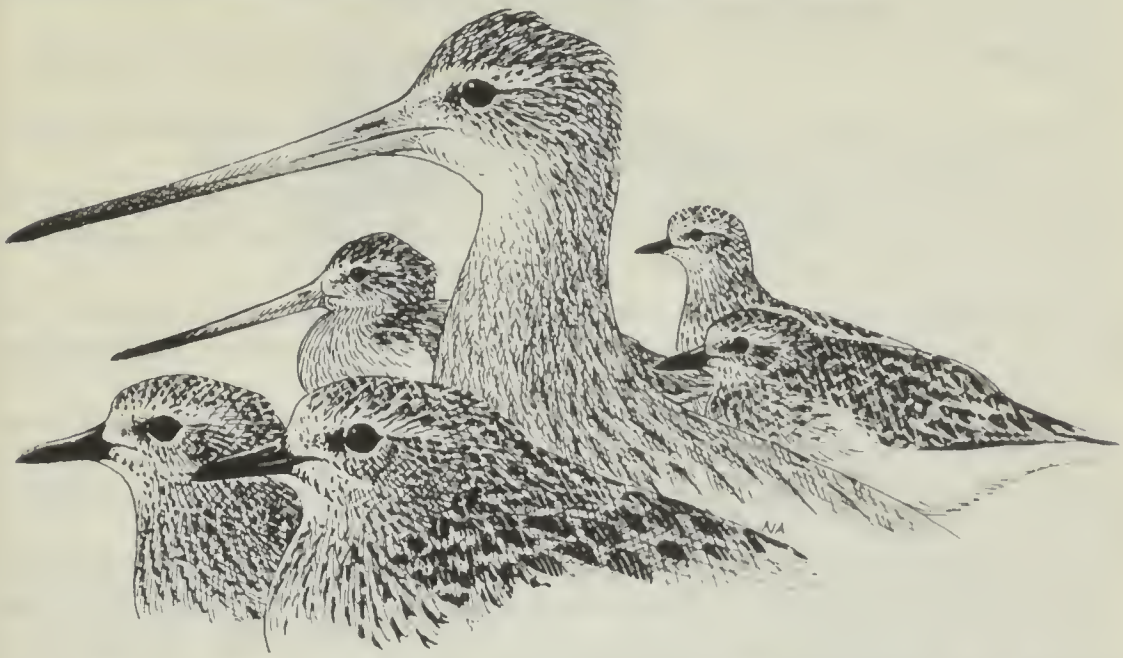
Black-tailed Godwit: Occasional winter records (1-8 birds) from Breydon (Feb, Dec), Cley (Jan), Titchwell (Jan) and Ousemouth (Jan).

An above average spring passage with peaks of 40 Titchwell April 7th, 340 Cley April 7th, 13 Holkham April 10th and 20 Breydon May 29th. 600 Ousemouth March 3rd had probably been flooded off the Ouse Washes where there were large concentrations of Icelandic passage migrants. Highest counts on the Ouse Washes at Welney were 570 March 8th, 620 March 21st, 1,084 March 22nd, 920 March 23rd gradually reducing but still 80 April 19th.

Autumn peaks of 50 Cley July 5th and Aug 5th, 12 Holkham July 10th, 40 Welney

July 13th and 27 Oct 15th and 500 Ousemouth Aug 16th/17th.

Two breeding groups in the Welney area of 8 and 3 pairs, but only one pair successfully rearing young. High water levels April/May caused 5 of these pairs to nest on adjacent arable where at least 2 pairs hatched young although none survived.



Bar-tailed Godwit: Largest counts consistently from Snettisham where high tides produced 3,600 Jan 11th, 860 June 4th, 3,500 Aug 21st and 1,500 Dec 4th. Other notable concentrations: 2,000 Titchwell/Thornham Oct 15th and 1,500 Nov 15th; also 250 Brancaster Harbour Jan.

Out of season 'red' birds at Overy Staithe Jan 4th/5th and again Dec 26th; also 3 Blakeney Harbour Jan 15th. One or 2 inland birds at Welney on 5 dates April/May with 11 May 6th.

Whimbrel: Noted between April 3rd (Snettisham) and Oct 8th (Lynn Point). Largest spring flocks: 42 Breydon April 28th, 24 Horsey May 10th, 58 Cley/Salthouse May 6th, 18 Holkham May 4th and 12 Lynn Point May 7th.

As usual most impressive numbers observed on autumn passage when a huge concentration of 400 Salthouse Aug 27th, 57 Blakeney Point Aug 6th, 53 Wells/Holkham Aug 5th, 42 Brancaster Harbour Aug 2nd (where total autumn movement involved 400+ birds), 20 Thornham Creek July 21st, 76 Holme Aug 2nd, 20 Snettisham July 27th followed by 21 Aug 23rd.

Inland records from Welney April 21st/23rd, 3 May 6th, July 31st, Aug 23rd and 4 Aug 9th. A flock of 19 Pentney GP Aug 26th.

Curlew: No reports of breeding received. Largest Wash counts at Snettisham: 965 Jan, 477 Feb, 877 Aug, 477 Sept, 760 Oct and 462 Nov.

Elsewhere a record Breydon count of 530 Nov 25th and 650 Brancaster Harbour July 23rd where winter population around 450 birds.

A heavy easterly passage at Cley April 20th involved flocks of 20-30 birds but also several of 100+ and one each of 225 and 400 birds.

Spotted Redshank: Winter records of 1-2 from Breydon (Feb, Dec), Burnham Norton (Feb), Brancaster (Jan) and Titchwell (Feb, Dec).

Highest spring numbers from Hickling 16 May 5th, Cley 16 April 18th and 20 May 4th and Snettisham 10 May 2nd. Substantial numbers also present in June when 4 Hickling 11th, 28 Cley 23rd and 7 Holkham 13th.

Autumn passage obvious mainly at Cley where up to 25 July/Aug and 20 Sept 19th. Small numbers at 7 other sites during the year.

Redshank: Peak Wash counts at Snettisham were 940 Jan-March, 1,160 April, 950 July 24th, 2,500 Aug 22nd, 3,460 Sept 18th, 1,450 Oct 17th with 500 wintering. Up to 26 pairs breeding on Holkham fresh-marshes.

Greenshank: Winter records from Blakeney (Dec), Titchwell/Holme (Dec) and Snettisham (Dec).

Spring passage peaked in May when 15 Hickling 24th, 7 Cley 21st/24th, 10 Holkham 21st, 17 Snettisham 27th, 5 Lakenheath Flashes 8th and 13 Welney 8th.

Largest numbers in autumn included 45 Breydon Aug 17th, 60 Cley Sept 17th, 15 Blakeney Aug 26th, 16 Holkham Aug 5th, 16 Brancaster Aug 22nd, 20 Titchwell Oct 2nd and 33 Snettisham July 23rd where 36 Aug 17th.

Green Sandpiper: Mild conditions resulted in overwintering birds at 32 sites, mostly 1-2 but notably up to 9 Bayfield Lake (Jan/Feb), 3 Gt. Melton (Jan) and 8 (Dec) and 3 Marham (Feb and Dec).

Small numbers noted on spring passage at 20 sites. Widely scattered in autumn and most favoured areas as follows: Cantley BF 19 July 2nd and 28 Aug 1st, 19th and 28th; 12 Gillingham July 11th, 11 Cley Aug 26th and 13 Sept 19th, 30 Holme July/Aug, 16 Wissington BF July/Aug and 11 King's Lynn BF Aug 21st.

Wood Sandpiper: Small numbers on spring passage at 13 sites from April 29th (Holme) — this individual was killed by a Sparrowhawk May 1st. Mostly one or two birds, but up to 6 Berney May 6th-31st, 5 Cley May 23rd-27th, 4 Holkham May 13th and 25th, 3 Holme May 22nd/23rd and 3 Lakenheath Washes May 14th.

A mediocre autumn passage with 1-2 birds at 15 sites, largest counts being 5-6 Cley July 15th-31st and 5 Aug 21st. Last recorded at Breydon Sept 28th.

Common Sandpiper: Winter records from Cley Jan 14th-Feb 28th and again Nov 21st and Dec 17th/18th. Also at King's Lynn BF Jan-March and Oct-Dec.

Otherwise extreme dates April 9th and Nov 5th (Berney). Maximum spring numbers 8-9 Cley May 6th and 21st.

Widespread autumn movement with largest counts 20 Breydon Aug 25th, 26 Cantley BF July 22nd, 11 Surlingham Aug 25th, 20 Cromer Pier Aug 26th, 18 Cley Aug 7th, 19 Lynn Point July 27th-29th and 15 Aug 21st-27th and 14 Wissington BF Aug 11th.

Turnstone: Largest counts at Snettisham: 80 Jan/Feb, 140 March, 275 April, 185 May, 410 Aug, 390 Sept and 60 Dec. Two notable flocks in Brancaster Harbour: 240 Jan and 210 Sept as well as 361 Sheringham roost-site.

Several inland records with singles King's Lynn BF Aug 27th/28th; Tottenhill GP Aug 11th; Wissington BF 2 May 21st and at Welney where singles April 23rd, May 3rd, 2 May 4th, May 6th, 11th and 25th with 2 Aug 26th.

Red-necked Phalarope: A typical scatter of records with a summer-plumaged bird at Hickling June 5th (TRB *et al*) followed by autumn juveniles at Welney Aug 27th-Sept 2nd with another Sept 17th/18th (JBK LB *et al*), Thompson Water Sept 6th and 8th (JW) and on the sea at Cley/Salthouse Sept 11th/12th (JH *et al*).

Grey Phalarope: All records concern birds at sea: Singles flying east off Sheringham Sept 28th (KBS), west off Weybourne Oct 8th (JW) and one in Holkham Bay Oct 14th (GMSE). Following a strong WSW gale Oct 29th a total of 8 flying west and one east off Sheringham Oct 30th (PJH BWJ) and a single on the sea off Cley later in the day was presumably one of these individuals.

Pomarine Skua: Spring migrants off Paston May 29th and 31st.

Autumn passage between July 16th and Nov 23rd, mostly from North Coast areas. A

total of 157 birds with monthly figures as follows: 7 July, 35 Aug, 61 Sept, 34 Oct and 20 Nov. Peak days: Sept 9th/10th (33) and Oct 7th/8th (24).

Winter sightings from The Wash Jan 4th when 2 followed the fisheries vessel *Protectoril*, Holme Jan 10th/11th and Cromer Feb 14th.

Arctic Skua: A few spring and early summer records of singles from Titchwell March 25th, Trimingham March 26th, Cley May 7th, Waxham May 27th, Blakeney Point June 2nd/4th and Thornham Point and Cromer June 24th.

Autumn passage between July 2nd (Breydon) and Nov 22nd (Cromer) when widely observed around the coast. Largest movement Aug 27th when 81 east at Paston, 160 Sheringham, 120 Cley, 90 Holme and 130 Hunstanton. On Sept 9th there were movements of 35 Sheringham and 50 Holme.

Four records of 3-20 flying inland at Ousemouth in Aug/Sept. An unusual sight was that of 3 mobbing a Marsh Harrier at sea off Snettisham Aug 20th.

Long-tailed Skua: A total of 13 individuals (7 adults) between July 30th and Sept 9th off coast between Paston and Holme.

Great Skua: Single winter birds off Snettisham Jan 14th, Holme Jan 17th and at Ousemouth Feb 1st. Two spring records: Holme April 10th and Ousemouth April 16th.

Autumn birds noted July 31st to Nov 23rd from many coastal sites. Largest movements Aug 27th when 54 Cromer, 65 Sheringham and 40 Cley/Blakeney Point; Sept 9th when 71 Cromer, 150 Sheringham, 120 Cley/Blakeney Point, 89 Holkham Bay, 45 Holme and 66 Ousemouth of which 39 flew inland; Sept 10th when 50 Waxham, 45 Cromer and 55 Sheringham; and Oct 8th when 80 Sheringham, 68 Cley/Blakeney Point, 99 Holme and 39 Hunstanton.

One killed and ate a Lapwing from a migrating flock off Hunstanton Aug 20th.

Mediterranean Gull: Observed most consistently at Yarmouth where 1-2 adults from Jan-March 19th and from July 2nd-Dec, 2nd winter from Nov 6th to Dec 31st and a 1st summer May 3rd, May 17th and July 10th. Elsewhere an adult (presumed returning bird of previous winters) off Overstrand for much of the year. At Breydon 1st winter Jan 9th and Sept 2nd with 1-3 (each 1st summer) April 12th to June 30th. At Cley/Blakeney Point up to 2 adults in April, Aug/Sept, 2nd winter Oct 8th, Oct 14th and Nov 17th, 1st winter Aug-Nov, 1st summer April 27th-29th, May 13th/21st and July with a 2nd summer Oct 7th.

In addition: Weybourne adult Sept 21st; Salthouse Dec 23rd; Cromer Pier 2nd summer

April 10th, 1st summer July 2nd, 17th and 31st, adult Aug 1st and another Nov 9th; Sheringham 1st summer April 8th and June 29th, adult Aug 4th/5th, 2nd winter Sept 28th, adult Sept 30th to Oct 5th and 2nd winter Nov 9th; Holkham adult Oct 23rd and Nov 19th; Burnham Overy adult Dec 26th; Brancaster July 31st; Titchwell 1st winter Feb 22nd, 2 adults April 11th-14th and Nov 19th; Thornham adult associating with Pacific Golden Plover July 22nd, 1st summer May 7th; Choseley 2nd winter March 4th and adult Sept 4th; Holme 1st winter Feb 28th, March 26th, adult Aug 3rd and 25th, 1st winter Oct 28th and Nov 9th/10th; Heacham adult Oct 2nd and Oct 21st; Snettisham adult Feb 18th/19th, June 17th and Aug 18th; King's Lynn 1st winter Feb 5th.

Inland: Burgh Castle adult Jan 8th, 1st winter April 15th and Nov 1st; Massingham Heath 1st winter Feb 11th and East Mere (Brecks) 1st summer July 12th. A long dead (1st winter) bird Blakeney Point Oct 20th.

A 2nd winter hybrid with Black-headed Gull at Heacham Oct/Nov and a 1st summer hybrid with Black-headed Gull at Breydon April 25th.

Little Gull: Unusually large numbers in the north-west of the county during the opening months of year. Counts from Holme/Hunstanton included 73 Jan 8th, 93 Jan 10th and 30 Jan 16th; also noted at Weybourne 9 Jan 4th and Yarmouth Feb 3rd.

Only a light spring passage when birds at Breydon/Berney up to 10 May 6th-18th; Filby 2 April 14th; Hickling maximum 16 May 28th; Cley maximum 10 May 4th; Holkham Park April 11th, May 7th and 12th while the fresh-marshes held 1-2 May 22nd/23rd; Snettisham 5-6 May 25th-27th; Lynn Point 8 April 4th; Denver Sluice April 24th; Welney April 8th to June 21st maximum 8 May 23rd and Pentney GP May 4th/5th.

A few immatures (2-6) summered at Hickling and Barton Broads and Snettisham.

Largest autumn movements occurred between Oct-Dec and were on average later than usual. Highest counts: Sheringham 50 Oct 8th, 55 Oct 30th and 100+ Nov 5th; Weybourne 52 Dec 11th; Salthouse 7 Dec 28th; Cley/Blakeney Point 150 Nov 5th, 35 Nov 22nd and 40 Dec 10th; Holkham 30 Nov 5th and 123 Dec 8th; Brancaster 10 Dec 22nd and Hunstanton/Holme 50 Oct 7th and 12 Dec 19th.

Sabine's Gull: A total of 9 birds (5 adults) as follows: Aug 27th an adult Hunstanton (PJL) and 2 adults moving east and observed from Weybourne, Sheringham and Cromer (SCV MN KBS *et al*); Sept 3rd a juvenile off Cley (RJ RM); Sept 9th juvenile off Cley (DJH); Sept 10th adult off Cley-Weybourne (PDK PAGR *et al*); Sept 21st adult Hunstanton (MR); Oct 2nd juvenile Sheringham (GC) and a late juvenile Nov 5th off Cley/Blakeney Point (BWJ PL ETM *et al*).

Black-headed Gull: Number of *pairs* at main sites: 1,500 Blakeney Point, 2,800 Wells saltmarsh, 300-400 Scolt but few successful due to Fox predation, 834 Snettisham and 400 Wissington BF.

Common Gull: Blakeney Point a pair hatched 2 young.

Lesser Black-backed Gull: Bred at Blakeney Point (2 pairs) and Wells saltmarsh (20 pairs).

Herring Gull: Bred at Blakeney Point (40 pairs) and Wells saltmarsh (29 pairs).

Northern race *argentatus* reported from Cley/Blakeney Point and Taverham up to March 5th and from Nov onwards as well as at Sheringham Jan/Feb and Oct-Dec; Blakeney Point July 29th; Holme April and Aug and Heacham Jan and Nov.

Yellow-legged individuals at Breydon July 29th, Yarmouth Aug 14th, Berney Oct 8th and Nov 5th, Hickling/Horsey area May 24th, June 17th and July 24th, Tunstead 2 Oct 3rd, Cley Sept 16th, Burnham Deepdale Aug 12th, Wereham Feb 24th and Pentney GP Jan 2nd.

Iceland Gull: A first-winter bird at Yarmouth/Gorleston Jan 1st to March 19th (many observers) with a second-winter bird Jan 1st (GRO) and Feb 23rd (PJH) and nearby at Caister April 30th (GRO).

Also seen at Breydon (1st winter) May 4th (PRA), Winterton Feb 18th, Weybourne adult Nov 22nd (JW), Cley/Salthouse 1st winter Dec 17th and 24th (PC PDK) and Blakeney Point (2nd winter) Nov 25th (MPT).

A series of records of first-winter and second-winter birds at various points along the North Coast in April probably relate to just 2 individuals: Cromer (2nd winter) April 9th and 1st winter April 16th (SCV MPL), Sheringham (1st winter) April 8th (KBS), Cley (2nd winter) April 16th-19th (OAMS) and (1st winter) April 8th, Blakeney harbour (1st winter) April 16th (SJMG SCJ) and Holme (1st winter) April 21st.

Glaucous Gull: Blakeney Point/Cley/Weybourne: A regular adult up to Feb 25th and from Sept 25th until end of year with 2 adults Feb 19th, 2 (1st winter) birds Jan 22nd-Feb 8th with another April 8th/9th, an immature (1st summer/2nd winter) was present from July until the year-end.

Many other scattered records of singles from Yarmouth adult Feb and Oct; Breydon Feb 2, March and Dec; Caister Feb; Waxham adult March and April 11th-15th; Paston April; Cromer April; Sheringham Feb-April and Sept; Holkham March; Titchwell/Thornham May and June; Hunstanton/Holme adult Jan-March, Oct and Dec; Heacham Jan/Feb; Snettisham Oct; Lynn Point Nov and inland at Attlebridge and Taverham both Jan.

Individuals resembling hybrid Glaucous Gulls at West Runton May 1st, Sheringham/Cley from July 1st, Titchwell April and Heacham Jan/Feb (same bird as Dec 1988) — all 1st winter or 2nd winter.

Kittiwake: An estimated 20,000 east off Sheringham between 0930 and 1530 hours Nov 22nd.

Sandwich Tern: Extreme dates March 9th (Salthouse) and Dec 9th (Cley). At Scolt 3,000 at evening roost by early May and 1,050 nests July 3rd — most soon deserted and no young reared due to Fox activity. A better season was enjoyed by 1,500 pairs at Blakeney Point. Inland occurrences at Welney May 21st and Flitcham July 24th. At Lynn Point 48 flew high inland Sept 17th.

Additional 1988: A very late bird off Cley Dec 17th (HPM).

Roseate Tern: Remains a rare visitor. Single adults at Cromer Aug 13th (MPL) and Paston Sept 9th (MF).

Common Tern: Observed between April 14th (Scolt and Filby) and Nov 10th (Titchwell). Only 758 pairs were reported as breeding. Looking back 20 years to 1969 shows Blakeney Point then held 1,200 pairs and Scolt 500 pairs with a county total close to 2,000 pairs.

Number of pairs at major colonies in 1989: Breydon 95 pairs on tern platforms reared 77 chicks; Blakeney Point 240 pairs but low fledging due to Herring Gull predation; Holkham NNR 66, but few if any young fledged due to unknown predators; Scolt 159 but only 10 young fledged due to heavy Fox predation and Snettisham 97 pairs. Other significant colonies at Hardley Flood (30), Hoveton (23) and Ranworth (22).

Arctic Tern: Recorded April 4th (Weybourne) and Nov 15th (Salthouse). Breeding occurred at Blakeney Point (4 pairs) and Scolt where one pair was predated twice.

A light spring passage when birds at Brèydon May 19th; Weybourne 17 May 22nd; Cley/Blakeney Point April 11th, 5 on 22nd and 5 on 25th; Holkham Bay 2 May 2nd; Titchwell 2 May 5th; Welney where northward migration included 4 April 19th, 18 April 20th, 3 April 22nd, 23rd and 5 April 27th and Pentney GP April 21st and May 3rd.

Only small numbers in autumn and no group exceeded 8 birds. Observed at Yarmouth, Sheringham, Cley/Blakeney Point, Snettisham and Lynn Point. Scarce inland in autumn but a juvenile at Welney Aug 27th after strong winds.

Little Tern: Recorded April 12th (Overy Staithe) and Oct 22nd (Holkham). A concentration of 220 Ousemouth July 12th. Two inland records: Lakenheath Flash 2 May 3rd and Pentney GP July 30th.

A decline to 477 breeding pairs (561 in 1988). The largest colony at Yarmouth where 180 pairs fledged 160 young despite an estimated 60 chicks predated by Kestrels. Heavy predation at other colonies by Foxes, Stoats, large Gulls, Oystercatchers, Magpies, Crows and high tide flooding enabled only 97 young to be fledged by remaining 297 pairs.

Whiskered Tern: Welney: an adult May 12th/13th (JBK *et al*) also visited the Cambs section of the Ouse Washes. The 18th county record.

Black Tern: First at Holme April 9th with other early April sightings at Rollesby on 11th and Holme/Titchwell on 14th. Spring passage occurred in two main waves commencing during the first ten days of May when noted in small numbers at 18 sites. Largest groups were 7 Lakenheath Flash and 7 Welney both on 6th; 7 Hickling on 7th; 6 Hoveton, 16 Barton and 7 Rockland all on 8th; 8 Strumpshaw, 12 Hardley and 7 Pentney GP all on 9th.

A further movement took place around May 19th-22nd when appeared at 13 localities — mostly in small numbers — but 13 east Weybourne, 21 Cley/Blakeney Point, 6 Holkham, 8 Titchwell and 11 Snettisham all on May 22nd.

A few unseasonal June records 2 Thornham Point 4th, Cley 18th and 5 Breydon 21st. A very quiet autumn passage being seen at only 4 sites with a total of 38 birds including 23 at Cley Sept 9th.

Black Guillemot: Singles at Weybourne Feb 9th (JW) and Cromer Oct 29th (MS).

Little Auk: One picked up in Salthouse village Jan 7th. In autumn recorded on many dates on North East coasts Oct 27th-Nov 29th with peak numbers 22 Cley Nov 1st and 12 Paston and Sheringham on same date, and 20+ east Sheringham Nov 22nd. In December singles Holkham 3rd and Salthouse 9th.

Puffin: In first winter period 1-2 Cromer Feb 11th and singles Weybourne Jan 4th and Holme March 27th and April 12th. Unprecedented autumn passage Aug 27th-Nov 22nd with birds moving mainly eastwards along north coast on at least 30 days. Mainly records of ones and twos with peaks of 18 Sheringham Sept 8th and 10 Blakeney Point Oct 8th.

Collared Dove: Largest counts 100 Shrumpshaw Jan 1st and 120 Limpenhoe Feb 6th.

Turtle Dove: Earliest record Titchwell April 15th. Notable visual spring passage mid-May with 117 west Weybourne on 14th and 20 west per hour Cley on 16th, when also 200 south at Snettisham. A very late bird Winterton Nov 11th.

Ring-necked Parakeet: Isolated records from Blakeney Point, Breydon, Burnham Norton, Caister, Cley, Hickling, Holkham Park, Holme, Langham, Snettisham, Waxham, Weybourne and Winterton.

Cuckoo: Simultaneous arrival April 9th when records from Cley, Pensthorpe and Weybourne.

Barn Owl: Recorded during year at 172 localities.

Little Owl: Recorded during year at 64 localities.

Tawny Owl: At a farm on Salthouse Heath an individual seen attacking nests of House Martins, eventually taking all the young from 7-8 nests present.

Long-eared Owl: At a Fenland site 6 at a winter roost March 11th and 14 there Dec 2nd. Also 4 roosting in hedgerow North Barsham March 30th-April 3rd. Spring migrants at Cley March 20th, Weybourne April 16th, Northrepps (in observers' garden) April 18th, Berney April 28th and Yarmouth April 30th. Breeding records only received from 3 Brecks localities and one North Norfolk site. Autumn coastal migrants at Weybourne Sept 9th, Blakeney Point Sept 10th, Oct 8th and Oct 28th/29th, Winterton Oct 4th and 28th, Waxham Oct 8th, 2 Cley Oct 29th (one flying in off sea being mobbed by an Arctic Skua) and Sheringham Nov 22nd.

Short-eared Owl: During RSPB winter survey of Yare Valley estimated total of 50 present in February with maximum of 13 Haddiscoe Island on 13th. Two pairs bred between Wolferton and Lynn Point. At Cromer one seen quarter mile out to sea on the unusual date of Aug 30th. At least 8 watched flying in off sea Sept 26th-Nov 28th between Weybourne and Blakeney Point.

Nightjar: A spring migrant flushed on Scolt Head May 25th. The 1988/9 RSPB Breckland survey produced a total of 229 churring males of which 135 were in Norfolk. Elsewhere churring males at Dersingham (3), Kelling Heath (4), Roydon Common (6), Salthouse Heath (4), Winterton (2) and Wolferton (3), where a male churring mid-day June 18th. Autumn migrants at Weybourne Aug 5th and Snettisham Aug 15th.

Swift: An early migrant Weybourne April 10th, but no other records until singles at Cley, Field Dalling and Sparham on 22nd, followed by widespread arrival in small numbers 25th-27th. A partial albino at Weybourne May 28th and June 18th and presumably the same bird at Cley July 1st and 14th. At Winterton 1,500 south in 1½ hours during evening of June 25th. No late records received.

Hoopoe: Singles at Gorleston April 8th, Salthouse Heath April 24th and later at Weybourne April 27th-29th, another at Weybourne on the unusual date of July 4th. West Runton Sept 13th-15th and Taverham (Thorpe Marriott) Nov 15th-17th.

Wryneck: In spring singles at Wiveton Downs April 17th, Hickling April 23rd, Holme April 25th, 29th/30th and May 6th, Yarmouth and Filby April 30th and Repps (window casualty) May 7th. In autumn Yarmouth Sept 9th-19th, Winterton Sept 12th-19th with 3 on 19th and one Oct 11th/12th, Sea Palling Sept 13th, Blakeney Point Sept 6th-13th with 2 on 12th, Blakeney Village Sept 17th, Morston Sept 20th, Wells (East Hills) Sept 9th, Holkham Meals Aug 28th-30th, 3 Sept 10th-12th, 2 13th and singles 14th and 20th, Overy Dunes Sept 12th, Thornham Point Sept 12th/13th, Holme Oct 1st and inland at Harleston 2 days end Sept. At least 4 records refer to sitings in observers' gardens.

Great Spotted Woodpecker: A Continental migrant flew in off the sea Weybourne Oct 19th.

Woodlark: Coastal migrants at Weybourne (flying west) March 10th, Burnham Deepdale Oct 28th and Winterton Oct 28th-30th. A notable and pleasing increase in Brecks where grand total of 63 territories, of which 39 in Norfolk.

Shorelark: None recorded in first winter period. In second winter period noted as follows:— Waxham 2 Nov 3rd; West Runton Nov 4th and 18th; Weybourne 2 west Oct 17th and 2 east Oct 26th; Salthouse 3 Oct 31st-Nov 5th then 5 until end of year with 6 Nov 9th; Cley up to 6 Oct 25th-27th; Blakeney Point Oct 16th, 3 Oct 17th-20th and one Nov 5th; Brancaster Nov 24th; Titchwell 2 Oct 24th; Holme 2 Oct 23rd and one Dec 18th and Snettisham Sept 26th with up to 5 Oct 8th-18th.

Sand Martin: First noted Titchwell March 8th with records from 7 further localities March 9th-12th. A survey between Sheringham and Weybourne revealed 594 burrows in use, the previous highest count being 269 in 1981. This species is clearly prone to very large population changes as there were only 6 burrows in use along this stretch of cliffs in 1984 following the 1982/83 population crash. At Winterton on Aug 19th 3,600 per hour moving south between 10am-1pm. Latest record Holme Oct 24th.

Swallow: Very early migrants Thornham March 11th, Holme March 12th and Cley March 19th. More widespread arrivals March 26th onwards. Late records in November from Bacton and West Somerton 17th, Horsey 18th and Cley 20th.

Red-rumped Swallow: Winterton Nov 4th (PC).

House Martin: March records from Taverham 18th, Cley 20th, Holme and Warham 26th, Snettisham 27th, Swanton Abbott 30th and West Acre 31st. Last recorded in November at Heacham 9th, Cley 10th and 3 Winterton 11th.

Richard's Pipit: In spring inland at Gillingham Marshes March 30th/April 1st (TA) and Blakeney Point April 30th (AMS *et al*). Autumn records from Weybourne Sept 13th/14th (DHS, KBS, JW), Oct 4th and 27th (KBS), Salthouse Nov 1st-6th (many observers). Cley Oct 25th/26th (HPM, AA) and Blakeney Point Oct 4th and 15th (SCJ).

Tawny Pipit: In spring 2 at West Runton April 30th, one remaining until May 3rd (MPL, SCV *et al*) and another May 16th (MPL), Horsey May 1st (JA, MF), Wells (East Hills) May 7th (BRS) and Blakeney Point May 16th-26th (many observers). One autumn record: a moulting adult at Snettisham July 18th-Sept 24th (TJD, PF, RAI *et al*).

Red-throated Pipit: Blakeney Point May 13th-16th (RD, MIE, AMS *et al*).

Rock Pipit: Birds of *littoralis* race identified at Paston March 27th and on the late date of May 11th, Cley March 3rd and 24th with 2 March 29th and one April 1st, Sheringham 2 March 6th and singles March 7th/8th and 18th with 2 March 24th and one March 27th and Hunstanton March 14th/15th. An individual of typical British race in song at Yarmouth Harbour entrance July 3rd.

Water Pipit: Regularly recorded at Cantley BF where at least 9 in first winter period and 8 in second winter period. Also singles at Surlingham Church Marsh regularly in both periods. At Cley singles March 24th and April 7th-9th with a major influx Oct 26th-Nov 3rd when 13+ present. Elsewhere: Blakeney Point Dec 3rd, Brancaster March 27th, Burnham Norton April 10th, Caister March 25th, Fowlmere Nov 6th, Haddiscoe Island 2 Feb 13th, Holkham April 1st, Holme 2 Sept 28th, Horsey March 7th, Lynn Point Feb 8th-March 26th, Nov 5th and Dec 2nd, Titchwell Feb 26th and 2 Nov 15th and Weybourne March 29th.

Yellow Wagtail: March records from Holme 22nd (2) and 30th/31st, Waxham 26th, Titchwell 27th, Winterton 28th, Welney 29th and Cley 30th. Last recorded Snettisham Oct 17th.

Blue-headed Wagtail: Total of at least 35 spring migrants April 15th-June 4th with maximum of 5 males West Runton April 30th/May 1st. In autumn Wissington BF Sept 1st.

Grey-headed Wagtail: A long-staying male Cley May 1st-28th and another male Weybourne May 15th/16th.

Ashy-headed Wagtail: A male showing the characteristics of this sub-species at West Runton with other *flava* wagtails April 30th (JDG).

Grey Wagtail: Successful breeding noted at Elsing, Great Ryburgh, Gressenhall Mill, Lyng Bridge, Narborough and West Acre. Pairs also in breeding season at Buckenham Mill, Keswick Mill, Norwich (Earlham Bridge), Santon Downham, Sparham Mill and Thetford.

Pied Wagtail: At Whitlingham Marsh roost near Norwich up to 60 in March, 85 July 16th increasing to 615 Sept 2nd and then decreasing to 410 by Oct 14th. Another large count of 200 Dec 21st in the Rhone-Poulenc factory, Norwich where a winter roost has been in use for several years.

White Wagtail: Early migrants Weybourne March 9th, Hunstanton March 10th and 3 Cley March 12th. Largest spring count 15 Weybourne March 27th.

Waxwing: In first winter period singles at Weybourne Jan 10th, Hindringham Jan 20th, Narborough Jan 22nd, Eaton Jan 27th, Sheringham March 9th, Sharrington April 19th

and 2 Cawston April 25th/26th. A minor influx late December with singles Cromer 29th and another 30th, Holkham 29th and 8 on 31st, Blakeney 30th and another flying over same day, 2 Holt 30th and 2 Briston 31st.

Dipper: One of the Northern race (Black-bellied) at Lyng, present since Nov 21st 1988, remained until March 27th.

A bird of British race at Earlham Park, Norwich on the unusual date of June 15th (LAF).

Thrush Nightingale: A singing male at Walsey Hills, Cley May 20th-22nd (M&TB, AMB, ES *et al*). Recorded for the third year running yet only the fourth county record.

Nightingale: Only one coastal spring migrant noted — Blakeney Point May 1st.

Bluethroat: Three typical late spring migrant males: Cley May 25th, Blakeney Point June 3rd and Poringland June 7th (found dead in county primary school grounds). One autumn record, Blakeney Point Sept 12th.

Black Redstart: At Heacham 2 separate birds Jan 30th, one remaining until March 14th: also one Weybourne Feb 26th. Only small spring passage with exceptionally 12 Blakeney Point April 18th. In breeding season only recorded at Yarmouth where 7 singing males and breeding confirmed at 3 sites. Usual autumn movements, but only on a small scale. One again Heacham Dec 15th until year end and another Paston Dec 16th.

Redstart: First recorded at Roydon Common and Thornham April 10th. In breeding season records from various sites in Battle Area, from Sandringham Woods and Swanton Novers Great Wood. Notable fall mid-September all round coast with maxima of 40 Blakeney Point and 50 Holme on 12th.

A first winter male of the race *samamisicus* at Holkham Meals Sept 12th (JBK). The second county record of this distinctive SW Asian race.

Whinchat: Present in breeding season in Brecks at Stanford and Tommy's Belt. Sept 12th 60 Blakeney Point and 30 Holme; next day 34 Horsey-Sea Palling. On 17th still 30 in a sugar-beet field at Gimingham.

Stonechat: In early part of year up to 4 in Yare Valley and up to 6 at Holme. Five successful breeding pairs along east coast. Usual small arrival of ones/twos along north coast Oct/Nov with up to 5 at Weybourne in Dec.

Siberian Stonechat: A first-winter bird Holkham Meals Sept 10th-17th (RG *et al*).

Wheatear: Very early arrivals at Weybourne March 6th and Stanford next day. Records from several localities March 11th/12th. Away from Brecks breeding noted at Paston; downy young also seen in Cley area. November records from Bexwell 1st-3rd, Winterton 3rd, Holkham 4th, Blakeney Point 5th and Snettisham 9th-12th and then found dead.

Pied Wheatear: A male at Winterton Sept 13th/14th (TRD *et al*). The fifth county record and an unusually early autumn date. The first county occurrence (28th May 1978) was

at exactly the same locality.

Rock Thrush: A male at Waxham April 30th (JRW *et al*). The second county record, the first being at Salthouse Heath similarly for one day only in May 1969.

Ring Ouzel: Following a very early migrant at Wereham March 5th/6th, a widespread and prolonged spring passage March 20th-May 29th with maximum counts in April as follows:— 13 Cromer GC 11th; 16 Blakeney Point 13th, 18 Waxham 19th, 11 Holme 19th, 14 West Acre 21st, 15 Holkham/Overy Dunes 22nd and 11 Winterton 24th. At Holme recorded on a total of 30 days between March 27th and May 15th. Males in song at Winterton April 29th and Yarmouth April 30th. In autumn one Holme Oct 7th followed by a total of only 12 Oct 27th-Nov 1st including 5 Blakeney Point on former date. Late migrants at Burnham Norton Nov 17th and Weybourne (2) Nov 25th.

Fieldfare: June records from Holme 1st, Weybourne 8th and Morston and Warham 10th. First returning migrants Holme Sept 10th with 2 next day Holkham Meals. Only very small-scale autumn immigration apart from larger movements over Wash mid-October.

Redwing: Extreme dates Berney May 2nd and Holme Sept 10th.

Mistle Thrush: At West Bilney flocks of 40 mid-February and 50 Sept 17th.

Cetti's Warbler: A large number of singing males in spring: Brundall, Buckenham/Cantley, Hardley, Horning Waterworks, Hoveton, How Hill to Sutton Broad (3), Irstead, Postwick, Ranworth 2, Rockland Broad to Surlingham 12, Strumpshaw 5, Thorpe St. Andrew, Whitlingham and Woodbastwick 2.

Away from the traditional Yare Valley and Broadland sites a pair almost certainly bred at a site on the North coast and a single at Holme March 30th.

Grasshopper Warbler: Earliest date Cley April 9th and by 25th seven singing males there. Autumn migrants Blakeney Point Sept 10th and Wells Sept 11th/12th.

River Warbler: Boughton Fen: a well-watched bird July 8th to 21st (PB PC *et al*). The second county record.

Savi's Warbler: First at Hickling April 19th and thereafter 4 singing males summered. Elsewhere singing birds at Catfield, Martham, Ranworth and Waxham.

Sedge Warbler: An influx in the closing days of March, the first at Holme and Titchwell on 28th. Latest: Holme Oct 5th.

Reed Warbler: At least 12 presumed migrants Horsey Sept 13th.

Icterine Warbler: Singing bird at Cromer May 23rd. In autumn: Caister Sept 11th; Holkham Meals Aug 27th/28th, Sept 1st, 2 Sept 10th/11th, one on 12th, 2 on 13th and one on 14th and Hunstanton GC Sept 10th.

Subalpine Warbler: Weybourne: A female or 1st summer male May 3rd (MPT JW *et al*). The eighth county occurrence.

Barred Warbler: Recorded as follows: Caister Sept 15th/16th; Winterton Aug 20th and Sept 18th; Northrepps Aug 28th-Sept 2nd; Weybourne Sept 11th-14th; Blakeney Point Aug 19th, Sept 6th and 12th; Holkham Meals Aug 28th, 1-2 Sept 10th-18th and singles Oct 20th and 26th; Holme Aug 28th; Hunstanton GC Sept 10th and Hunstanton Sept 12th/13th.

Lesser Whitethroat: First reported at Waxham, Beechamwell and Hoe all April 16th; 12 Blakeney Point April 30th. In autumn 10 Horsey Corner Sept 13th and a late bird at Wiveton Nov 19th onwards was of the British race.

Whitethroat: First Weybourne April 15th.

Garden Warbler: Peak migrant counts: 12 Horsey Corner Sept 13th and 17 Holme Oct 17th. A late bird at Holme Nov 5th.

Blackcap: A male regularly visited a Pudding Norton bird-table Feb 6th-14th. Dec records: Downham Market, Holkham, Holme 2, Swaffham 2 and Winterton.

Greenish Warbler: 1987 Blakeney Point records should read 'One Aug 25th/26th, 2 on 27th/28th with one remaining till 30th'.

Pallas's Warbler: Blakeney Point Oct 15th/16th (GED PF SCJ AMS NW), Weybourne Oct 18th (KBS), Holkham Meals Oct 21st/22nd (ICW MKN KAN *et al*) and 27th (AB) and Waxham Nov 12th-14th (JRW NWW *et al*).

Yellow-browed Warbler: Another excellent set of observations with a minimum of 31 individuals: Yarmouth Oct 3rd, 3 on 4th with one till 7th, Oct 11th and 29th; Winterton Oct 16th/17th and Nov 2nd; Waxham Sept 24th, 25th, 29th and Oct 6th-8th; Hickling (Whiteslea) Sept 16th; Sheringham Oct 4th; Weybourne Oct 3rd-5th; Stiffkey Oct 4th, 2 on 6th/7th; Wells (East Hills) Oct 6th/7th; Holkham Meals 5 Oct 4th, 3 on 5th, 3 on 6th, 6 on 7th, 3 on 8th, one on 9th, 2 on 10th, 2 on 14th, 4 on 15th with one remaining at Wells until 22nd and one at Holkham till Nov 2nd; Wells Town Oct 6th-13th with 2 on 8th; Holkham Park 2 Oct 15th with one till 18th; Titchwell Oct 7th and Holme Oct 4th-6th. A late bird at Winterton Dec 1st-8th showed all the characteristics of the south-west Asian race *humei* (PC AMS AL PJH *et al*).

Dusky Warbler: Blakeney Point Nov 12th (SCJ *et al*).

Additional 1985: Holkham Meals May 21st-23rd (PMC *et al*).

Bonelli's Warbler: Holkham Meals: Sept 10th-17th (RFR CKTH *et al*). The eighth county record.

Wood Warbler: Coastal spring migrants at Holkham Gap May 3rd, Titchwell May 9th and Weybourne May 21st. Singing males at Blickling 2, Docking, Holkham Park, Kelling 2, Langham, Sandringham, Sheringham 4 including a breeding pair, Snettisham (Ken Hill), Swanton Novers, Thorpe St. Andrew, Weybourne 2 and Wolferton.

A good number of autumn migrants: Holme Aug 25th; Holkham Meals Aug 30th and

Sept 11th/12th; Yarmouth Sept 10th and 2 Sept 16th; Cley Sept 12th; Wells (East Hills) Sept 10th/11th and Sculthorpe Sept 12th.

Chiffchaff: Recorded in first-winter period at Holkham Meals, Holme, Strumpshaw, Titchwell and Weybourne. Perhaps first spring migrant at Winterton Feb 26th and singing birds widespread by end of first week in March.

Late migrants at Blakeney Point, Waxham, Winterton and Yarmouth until second week in Nov. In second-winter period at Cromer, Holkham Meals, Holme, Paston and Titchwell.

At Weybourne the bird which arrived Nov 2nd 1988 and was ringed shortly afterwards successfully overwintered and remained to breed. This is apparently the first occasion a Chiffchaff has been proved to both winter and breed in Britain and it is remarkable that it should have done so at the same locality. It was reported as *abietinus* in the 1988 NBR, but closer examination showed it to be intermediate between that race and *collybita* (KBS).

Willow Warbler: First on the very early date of March 11th at Salthouse followed by Strumpshaw March 25th and records widespread after 28th. Good numbers of migrants in mid-Sept: 30 Holkham Meals Sept 11th, 30 Blakeney Point and 15 Holme Sept 12th and 40 Horsey Gap-Sea Palling Sept 13th. Many of these showed characters of the Scandinavian race *acredula*.

Three Oct records: Holme 5th, Holkham Meals 14th and Titchwell 22nd.

Goldcrest: Good numbers of autumn coastal migrants: 50 Blakeney Point Sept 12th, 150 Horsey Gap-Sea Palling Sept 13th, 350-400 Holkham Meals Oct 2nd, 400 there and 60 Blakeney Point Oct 8th and 50 Yarmouth Oct 11th.

Firecrest: Spring passage birds (ones and twos) at Blakeney Point, Brancaster Staithe, High Kelling, Holkham Meals, Holme, Horsey, Norwich (Earlham Cemetery), Paston, Sheringham, Strumpshaw, Swanton Novers, Walsey Hills/Cley, Waxham, Welney, Weybourne and Yarmouth.

Autumn birds (again ones and twos) at Blakeney Point, Hemsby, Holkham Meals, Holme, Pentney, Pulham Market, Weybourne, Winterton and Yarmouth. In winter at Sparham Jan 1st-3rd and at Holt Dec 26th.

Spotted Flycatcher: Largest assemblies: 14+ Scolt May 25th and 10+ Yarmouth Sept 16th.

Red-breasted Flycatcher: An excellent autumn: Yarmouth Sept 10th-16th; Caister adult male Sept 13th-17th; Cley Sept 12th; Blakeney Point Sept 10th with 2 on 11th and 5 on 12th; Wells East Hills 5 Sept 10th/11th; Holkham Meals Sept 10th-13th, Sept 29th-Oct 2nd, Oct 7th, Oct 8th and Oct 18th till at least 22nd with 2 present on 19th and Thornham Point Sept 12th/13th.

Pied Flycatcher: In spring: Yarmouth May 9th and 12th; Strumpshaw May 24th; Paston May 21st, Cromer May 23rd; Salthouse Heath April 26th; Blakeney Point May 20th and Holme April 16th and May 20th.

In autumn peak numbers Sept 12th including Yarmouth 12, Blakeney Point 60+, Holkham Meals 21 and Holme 40. Inland at Welney Sept 13th and Norwich (Sprowston) Sept 28th. October birds at Yarmouth 3rd/4th, Winterton 5th, Holkham Meals 2nd and Holme 2nd and 5th.

Bearded Tit: Pairs bred at Breydon one, Berney 4, Surlingham Church Marsh one, How Hill 8, Hickling 22, Horsey 10, Woodbastwick 12, Ranworth 10, Cley 10, Burnham Overy Staithe one and King's Lynn BF 2.

Autumn irruption obvious during mid-Oct with 6 leaving Cley Oct 11th, 12 west at Weybourne and 4 south at Winterton on 18th and 17 west at Wiveton on 19th. A wide scatter in winter, largest number (55-65) at Titchwell in Dec.

Long-tailed Tit: Large flock of 73 at Bayfield Feb 2nd.

Red-breasted Nuthatch: This delightful addition to the British List was present at Holkham Meals from Oct 13th into 1990 (RA PV *et al*). See article on page 412.

Golden Oriole: Spring migrants at Holkham May 15th, Burnham Overy May 23rd, Glandford May 24th, Holme May 25th and Kelling 2 June 2nd.

Up to 7 pairs bred in the county; in addition a further 5 pairs summered.

Red-backed Shrike: In spring single migrants at Winterton, Sheringham, Weybourne, Salthouse Heath, Walsey Hills, Blakeney Point, Scolt, Thornham and Holme May 18th-June 24th.

In the Brecks a solitary male returned to Santon Downham May 18th remaining until June 10th.

Good numbers in autumn when 1-3 at Yarmouth, Caister, Winterton, Horsey, Horsey Mere, Weybourne, Salthouse, Blakeney Point, Blakeney, Morston, Wells, Holme and Hunstanton GC.

Great Grey Shrike: During April at Winterton 24th-26th, Weybourne 18th, Cley 20th, Salthouse Heath 21st-25th, Barrow Common 26th and Holme 17th-25th.

In autumn Waxham Oct 19th, Holkham Nov 16th-18th, Holme Sept 11th/12th and East Harling Nov 11th. During the winter at UEA Jan 23rd-Feb 17th and probably the same bird returned to nearby Keswick Mill Dec 10th.

Magpie: Largest roost counts: 70 New Buckenham Common Jan when 110 Roydon Common.

Carrion Crow: Surlingham: 60 collecting to roost March 11th with 100 there Nov 29th. Roydon Common 100 Nov 25th.

Hooded Crow: A bird at Holkham for the second half of Jan with singles at Roydon Common Jan 21st and at Breydon Feb 12th-April 15th. Coastal spring passage March 4th-June 5th; July birds noted at Salthouse and Holme. Single autumn bird at Winterton Nov 19th and 2 at Horsey Dec 27th. A hybrid at Belton and Haddiscoe Island in Feb.

Tree Sparrow: Largest winter flocks: up to 200 Thorpe End Jan-March; 180 Hindringham Jan and 200 Massingham Heath Feb 26th.

Brambling: Spring totals included 30 Salthouse Heath April 17th increasing to 70 24th/25th; 50 Weeting March 25th; 100 Massingham Heath Feb 5th and 150 Gooderstone in late Feb. A late bird Kelling June 9th.

In autumn largest parties were 50 Snettisham Oct 17th and 60 Cley Oct 27th.

Siskin: Winter flocks up to 60 widespread. In addition 120 Sparham Jan 3rd, 150

Narborough Jan 15th, 250 Bodney/Langford Feb 11th and 125 Santon Downham March 30th. During March/April many observations of birds feeding on peanuts in gardens. Bred at Snettisham (Ken Hill), Watton and Swaffham Forest.

Twite: Largest flocks: 700 Brancaster Feb 6th and Nov 24th; 150 Salthouse Nov 3rd and 500 Holkham Bay Nov 7th. Inland at Southery Fen 12 Oct 11th and Welney Nov 15th. Weybourne 60 flew east Oct 23rd.

Mealy Redpoll: All reports in first-winter period with very small numbers (maximum 20) at Choseley, Downham Market, Hickling, Massingham Heath, Rollesby and Titchwell. Larger flocks at Thorpe End (Dussindale) where up to 30 Jan/Feb and Hindringham where up to 50 late Jan.

Arctic Redpoll: Thorpe End (Dussindale) one of the race *exilipes* Jan 25th-March 25th (BWJ *et al*).

Additional 1986: Burnham Deepdale/Scolt Head Jan 26th/27th (RGM RW).

Two-barred Crossbill: Additional 1980: Santon Warren a female June 7th (RW *et al*).

Common Crossbill: Most reports from Santon Downham and Thetford areas. Breeding recorded at Thetford, Sandringham and Kelling. Other reports from Holkham Meals, Wolferton, Fowl Mere, West Tofts and St. Helen's Well.

Coastal records: Cromer GC June 11th; Weybourne 2 east Jan 28th and 2 west July 3rd; Gun Hill 9 east May 22nd; Holme March 27th and Snettisham March 26th.

Scarlet Rosefinch: Holme Sept 13th and 17th (MJAB GFH RLKJ JJ).

Hawfinch: Bred at Bayfield, Kelling (2 pairs raising 3/4 young each), Saham Toney and at Sandringham. Largest flocks at Costessey where 11 at pre-roost gathering Feb 8th and 12 Ringland Hills Feb 19th. Otherwise reported from Alderford, Bayfield, Brooke, Eaton, Harpley, Holkham Park, Holkham Meals, Home Mere, Lynford, Newton Flotman, Norwich (Earlham Cemetery), Salthouse Heath, Sandringham, Thompson Water, Thorpe St. Andrew and Yarmouth.

Lapland Bunting: Small numbers at regular coastal sites during both winter periods: Beighton Marshes, Belton, Breydon, Cley, Choseley, Haddiscoe Island, Halvergate, Holkham, Horsey, Salthouse, Snettisham, Waxham, Wells, Weybourne and Winterton.

Latest in spring: a male Blakeney Point May 14th. First in autumn: Snettisham Sept 9th. Largest numbers: up to 43 Burnham Norton in Jan. An inland example at Welney

The Red-breasted Nuthatch which tantalised many observers at Holkham Meals. The same locality attracted this Indigo Bunting in 1988. This Tawny Pipit made a prolonged stay at Snettisham.

Sparrowhawks have made a remarkable come-back. Barn Owls remain under threat in many areas following the loss of nesting sites in old buildings and hollow trees.

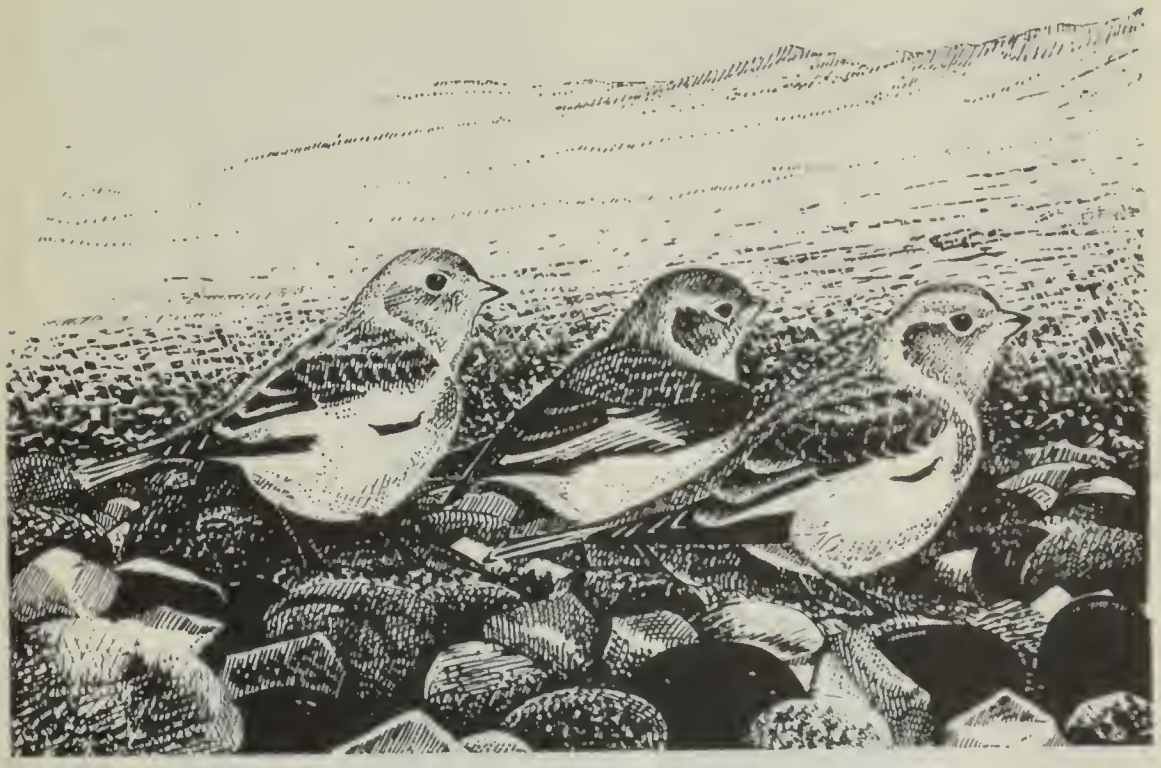
This Broad-billed Sandpiper provided good viewing at Holme. The Night Heron visited Welney Wildfowl Refuge. Overstrand attracted this Mediterranean Gull for the greater part of 1989.

Nowadays Red Squirrels are almost confined to Thetford Forest, but Grey Squirrels have become widespread road casualties. Sightings of Harvest Mice and discoveries of their nests are always welcome

Dec 4th.

Snow Bunting: Largest flocks: 150 Blakeney Point Jan 17th, 200 Salthouse Feb 10th, 200 Holme Nov 17th and 250 Holkham Bay Nov 19th. Late spring birds at Berney where one remained all April and Breydon April 29th. In addition a female at Cley June 5th-9th.

First in autumn at Cley (2 Sept 18th). Inland: Coston Oct 22nd, Bexwell Oct 31st/Nov 1st, Weeting Nov 22nd and Elsing Dec 3rd.



Yellowhammer: Salthouse: A creamy-yellow leucistic individual Oct 1st.

Ortolan: Horsey Mill: a female May 15th/16th (AVH LM ER RDS *et al*).

Little Bunting: Yarmouth Sept 9th/10th (KRD *et al*), Oct 4th (GW) and Oct 15th (GMC).

Corn Bunting: Largest flocks: 50 Berney March 2nd-7th, 43 Crimplesham Feb 3rd, 35 Hilgay Fen May 13th, 50 Lynn Point mid-March, 30 Ten-mile Bank Feb 22nd, 45 Thornham April 13th and 40 Titchwell Feb/March.

Spring/Summer records (many of singing males): Boughton, Choseley, Downham Market, Fincham, Hilgay, Lakenheath Flash, Langham, Marham, Methwold Hythe, Morston, Pentney, Ringstead, Setchey, Shipdham, Snettisham, Thornham, Wereham, Weybourne and Winterton.

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Photographs: Little Bunting, Northern Golden Plover, Dotterel, Tawny Pipit, Broad-billed Sandpiper, Night Heron and Mediterranean Gull (*R. Chittenden*); Red-breasted Nuthatch (*D. M. Cottridge*); Pacific Golden Plover (*A. Greensmith*); Shelduck (*A. L. Howes*); Pallas's Warbler (*B. W. Jarvis*); Bittern (*R. Jones*); Pink-footed Geese (both plates), River Warbler, Sparrowhawk, Harvest Mouse and Hares (*C. R. Knights*); Kingfisher, Barn Owl, Red Squirrel, Grey Squirrel and Mink (*R. Powley*).

Line Drawings: 425 Shoveler and Gadwall, 427 Wigeon, 430 Barn Owl, 448 Leach's Petrels, 449 Little Egret, 458 Golden Plover and Lapwing and 461 Bar-tailed Godwits and Grey Plovers (*N. Arlott*); 414 Pink-footed Geese (*N. Borrow*); 456 Cranes and Hen Harrier, 465 Iceland Gull and 473 Red-breasted Flycatcher (*D. Bryant*); 439 Hawfinch (*C. Donner*); 412 Red-breasted Nuthatch (*E. A. Fisher*); 436 Yellow-browed Bunting (*J. B. Kemp*); 452 Long-tailed Duck, 459 Semipalmated Sandpiper and 463 Pomarine Skua (*C. Lansdell*); 482 Noctule Bat, 483 Mink and 490 House Mice (*J. Last*); 474 Red-breasted Nuthatch (*J. R. McCallum*); 432 Woodlark (*R. Millington*); 446 Black-throated Divers, 474 Golden Oriole and 479 Snow Buntings (*R. Powley*); 447 Sooty Shearwater, 451 Brent Geese and Brant Goose, 453 Ruddy Duck and 467 Nightjar (*M. Read*); 411 Black-tailed Godwit and Spoonbill, 444 Quail, 445 Black-tailed Godwit and Marsh Harrier and 478 Black-tailed Godwit and Heron (*the late R. A. Richardson*); 448 Manx Shearwaters, 454 Hen Harriers, 455 Hobby, 475 Red-backed Shrike, 476 Siskins and 477 Snow Buntings (*J. P. Smith*) and 421 Yellow-browed Warbler, 469 Red-throated Pipit, 470 Pied Wheatear, 471 Rock Thrush, 472 Pallas's Warbler and 477 Little Bunting (*A. M. Stoddart*).

NORFOLK MAMMAL REPORT 1989

Editorial

The Editor is pleased to present the 34th annual Norfolk Mammal Report.

We are again fortunate to be able to publish more than one feature article, but this does put great pressure on available space. So the decision has been made to combine the usual Editorial/Classified Notes. This means that the wealth of background information and anecdotes submitted appear to have been given very short shrift. We emphasise they are all stored and will be combined with next year's contributions to give us extended Classified Notes in our next edition.

No great headline-grabbing events in the mammal world in Norfolk during 1989 we are relieved to say. What the new stabilised level of common seal population will be is still speculation. It is not realistic to expect to see the herds we remember. We made a serious slip last year in allowing the harp seal found very recently dead in Blakeney harbour on 27th March 1988 to go unlisted. This vagrant from the north has appeared no more than a dozen times in the UK for over a century but in 1988 two were recorded. This compares with the thousands trapped in fishing nets off Norway. We apologise for this omission, as we do for any other errors in this or any other report.

Our main feature article, by Simon Baker, fills a significant gap in our published data on Norfolk mammals. It brings together all information on the American mink and because mammals have no regard for boundaries, the article covers our whole region. Clive Slater's article on rat and mouse infestation in north-east Norfolk in 1987, held over for lack of space, is included in this year's report. Although the data was collected some time ago, we feel it is of significance and should be published.

The bats form a considerable proportion of the mammal list and from time to time John Goldsmith brings us up to date on their status. He does so again in a short article.

Moving on to other orders, the Insectivora were well represented by hedgehogs in every month of the year, though minute late-brooded youngsters in December did not always respond to devoted human care and often died. Adults, however, were seen and appeared to be in good condition. Yet the general impression was that fewer hedgehogs were noted in many districts. It may be the dry summer and poor invertebrate fauna when the ground vegetation was less than perfect had its effect. Certainly, the shrews were not as well represented in the contributed lists. They of course, are entirely dependent on a plentiful supply of invertebrate food. In contrast, moles could well claim to be our most widespread and successful mammal. We refute any gardener's claim to house our entire stock! The insectivore giving cause for concern is the water shrew. After such a good year in 1988 when far more were seen than for many previous seasons, 1989 produced only two records, one from Reedham Marshes and the other from Upton Fen. This animal's intriguing behaviour as it swims under water, its fur shimmering with bubbles of trapped air, should surely be enough to make even the unknowing observer ask after its name and in so doing report its presence.

As for the Lagomorpha, the brown hare was seen more frequently in Breckland and

in many areas along the north coast and in open areas of central Norfolk. Rabbits were much in the news. The scheme to use them as agents of land management on Weeting Heath to preserve Breckland species will be watched with interest. The other scheme to move the colony at the University of East Anglia in order to use the site of their warren for new buildings has been hotly contested as a profound setback to vital research.

The seemingly ubiquitous representative of the Rodentia, the grey squirrel, was responsible for its now regular damage. A number of contributors suggested a slight retrenchment in numbers but there was no real significant fall. Now that the Forestry Commission has inaugurated the new Forest Park at Thetford and taken the red squirrel as its symbol we trust that indiginous species will continue to prosper in those plantations. At the moment it seems to be in a healthy state.

Stories of bank voles feeding in gardens must wait till next year. They appear to have had a good year as did the short-tailed field vole. 'More than last year but generally fewer', so says a correspondent comparing the short term and the long. Water voles were seen in most parts of the county in reduced numbers. Has there been a slip back in its recovery? Lack of water in the ponds was suggested as one reason. Two references only came from one south Norfolk site where they were once plentiful. On a happier note the number of harvest mice found in west Norfolk stack yards by one contributor was astonishing.

The coypu clings to its tenuous hold on our list even if it may no longer be found living in the county. Dr. Morris Gosling, Coypu Research Laboratory, who through the years has kept us so well informed, writes:

'Field staff from the ADAS Coypu Research Laboratory continued to carry out systematic surveys throughout 1989 to check if any coypus remained after the recent eradication campaign. In addition we followed up a number of reports of coypus from members of the public. In most cases the culprits proved to be other mammals, often rats or water voles, and the unusual appearance of rabbits infected with myxomatosis may also have stimulated one or two reports. However, at the end of November a sharp-eyed member of the public reported seeing a coypu near Feltwell in west Norfolk. This was confirmed on the following day by a member of our field team and after a few weeks of intensive trapping a coypu was caught on the 20th of December. Like the two animals killed on the roads in 1988 it proved to be an old male and extensive surveys in the area failed to reveal evidence of any other coypus.

Three animals have thus been confirmed since the last small colony was removed by Coypu Control trappers on the River Great Ouse in April 1987, almost three years ago at the time of writing in April 1990. All three were isolated individuals and as time goes on it becomes increasingly unlikely that any breeding colonies remain. As a result, the systematic surveys carried out by staff from the Coypu Research Laboratory stopped at the end of March 1990 and the two permanent staff involved in this work have been transferred to other duties within the Ministry of Agriculture. Of course this does not mean that no coypus remain — this will not be known for certain for some years — and responsibility for following up any reports of coypus from members of the public have been transferred to the Ministry of Agriculture's Wildlife and Storage Biology Group (telephone 0223 462762).'

Extreme contrasts in the Carnivora in that foxes are over-plentiful, while otters and badgers continue only with special assistance. Stoats and weasels are reasonably represented where habitat is suitable. The number of stoats in ermine has been surprising. Any reports are very welcome as we may need to look more closely at the cause of this phenomenon.

After last year's full account of Artiodactyla we need only to say that the red, roe, chinese water and muntjac deer were well represented on our index cards. Far fewer contributors actually saw fallow deer.

So it was with Cetaceans. It is now a rare event to note more than a single or a very

small party. Common porpoises were seen from Winterton, Weybourne, Salthouse, Paston, Scolt Head and Cley, which gave most returns.

Work on the distribution maps of Norfolk mammals continues and we intend to publish more as space permits. This is the cue for our annual reminder that every record counts and we do need far more detail if these maps are to have real significance. We cannot emphasise too often or too strongly that even the common-place is worth recording. After all, have we any guarantee it will remain so?

We thank all our contributors especially John Last for vignettes. Without their efforts this report could not exist. Notes for the next report should be sent to Rex Hancy, Ardea, 124 Fakenham Road, Taverham, Norwich NR8 6QH by the end of January 1991. We do have specially prepared recording sheets available from the Natural History Department at Norwich Castle Museum. John Goldsmith on Norwich 611277 Extension 286 will be happy to pass them on. He continues to answer queries on all vertebrate fauna.

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Mink in East Anglia

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Introduction

Mink (*Mustela vison)* are native to much of North America and were imported to Britain to be bred for their fur. The first farms were established in 1929 and escaped animals were soon found in the wild (Lever, 1985). However, the first record of breeding out of captivity was not until 1956, on the River Teign in Devon. In 1965 a trapping campaign was started by the Ministry of Agriculture Fisheries and Food (MAFF) to try and limit the spread of the developing wild population (Thompson, 1971). Nine trappers were employed but by 1970 it was clear that further spread was unavoidable and trapping was discontinued. Records of mink known to have been killed each year to 1967 were kept by MAFF and the results for East Anglia are summarized in Table 1. Mink are now found throughout Britain and are likely to be a permanent addition to our fauna.

Table 1

The number of mink caught in the wild in East Anglia reported to MAFF up to September 1967 (Thompson, 1968).

	pre	1961	1961	1962	1963	1964	1965	1966	1967	Total
Suffolk		3	4	2	6	3	4	2	2	26
Essex		—	—	17	5	—	—	—	2	24
Norfolk		—	—	2	6	2	1	2	1	14
Cambridgeshire		—	—	—	—	2	1	—	—	3
Hertfordshire		—	—	1	—	1	—	—	—	2
Huntingdonshire		—	—	—	—	—	—	1	1	2
Bedfordshire		—	—	—	—	—	—	1	—	1

The more recent Coypu Eradication Campaign has, in contrast, probably been successful in achieving its objective (Gosling, 1989). Incidental captures of mink made during coypu trapping operations has also provided information on mink distribution and abundance. Additional information is available from records held at the Castle Museum in Norwich and from reports made by landowners to the ADAS office in Norwich. These data, together with information on the distribution of mink farms in the region, help illustrate the establishment and status of the species in Norfolk and allow this to be viewed in the context of its status in East Anglia as a whole.

Mink caught during the Campaign to eradicate Coypus

The trapping of mink

Centrally co-ordinated trapping of coypus has been in progress since 1962, when a government sponsored campaign attempted to eradicate coypus from all areas except their 'inner redoubts' in the Broads (Norris, 1967). This campaign continued until 1965. Trapping remained at a low level in the late 1960's and early 1970's but the number of trappers employed then rose to 18 by 1977 and remained at that level until a second eradication campaign was started in April 1981 (Gosling, 1985). This campaign employed 24 trappers and continued until January 1989 when the campaign was judged to have attained its objective and the Coypu Control Organisation, which employed the trappers, was disbanded.

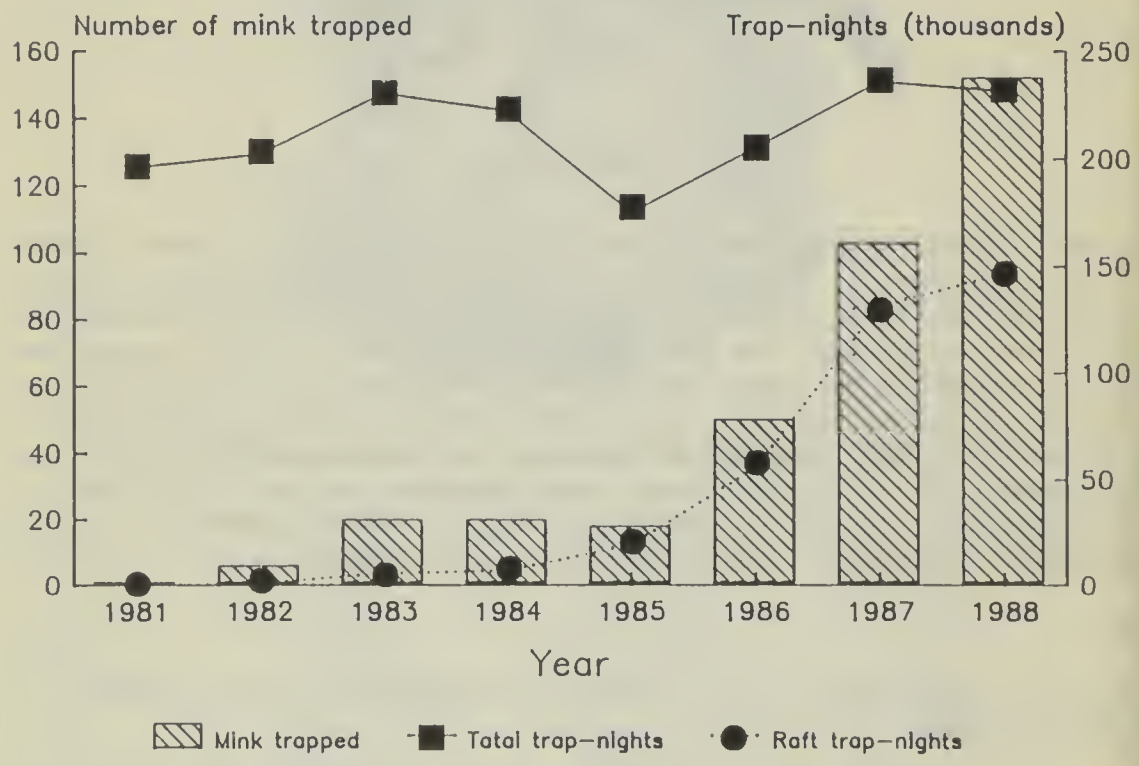

Figure 1. The number of mink caught (n=370), the total number of trap-nights and the number of trap-nights on rafts recorded by Coypu Control trappers each year between 1981 and 1988.

Staff at the ADAS (Agricultural Development & Advisory Service), Coypu Research Laboratory in Norwich monitored and guided the eradication campaign and received weekly records from each trapper detailing where they had been trapping, the number of cage traps set and the number of coypus caught. Although the traps were baited with root crops

and no attempt was made to catch species other than coypus, mink were captured incidentally. From 1981 trappers were instructed to shoot any mink caught and in October 1983 the trappers' weekly recording sheet was modified to include the numbers of mink killed. Relatively few mink were caught prior to 1983 and it is likely that when this occurred it would have been sufficiently noteworthy for a comment to be placed on the weekly record sheet. All records of mink recorded from March 1973, the earliest records available, to the end of 1988 have been used.

One problem in interpreting the data is that trapping effort has not been even over the whole of East Anglia and has varied in intensity at a given site from year to year as trapping effort was redirected in an attempt to maximise the numbers of coypus caught (Gosling and Baker, 1987). Despite this, the trapping results give a reasonable reflection of mink distribution and relative densities because trapping intensity has generally been so great that it would rarely have limited the numbers of mink caught. A recent brief period of trapping near Feltwell in southwest Norfolk, in December 1989, illustrates this well. In all Decembers between 1978 and 1988, 33 mink were caught in 147,460 trap-nights: equivalent to 1 mink per 4,468 trap-nights (a trap-night is one trap set for one night). However, at Feltwell in 1989, six mink were caught in only 1,700 trap-nights: equivalent to 1 mink per 283 trap-nights. Which indicates that mink are readily caught in coypu trapping operations if they are present.

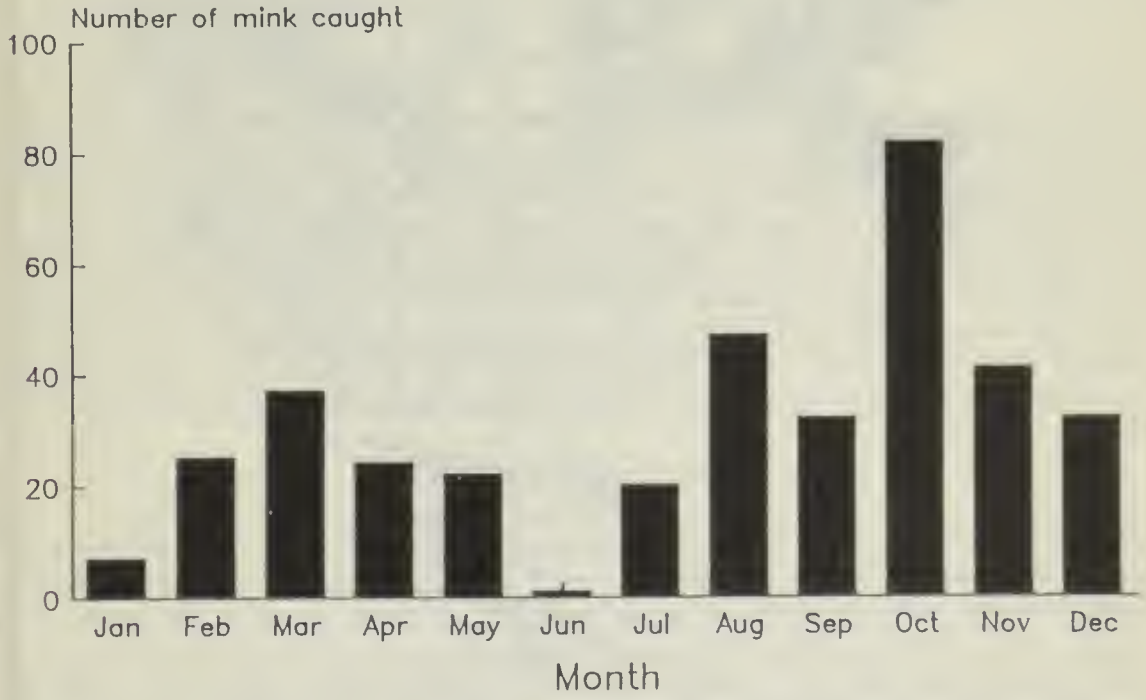

Figure 2. The total number of mink caught each month by Coypu Control trappers between 1978 and 1988 (n=380).

Numbers of mink killed each year

The number of mink caught has risen sharply in recent years. In the eight years prior to 1981 only 10 mink were trapped but by 1988 the annual total had risen to 152 (Figure 1). Part of the increase may be due to an increase in the proportion of traps set on rafts (Figure 1). These have been shown to be more effective at catching coypus than traps set on land and generally catch fewer non-target species other than mink (Baker & Clarke, 1988). The effort put into raft trapping consequently rose during the campaign but the

rate of increase in raft trapping does not follow in detail the increase in mink kills. For instance, between 1983 and 1985 the number of raft traps set rose by 229% but the number of mink caught stayed stable; whilst between 1987 and 1988 the number of raft traps only rose by 12%, whilst the number of mink killed went up by 44%.

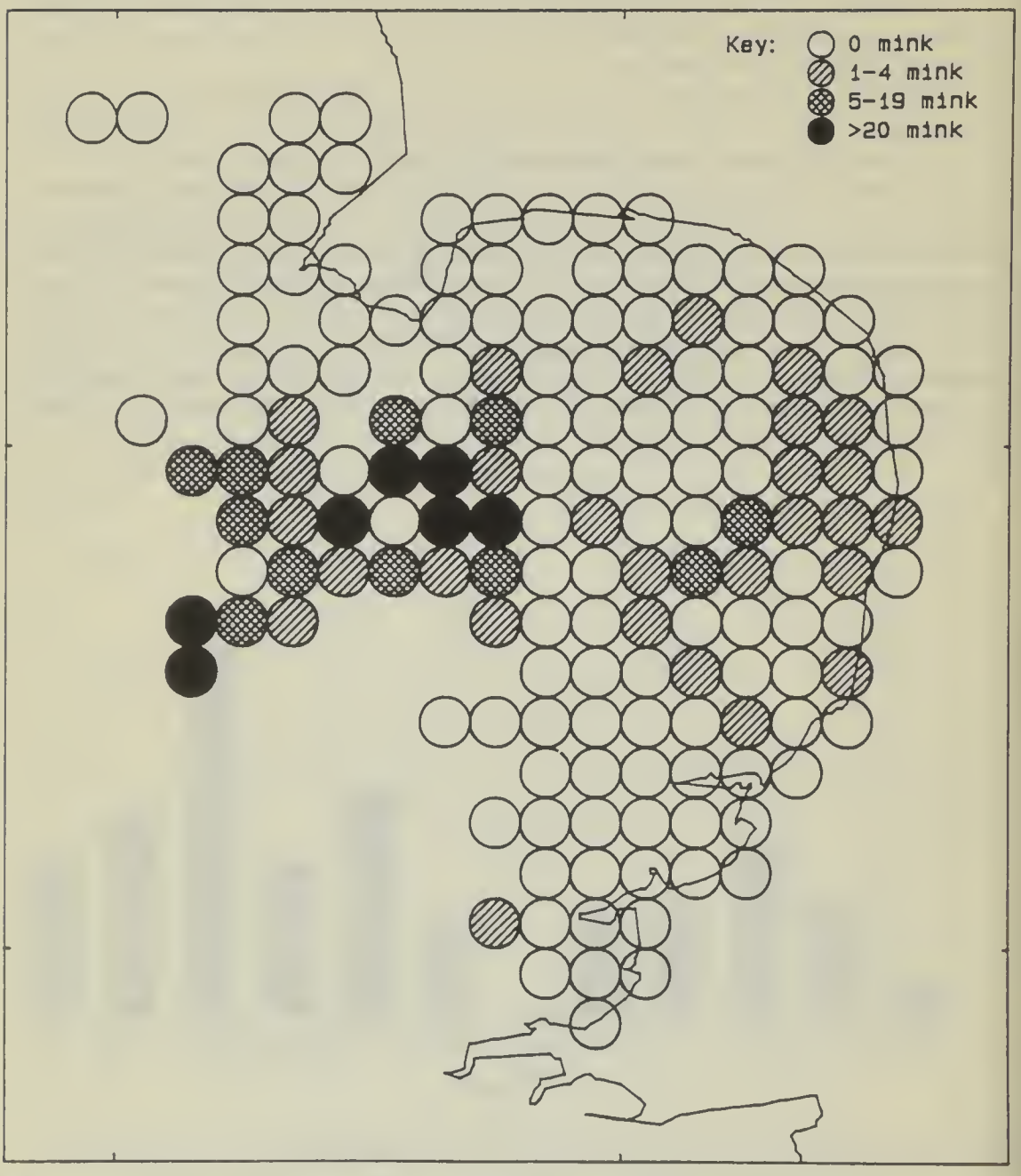

Figure 3. The area over which coypu trapping was carried out between 1981 and 1988 and the number of mink caught per 10 km square. Most, 86%, of the mink were caught in the area shown as lightly shaded; see text for further details.

A more important cause of the overall rise in mink caught is that more trapping has been done in recent years in areas where there are more mink, notably in Cambridgeshire, west Norfolk and along the River Great Ouse. The majority (86%) of all mink caught by Coypu Control were caught in the block of 25 10 km grid squares with mink captures in this area, shown lightly shaded in Figure 3. Little trapping was done here prior to 1983

(<4,000 trap-nights), but this had risen to just over 9,000 trap-nights in 1984 and 1985, 17,000 in 1986 and 41,000 and 39,000 trap-nights in 1987 and 1988 respectively. However, the large increase in the number of mink caught between 1987 and 1988, despite similar trapping effort in the high density area, and only a small increase in raft trapping, indicates a real underlying increase in the population in recent years.

Mink killed per month

The distribution of mink captures during the year (Figure 2) shows two peaks, one in late summer and autumn and a smaller one in the spring. This pattern is similar to that found by Clark (1970) in Yorkshire and Lancashire, except that his peak month was September rather than October. As no bait attractive to mink was used in the coypu traps, the seasonal trend in captures is probably due to changes in mobility. The autumn peak is likely to have resulted from a combination of the dispersal of young animals, the use of more den sites and greater daily travelling by territorial animals at this time of year; as was observed by Birks and Linn (1982) who radio-tracked mink in Devon. Mink mate between February and April and the spring peak may reflect increased movement of animals searching for mates. After a variable delay following mating, the fertilised ova implant in the uterus and the young are born in mid-May, usually some 45-52 days after mating (Stevenson, 1959). June was the month when the least mink were caught, both by coypu trappers and in Clark's (1970) study. Whether this low catchability is directly associated with the presence of young is unclear.

Distribution in East Anglia

The distribution map (Figure 3) shows all 10 km grid squares in which a reasonable amount of trapping occurred (>200 trap-nights) between 1981 and 1988 and the relative numbers of mink caught. In total 370 mink were trapped, the most caught in one square, 38, were caught in grid TL68 which contains the River Little Ouse and its catchment to the west of Lakenheath. In general mink are most common in west Norfolk and west Cambridgeshire; along the Great and Little Ouse rivers and in the agricultural land to the east of the Ouse Washes. They were also found, although less frequently, in the Broads, along the River Waveney and in the extensive areas of grazing marsh in east Norfolk and north Suffolk. The parts of Lincolnshire and Essex where trapping took place appear to have very few mink.

Mink distribution in Norfolk

The first known record of a mink in the wild in Norfolk was an adult female that was shot in a chicken run at Ringland, near Norwich, in August 1957. The distribution of all records for the county are shown in Figure 4. In the case of records from Coypu Control trappers, captures were identified by site and 10 km grid reference. The site was usually the nearest village but sometimes the name of the marsh or even the name of the farm. This information has been used to identify a central 1 km grid square for the site. Where similar information was available for other records this process was repeated and all records for which a one kilometre grid reference could be assigned are presented as tetrads (2 km by 2 km squares) in the distribution map. Inaccuracy caused in assigning grids to sites will be small and would tend to underestimate the true distribution of the species, because kills from large sites would all be assigned to a central square when in reality they would be more dispersed. This effect will be most evident in the agricultural fens in the west of the county where mink are relatively abundant (Figure 3) and villages are widely dispersed. Tetrads where there are records of mink from before 1971 are distinguished as, before the wild population became widely established, a greater proportion of reports are likely to be of animals that have escaped from fur farms.

Little is known of the early days of mink keeping in the region but the first note on the mink record card held at the Castle Museum records ten farms known to Jim Taylor Page in 1961. In 1962 an Order made under the Destructive Imported Animals Act 1932, required mink farms to be licensed and any escapes to be reported. The result was that many farms were unwilling or unable to comply with the new keeping conditions imposed under the Act and the number of farms in Britain fell from over 700 to 300 (Thompson, 1967). By 1987 only 51 farms were licensed (United Kingdom Parliament, 1987), although the number of animals kept, about 100,000, is probably similar to that in 1962.

Figure 4. Tetrads in which wild mink are known to have been present in Norfolk; based on information from Coypu Control, MAFF and Norwich Castle Museum (n=130). Open circles indicate tetrads where mink were recorded prior to 1971.

The events in Norfolk have mirrored those nationally. Although at least ten farms had been present in 1961 only five farms were licensed by 1963 and all these have now stopped trading. Since 1965 four new licences have been granted, one of which was to a wildlife park, and in 1989 only three establishments were licensed. Figure 5 shows the locations where mink are known to have been kept in Norfolk, with open symbols denoting sites where farms were present prior to 1962. As around half of the farms present at that time were not sufficiently viable for their owners to licence them in 1962, it is likely that housing was often of poor quality prior to the introduction of licensing and there were probably many escapes. Only a few escapes have been reported since 1962.

Many animals were recaptured soon after they escaped but it quickly becomes impossible to distinguish wild bred animals from escapees, especially as they can travel long distances after escaping. For example, an unusual 'pink' coloured mink escaped from a farm in Lincolnshire in September 1968 and was caught 20 miles away (assuming it had

taken the most direct route by water) 50 days after its escape (J. Lill, pers. comm.). The problems faced by escapees are often underestimated and many such animals, which have spent the whole of their lives in a small cage, will die of starvation or in an accident in an unfamiliar world. Those that do survive will often not be able to find a mate and ultimately die without issue.

Conclusion

Records of mink killed in East Anglia, shown in Table 1, and other early records from Norfolk (Fig. 4) indicate that mink were widespread, although not abundant, in Norfolk and Suffolk in the 1960's. During succeeding years populations have become established in Norfolk: in the southwest of the county, along the River Waveney and in Broadland. For the reasons outlined above it is uncertain what role the county's mink farms played in this establishment and to what extent it is due to immigration from populations established beyond Norfolk. However, the easterly distribution of farms corresponds with the distribution of most of the early records of wild mink (Fig. 4, open circles), indicating that many of these were probably escapees. Such escapees probably helped mink to become established in Broadland and along the River Waveney before they were colonised from outside. However, the area where mink are most abundant, in the west of the county (Fig. 3), does not correspond to known mink holdings. It is likely that this population has developed from an established population along the River Great Ouse, which may have had its origins well outside the county.

Whatever the origins of mink in Norfolk, the species is now well established and is likely to remain, for better or worse, a member of our fauna for the foreseeable future. It is indeed possible that with the cessation of the intensive coypu trapping operations,

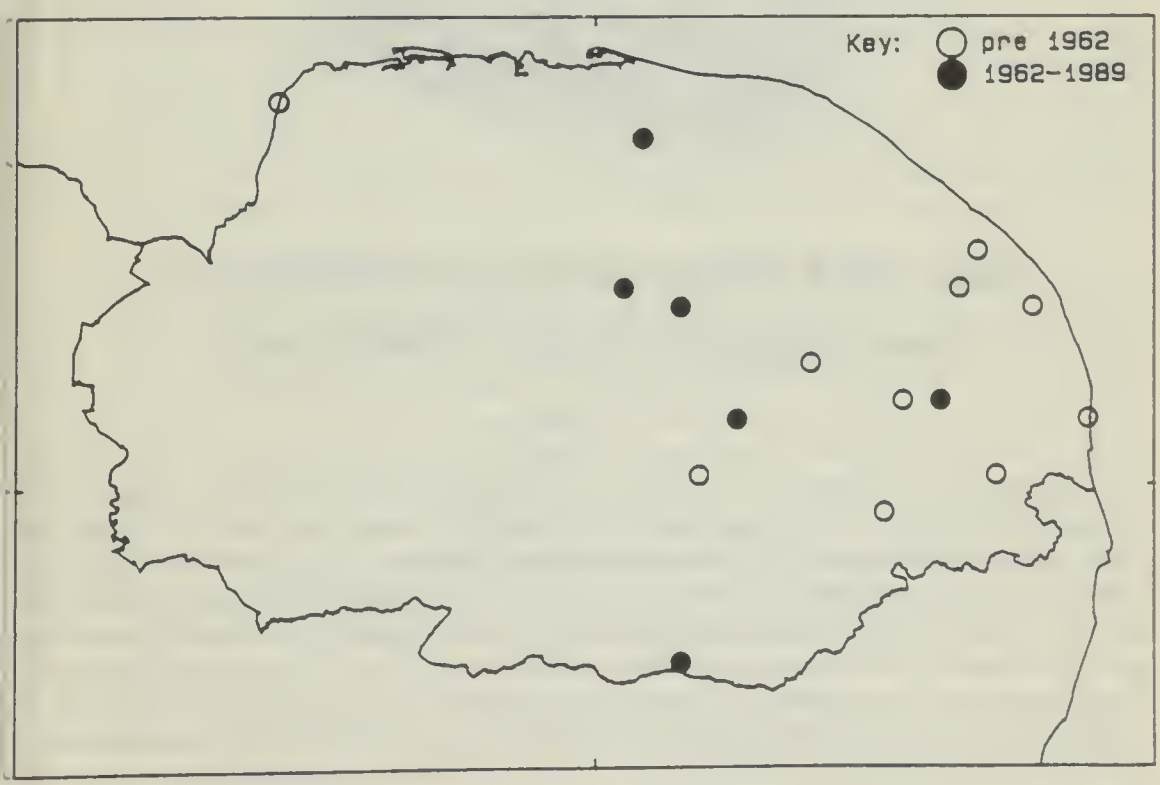

Figure 5. The locations of 17 mink farms in Norfolk. Open circles indicate those present before licensing was introduced in 1962.

which have in the past probably slowed the build up of mink, Norfolk will now see a rapid increase in mink numbers.

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Rat and Mouse Infestations in Non-Agricultural Premises

C. A. Slater

The distribution and status of the common rat and house mouse in Norfolk are not well documented. Records of these two species in *Norfolk Mammal Reports* for the past 20 years are mainly anecdotal with few systematic observations. It is therefore probable that their distribution and status have been regularly under-recorded. One source of information not commonly utilised by mammal recorders is the rodent control work undertaken by local authorities (in this context the term rodent refers to rats and mice only). Records of rodent control from north-east Norfolk during 1987 are presented and discussed to evaluate their use in determining common rat and house mouse distribution and status.

Local Authority Rodent Control

Local authorities have the legal responsibility to ensure that all land and buildings within

their boundaries are kept free from rats and mice as far as practicable. Most authorities administer this function through their Environmental Health Departments (EHDs) many of which offer a pest control service which will deal with rat infestations free of charge, and in many cases mice infestations as well. Other authorities make charges for mice disinfection and many authorities refer complaints, especially non-domestic requests, to commercial companies as their contractors. An indication of the scale of this activity can be gained from the statistic that in 1985/86 more than 450,000 infestations of rats and mice were treated by local authorities in England and Wales (IEHO 1987).

North Norfolk District Council is one of 7 local authorities administering rodent control in Norfolk since 1974 and was chosen for this study for two main reasons. Firstly the EHD employs its own rodent control workers to deal with both rat and mouse infestations and secondly, it was willing to make its records available for examination. As this initial analysis was mainly concerned with evaluating the usefulness of local authority records rather than attempting a large scale survey, data were selected from one year only (1987) in one administrative sector where one rodent control worker was employed. The study area consisted of approximately one third of the total area administered by North Norfolk District Council (Fig. 1).

On receipt of a complaint of rat or mouse infestations from occupiers of non-agricultural domestic dwellings in NE Norfolk, the EHD provides treatment free of charge. However, where the premises are used partly as dwellings and for business, or solely for commercial purposes, a charge is made. Charging for treatment may cause some occupiers not to seek help from local authorities so these categories were excluded from this study. The number of rateable premises in the study area was obtained from the valuation list and totalled 14,207. Premises categorised as non-agricultural and rated for domestic use only amounted to 11,987 (84.4 per cent) and formed the basis of the study.

Identification

Rodent control workers are trained to distinguish rat from mouse infestations in order to provide appropriate treatment. It can therefore be assumed that rat infestation records in NE Norfolk are reliable indicators of the presence of the common rat as the ship rat has not been recorded in Norfolk for many years. The situation with respect to mouse-infested premises is not so straightforward. Although records reliably indicated the presence of mice they did not identify the species which could be either the house mouse or wood mouse.

Corbet & Southern (1977) describe typical house mouse habitat as associated with human activities and buildings whereas the wood mouse prefers more natural, outdoor habitats. These authors also mention an observation that woodmice will successfully compete with house mice in buildings in the absence of human habitation. Similarly, Meehan (1984) states that wood mice rarely venture into inhabited buildings although they will enter outbuildings in winter. In contrast, recent *Norfolk Mammal Reports* have speculated that wood mice numbers in buildings may be increasing at the expense of house mice. Local authority rodent control methods and records usually do not help our understanding of this situation and mouse infestations cannot be identified to species with any certainty. A field study would be required to determine the relative frequencies of house mouse and wood mouse infestations and the factors influencing their prevalence in buildings.

Notification

It would be very helpful to know to what extent occupiers of non-agricultural domestic-only premises notify rat and mouse infestations to the EHD in NE Norfolk in comparison to actual infestation levels. Many factors could influence the notification rate in a given area e.g. the local authority may not provide a comprehensive pest control service, there

may be a charge, the occupiers may treat infestations themselves or a servicing company may be employed. Unfortunately the notification rate in NE Norfolk in 1987 is not known and cannot be estimated. However, one source of information on notification rates comes from a survey organised by the Ministry of Agriculture, Fisheries and Food (MAFF) between 1976 and 1980 (Rennison & Drummond 1984). This survey was the first to provide a comprehensive picture of rodent problems in non-agricultural premises throughout England and Wales using a random sampling procedure carried out by local authorities.

Figure 1. The distribution and number of rat and mouse infestated non-agricultural domestic-only premises reported in 36 NE Norfolk parishes in 1987. 5 × 5 km squares are shown.

The survey revealed that in rural areas (populations less than 3,000 people) only 58.6 per cent of rat infestations and 41.4 per cent of mouse infestations were reported to local authorities. It would require a similar random sample survey in the study area to obtain comparative figures. If similar levels of notification were operating in the study area in 1987 this would have important implications for distribution and status assessments. As it is the infestation rates reported in NE Norfolk can only be taken to indicate minimum infestation levels for 1987.

Distribution

The 36 parishes in NE Norfolk included in the study area are shown in Fig. 1. These parishes are within, or overlap, 25 adjoining 5 × 5 km squares in the National Grid TG sector. Although the exact address of each confirmed infestation was recorded by the rodent control worker, this initial investigation was restricted to analysis at the parish level. The disadvantage of this was that it enabled very few positive confirmations on the grid system. All parishes had a population of less than 3,000 people except for North Walsham with a population of more than 8,000.

Fig. 1 and Table 1 show the distribution of rat and mouse-infested premises by parishes in the study area. Every parish contained at least one rat-infested premises indicating the widespread distribution of common rats. Only 3 parishes (Honing, Swafield, Scottow) are completely contained in 5 × 5 km squares. If records for several years were plotted by address a reasonably detailed distribution map of common rats associated with buildings should emerge.

Rodent control workers also record the site of an infestation and this was used to determine the proportion of infestations inside a dwelling or outbuilding and those outside. The majority, 75.1 per cent of rat-infested premises (excluding the few premises simultaneously infested by both species) were confined to outdoor areas.

Twenty six (72.7 per cent) parishes had at least one mouse-infested premises indicating distribution was not as widespread as rats. Plotting a distribution map for house mouse-infested premises would not be possible without first confirming the identity of the species in each case. If this were done it could add considerably to the distribution map in the 1987 *Norfolk Mammal Report* (p. 164) where the house mouse is recorded in only 3 of the 25 squares in the study area.

The site of mouse infestations were recorded as inside dwellings only or inside outbuildings only. The majority (92.2 per cent) of mouse-infested premises (excluding the few premises simultaneously infested by both species) were within dwellings which was in marked contrast to rats.

Infestation Rates

Rats were reported present in 272 (2.3 per cent) non-agricultural domestic-only premises ranging by parish from 0.8-12.5 per cent (Table 1). Mice were found to be present in 87 (0.7 per cent) premises ranging by parish from 0.2-2.9 per cent. Only 10 (0.08 per cent) premises in 6 (16.6 per cent) parishes were recorded with simultaneous rat and mouse-infested premises ranging from <0.1-0.7 per cent. These figures suggest it is unusual for rat and mouse infestations to be associated and occur in the same premises. Where percentages are given of either rat or mouse-infested premises they include the small percentages that were also infested by the other species.

The higher proportion of rat-infested premises may reflect infestation levels or be biased by other factors influencing notification e.g. more occupiers may undertake their own treatment of mice than rats. Thus these figures can only be used to indicate minimum infestation levels. Average infestation rates in non-agricultural domestic-only premises in rural areas in England and Wales from 1976-1980 were 5.2 per cent for rats and 3.7 per cent for mice (Rennison & Drummond 1984). These figures are much higher than those in the present study and probably reflect the greater value of an unbiased random sample. Also random sampling allows greater confidence to be placed in the significance of annual changes of prevalence. Annual notification rates can at best only provide a rough idea of infestation levels and changes (Rennison & Drummond 1984).

Rats and Mice in Other Locations

Rat and mouse infestations are of course found in locations other than non-agricultural

Table 1. Rat and mouse infestation rates of non-agricultural domestic-only premises reported in 36 NE Norfolk parishes in 1987.

Parish[1]	No. of Ratable Premises	Rat Infested[2]		Mouse Infested[2]		Rat & Mouse Infested[3]	
		No.	%	No.	%	No.	%
Ashmanaugh	58	4	6.9	0	0.0	0	0.0
Bacton	545	26	4.8	12	2.2	4	0.7
Barton Turf	175	5	2.9	2	1.1	0	0.0
Brumstead	8	1	12.5	0	0.0	0	0.0
Catfield	223	6	2.7	3	1.3	1	0.5
Dilham	113	3	2.7	1	0.9	0	0.0
East Ruston	139	6	4.3	1	0.7	0	0.0
Felmingham	150	7	4.7	2	1.3	1	0.7
Happisburgh	613	32	5.2	5	0.8	0	0.0
Hickling	337	5	1.5	2	0.6	1	0.3
Honing	78	2	2.6	0	0.0	0	0.0
Horning	470	4	0.9	1	0.2	0	0.0
Horsey	29	1	3.4	0	0.0	0	0.0
Hoveton	754	16	2.1	5	0.7	0	0.0
Ingham	112	4	3.6	2	1.8	0	0.0
Knapton	130	1	0.8	0	0.0	0	0.0
Lessingham	344	6	1.7	3	0.9	1	0.3
Ludham	464	6	1.3	3	0.6	1	0.2
Neatishead	191	4	2.1	4	2.1	0	0.0
North Walsham	3158	32	1.0	12	0.4	1	<0.1
Paston	64	1	1.6	0	0.0	0	0.0
Potter Heigham	365	8	2.2	2	0.5	0	0.0
Scottow	69	2	2.9	1	1.4	0	0.0
Sea Palling	202	7	3.5	2	1.0	0	0.0
Skeyton	55	2	3.6	0	0.0	0	0.0
Sloley	81	8	9.9	0	0.0	0	0.0
Smallburgh	131	3	2.3	1	0.8	0	0.0
Stalham	1288	10	0.8	5	0.4	0	0.0
Sutton	553	17	3.1	2	0.4	0	0.0
Swafield	92	4	4.3	0	0.0	0	0.0
Swanton Abbott	107	2	1.9	2	1.9	0	0.0
Trunch	331	9	2.7	3	0.9	0	0.0
Tunstead	176	10	5.7	4	2.3	0	0.0
Westwick	34	2	5.9	1	2.9	0	0.0
Witton	93	4	4.3	0	0.0	0	0.0
Worstead	255	12	4.7	6	2.4	0	0.0
Totals	11987	272		87		10	

[1]All parishes had a population of less than 3000 people except North Walsham
[2]Includes premises simultaneously infested by both species.
[3]Premises simultaneously infested by both species.

domestic-only premises and in some cases information on infestations may be available. For instance in the NE Norfolk study area 10.9 per cent of rateable properties were categorised as non-agricultural domestic and business use or commercial use only. If a local authority keeps records for these types of properties they can add to the overall picture. It is of interest that in the national survey rat and mouse infestation rates in both these types of premises in rural areas were much higher than in domestic-only premises and the notification rates were lower (Rennison & Drummond 1984).

Rats are often associated with sewers, agricultural holdings and refuse tips and in favourable conditions large numbers can build up at these locations. Little information seems to be available on prevalence at these sites locally although information collected nationally between 1973 and 1975 indicated that about 60 per cent of sewers and 50 per cent of groups of farm buildings were infested by rats (MAFF 1976).

Conclusion

Local authorities providing a rodent control service can be a useful source of information on rat and mouse distribution and status in non-agricultural premises in their areas. Rat infestation records enabled positive identification of common rats in NE Norfolk but mouse infestation records did not allow house mouse and wood mouse infestations to be distinguished. Notification rates are probably low in some areas and this must be taken into account when interpreting data. The distribution of rat and mouse infestations could be plotted from address records but assessing status and trends is limited to determining minimum infestation levels in a given period. Positive identification of house mouse or wood mouse infestations and random sampling could make a significant contribution to existing mammal records. However, this would require much more effort on the part of the investigator compared to only examining local authority rodent control records.

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Norfolk Bat Review 1988-1989

J. G. Goldsmith

Pipistrelles still account for well over 90% of all bats encountered. Their fondness for human habitation means that the summer colonies of mums and babies are often detected by the droppings that can accumulate beneath the entrance holes. Almost 300 enquiries were handled by Norfolk Bat Group volunteers and the Nature Conservancy Council during the 1988/89 period, the majority of which concerned Pipistrelle colonies. A most encouraging trend these days is that very few householders who find they have bats as house-guests during the summer, demand their immediate exclusion. Often they become proud colony 'owners', so that 'counting the colony' becomes a focal point for a garden party/barbecue! Summer eviction is not of course usually a humane practical possibility, even without the restraints of the 1981 Wildlife & Countryside Act!

Noctules remain noteworthy, with breeding tree roosts recorded at Norwich, Woodbastwick and Thorpe. The latter colony unfortunately resided in a felled Sweet Chestnut tree. The tree, dislodged by the October 1987 gales and leaning at seventy five degrees on a fellow Oak, had been checked by the tree felling gang since it contained holes, but when actually sawn-down on 30th June 1988 over 120 adult and juvenile Noctules appeared as the trunk split open during its sliding descent to the ground. An emergency visit was arranged within half an hour and the trunk carefully dismembered. All the bats — mostly juveniles — were caught up and the colony was placed in a large specially constructed bat-box, on an adjacent tree, just before dusk. The scene at sunset was very spectacular with many criss-crossing Noctules weaving at low level between the trees and others on the ground, some crawling over the now prostrate trunk, searching for their lost babies. Even before the box full of youngsters could be affixed to the tree, mothers were alighting on it and communicating with their offspring. Some of the smaller babies were taken by their mothers from the box to another, unknown, roost but the box remained in occasional use for about two weeks. Only three skeletons were found in the box at the year end, indicating a reasonably successful 'rescue'. Our other large bat, the Serotine, was found at new sites in 1988: Loddon, Winterton, Feltwell and unconfirmed at Burnham Overy.

Visitors to the known underground hibernation sites were tackled by about half-a-dozen licenced people. Daubenton's, Natterer's and Long-eared bats were seen, although numbers were down overall, probably due to the two successive mild winters. Brants and Whiskered bats, both usually only encountered underground in winter, are now a great rarity in the county, with only a single specimen of the former species noted. Work on protecting and enhancing selected underground sites continues, with the 'best' Norfolk hibernation site — chalk caves in the Stanford Battle Area — having over 60 individual bats of five species recorded.

Lastly our East Anglian speciality, the Barbastelle, was noted in North Norfolk (with one not previously recorded at Stiffkey in May 1985) and the exciting discovery of what seems to be the only currently known breeding colony in Britain: in a picturesque old black weather-boarded cart-shed near Cromer in July 1988.'

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