

Wicken Fen Group Report No.8 1976

INTRODUCTION

1976 saw the completion of the Group's eighth summer of fieldwork at Wicken Fen. The number of birds ringed in the year increased slightly as did the membership of the Group although the latter increase concealed some losses which were more than compensated by recruitment, particularly of university undergraduates.

A notable and welcome change in the Fen's bird community was the increase in the number of breeding Sedge Warblers after several years of low population apparently attributable to poor conditions in their winter quarters. This change is dealt with more fully elsewhere in this Report. The changing fortunes of the Sedge Warbler are a reminder that conditions far from Wicken Fen are of vital importance to many of its commonest birds. Several Group members participated in an expedition to western France which was studying the conditions in which migrant Reed and Sedge Warblers prepare for the long autumn migration to West Africa.

Analysis of ringing results from the Fen has this year yielded papers on bird population changes and aspects of *Acrocephalus* Warbler biology while another paper brings together the results of work on finch moult at four Cambridgeshire sites. An analysis of bird of prey observations continues the series of summaries of the status of ecological groupings of birds of special interest.



A REVIEW OF THE YEAR

Although four ringing visits were made to the Fen in January and early February, mainly to catch Reed Buntings at roost, the Group's activities did not begin in earnest until April 7th, but from April 10th visits were made on all save one weekend up to November 21st. In addition to those days on which ringing was carried out a series of brief visits were made in February and March, this is a period when records are sparse and some valuable observations resulted. The combined effect of these special visits and of the extended period of ringing coverage was to increase the number of days on which a visit was made to the Fen by a member of the Group from about 75 during 1975 to 87 in 1976. This review is based on the observation during these 87 visits together with records from Fen staff and information published in the Bulletin of the Cambridge Bird Club. As in previous years this summary is being written in mid November and therefore excludes records for the last six weeks of the year.

1976 will be remembered for its hot dry summer and the extremely wet autumn. Drought conditions, the severity of which is indicated by the fall in the water table of the Sedge Fen to about 2m below surface level by September, are likely to have particularly adverse effects on the flora and fauna of a fenland ecosystem such as Wicken and it is perhaps fortunate that water levels had recovered to Lode level, about 50cm below the surface, by late October. Water levels in Adventurer's Fen fell less markedly than those on the Sedge Fen but the growth of Reed was somewhat reduced and Trevelyan's Piece, which had been well flooded and attractive to ducks and waders early in the year, dried out rapidly in May and June to become completely unsuitable for these groups. As in recent years the winter periods were mild.

It is convenient to begin this summary with three species, Hen Harrier, Great Grey Shrike and Bearded Tit, whose autumn arrival at the Fen was reported in last years review. In recent years the Hen Harrier has once again become a regular winter visitor and the male first noted on October 24th (1975) remained in the area until at least April 7th. The Great Grey Shrike is also a regular winter visitor and after the single bird seen in October, 1975, other singles were seen in each of the first three months of 1976. Bearded Tits are also regular winter residents but their numbers fluctuate considerably, 1975/76 was a poor year with a maximum of four birds being seen and an early departure in the first half of February.

Less usual winter visitors in the first half of the year included a Hooded Crow, the first since the formation of the Group, on January 23rd, and an Oystercatcher on February 14th. This latter bird was found dead near the Mere and post-mortem analysis indicated that it had died from lead poisoning following wounding with shot. Stonechats were formerly regular winter visitors to the Fen but have been most uncommon in recent years, two were however present in January and one in February.

Stonechats were also seen in the autumn, with single records in October and November, so hopefully the species is returning to its former status. There were only two records of Bittern, in early February and early March, but, at the other extreme, Goldcrests were numerous on February 7th when over 1000 Wood Pigeons were roosting on Verrall's Fen.

The chief feature of the first winter wildfowl population was the flock of about 700 Wigeon in January, more usual numbers of about 250 were feeding on Trevelyan's Piece in February and March. A single Canada Goose present in January was early and was not joined by another until late February. The most interesting duck observations came from the February - April period when eight species were seen, some presumably on passage. Teal and Shoveler were prominent from February 14th with Teal numbers peaking, at 19 males and 12 females, on the 26th and Shoveler, at nine males and five females, in early March. Shoveler were present during the breeding season, with an estimated six pairs but breeding not being proved, but the only record of Teal between April 6th and September 11th was of a single male on May 8th. Tufted Duck were first noted in any number in March with 12 males and four females on 28th. This species also probably bred with 10 males being present on April 4th and a minimum estimate of four pairs at the end of that month. Apart from the ubiquitous Mallard the other species were present in only small numbers. A pair of Pintail were seen on both February 14th and April 15th but breeding was not suspected. Pochard were noted on several dates in March, with a maximum of three males on 2nd, while a single male Gadwall was present on April 15th and 16th and a pair on April 30th. Also on April 30th a probably Garganey was seen.



Alongside these wildfowl there were some passage waders of interest. On March 18th single Reeve and Dunlin were present, both species were also seen later with three Dunlin on March 24th and two on 25th and another single Reeve on March 29th. Curlew were also seen in March, with two on 24th, but also in April, a single on 10th, and June, a single on 4th. Two Ringed Plover were present on April 10th and another caught on May 1st was the first ringed by the Group, another single bird was present on May 16th. Golden Plover were noted on several dates between March 29th and May 1st with a maximum of 45 on April 10th, also in April was a Bar-tailed Godwit on 28th. A Green-shank on May 16th was unusual, being only the Group's second spring record for a species fairly common in the autumn, but most outstanding was a Wood Sandpiper, the first definite record in the history of the Group, on June 1st. This remarkable series of records, which amounts to two-thirds of the total number of spring records for the period 1969-74, is partly the result of better coverage during the passage period and indicates that the Fen is more used in the spring than previous records would suggest.

In contrast to ducks and waders obvious passerine migration was confined to two species, Wheat-ear and Yellow Wagtail, although it still produced features of interest. Wheatears are usually more common in the autumn than in the spring but in 1976 birds were seen in March, one on 29th, April, two on 6th, and May, three records involving at least two individuals with last on 22nd. The first Yellow Wagtail was seen on April 10th and there was a heavy passage on April 24th - 25th with 10+ birds being present, a Blue-headed Wagtail was photographed on May 17th. Although a single Yellow Wagtail was seen throughout May and up to June 5th it seems that, in contrast to most recent years, the species did not breed on the Reserve, although a pair with young were noted at nearby Priory Farm.

Some summer visitors had arrived before Yellow Wagtails made their appearance with Sand Martins on April 6th and Chiffchaff and House Martin on April 8th. Sedge Warblers were first noted on April 11th, overlapping with winter visitors such as Siskin, also on 11th, and Field-fare, present until 17th, but not with Brambling last seen on 10th. There were indications of a recovery in the numbers of Sedge Warblers with this species being very abundant in early May, 28 being caught on 8th, and the numbers ringed increasing, both absolutely and in proportion to the number of Reed Warblers ringed, as compared to 1975. Some winter visitors remained into May with several Wigeon on the 6th, the day before the first Reed Warbler record. May also saw the first of several Marsh Harriers at the Fen with a male on 1st and a probable female on 22nd.

The first indication of the breeding season was on February 14th when a pair of Great Crested Grebes were displaying on the Mere, a third

bird not in breeding plumage also being present. Breeding was successful with an adult and two young being present on April 3rd. The first record of drumming Snipe was on February 26th and a minimum of 10 pairs were estimated for Adventurer's Fen. February 26th also saw the first spring record of Redshank, of which at least three pairs were to be present with one of the birds having been ringed on the North-Norfolk coast. Despite the rapid drying out of the Fen at least one of the pairs successfully raised young, as did several of the six or seven pairs of Lapwing estimated to have bred on Brett's and Trevelyon's Pieces. In April drumming Great Spotted Woodpeckers were seen near the Reed Bed and in May a nest of this species was found on the Sedge Fen, three young were in the nest in June and the last record of the year was of a single bird in August. There was no evidence that Mute Swan bred although up to three birds were present in May, similarly Canada Goose did not appear to breed despite the presence of two pairs for much of May and an abnormal influx in the second half of the month with nine birds on 16th, eight on 21st and six plus on 22nd. The number of Wrens appeared to be lower than usual, with the number ringed falling to about half that in 1975, but the number of Tree Creepers ringed more than doubled to reach the same level as in 1973. At least 10 reeling Grasshopper Warblers were reported and Barn Owls were unusually common.

Autumn migration began on July 3rd with three Common Terns over the Mere. July also saw the first of the few autumn waders with 10+ Golden Plover on 24th and single Whimbrel on 25th and 31st. The only August wader was a single Greenshank on 8th and no others were noted until three Dunlin were seen on October 17th. Kestrels were unusually numerous in July with several records of two and three birds, in contrast to the usual singles, and a female Marsh Harrier was seen on 20th. A female Marsh Harrier was also noted on August 13th, two birds were recorded in September and an unsexed bird in October.

Duck numbers began to build up in August, with some Shoveler being noted among the Mallard, and a small Starling roost developed.

For the first time for several years sizeable groups of Herons were present with 11 on 6th, four on 13th and eight on 27th. Also on August 27th a possible Sparrowhawk was seen and the regular Swallow and Sand Martin roost was first noted. This roost never became very large in 1976 with a maximum of about 1000 birds being present on September 11th when 85 Swallows, including one control, and 23 Sand Martins were caught, it had disappeared by October 9th. The Starling roost also disappeared in October after reaching a fairly large size in September but the finch roost gradually increased in numbers over the period August - October. There were several late Swifts in September, with the last on 18th, but the only possible passerine migrants were three to five Yellow Wagtails in the first half of September. The first returning winter visitors were Wigeon on September 11th.

The main arrival of winter visitors occurred in October. Redwing were noted on 1st and Fieldfare on 2nd but none of these early birds appear to have settled on the Fen for these species were not present on 9th and numbers were low until there was a major arrival, which included Robins, on 30th and 31st. In contrast to Redwing and Fieldfare there did appear to be an influx of Blackbirds and Song Thrushes in mid-October, overlapping with the disappearance of summer visitors such as Reed Warbler, last seen on 9th and Blackcap, last seen on 16th; the last Sedge Warbler was recorded on October 2nd. Other interesting features in October were the second Green Woodpecker of the year on 1st, the first had been seen on August 8th; a flock of over 250 Lapwing on 9th; an unusual autumn Redshank, the first since June 18th, on 16th; and the return of Stonechat, on 9th, Hen Harrier, and Bearded Tit. The arrival of this last species on October 31st was on the 1973-74 scale with about 30 birds being seen, 15 were still present on November 13th and 19 on November 21st.

The only summer migrant to remain into November was House Martin on 1st. Fieldfares were numerous in the first half of the month and Bullfinches were prominent on 7th and 21st, when 37 were caught. A Great Crested Grebe was on the Mere on November 6th together with Mallard, Shoveler, Tufted Duck, Teal, Wigeon and Pochard. On November 13th two Hen Harriers, a male and a female, were present.

Notes on other species

Montagu's Harrier. An immature bird, the first record since 1969, was seen in April.

Lesser Spotted Woodpecker. One reported in March means that all three Woodpecker species were recorded during the year.

Carrion Crow. Several records of up to three birds early in the year. This species is probably under-recorded.

Magpie. A bird on October 17th, during a period when there were an unusually large number of fenland records, was the fourth since 1969.

Jay. Considerably more common with an increased number of sightings and a well above average number of birds ringed.

Nightingale. The B.T.O. survey did not reveal any birds on the Fen and the only record was of a possible sighting in April.

Pied Wagtail. The presence of this species is rarely noted. During 1976 birds were seen several times in March and April with a maximum of five on April 6th and a bird was seen collecting nest material on May 1st. Apart from a single bird on May 22nd the only other records were for November 6th, a single bird, and November 20th, about 50 moving south-west.

Redpoll. After a marked decline in 1975 the numbers ringed doubled in 1976.

Sarus Crane. An individual of this species, which seems to have been resident in Cambridgeshire since at least the autumn of 1974, was noted on a number of occasions, particularly in March, April and August.

Cardinal. A male Red Cardinal was seen on July 30th and 31st and on October 16th.

Budgerigar. One seen on October 2nd.

RECOVERIES

The following list covers all recoveries and controls of birds more than 10 km from the place of ringing, notified to the Group by the B.T.O. since the last report.

Although only 14 birds are involved, some interesting features emerge. Redshanks are mainly summer visitors to Wicken — DS 66284, which might have been one of the Fen's breeding stock, was in N. Norfolk two autumns earlier. The Turtle Dove represents the Fen's "furthest south" recovery; there have been relatively few African recoveries of British ringed birds of this species.

Reed Warblers continue to provide recoveries, but this year only one was from overseas, in Spain. JV 47336 left Wicken at average weight, and perhaps stopped at the Channel coast for further fattening. The Blackcap, a late bird at Wicken, might well have been planning to winter locally, but for the sad accident of flying against a window in Girton.

JV 45678 was only about the fifth Moroccan recovery of a British ringed Spotted Flycatcher; the unfortunate bird had been trapped and caged.

The Greenfinch, Bullfinch and Reed Bunting recoveries continue to show up the well recognised local movements, particularly in autumn and winter, of these species.

The Redpoll, although only travelling about 250 miles, is the first foreign-ringed bird caught by the Group, despite 9 years of operating.

Key to symbols and terms in the list:

- 1—bird ringed as nestling
- 2—bird ringed as full-grown, age unknown
- 3—bird ringed in the calendar year of hatching
- 4—bird ringed in the year following hatching or later
- 5—bird ringed in the year following hatching
- m—male
- f—female
- x—found dead
- v—controlled (caught alive and released)
- o—caught or trapped and not released

| | | | | | |
|--------------------|-----------------|----|----------|---------------------|------------|
| Redshank | DS66284 | 4 | 20. 7.74 | Terrington, Norfolk | |
| | | v | 30. 4.76 | WF | 55km S |
| Turtle Dove | DS55180 | 2 | 29. 7.73 | WF | |
| | | x | 1. 4.76 | Ambidedi, Mali | 4500km SSW |
| Redwing | BV21849 | 3 | 19.10.75 | WF | |
| | | x | 9. 3.76 | Burton Joyce, Notts | 115km NW |
| Reed Warbler | JJ92966 | 3 | 4. 8.73 | WF | |
| | | o | 31. 8.76 | Huelva, Spain | 1850km SSW |
| | JS17019 | 3 | 19. 8.73 | WF | |
| | | x | 22. 5.76 | Littleport, Cambs | 16km N |
| | JV44763 | 3 | 14. 9.74 | WF | |
| | | v | 1. 8.76 | Peakirk, Northants | 50km NW |
| | JV47336 | 3 | 13. 9.75 | WF | |
| | | v | 2.10.75 | Littlington, Sussex | 165km S |
| Blackcap | JV47649 | 3m | 19.10.75 | WF | |
| | | x | 28.10.75 | Girton, Cambs | 16km SW |
| Spotted Flycatcher | JV45678 | 4 | 5. 7.74 | WF | |
| | | o | 14. 7.76 | Tangier, Morocco | 1940km SSW |
| Greenfinch | BP53843 | 2f | 19.10.75 | WF | |
| | | x | 16. 2.76 | Lakenheath, Suffolk | 20km NE |
| Redpoll | Bruxelles 99718 | 3m | 27.11.75 | Brabant, Belgium | |
| | | v | 7. 5.76 | WF | 370km NW |
| Bullfinch | JJ91250 | 3m | 23. 9.72 | WF | |
| | | v | 22.11.75 | Sawston, Cambs | 21km SSW |
| Reed Bunting | JH17203 | 3m | 9.10.71 | WF | |
| | | v | 18. 7.76 | Fowlmere, Cambs | 28km SW |
| | JV47771 | 4m | 29.11.75 | WF | |
| | | x | 10.12.75 | West Wrating, Cambs | 19km S |

SPECIES RINGED (1.12.75 - 30.11.76)

| | Sites A, B & E | Sites F, G J & K | 1976 Total | Grand Total 1968-1976 |
|---------------------------|----------------|------------------|------------|-----------------------|
| Mallard | - | - | - | 5 |
| Kestrel | - | 1 | 1 | 2 |
| Red-legged Partridge | - | - | - | 6 |
| Water Rail | - | - | - | 1 |
| Moorhen | - | 1 | 1 | 7 |
| Lapwing | - | 2 | 2 | 10 |
| Ringed Plover | - | 1 | 1 | 1 |
| Snipe | - | 8 | 8 | 74 |
| Jack Snipe | - | - | - | 1 |
| Woodcock | - | - | - | 5 |
| Redshank | - | 5 | 5 | 13 |
| Woodpigeon | - | 3 | 3 | 14 |
| Turtle Dove | - | 2 | 2 | 25 |
| Collared Dove | - | - | - | 6 |
| Cuckoo | 1 | 3 | 4 | 26 |
| Little Owl | - | - | - | 1 |
| Tawny Owl | 1 | - | 1 | 11 |
| Long-eared Owl | - | 2 | 2 | 7 |
| Swift | - | - | - | 7 |
| Kingfisher | 2 | 5 | 7 | 89 |
| Great Spotted Woodpecker | 1 | - | 1 | 3 |
| Lesser Spotted Woodpecker | - | - | - | 5 |
| Skylark | - | 1 | 1 | 9 |
| Swallow | 1 | 209 | 210 | 2685 |

| | | | | |
|---------------------|-----|------|------|-------|
| House Martin | - | - | - | 10 |
| Sand Martin | - | 28 | 28 | 41 |
| Jay | 2 | 3 | 5 | 18 |
| Great Tit | 20 | 18 | 38 | 310 |
| Blue Tit | 86 | 77 | 163 | 1166 |
| Coal Tit | - | - | - | 4 |
| Willow Tit | 7 | 8 | 15 | 186 |
| Long-tailed Tit | 9 | 28 | 37 | 429 |
| Tree Creeper | 4 | 6 | 10 | 65 |
| Wren | 14 | 52 | 66 | 970 |
| Bearded Tit | - | 1 | 1 | 29 |
| Mistle Thrush | - | - | - | 3 |
| Fieldfare | - | 6 | 6 | 42 |
| Song Thrush | 19 | 88 | 107 | 1379 |
| Redwing | - | 33 | 33 | 121 |
| Blackbird | 13 | 80 | 93 | 1000 |
| Whinchat | - | - | - | 5 |
| Redstart | - | - | - | 6 |
| Nightingale | - | - | - | 9 |
| Robin | 31 | 54 | 85 | 746 |
| Grasshopper Warbler | - | 4 | 4 | 105 |
| Great Reed Warbler | - | - | - | 1 |
| Reed Warbler | 28 | 315 | 343 | 3546 |
| Sedge Warbler | 35 | 166 | 201 | 2124 |
| Blackcap | 14 | 44 | 58 | 700 |
| Garden Warbler | 6 | 5 | 11 | 114 |
| Whitethroat | - | 5 | 5 | 148 |
| Lesser Whitethroat | 2 | 30 | 32 | 240 |
| Willow Warbler | 15 | 31 | 46 | 939 |
| Chiffchaff | 4 | 15 | 19 | 274 |
| Goldcrest | - | 4 | 4 | 28 |
| Spotted Flycatcher | 2 | 7 | 9 | 140 |
| Pied Flycatcher | - | - | - | 1 |
| Duncock | 41 | 86 | 127 | 1481 |
| Meadow Pipit | - | 3 | 3 | 17 |
| Tree Pipit | - | - | - | 1 |
| Pied Wagtail | - | - | - | 8 |
| Yellow Wagtail | - | - | - | 6 |
| Red backed Shrike | - | - | - | 1 |
| Starling | 1 | 1 | 2 | 13 |
| Greenfinch | 13 | 74 | 87 | 480 |
| Goldfinch | 4 | 26 | 30 | 400 |
| Linnet | 1 | 29 | 30 | 280 |
| Redpoll | 14 | 111 | 125 | 1169 |
| Bullfinch | 37 | 114 | 151 | 1473 |
| Chaffinch | 9 | 19 | 28 | 275 |
| Brambling | - | - | - | 26 |
| Corn Bunting | - | 2 | 2 | 13 |
| Yellowhammer | 2 | 2 | 4 | 76 |
| Reed Bunting | 12 | 313 | 325 | 2073 |
| House Sparrow | 2 | 4 | 6 | 7 |
| Tree Sparrow | 6 | 9 | 15 | 1037 |
| TOTALS | 459 | 2144 | 2603 | 26748 |

STANDARDISED MIST NETTING AND BIRD POPULATIONS

R.D.P. Milwright

In 1970 mist net sites were selected in areas with a range of vegetation types and standardised trapping sessions begun in order to monitor changes in bird populations and to investigate differences in the composition of the bird communities of different habitats. (1). Preliminary results were described by Bibby (2) and Green reported complementary mapping census work for one of the study areas (3). With some modifications, described below, this work is continuing. The present paper examines the results of the first seven years of the scheme 1970 – 1976.

The study areas

The standard mist net sites are located in six subareas, four at the north eastern end of Wicken Sedge Fen and two on West Adventurers Fen. The vegetation of the subareas was briefly described by Bibby (1) but some changes have occurred since that time and the maps (Figure 1.) and descriptions below report the current situation.

Wicken Sedge Fen subareas

A1 mist nets used – 140'

The area consists of three water filled brick pits with considerable reed growth, surrounded by carr. The birch-sallow carr is 4-6 metres tall whereas the hawthorn-buckthorn carr is 3-8 metres in height. The mature trees reach up to 15 metres. The area has changed little during the study with some increase in the height and density of the carr and the area covered by reeds. Originally 200' of mist net were used in this area but overgrowth of vegetation in one site prevented the use of a 60' net after 1971.

A2 mist nets used – 200'

The area consists of birch-buckthorn-sallow carr with a few mature willow oak and poplar trees bordered by a narrow sedge field. There is little ground cover under the bushes of the carr although there is some grass, sedge and meadowsweet along the droves. Few changes have occurred in the area except that carr has invaded an area adjacent to one of the net sites which originally was wet with reeds, rushes and a few small bushes.

B2 mist nets used – 200'

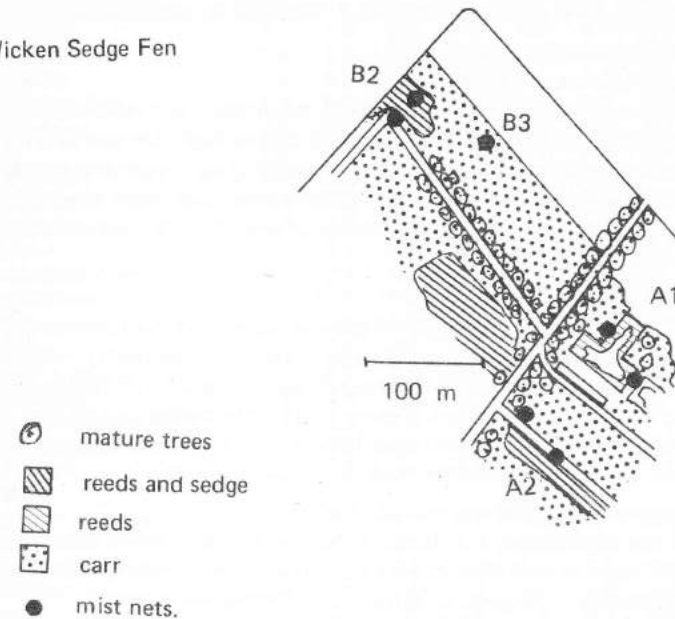
An area of hawthorn-buckthorn-sallow carr 4-8 metres high with a wet, reedy area in its centre. The carr has increased in height and density during the study but the main change has been a drying out of the wet area which was originally covered by pure reed stands but now has mixed beds of nettles, reeds, sedge, willowherb and meadowsweet.

B3 mist nets used – 100'

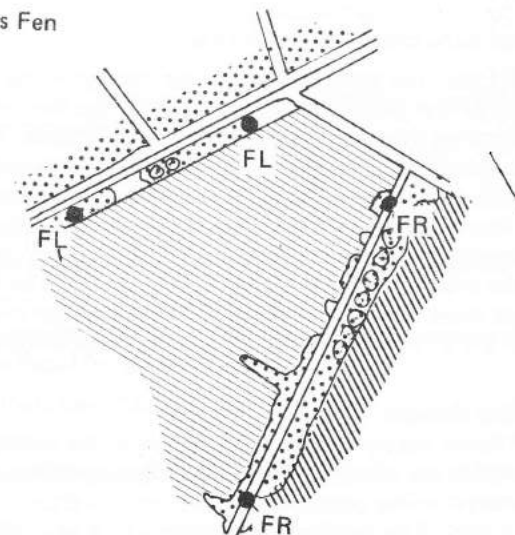
The driest area dominated by buckthorn-hawthorn-carr 2-4 metres high with little ground cover under the bushes. During the study the area has

Figure 1. Maps of study areas

Wicken Sedge Fen



West Adventurers Fen



changed considerably with a dramatic increase in the height and density of the bushes and a great reduction in the ground cover of grasses, sedge and brambles. The area is adjacent to a field usually planted to cereals.

West Adventurers Fen subareas

FR mist nets used — 200'

The area is a drove, lined with hawthorn, buckthorn and willow bushes 3-6 metres high and willow trees up to 15 metres high. On one side of the drove is a reed bed which is cut for thatching each year and on the other side is a field which was rough grazing when the study began but has since become a wet area with a cover of mixed reeds, rushes, willow herb and hemp agrimony.

FL mist nets used — 200'

The area is a 10 metre wide strip of ground separating the commercial reed bed mentioned above from Wicken Lode. It is covered by reeds and grasses with fairly well spaced clumps of hawthorns up to 6 metres high and brambles. To the north of Wicken Lode is the Sedge Fen an area of tall dense carr. The site has changed little during the study although the hawthorn bushes have been thinned out in some places.

Trapping procedure and analysis of results

Each of the six subareas is netted on four weekends in every season. The visits begin in mid May and are spaced at approximately four week intervals, ending in August. Originally all subareas were netted simultaneously but after 1974 the Wicken Sedge Fen and West Adventurers Fen areas have been covered separately on consecutive weekends. Another change has been to reduce the period of netting from two evenings and mornings to one evening and morning. This does not appear to change the composition of the catch and only reduces the number of individual birds caught by about 25%.

Bibby (2) analysed the trapping data by calculating the proportion of the total number of handlings of adult birds represented by each species and comparing this quantity between areas and years. This method assumes that the total number of birds nesting in the areas does not vary much from year to year. It has since been found that retrap rates vary greatly from species to species and therefore the number of individual adults caught rather than the number of handlings is used. As an illustration of the importance of this modification; in 1976 in the Wicken Sedge Fen areas there were 66 handlings of Sedge Warblers involving 27 birds, however the 21 handlings of Reed buntings each involved a different bird.

Population changes

Table 1 shows the percentage composition of the catch from all areas combined for the years 1970-76. The following points are considered noteworthy;

1) Sedge Warblers declined until 1973 but have shown some recovery since. This decline began in 1969 and has been associated with a drought

Table 1. Species composition of the catch of adult passerines 1970-76

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 |
|---------------------|------|------|------|------|------|------|------|
| Great Tit | 1.1 | 1.3 | 1.2 | 1.6 | 1.0 | 0.7 | 0.6 |
| Blue Tit | 2.4 | 2.6 | 2.4 | 2.1 | 3.2 | 3.0 | 1.5 |
| Willow Tit | 1.0 | 0.3 | 1.0 | 0.2 | 1.5 | 0.5 | 0.9 |
| Long tailed Tit | 1.3 | 0.5 | 0.7 | 1.6 | 1.3 | 1.4 | 2.0 |
| Tree Creeper | 0.2 | 0.2 | 0.9 | 0.2 | 0.5 | 0.5 | 0.7 |
| Wren | 1.9 | 2.6 | 5.8 | 3.8 | 3.7 | 3.0 | 3.0 |
| Song Thrush | 4.2 | 6.2 | 6.1 | 5.9 | 6.3 | 3.7 | 5.6 |
| Blackbird | 5.3 | 6.7 | 6.0 | 8.5 | 5.3 | 4.6 | 4.3 |
| Nightingale | 0.2 | 0.2 | - | - | - | - | - |
| Robin | 2.7 | 3.4 | 2.9 | 3.1 | 3.2 | 3.4 | 2.4 |
| Grasshopper Warbler | 1.0 | 0.3 | 0.5 | 0.2 | 0.3 | - | - |
| Reed Warbler | 20.1 | 17.7 | 16.0 | 19.6 | 18.6 | 21.9 | 19.7 |
| Sedge Warbler | 15.9 | 11.3 | 5.6 | 4.7 | 5.6 | 7.6 | 10.8 |
| Blackcap | 3.1 | 2.6 | 4.4 | 2.6 | 1.7 | 3.4 | 2.8 |
| Garden Warbler | - | 0.2 | 0.5 | 0.5 | 0.3 | 1.4 | 0.9 |
| Whitethroat | 1.8 | 1.8 | 1.2 | 0.2 | 0.2 | - | - |
| Lesser Whitethroat | 2.1 | 1.6 | 1.2 | 1.6 | 1.4 | 1.1 | 1.1 |
| Willow Warbler | 2.7 | 3.6 | 2.9 | 1.2 | 3.2 | 2.7 | 3.3 |
| Chiff-chaff | 0.6 | 1.0 | 1.4 | 0.2 | 0.5 | 0.2 | 0.4 |
| Goldcrest | - | - | - | - | 0.2 | - | - |
| Spotted Flycatcher | 1.1 | 1.5 | 1.0 | 1.2 | 1.9 | 1.1 | 0.2 |
| Dunnock | 7.8 | 8.2 | 10.2 | 6.6 | 8.5 | 7.5 | 6.1 |
| Greenfinch | 2.9 | 1.1 | 0.9 | 5.6 | 1.0 | 1.8 | 3.5 |
| Goldfinch | 1.9 | 1.6 | 1.0 | 1.9 | 3.6 | 1.6 | 0.9 |
| Linnet | - | 0.2 | 0.7 | 0.9 | 2.0 | 0.9 | 0.4 |
| Redpoll | 3.6 | 4.4 | 3.6 | 5.4 | 5.3 | 5.0 | 4.8 |
| Bullfinch | 6.8 | 9.5 | 14.5 | 13.9 | 10.3 | 12.8 | 16.3 |
| Chaffinch | 1.3 | 1.1 | 0.9 | 0.9 | 0.8 | 1.4 | 1.7 |
| Yellowhammer | 0.3 | 0.6 | 0.3 | 0.2 | - | 0.7 | 0.4 |
| Reed bunting | 4.2 | 5.6 | 4.8 | 4.7 | 3.9 | 4.8 | 4.6 |
| Tree Sparrow | 2.3 | 2.0 | 1.5 | 0.7 | 4.6 | 3.2 | 1.1 |

in the winter quarters in Sahelian Africa (4). By contrast the index for Reed Warblers has remained fairly steady.

- 2) Nightingale, Grasshopper Warbler and Whitethroat, never very common in the study areas, have declined to the point where they are not caught during whole seasons in the standard nets.
- 3) Willow Warblers recovered after a marked drop in numbers in 1973 noted by Bibby (2).
- 4) Bullfinch numbers have risen considerably over the period, a change examined in more detail by Bibby (5).
- 5) Blackbird numbers have declined since 1973.

Habitat preference

The clear differences between the bird communities in the different areas were pointed out by Bibby (2). The following points concentrate on changes in preference for certain areas associated with habitat changes

Table 2. Population change in different areas for selected species

| Species | period | A1 | A2 | B2 | B3 | FR | FL |
|----------------|---------|------|------|------|------|------|------|
| Reed Warbler | 1970-72 | 23.7 | 13.1 | 9.5 | 3.6 | 24.0 | 31.0 |
| | 1972-74 | 30.0 | 9.0 | 8.7 | 3.0 | 24.3 | 36.5 |
| | 1974-76 | 20.1 | 7.7 | 8.1 | 5.5 | 31.7 | 45.8 |
| Sedge Warbler | 1970-72 | 9.7 | 9.5 | 12.0 | 7.1 | 13.8 | 12.0 |
| | 1972-74 | 5.4 | 3.5 | 4.3 | 1.3 | 14.8 | 4.2 |
| | 1974-76 | 7.2 | 4.8 | 5.7 | 4.7 | 18.5 | 6.9 |
| Bullfinch | 1970-72 | 9.0 | 14.7 | 12.7 | 6.5 | 5.5 | 9.5 |
| | 1972-74 | 13.3 | 16.1 | 14.0 | 14.2 | 7.0 | 11.0 |
| | 1974-76 | 14.4 | 13.7 | 15.8 | 14.8 | 10.1 | 8.8 |
| Willow Warbler | 1970-72 | 2.7 | 2.6 | 3.4 | 3.6 | 2.9 | 3.8 |
| | 1972-74 | 1.3 | 4.2 | 2.2 | 3.4 | 2.2 | 1.9 |
| | 1974-76 | 1.9 | 6.6 | 2.4 | 2.7 | 1.8 | 1.9 |

or changes in population density. Table 2 shows numbers of birds as a percentage of the total catch for the six subareas. Three overlapping periods are compared, 1970-72, 1972-74, 1974-76. The species considered are the Reed Warbler, Sedge Warbler, Bullfinch and Willow Warbler. The following points can be made.

1) Area A2 seems to have become less attractive for Reed Warblers and area FL considerably more so. The reasons for these changes are not clear as neither area has changed very markedly.

2) Although Sedge Warblers declined to a low level in the 1972-74 period when all the areas are considered, populations appear to have increased in one area, FR. It seems likely that the changes which have taken place in the field alongside the net sites have made the area very suitable habitat for this species since it forages low down in damp rushy or reedy areas (6). The fact that Sedge Warblers are more common in FR than in the more bushy FL and that for Reed Warblers this situation is reversed is in line with the results of Green and Davies (6) which showed that Reed Warblers fed more in bushes and less in marsh vegetation than Sedge Warblers.

3) Bullfinches have increased mainly in areas B3, FR and A1 while their numbers have remained steady in the other areas. Since the areas where the increases have occurred are those where the species was initially least common, it seems likely that Bullfinches may be colonising suboptimal habitats as their overall populations increase. The species is now very evenly spread through the different areas and as numbers seem to be reaching a stable level (Table 1.) it may be that the Fen is now "full" of Bullfinches.

4) Willow Warblers have increased markedly in area A2, remaining steady elsewhere. This may be associated with the colonisation of parts of the area by carr.

Conclusion

There are disadvantages to the method of population monitoring described above. The most important is probably that changes are only

measured relative to other species comprising the total community; if total bird densities change then the method could give misleading results. However, given the range of habitats covered, it is likely that such changes will tend to cancel out. Another problem is that some species, particularly the cardueline finches, are probably caught while feeding in flocks rather than while in their breeding areas and the fluctuations in the numbers of cardueline finches caught tend to support this idea. If this is the case then the method is not suitable for them. For other species, it would appear that the results are useful in following bird populations on the Fen. For some species like the Reed Warbler for which the British Trust for Ornithology's Common Bird Census is not suitable they might, in combination with work in other areas, provide information on population trends on a national level.

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TIMING OF FLEDGING AND PASSAGE OF JUVENILE REED WARBLERS

Ann Naylor and Rhys Green

Studies of Reed Warblers at the Fen have so far dealt with populations (1,2) survival (3,4,5), weights (6,7), wing lengths (8,9) and feeding ecology (10). Breeding biology has received no attention mainly because so few nests are found by the Group. This paper examines the information that Reed Warblers caught in mist nets can provide on the timing of breeding. In particular the main period of occurrence of locally bred juvenile birds on the Fen is described. Juvenile Reed Warblers may be from nests on the Fen or from natal areas many kilometres away. The relative numbers of locally bred and passage birds have not previously been assessed although this is important if indices of breeding success (2) or first year survival rates are to be calculated.

Timing of egg laying

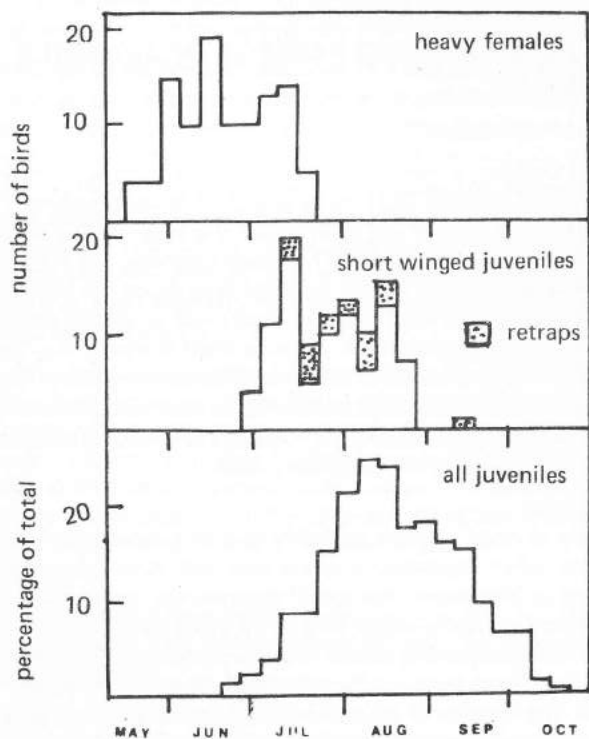
The small sample of nests found is probably biased towards the early part of the season when vegetation is sparse and nests relatively easily found. Therefore an alternative method of determining laying dates is used. Reed Warblers normally weigh 10 g to 12 g but adult females are often caught in the breeding season with distended abdomens and weights up to 16 g. These birds are forming eggs which weigh about 2.4 g when laid. The number of adult Reed Warblers caught weighing more than 13.0 g was determined for each week throughout the season. During the early summer most of these heavy birds were females and were

Table 1. Occurrence of heavy adult Reed Warblers 1969-76

| | before 23 July | after 23 July |
|---|----------------|---------------|
| females (brood patch or wing 62mm or less) | 104 | 43 |
| others | 27 | 59 |

therefore probably forming eggs at the time of capture. After about the 23 July the numbers of heavy males and females are similar and most of these birds were probably heavy because they were depositing premigratory fat (Table 1.). The timing of laying can be determined by examination of the dates on which heavy females occur. Those caught after 23 July are excluded and this may result in some late clutches being missed but the numbers involved are probably small. Figure 1 shows the distribution of captures of heavy females. Laying began in mid May reaching a peak in June and declining after mid July. The prolonged

Figure 1. Timing of egg laying, fledging and catching of juveniles.



peak of laying was probably due to second and repeat clutches.

Fledging

Reed Warblers leave the nest before their wing and tail feathers are fully grown and the wing length does not reach a maximum value until the birds are about 15 days out of the nest (11). The birds caught in mist nets at this stage are recognisable by their measurements and are clearly locally bred. Figure 1 shows the timing of captures of juveniles with wing lengths of 58 mm. or less or those with wing lengths of 59mm. which had grown by 2mm or more on subsequent capture. These birds can be said to have been captured in the process of fledging. The first young appeared in late June and the last were caught in late August. The distribution of fledging dates covers a period of similar duration to that of laying dates and lags behind it by about 38 days. This delay is that expected since about 15-16 days are required for egg laying and incubation and the young birds are about 20 days old when trapped with wing lengths of 55-58 mm. (11). The fact that the distributions are approximately the same shape suggests that fledging success does not vary drastically through the season.

Passage

Only one locally bred juvenile Reed Warbler has been recaptured on the Fen after the end of August and it seems that the young birds leave the natal area soon after becoming independent. However juvenile Reed Warblers occur on the Fen in good numbers until late September (Figure 1), and it seems likely that many of these birds are on passage. This possibility is examined further by calculating the rates at which young birds return to breed at the Fen in subsequent years. It is likely that most young Reed Warblers breed fairly close to their natal site and so it would be expected that few passage birds would return to breed. Table 2 shows apparent survival rates to one year old calculated for birds ringed in three periods, June-July, August and September-October. These rates are obtained by dividing the percentage of birds ringed which are caught in their first adult summer by the average probability of catching an adult Reed Warbler during a season's trapping which is 0.44 (4). The apparent first year survival rate for birds ringed in the period June-July is 22%, similar to the 24% calculated by Long (12). The rate

Table 2. Apparent survival rates for juvenile Reed Warblers

| ringed | number ringed | number trapped when one year old | apparent first year survival (percent) |
|--------------|---------------|----------------------------------|--|
| June-July | 340 | 33 | 22 |
| August | 769 | 38 | 11 |
| Sept. - Oct. | 635 | 12 | 4 |

falls off later in the season, probably because of dilution of locally bred birds with passage migrants.

Conclusion

Reed Warblers have a protracted breeding season, eggs being laid from mid May to at least late July and young being fledged until late August. Few locally bred juveniles remain on the Fen after the end of August. A decline in the apparent first year survival rate as the season progresses suggests that whereas in June and July most of the young Reed Warblers caught are local birds those hatched elsewhere predominate later in the season.

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PREMIGRATORY WEIGHTS OF JUVENILE REED AND SEDGE WARBLERS AT WICKEN FEN

C.J.R. Thorne

Compared with several south coast reedbed sites, relatively few *Acrocephalus* Warblers are caught at Wicken during September and October. Those handled are almost all juveniles, the adult birds having passed through earlier.

Bibby et al. (1) have analysed the weight changes of Sedge Warblers at Radipole Lake, Dorset and shown that they are correlated with the densities of aphids which form their food supply. At that site both Reed and Sedge Warblers put on weight though the former show smaller weight gains. (2).

An analysis of all late-season juvenile *Acrocephalus* warblers caught at Wicken was attempted. The weights of all Sedge Warblers caught on or after August 30, and of all Reed Warblers caught on or after September 12, during the seven year period 1970-1976, were used in the analysis. Weights were adjusted to a noon value by adding 0.1 g per hour for any bird caught before mid-day, and by subtracting 0.1 g per hour for any bird caught after mid-day.

Figure 1 shows the relationship between body weight, and date of catching, for Sedge Warblers. Only 66 birds are involved, and all but



four were of 'normal' weight (arbitrarily taken to be below 13 g), with a mean of 10.7 ± 0.8 g. The four heavy birds were all over 16 g, and one of these was the only retrap recorded during this period of the year — it had gained 5.7 g within a week.

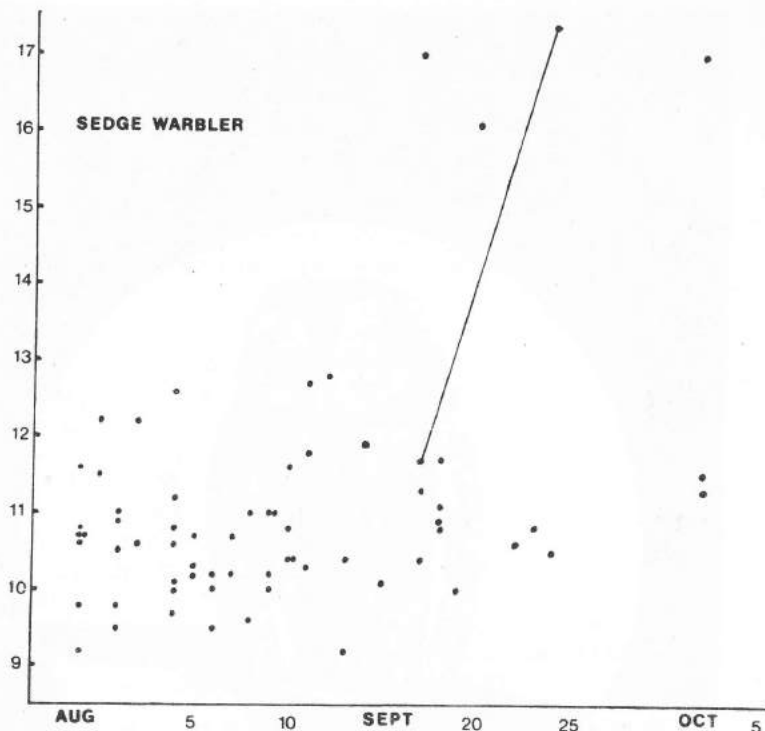


Figure 1. Adjusted noon body weight of all Wicken juvenile Sedge Warblers, plotted against date of capture. The line joins an individual bird retrapped during the period (August 30 onwards, 1970-1976).

Figure 2 shows a similar graph for juvenile Reed Warblers. More birds are involved (416 in all), and the 22 retraps (of more than one day interval) are also shown. Again, the majority of birds are of 'normal' weight throughout the period, but 64 (15.4%) were 13 g or more in weight.

There seems to be a rather clear distinction between 'normals' and 'heavyweights' at Wicken. A graphical analysis of all the weights (Figure 3) shows a normal distribution for birds of under 13 g in both species, with apparently a separate group of 'heavyweights', rather than a pronounced skew or tail at the upper end of the distribution. This would suggest that the build-up of weight (largely fat, the optimum fuel for energy production during long-distance flight) is a rapid process, and therefore the probability of capturing a bird of intermediate weight during the fattening period is rather low. Some Reed Warblers obviously gain a great deal of weight during an autumn stay at Wicken, but others show no such increase over periods of up to four weeks in late autumn (Fig. 2). The exact origin of few of these birds is known, so the differ-

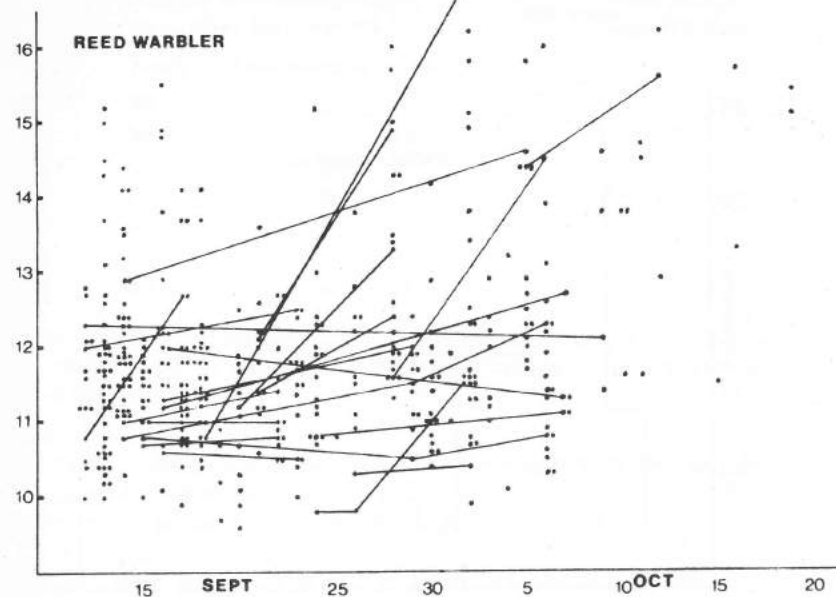


Figure 2. Adjusted noon body weight of all Wicken juvenile Reed Warblers, plotted against date of capture. The lines join individual retraps during the period (September 12 onwards, 1970-1976).

ence in their physiological condition (early or late hormonally triggered) can only be speculated upon.

Furthermore, we do not yet know whether 'heavyweights' leave Wicken and embark on long-distance southward migration without a further stop in Britain; to date there have been no recoveries of such Wicken-ringed birds. 'Normal' weight juvenile Reed Warblers certainly stop at points further south — JH 18089, noon weight 11.0 g at Wicken on 8 September 1971 was trapped at Beachy Head on 18 September 1971, and JV 47336, noon weight 10.8 g at Wicken on 13 September 1975 was trapped at Littlington, Sussex on 2 October 1975.

The incidence of heavyweights varies from year to year. Table 1 shows the number of different individual Reed Warblers caught each year (on or after September 12), and the fraction of these that were in the heavy-weight (13 g or more) class. The sample sizes are small but suggest that the best fattening season during a poor 4 year spell (1970-1973) was in 1971, while the last three years (1974-76) have all produced a high proportion of fat birds. In some confirmation of this, the four heavy-weight Sedge Warblers were all caught in 'good' Reed Warbler fattening

Figure 3. Distribution of juvenile Reed and Sedge Warbler noon weights. The data from figures 1 and 2 were used.

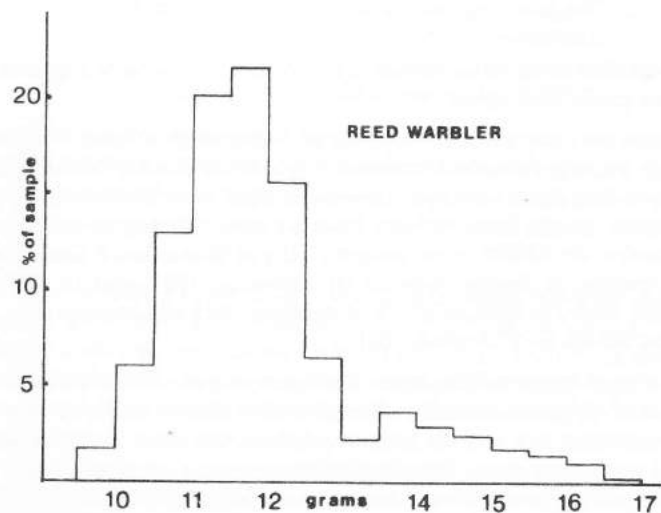
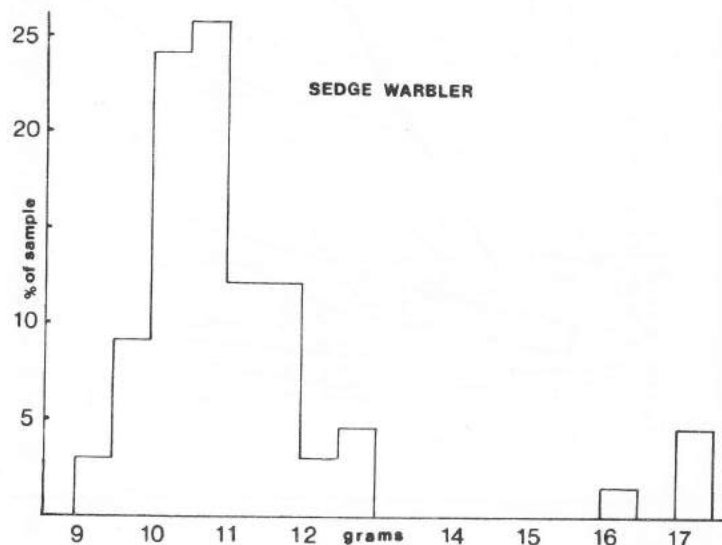


Table 1 Incidence of heavyweight juvenile Reed Warblers at Wicken.

| Year | Number of juveniles caught on or after September 12 | | % | Heavyweight Sedge Warblers |
|------|---|--------------|------|----------------------------|
| | Total | Heavyweights | | |
| 1970 | 30 | 2 | 6.7 | |
| 1971 | 54 | 7 | 13.0 | * |
| 1972 | 60 | 3 | 5.0 | |
| 1973 | 68 | 6 | 8.8 | |
| 1974 | 105 | 27 | 25.7 | |
| 1975 | 31 | 7 | 22.6 | * |
| 1976 | 32 | 9 | 28.1 | ** |

seasons (1971, 1975 and 1976). It would be interesting to know whether such variation can be correlated with parallel changes in the availability of food sources.

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ADULT SURVIVAL RATES FOR REED AND SEDGE WARBLERS

Rhys Green

Estimates of the annual survival rates of birds are essential for the understanding of population processes. This paper estimates survival rates from ringing results obtained at the Reed Bed on Adventurers Fen. Details of the catching programme are given by Green (1).

Methods and Results

Table 1 summarises the numbers of Reed and Sedge Warblers ringed and retrapped. The analysis follows that of Long (2) for a Reed Warbler colony in Jersey and is Leslie and Chitty's method B (3). Table 2 is a further summary of the data in Table 1 and shows the number of occurrences of different intervals between handlings of birds as proportions of the numbers of ringed birds available to be retrapped at those intervals. These results are plotted semilogarithmically in Figure 1. Regression lines have been added. The slope of the regression line is equal to the logarithm of the annual survival rate (2,3) so that the steeper the slope of the line the lower is the survival rate.

The survival rates derived from Figure 1 are 49% for the Reed Warbler and 30% for the Sedge Warbler. These rates represent overall averages. Year to year variations in the survival rate of Reed Warblers have been

Table 1. Numbers of *Acrocephalus* warblers ringed and retrapped 1969 - 1976

Reed Warbler

| year ringed | year retrapped | | | | | | | |
|-------------|----------------|------------|------------|------------|------------|------------|------|---|
| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | |
| 1969 | 171 | 21 | 19 | 7 | 4 | 1 | 0 | 0 |
| 1970 | 325 | 38 | 14 | 8 | 4 | 0 | 0 | 1 |
| 1971 | | 469 | 39 | 22 | 9 | 6 | 2 | |
| 1972 | | | 389 | 33 | 12 | 10 | 4 | |
| 1973 | | | | 658 | 38 | 25 | 9 | |
| 1974 | | | | | 374 | 23 | 10 | |
| 1975 | | | | | | 338 | 26 | |

Sedge Warbler

| year ringed | year retrapped | | | | | | | |
|-------------|----------------|------------|------------|------------|------------|------------|------|---|
| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | |
| 1969 | 116 | 17 | 7 | 1 | 2 | 0 | 0 | 0 |
| 1970 | 287 | 13 | 6 | 1 | 0 | 0 | 0 | 0 |
| 1971 | | 295 | 15 | 3 | 0 | 0 | 0 | |
| 1972 | | | 196 | 2 | 1 | 1 | 1 | |
| 1973 | | | | 263 | 17 | 4 | 2 | |
| 1974 | | | | | 184 | 11 | 5 | |
| 1975 | | | | | | 155 | 14 | |

figures in bold type are numbers of birds ringed

Table 2. Survival statistics

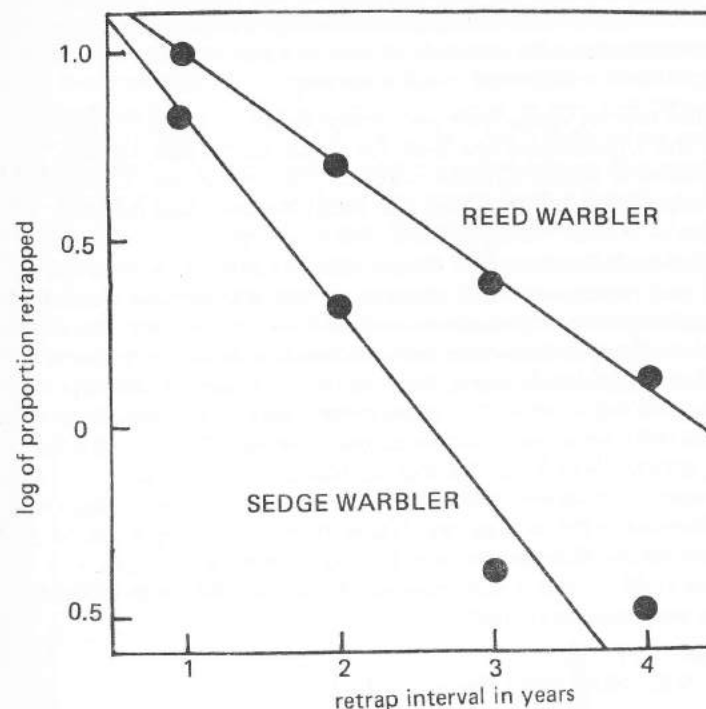
Reed Warbler

| retrap interval (years) | number of birds | | percentage retrapped |
|-------------------------|---------------------------|-----------|----------------------|
| | available to be retrapped | retrapped | |
| 1 | 3057 | 305 | 10.0 |
| 2 | 2655 | 133 | 5.0 |
| 3 | 2217 | 52 | 2.4 |
| 4 | 1492 | 19 | 1.3 |

Sedge Warbler

| | | | |
|---|------|-----|-----|
| 1 | 1597 | 108 | 6.8 |
| 2 | 1426 | 30 | 2.1 |
| 3 | 1224 | 5 | 0.4 |
| 4 | 953 | 3 | 0.3 |

Figure 1.



examined by Green (1) and a similar analysis is attempted here for the Sedge Warbler. In the earlier study (1) the apparent survival of newly ringed and previously ringed Reed Warblers differed because the newly ringed birds included a large and variable proportion of transient visitors to the trapping area which were not caught there subsequently. The previously ringed birds were those that had returned to the same area in at least two seasons and were probably birds breeding in the trapping area. Therefore the survival rate of previously ringed birds is assumed here to approximate to the adult survival rate. The method for calculating the year specific survival rates follows that used for the Reed Warbler except that trapping efficiency is assumed to be constant. The Sedge Warbler data are not sufficient for the calculation of separate trapping efficiencies for each year. The survival estimates are shown in Table 3.

Table 3. Annual variation in Sedge Warbler survival

| | 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 |
|---|---------|---------|---------|---------|---------|---------|
| number of previously ringed birds in year 1 | 17 | 20 | 22 | 8 | 18 | 16 |
| number caught in year 2 | 7 | 7 | 6 | 1 | 5 | 8 |
| survival rate | 41 | 35 | 27 | 13 | 28 | 50 |

Discussion

The average survival rate for Reed Warblers of 49% is lower than that of 56% for Reed Warblers in Jersey calculated by Long (2), but given that the two studies cover different periods and that the rates vary from year to year, such a difference is not surprising.

The survival rate for Sedge Warblers is much lower than that of Reed Warblers and is remarkably low, even for a small bird. Table 3 shows that considerable annual variation occurs in the survival rate. Elsewhere in this Report Milwright (4) shows that Sedge Warblers have declined in numbers at Wicken Fen since 1970. The results of the British Trust for Ornithology's Common Bird Census (5) show that this decline has occurred on a national scale and dates from 1968-69 when declines also began in other species which winter in West Africa, particularly the Whitethroat. These declines have been associated with drought conditions in West Africa (5). It seems likely that the low survival rate of Sedge Warblers indicated by this study reflects atypically high over-winter mortality on wintering grounds made ecologically unsuitable by drought. Wicken Fen's Sedge Warbler population is beginning to increase again from its very low level in 1972-74 (4) and this is associated with an increase in the survival rate (Table 3). It will be interesting to see if these further changes can be explained in terms of changed conditions in Africa and if other species which share the Sedge Warblers wintering area respond similarly.

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PRIMARY MOULT OF FINCHES IN CAMBRIDGESHIRE

C.J.R. Thorne

A survey of the moult of twelve passerine species at Wicken (1) included only two finches, the Redpoll and the Greenfinch. The accumulation of more completed moult cards, now covering the period 1971-76, together with the use of data from birds caught at Lode, Coton and Sawston, has allowed the preliminary analysis of moult in the six finch species most commonly caught at Wicken Fen. The analysis is restricted to a consideration of the rate and season of the primary moult of adult birds.

Scatter diagrams of primary moult score plotted against date were drawn, and regression analysis was used to estimate the rate and the 'average season' of primary moult, following the techniques of Evans (2) and

Newton (3,4). However, as well as the regression of moult score on date, which Newton showed was likely to give too low an estimate of moult rate if a non-synchronised population was sampled, the alternative analysis, that of regressing date on moult score, was also carried out. The latter treatment, which seems preferable for heterogeneous data encompassing birds of different ages, both sexes, and several different years, allows the estimation of the mean date for a given moult score, and hence both the rate of moult, and, by extrapolation, the 'average date' for the start and finish of primary moult. Such a regression analysis of date on moult score was used in the earlier paper (1).

The figure shows a typical scatter diagram (for the Greenfinch data) and the Table shows the collected information. The first column gives the sample size, the total of Wicken records appearing in brackets below. The next two columns show the moult duration calculated (A) by regressing date on moult and (B) by regressing moult on date. The final column shows the correlation coefficient.

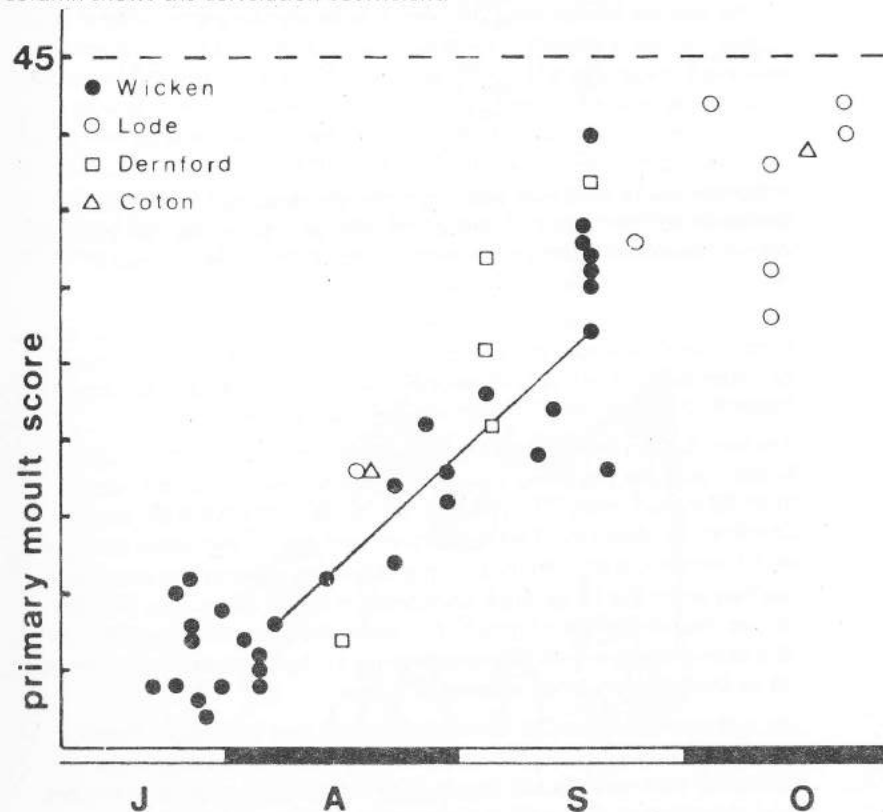


Figure 1. Scatter diagram of Greenfinch primary moult score, plotted against date. Four Cambridgeshire sites, data from 1971-76. The line connects the two scores of a retrapped bird.

Table 1.

| | Sample size | duration of primary moult (days) | | Correlation Coefficient |
|------------|--------------|----------------------------------|----------------|-------------------------|
| | | regression (A) | regression (B) | |
| Greenfinch | 48 (33) | 89 July 22 - Oct 19 | 105 | 0.92 |
| Goldfinch | 33 (20) | 66 July 28 - Oct 2 | 92 | 0.85 |
| Linnet | 20 (14) | 77 July 24 - Oct 9 | 88 | 0.94 |
| Redpoll | 52 (52) | 55 Aug 3 - Sept 27 | 64 | 0.93 |
| Bullfinch | 101 (101) | 65 Aug 7 - Oct 11 | 93 | 0.83 |
| Chaffinch | 14 (14) | 65 July 5 - Sept 7 | 78 | 0.91 |

It can be clearly seen that with the most scattered data, i.e. for those species in which the coefficient of correlation is poor, the two calculations of the moult duration fall farthest apart. Thus not too much reliance should be placed on any of these figures.

A few birds have been caught twice during a single moult. Extrapolations from these data would indicate a primary moult duration of 99 days for Greenfinch (1 retrap), 94 days for Goldfinch (1 retrap), 63 days for Redpoll (2 retraps) and 77 days for Bullfinch (5 retraps).

Newton (5), analysing the BTO collection of moult cards for southern Britain, gave the following values for primary moult duration: Greenfinch 80 days, Linnet 70 days, Redpoll 50 days, Bullfinch 85 days, Chaffinch 70 days. The Cambridgeshire data are in reasonable agreement with Newton's, and confirm that the Chaffinch commences moulting earliest while the Greenfinch completes its moult latest. The Redpoll shows the fastest rate of moult, the Greenfinch the slowest, although the extremely slow rate estimated earlier (1) can now be seen to be due to an inadequately small amount of data.

As a postscript, it may be noted that several first year Greenfinches, caught at Wicken during the autumn of 1976, were undergoing a complete post-juvenile tail moult. Such PJ moult is unusual in finches, and according to Snow (6) is unrecorded for Greenfinches.

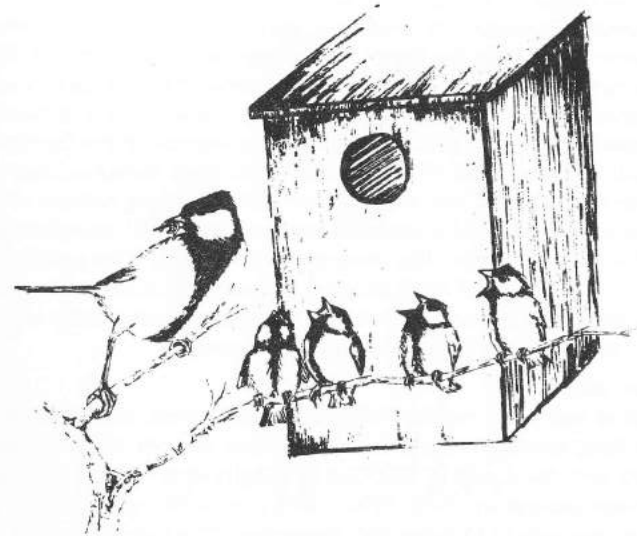
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NEST BOXES 1976

J.W. & C.M. Smith

The prevalence of gale damage and flooding on the Northern edge of the Sedge Fen and problems in 1975 with weasels and bees (1) resulted in a decision to resite the nest boxes in January 1976. The boxes were initially erected to test a plastic design of nest box for the Royal Society for the Protection of Birds. The plastic boxes have been found to be unsatisfactory compared with wooden ones mainly because of condensation inside the box. These boxes were therefore taken down and some of them replaced with wooden ones. The nest boxes have now been moved to a more sheltered position on the southern edge of the Sedge Fen adjacent to Wicken Lode. Thirty four boxes are now in position. More young were fledged in 1976 than in 1975 but predation in the egg stage was still severe (Table 1). Two adult Blue Tits nested in the boxes for the second year and two Great Tits for the third year; one of these birds using adjacent boxes in the three years of occupancy.



The movement of the boxes in January may have reduced the number of nesting Tree Sparrows as this species seems to select its nest site in the autumn (Table 2). Similarly no Tree Sparrows nested in 1973 when the nest boxes were put up in the spring.

Table 1. Nesting performance in nest boxes 1976.

| | nests occupied | nests successful | young fledged |
|--------------|----------------|------------------|---------------|
| Great Tit | 5 | 3 | 21 |
| Blue Tit | 20 | 8 | 60 |
| Tree Sparrow | 1 | 0 | 0 |

Table 2. Numbers of Tree Sparrows occupying nest boxes 1973-76.

| | |
|------|----|
| 1973 | 0 |
| 1974 | 8 |
| 1975 | 11 |
| 1976 | 1 |

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BIRDS OF PREY AT WICKEN FEN 1969 - 1976

H.J. Harvey

In the strictest sense the term 'birds of prey' should be applied only to members of the order Falconiformes, although with the addition of the prefix 'nocturnal' it is frequently used of owls. For the purpose of this paper however a wider interpretation, that of a species which hunts and kills higher vertebrates for food (1), has been adopted so that shrikes may be included. This review, to mid November 1976, is based mainly on observations by the Group but additional valuable records have been received from the staff of the Fen. The records of the Cambridge Bird Club for the period 1969-1975 have also been consulted but complete records were not available for 1976. Previous reviews of the occurrence at the Fen of waders (2) and waterbirds (3) were limited by the paucity of records for the more common species. This problem is less severe in the case of birds of prey, although the Kestrel does appear to be under-recorded, and the major difficulties are associated with the interpretation of records for the nocturnal species.

Sparrow Hawk

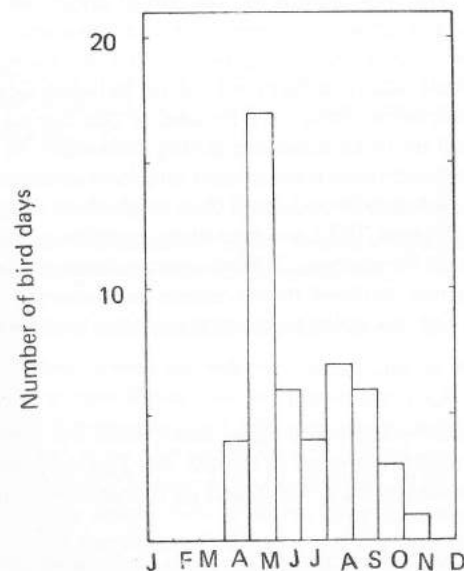
An unusual but fairly regular visitor with ten records, nine definite and one possible, during the period. Three records in both 1969, in January, February and April, and in 1971, all in August with two on adjacent days. Single records in 1970, 1972, 1975 and 1976, two of these records in August and one in October and November. The five August records could refer to young birds, which become independent of their parents

in that month (4), dispersing from breeding sites. The remainder of the observations suggest that birds may winter in the general area with occasional visits to the Fen. Two of the winter records involved birds seen at dusk near large Starling roosts, these are a favoured feeding area (4) and the decline in the size of such roosts at Wicken in recent years may help account for the small number of records.

Marsh Harrier

An annual visitor over the period with 12 bird days in 1975, eight in 1971, seven in 1976, six in 1972, four in 1970, 1973 and 1974, and three in 1969. A number of the records refer to birds flying over the Fen but birds frequently hunt the area and were, or may have been, resident for short periods in August 1970, March and April 1971, May 1972 and throughout May 1975. On two dates in May 1975 both a male and a female bird were seen, the only occasions when more than one bird has been present. The distribution of bird days by month is shown in Figure 1, the peak of 17 in May is strongly influenced by the ten bird days during this month in 1975. The earliest record is for April 9 and the latest for November 10. Of the 15 birds which have been sexed 12 were identified as females and only three as males. It is probable that many of the birds observed at Wicken are those also seen, and in recent years summering, at the Ouse Washes, ten miles to the north-west.

Figure 1. Monthly distribution of bird-days for Marsh Harrier over period 1969-76.





Hen Harrier

This species was once a regular visitor in winter to the Fen but became infrequent after 1956 (5), recent records would suggest that it is regaining its former status. The first records for the period under review were of a female seen regularly between November 5 and November 20, 1972, there were no further records until the autumn of 1974. During the 1974-75 winter a female was recorded on 12 dates between October 19 and March 24 with two birds, either two females or one female and one immature, being noted on three occasions during December. In the 1975-76 winter there were seven records of a single bird, a male when identified to sex, between October 24 and April 7. A single bird, not sexed, was reported in late October 1976 and two birds, possibly a male and a female, were present on November 13. Birds hunt extensively over the Fen but are probably not confined to the reserve and records from nearby Chippenham Fen, six miles to the east, possibly involve the same individuals.

Montagu's Harrier

This species bred regularly at Wicken up to about 1950 but is now a very rare visitor, as it currently is in most of Britain (6). The only records for the period are of a female in May, 1969, and an immature in April 1976.

Harrier Sp.

In addition to the above records there have been single birds which have not been specifically identified. Birds in April 1969, May 1976 and September 1973 were tentatively identified as Marsh Harriers while one

in October 1975 was definitely not of this species. There is no indication of the species involved in the case of birds in January 1972, September 1971, 1973 and 1976, between October 21 and October 28 1973, or on November 6, 1976.

Osprey

One reported over the Fen in June 1969 is the only record for this migrant species.

Red-Footed Falcon

The record of an immature male on June 3, 1971, was accepted by the British Birds Rarities Committee. It was the first Cambridgeshire record for the species and was unusually far inland when compared with other sightings (7). The most common period for records is the second half of May (8).

Kestrel

A Kestrel may be seen on most visits to the Fen but birds only hunt over the area and do not breed on the reserve. Not surprisingly the vast majority of records refer to birds over the grassland areas of Adventurer's Fen but birds occasionally hunt over the droves and cut Sedge fields of the Sedge Fen. At most times only one bird is present but two birds are sometimes recorded, especially in the period July to September. There are only two records of three birds, both in July, 1976, but nine were seen in the vicinity of the Fen in September 1972.

Two Kestrels have been caught and ringed, a juvenile male in August 1973 and an unsexed juvenile in October 1976, neither has been recovered.

Barn Owl

The main feature of records for this species is their highly seasonal pattern, with 54% occurring in July. This feature is perhaps explained by the following factors:

- i. young owls are likely to be on the nest during this month and may be reaching full size with consequent high food demands (9),
- ii. small mammal populations in fenland, arable areas are at their lowest level of the year at this time (10),

and

- iii the hours of darkness available for hunting are limited.

Surprisingly there are no records for August and of the remaining records five are from September, two from both June and October, with single records in February (of a bird roosting in the hide), April and November. The yearly pattern of records is similarly uneven with nine in 1976, seven in 1972, four in 1973, three in 1975, two in 1970, one in 1969 and none in either 1971 or 1974. With the exception of two birds in both July and September 1976 all observations refer to single birds. This pattern would suggest that records refer mainly to birds breeding near the Fen and hunting over the reserve when they cannot obtain sufficient food from their normal feeding areas.

Little Owl

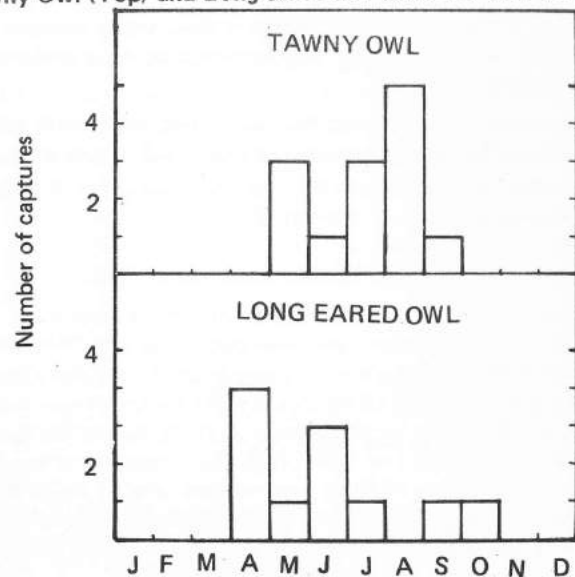
Although this species is frequently seen near the Fen there are only 13 records from the reserve itself, three in 1972, six in 1973 and four in 1975. The nine records for the period May – September reflect successful breeding in 1975, when a pullus was seen, and probable breeding in 1973. The four winter records are from February and October, 1975, and November and December, 1972, the last occasion being the only time when two adult birds have been seen together. An adult was caught and ringed in May, 1973.

Tawny Owl

A resident breeding species recorded in every year and probably the most numerous bird of prey on the reserve. The fact that many records refer to birds heard, an observation not always noted, and that there is no correlation between the number of records in a year and the number of birds caught and ringed in a year, make it difficult to estimate precise numbers or changes in abundance. A detailed survey in February, 1975 indicated that there were six breeding pairs in that year.

A total of 11 birds have been ringed, four in 1969, two in 1973 and 1974, and one in 1970, 1975 and 1976, of these one was a pullus, six were juveniles, and four were adults. An adult ringed in May 1974 was retrapped in September 1976 and a juvenile ringed in June 1975 was retrapped in August of that year, these have been the only two recoveries. As illustrated in Figure 2 the monthly pattern of birds caught is very different from that of the Long-eared Owl.

Figure 2. Monthly distribution of all captures, new and retraps, of Tawny Owl (Top) and Long-eared Owl (Bottom) over period 1969-76.



Another interesting contrast between this species and the Long-eared Owl is the extent to which the weights of birds vary. In the case of the Tawny Owl, with the exception of a juvenile weighing 294 grams, all weights fall in the range 380-427 grams, this range is only 12% of the mean value (Mean \pm S.D. = 399g \pm 16.1). In contrast the weights of Long-eared Owls, which do not include any known juveniles, vary between 216 and 321 grams, a range of 38% of the mean (Mean \pm S.D. = 271g \pm 37.7). The differences in the monthly pattern of capture (Fig. 2) would not seem to explain this contrast for both the heaviest and the lightest Long-eared Owls were caught in June.

Long-eared Owl

A detailed survey in February 1975 suggested that there were four breeding pairs of this resident species in that year, but the annual average number of records is only five. This species is notoriously secretive and difficult to census accurately (6,9) but an apparent increase since 1974 in both the number of records and of birds caught might suggest that it has recently become more common on the Fen. If an increase has occurred then it is in contrast to the decline in the country as a whole (6) and has occurred over a period when the area of carr, presumably a suitable habitat for the species (6), has been declining as a result of clearance.

Seven birds have been ringed, one in each of 1971 and 1972, three in 1975 and two in 1976, four have been aged as adults and three have not been aged, in contrast to the Tawny Owl no known juveniles have been handled. The monthly pattern of captures is shown in Figure 2. An adult ringed in June 1972 was recaptured in July 1974 and a bird ringed in October 1975 was retrapped in April 1976. There have been no recoveries away from the Fen.

Short-Eared Owl

This species bred on the Fen into the early twentieth century (11) and still breeds in East Anglia (6) but it now occurs at the Fen only as a winter visitor, a change probably associated with the development of carr and the loss of extensive areas of sedge and litter fields. In some years large numbers may be present but the 14 records for the period under review all refer to single birds. Birds in March 1969, October 1971, September 1972, and March 1975, February 1976 and April 1976 were seen only once but six records between April 2 and May 4, 1971, presumably all involved the same individual. It is less likely that records on October 19 and November 30, 1975, indicate a period of residence.

Great Grey Shrike

A regular winter visitor with 26 records, all of single birds, from all winter periods under review. Save for 1973/74, when the species was noted only once, the number of records each winter is very regular with five in 1969/70, four in 1970/71, 1971/72, 1972/73, 1974/75 and 1975/76. The extreme dates are October 8 (1972) and April 9 (1970) and there are six records for March, five from both December and

January, four in October, three in November, two in February and a single record in April. Records from nearby Lode (12), five miles south and south west, may refer to the same individuals.

Red-Backed Shrike

The only record is of a juvenile caught in August 1970. This was one of the last years in which this species bred on nearby Fleam Dyke, two and a half miles south at its closest, and this bird could well have originated from this site.

Other Species

An unidentified raptor present for some time in January and February 1976 was not of any European species and was presumed to be an escape from captivity.

Although no other species have been identified during the period it may be noted that certain species were commonly seen at the Fen in recent times (5). Rough-legged Buzzards were recorded almost annually from 1938-57 and Buzzards were seen regularly up to 1965. Peregrines were regular winter visitors until 1950 and Merlins until to about 1960. The recent absence of some of these species can clearly be associated with changes in their national status but whether, with the vastly increased number of visitors to the Fen, the reserve still provides a suitable habitat is perhaps open to debate.

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