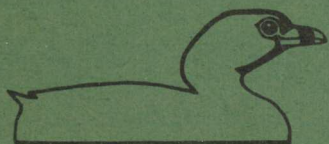


BRISTOL ORNITHOLOGY



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BRISTOL ORNITHOLOGY

THE JOURNAL OF THE BRISTOL ORNITHOLOGICAL CLUB

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PREFACE

'Bristol Ornithology' is essentially the annual report of the Bristol Ornithological Club containing accounts of the official activities of the Club and its members over the past year. In addition there is a series of papers contributed by members on original work in progress chiefly in the Bristol area and also a detailed review of local ornithology compiled from the records published during 1967 in 'Bird News' - the Club's monthly publication. These contributions together with the weather synopsis provide a valuable guide or reference work to the ornithological year in the Bristol district.

It was considered necessary to include in the first issue a full list of members and also the Constitution and rules but these will not be repeated annually. The BrOC crossword at the end of Journal provides a slight departure from the traditional contents of an annual report and it is intended for easy removal whether as an entry or for simple destruction (the wide margin of the page enables the crossword to be cut out without disturbing the binding).

Although by agreement the acknowledgements owed to many for help in the production of 'Bristol Ornithology' are to be kept to a minimum, special thanks are due to Don Ladhams for illustrations and Robin Prytherch for illustrations and general art work. The Great Crested Grebe drawings are by Robert Gillmor.

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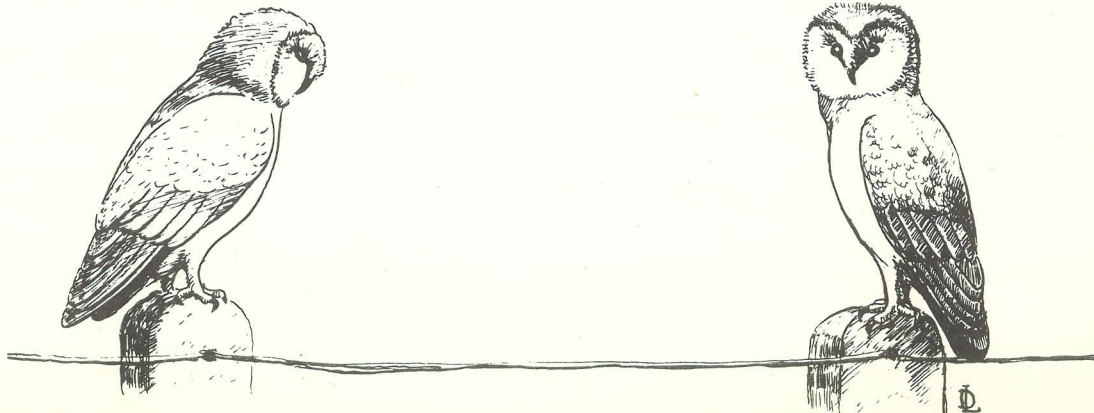
EDITORS

BIRD NEWS

M. Kendall
D. E. Ladhams
R. J. Prytherch

BRISTOL ORNITHOLOGY

R. H. Poulding (assisted by a committee)



A REVIEW OF 1967

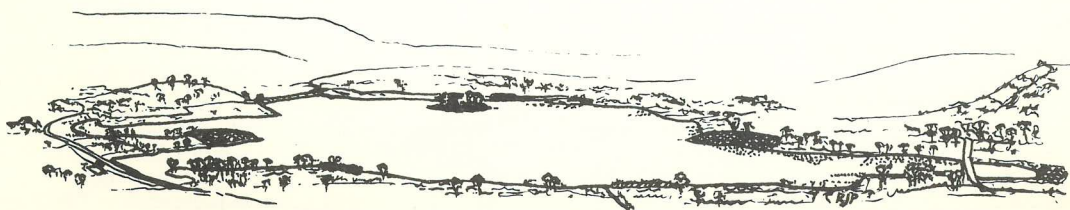
by K. D. Smith

It is impracticable in this brief narrative to condense the many records for 1967 which are listed in the monthly reports of the Bristol Ornithological Club, and the aim has been to sift through the data received on 222 species, excluding probable escapes and species not on the British list, reported within a radius of about 30 miles of Bristol (in Somerset and Gloucester), and to produce a selective report outlining the main events and trends. Space is limited, therefore supporting data, especially dates, have been cut to a minimum - in any event dates tend to reflect the sum of the energy displayed by observers at the week-ends rather than day-to-day accuracy. Reservoirs, often referred to collectively, means those at Barrow Gurney, Blagdon, Cheddar and Chew Valley. W. T. signifies the Wildfowl Trust at Slimbridge and the New Grounds refer to the adjacent river bank and estuary. Inclusion of a record here is no indication that it has been accepted by national or county juries, but those already listed in the monthly reports which are now known to have been rejected by the Rare Birds Committee, and others for which no further details have been received, have been omitted. My thanks are due to Michael Kendall for providing the weather notes, and for other assistance.

The winter scene

With an absence of cold weather in early 1967, except for a few days with snow showers in January, and with February temperatures in England above the average, the prospects for the breeding season seemed good and likely to lead to the further recovery of species badly depleted in the winter of 1962/63. Apart from a scarcity of Redwings, winter visitors were well in evidence in the Bristol area. Up to 3 Great Northern Divers, one Red-throated Diver, and one Slavonian Grebe were recorded on the reservoirs; Great Crested Grebes were prominent on all of them, with maximum counts at Chew Valley of 182 in January, and 115 in February. Westerly gales in the third week of February brought a Fulmar to Berrow, and a Gannet to Street, but no widespread 'wreck' occurred. As usual the commonest wintering geese were Whitefronts, with a maximum of 4000 at the New Grounds in February (including one Greenland *A. a. flavirostris*), as well as small gaggles dispersed along the Somerset coast in January, but their departure by 11 March was the earliest for six years. Brent Geese were reported twice from Sand Bay, as well as one dark-bellied *B. b. bernicla* at the New Grounds; two Red-breasted Geese, one Lesser Whitefront, one Bean and one, perhaps two Pinkfeet, visited the New Grounds. Probably the most spectacular sight in the local ornithological calendar is the winter concentration of Bewick's Swans at W. T. enclosures, where M. A. Ogilvie reports a 1966/67 total of 335 (best day 218), of which some 31% were cygnets, indicating a strikingly successful breeding season in Siberia. Small herds were also widely reported from the usual areas (max. 47 on Stoke Moor), and all had left by the first week of March.

Of the commoner *Anatidae* wintering at Chew Valley, Mallard reached 920 on 5 February, Teal 1200 on 4 February (according to the Wildfowl Trust monthly counts at its lowest level for 15 years), Shoveler 500 in early March, and Pochard 1770 on



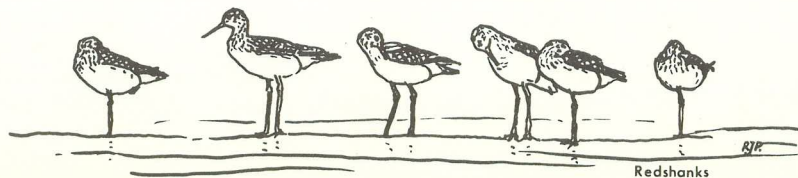
Chew Valley Lake from Keighton Hill, Mendip.

22 January, whilst Wigeon reached 2000 at Steart on 14 January, and 1300 at Chew Valley on 4 February, and Tufted Duck peaked at 170 at Blagdon on 26 February. The wintering populations of both Gadwall and Pintail were apparently small, with not more than 12 in any one locality except in W.T. enclosures, where 320 Pintail were counted at dawn on one January morning in the Rushy Pen. A few Scaup, one Long-tailed Duck, Goldeneye (max. 21), Smew (max. 4), Goosanders (max. 8) and single Mergansers (one, Steart) were reported from the reservoirs; 22 Common Scoters were seen off Brean Down on 12 February.

A Peregrine (2 on 29 January) was reported from the New Grounds up to late March, also wintering Merlins from the coast, Tealham Moor and Wedmore. It is difficult to assess the winter counts of the commoner shore-waders, as the main flocks probably move widely within Bridgwater and Weston Bays, but the commonest species included Oystercatcher (160 in Weston Bay), Knot (1700 between Sand Bay and Steart in January), Dunlin (flocks up to 5000) and Curlew. Other species were fewer - Ringed Plover (flocks up to 30); a sprinkling of Grey Plover; Turnstone (usually few but 200 at Chittening on the Severn); Sanderling (normally few but 121 in Weston Bay on 20 March); Redshank (only moderate numbers); Black-tailed Godwit (up to 33 on the Axe and Brean coast), and Bar-tailed Godwit (up to 200). Counts suggest that some species which breed in higher latitudes are commoner along the Somerset coast in summer than in winter (see later). Golden Plover and Lapwing wintered in quantity, and southerly cold-weather movements of Lapwing occurred in early January. Scarcer wintering waders included a Curlew Sandpiper in Clevedon Bay in January and March; Ruff (8 from 3 localities); 2 Spotted Redshank; Green Sandpiper (7 records); a Common Sandpiper at Sea Mills on 7 January, and an Avocet at Steart on 29 January.

The highest count of wintering Lesser Black-backed Gulls - 41 on 11 February - was at Barrow Gurney; one, perhaps two, Iceland Gulls were apparently alternating between the River Avon and the reservoirs, and a few Kittiwakes were reported from Frampton to Cheddar early in the year. A Little Auk was found in a garden near Bridgwater on 25 February, after the earlier gales. Short-eared Owls were reported only from Steart (max. 7). Other records included a Shore Lark at Berrow from 3 December 1966 to 13 April 1967; a very early Swallow at Weston-super-Mare on 7 February, coincident with several in Devon and Cornwall; Water Pipits *Anthus s. spinoletta* at Chew Valley into early April (max. 6 in March), and Cheddar; a Waxwing at Chew Valley on 11 February, and a few wintering *Phylloscopi*, presumably Chiffchaffs. Fieldfares were abundant, notably in the heavily-fruiting sea buckthorn *Hippophae rhamnoides* on the Berrow dunes, but Redwings were scarce throughout the winter, perhaps due to the failure of the hawthorn-berry crop. Three Bearded Tits at Berrow on 7 January and one on 12 February were presumably a carry-over from the autumn influx of 1966.

The resident buntings are the subject of a current enquiry by the Bristol Ornithological Club: a Lapland Bunting was seen on the Yeo Estuary on 25 February, and 5 Snow Buntings in Sand Bay on 9 January, and one at Steart on 16 March. As usual large concentrations of finches, mainly Chaffinches, Bramblings and Greenfinches, wintered at Steart, but numbers fluctuated greatly - for example Bramblings reached 2000 on 17 January, but were normally in hundreds - and the reasons for these sudden and temporary influxes are not obvious. Siskins were widely reported from January to mid-April (50 at Westhay Moor, 130 at Frampton), so were Lesser Redpolls, which were commoner in January than Siskins, but flocks rarely exceeded twenty. February records of Twites from Chew Valley (1), Weston-super-Mare (9, twice) and Sand Bay (5), suggests nomadism well west of the normally accepted winter range of this species. Up to 30 Crossbills

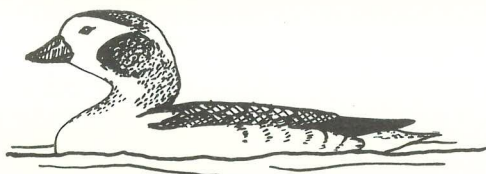


wintered at Ashton Hill Plantation up until 23 April, with other reports from Ubley, Wraxall, Blagdon and Cadbury Camp. Heavy evening movements in February and March (and again in July) of Starlings leaving the mainland at Brean and heading towards Steep Holm (4-5 miles W. N. W.), led to the interesting discovery of 200 roosting in a wood on the island in April, with evidence of a much larger winter roost there.

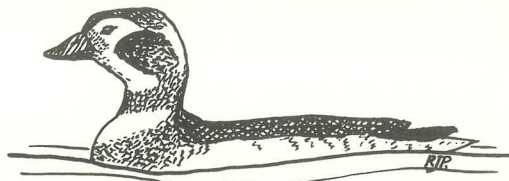
Spring migration

The weather in March 1967 was mainly cyclonic until the 12th., and again from the 25th to the 30th, although pressure was high to the south of the country for most of the first week. Anti-cyclones off the South-west coast dominated the weather for most of the intervening period. April and May were mostly unsettled with variable winds, much rain in May, and only brief dry spells.

An increase in Slavonian Grebes on the reservoirs between mid-March and late April (max. 3 on 19 March), and a single Black-necked Grebe at Chew Valley on 30 March, indicated a small spring grebe passage. Fronts associated with a complex and slow-moving disturbance off the west coast of Scotland between 19 and 30 May were presumably responsible for the presence of a Storm Petrel, Gannet and more remarkably, a Long-tailed Skua at Slimbridge on 26/27 May. The first Garganey (3) were reported from Wet Moor on 5 March; scarcer duck seen in April included a Ferruginous Duck, 2 Long-tailed Ducks and up to 3 Scaup at Chew Valley and in May a pair of Red-crested Pochard at Frampton, an Eider at Sand Point and a Merganser at the New Grounds. Raptors, all at Chew Valley, included an Osprey on 6/7 May, a Montagu's Harrier on 26 April, and the first Hobby of the year on 6 May.



Chew Valley Lake



Barrow Gurney Res.

Long-tailed Ducks, both seen on 25 March 1967

The water-level in the reservoirs was high with the May rains, and few waders were seen inland, but on the coast Ringed Plover were commoner than in winter, with the main passage extending from late April to late May (max. 120 in Sand Bay on 26 April). Common Sandpipers did not appear in quantity until the third week of April, apart from one on the 1st; Whimbrel passage was notable, with the main bulk passing during the first two weeks of May and larger flocks were recorded inland (102 at Godney Moor on 4 May) than on the coast. Lundy also reported an exceptional Whimbrel movement in May. A flock of 21 Golden Plover at Blackford Moor on 19 April were the northern *C. a. altifrons*; a Wood Sandpiper was seen at the New Grounds on 4 June, and a Little Stint (both uncommon in spring) at Steart on 13 May; hardly any Spotted Redshank (2 or 4), or Greenshank (2) were noticed. Two Arctic Skuas flew north-east past Berrow on 13 April. Five or six Little Gulls, mostly single immature birds, visited the reservoirs and the River Parrett between late February and late April, whilst the number of Lesser Black-backed Gulls rose to 360 at Chew Valley by 26 February. There was a small spring passage of terns, mainly of Black Terns through Chew Valley in the first two weeks of May (max. 22 on 11th), and Common/Arctic Terns, of which some 25 were seen on the coast and reservoirs, mostly in the first three weeks of May. Four Guillemots were noted at sea between Weston-super-Mare and Steep Holm on 19 May.

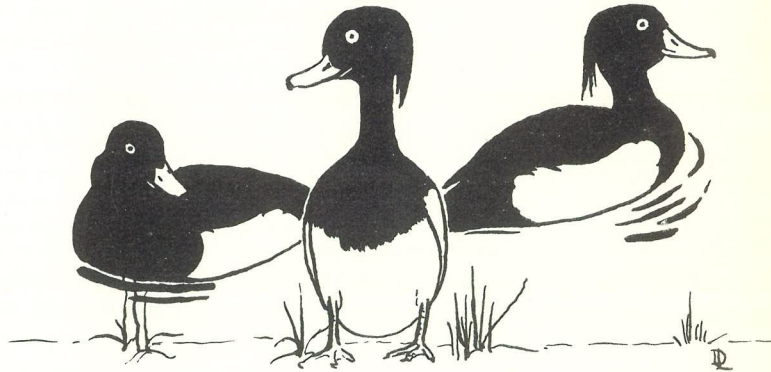
It is not proposed to enumerate here in detail the arrival of summer visitors (see the monthly reports) - an early Cuckoo was noted on 9 April, and one or two Swifts between 11 and 19 April - but if anything some species were a week or more late in arriving in quantity. For example, whilst there was a substantial initial influx of Sand Martins in the second half of March, there was then a lull until the third week of April; and whilst Blackcaps were first reported on 14 March most did not arrive until after 17 April. It is relevant to mention here that P. A. D. Hollom - who was in western Morocco (which is crossed by many of our migrants) in early spring 1967 - informs me (*in litt.*) that the weather south of the Atlas Mountains was extremely unsettled: there is growing evidence from various sources that bad weather in spring along the northern fringe of the Sahara is one of the factors responsible for the irregular arrivals of

waves of migrants reaching Europe.

Of the less common passage-migrants a Quail was seen at Dundry on 17 May, a Little Crake at Chew Valley on 10 May, and a Corncrake at Stogursey on 29 April. A Blue-headed Wagtail *M. f. flava* appeared at Steart on 29 May, and White Wagtails *M. a. alba* were first noted on 23 March, with the main movement in the second half of April (max. 18 at Berrow on 22nd); a few Pied Flycatchers and Ring Ouzels passed through the area. Two Coal Tits on Steep Holm on 23 April were the first to be recorded on the island.

Resident species

After the wet spring June to the end of August was mostly warm and dry. Such conditions, favourable for maximum cover and insect abundance, together perhaps with a reduction in human disturbance in the spring, suggested optimum conditions for breeding although it seems that the very wet May mitigated against this and flooding caused egg-losses in Lapwing and probably in duck. The Bristol area cannot boast of a Haver-gate Island, or of any rare breeding species, but about 108 species breed regularly or in most years, of which a few are mentioned here.



Little Grebes were building a nest-platform at Chew Valley as early as 19 January; Great Crested Grebes bred at same reservoir (148 adults plus 18 broods in August), Blagdon (17 pairs with broods in July), Orchardleigh and Tortworth. Data were received for 6 Somerset heronries, the largest being at Somerset Court (28 occupied nests), and Somerton (20). Mallard, Gadwall, Shoveler, Pochard and Tufted Duck (one female with an ever-increasing nursery up to 20) bred at Chew Valley; Shelduck, Teal and Garganey were seen there, but no young were reported. It is encouraging to note from the monthly reports that Sparrowhawks are no longer rare birds in our area, and breeding success of these, and of Buzzards, was reported, although the percentage of young Buzzards which fledged, only 5 from 4 nests, was poor. Hobbies, with an average of 13 sightings per month (June to September), from 8 localities, are also commoner than in former days. Small numbers of Oystercatchers, Ringed Plovers and Redshanks bred in coastal areas.

Collared Doves continue to expand their range, but Barn Owls seem at a very low ebb. Kingfishers (20 juveniles trapped at Chew Valley by the end of August) and Green Woodpeckers show a welcome annual increase, but Lesser Spotted Woodpeckers (19 reports of mostly single birds from 15 localities) remain thinly distributed in the Bristol area. Sand Martins at Shapwick showed an interesting variation from the usual nest-site by breeding in the spaces between stacked peat-blocks. A Dipper was incubating near Bath on 25 March. A Willow Tit was seen on 25 March at Christon, 12 miles N.N.W. of the known breeding areas on the peat-moors, where a pair were feeding young on 2 July. Reports of Cirl Buntings from 18 localities indicate a scattered distribution in much of north Somerset. Redpolls may have bred in Weston woods. A nest of House Sparrows at Bathampton contained 3 nestlings on 30 January; Tree Sparrows were reported from at least 30 Somerset localities during the year, in addition to the Severn Valley populations. Three pairs of Ravens were noted in West Mendip in February, and at least one pair reared two young.

Other mid-summer observations

The elusive Pied-billed Grebe at Chew Valley was not certainly recorded until 14 May, then not again until 23 July, and occasionally in August and September, but its whereabouts for much of the year remain a mystery. A Fulmer appeared off Brean Down on 2 June; 231 Manx Shearwaters flew south-west past Steart in 1½ hours on 25 June, coincident with considerable movements off Minehead - impressive numbers for the Somerset coast, but not unique (see Report on Somerset Birds 1964). Eleven were also seen off Berrow on 22 July. Gadwall peaked at 58 in late August at Chew Valley, whilst a drake Red-crested Pochard,

perhaps an escape, stayed there from 10 July to 20 August; a few Scoter appeared off the coast in the late summer. An adult Mediterranean Gull was seen at Bristol Bridge on 30 June, and an immature at Chew Valley on 2 July. The first immigrant Crossbills (14) were noted in the Avon Gorge on 11 July. Some movement of Woodlarks - once a locally common resident - was reported, with one at Chittening on 17 July, and 3 at Sand Point on 2 August.



A young Buzzard

Maximum counts of summering waders made in late June or early July, mostly at or near Steart, included Oystercatcher (200), Grey Plover (60), Turnstone (up to 70), Dunlin (up to 200), Knot (130), Spotted Redshank (8 on 24 June at Middle Point, up to 6 in June and July at Steart), Redshank (250), Black-tailed Godwit (40 to 70), Bar-tailed Godwit (up to 280) and Curlew (2000). Most were presumably non-breeders and British-breeding adults augmented by the young of the year, but a few more northerly species were in larger numbers than in winter. It is well-known that many individuals of wader-species, and some Laridae, which breed in the northern hemisphere, spend the summer far to the south of their country of birth, in fact quite a number do not leave the tropics, and in a recent paper on Palaearctic migrants in Senegal, Morel & Roux (*Terre Vie* 113: reviewed in *Ibis* 109:460) have shown that some raptors, various water-birds, and even passerines, supposedly immature individuals, may remain throughout the year in their winter quarters. Little attention seems to have been given to this in the past.

Autumn passage

The fine summer was succeeded by a generally unsettled autumn, with much westerly weather, and the full force of gales was felt in the Bristol Channel, especially in the first week of September, when storm-driven birds - Manx Shearwaters, a Storm Petrel, Gannets, Kittiwakes, Great Skuas (2), Arctic Skuas (3) and unusually large numbers of terns - were recorded as far up-channel as the New Grounds and inland in north Somerset. A high count of 360 Great Crested Grebes, (mainly juveniles) was made at Chew Valley in October, and 330 in mid-November; a Bittern inhabited Herriott's Pool at Chew Valley for 8 weeks; migrant Garganey were reported from most reservoirs, Tadham Moor and Frampton, up to 15 October; single Peregrines and Merlins (12 records in October) were seen in coastal areas, and also a late Hobby at Peasedown on 17 October. The voluminous data received on wader-passage can be summarised only very briefly. Approximate totals of birds recorded between the second week of July and the end of October have been attempted, though they may be considerable over-estimates due to the usual dilemma of differentiating between 'off-passage' birds and new arrivals. Of species that can loosely be termed lacustrine-waders, some 12 (or fewer) Little Ringer Plover were recorded at Chew Valley (13 July to 12 September), with one at Cheddar in July; peak-passage of Green Sandpipers (100 at the most) was from mid-July to the end of the first week of August, and of Wood Sandpipers (less than 50) in the first two weeks of August, with a late bird at Cheddar on 1/2 October, but periods of peak-passage are difficult to define for Ruff (c. 130) Spotted Redshank (less than 150), and Greenshank (c. 250). Local ornithologists consider that some of these species were scarcer than in autumn 1966, nevertheless the figures are notable when it is recalled that 30 years ago single Somerset records of most of them would have merited a paragraph or more in 'British Birds'.

Ringed Plover were plentiful from mid-August onwards, with a probable total of some 2000 along the coasts of both counties between 18 and 24 August, but flocks exceeding 200 in September were reported only from Chittening. Black-tailed Godwits built up rapidly from under 100 in June to 1000 by 27 July (and on 23 September, but below 300 in October)

in Bridgwater Bay, with up to 15 at Chew Valley in mid-autumn. It was a good year for Little Stints (c.300) with stragglers to 21 November, but Curlew Sandpiper were fewer (c.50, last on 12 November), whilst Whimbrel passage was negligible compared with the spring. An Avocet was frequently seen at Steart from 10 August onwards; 4 Grey Phalaropes were reported in October. The Bristol area had rather more than its fair share of the now expected annual autumn influx of Nearctic waders, with one, a Wilson's Phalarope at Chew Valley occurring just after the gales in early September. A Pectoral Sandpiper visited Barrow Gurney in late September, whilst October produced a Lesser Golden Plover and a Baird's Sandpiper on the Severn, and another, or the same Wilson's Phalarope at Durleigh.

Little Gulls, apparently all juveniles, were well in evidence, mainly at Chew Valley with some 25 from 8 August to mid-November. Returning Black Terns were first reported on 16 July from the same reservoir, where there was a sizeable influx (105) on 8 August during anti-cyclonic weather, with further widespread reports in August and September, and stragglers to 31 October, in all perhaps some 300 birds. There was an unusually heavy passage of Common/Arctic Terns, especially during and after the gales in early September (total of 284 on the reservoirs on 5th/6th), with a continuous passage to the second week of October, and late migrants to 9 November. Some (one dead) were certainly identified as Arctic. Roseate Terns were recorded twice (Chew Valley and Durleigh - only 5 previous Somerset records), as well as Sandwich (8) and Little Terns (21) inland and on the coast. A few Jack Snipe arrived in October. A Long-eared Owl was seen at Chew Valley on 5 September, but our knowledge of the true status of this species in the Bristol area seems no better than it was 20 years ago (see Davis, Proc. Bristol Nat. Soc. 1947). Non-passerine rarities not already listed included Kentish Plover (Chew Valley), on 28 July; Red-footed Falcon (Farrington Gurney), and one or more White-winged Black Terns (Chew Valley) in August; Osprey and Spotted Crane (Chew Valley), and Alpine Swift (Steep Holm) in September; Leach's Petrel (Cheddar), Goshawk (Litton), Mediterranean Gull (Clevedon), 2 Gull-billed Terns (Frampton), and 2 Wrynecks (Sand Point and Bath) in October; and Red Kite (Hunstrete) on 1 November.

In the absence of systematic counts in well-defined census areas it would be difficult to write anything informative on the movements of night-migrants heading for south of the Sahara. but an apparent absence throughout the autumn of semi-rarities of Continental origin as 'indicators' of westward-displacement of migrants may have been due to the weather prevailing in the Bristol Channel. A Melodious Warbler trapped on Steep Holm on 28 August was the second record there - is it not time that teams of ringers studied migration on this island during the whole of one autumn? Small numbers of Redpolls were noted along the coast from mid-September onwards, and Snow Buntings, Bramblings and Siskins along the coast and inland from early October onwards, whilst a migration-watch on 22 October for day-migrants at 7 selected points on or near the Somerset coast extended the previous studies made by E. G. Holt over many years (1950, 'British Birds' XLIII:271-273; Report on Somerset Birds 1959). Most visual migrants - mainly Skylarks, Meadow Pipits, Turdidae, Starlings, finches and Tree Sparrows were heading between west and south. Gold-crests were reported to be unusually abundant in October; the first autumn Water Pipits were seen at Chew Valley and Cheddar on 28 October; Redwings (first on 24 September), and Fieldfares (first on 17 October) were both common by late October.

The onset of winter

Matters of much concern which arose in the early winter were the foot-and-mouth epidemic, with the restrictions it necessarily imposed on human activities - hence the incomplete duck-counts on the reservoirs, and poor coverage elsewhere in December - and the start of winter sailing at Chew Valley, with its disturbance to wildfowl. Apart from an early cold spell, with several inches of snow, in the second week of December, the weather calls for little comment. The cold snap was short, but sharp, and fairly heavy movements of Lapwings, Skylarks, Redwings and Starlings and lighter movements of Woodpigeons, Fieldfares, Meadow Pipits and finches were reported; most visual movements were between west and south-east, but some larks and Starlings flew east or north-east.

Great Northern Divers (singles Chew Valley and Cheddar) re-appeared in mid-November, and Great Crested Grebe numbers (287 at Chew Valley on 16 December) remained high. Both White-fronted Geese (first on 18 November at the New Grounds, 2000 there by 31 December) and Bewick's Swans (3 on 9 November at Wildfowl Trust, 200 individuals recorded there up to the end of December, and widespread reports from the usual areas) were very late in arriving; 5 Whooper Swans occurred at Cheddar on 15 November, and 5

at Chew Valley on 22 December. Data on duck-counts is omitted for the reason given above, but of the scarcer but regular winter-visitors Goldeneye were reported from 15 October onwards, Goosanders from 29 October and Smew from 23 December. Twelve Pochard flying north on 19 November in Weston Bay was an unusual locality record, and the number of Long-tailed Duck (at least 8 from 28 October to the end of the year in various places) was exceptional, but part of a national influx. Up to 13 Scoter were reported off Sand Point between 20 November and 24 December, and also 7 Mergansers on the reservoirs and coast in December. A Peregrine was noted irregularly in the New Grounds area during November and December.

Peak Dunlin passage seems to have been in the second week of November, with some 20,000 being reported along the coast, and also on inland moors, on the 12th, but other waders were in normal numbers for the early winter. Scarcer wintering or very late passage-waders in November included single Little Stints at Steart and along the Severn, single Purple Sandpipers (uncommon in north Somerset) at Steart and Sand Point, one Curlew Sandpiper, a few Ruff, Spotted Redshank, Greenshank, Green Sandpipers and Common Sandpipers, and in December Ruff (4), Spotted Redshank (4), Green Sandpipers (6), Common Sandpipers (4 or 5), and a Grey Phalarope at Stolford on the 23rd. Three Arctic Skuas were seen along the coast in November (last on 29th), and several Kittiwakes near Weston-super-Mare on 25 December. 60 Collared Doves near Avon ferry, Shirehampton on 27 December appears to be the highest individual count for the year. Other less-common non-passerines late in the year were a Hen Harrier at Chew Valley on 20 November, a Puffin at Cheddar in the first week of November, and single Short-eared Owls at Chew Valley, Steart and Clevedon and two at Berrow.

Late departing passerine summer-migrants reported in November included a few Swallows up to 18th, House Martins to 19th, a Whinchat on 12th, Wheatear on 17th, Ring Ouzel 10th-12th, and a small Black Redstart passage (5 birds in 4 localities) between 8th and 21st. A Water Pipit ringed at Chew Valley in 1966 was recovered there on 18 November 1967. Other passerines during the early winter included a Shore Lark at Berrow on 3 December, a few December Chiffchaffs, a Firecrest at Berrow on 22 November, three coastal Lapland Buntings between 11 November and 11 December, and Snow Buntings in coastal areas between 3 November and 19 December (51 in 10 parties or individuals in November, max. 25 on 17th, 14 in 6 parties or individuals in December). Single Twites were reported from Chew Valley and Cheddar in December, as well as a few Crossbills in November and December (max. 5 at Barrow Gurney on 16 December). An odd record was of 69 House Sparrows flying west from Sand Point on 22 December.

WEATHER IN THE SOUTH AND WEST, 1967

by M. Kendall.

JANUARY.

Surface winds were mainly north during the first week with temperatures below average, variable on the 6th and 8th then north-west until the 14th. From the 15th onward westerly gales (particularly severe in the third week) predominated bringing rain and milder conditions. Rainfall for the month was however below average generally and sunshine too, was less. It was exceptionally mild during the last few days.

FEBRUARY.

The month started mild and wet with south-west winds. On the 3rd it became sunny and dry and somewhat cooler with winds north-westerly until the 6th. Then cloudy weather spread in from the north and there followed a period of light variable winds but it remained generally dry. Moderate to strong south-east winds with their origin in central Russia brought colder weather on the 11th; fog and air frost were a regular early morning feature with generally crisp sunny days. A few snow showers occurred on the 14th. A change on 15th with a south-west airflow and the snow showers had given way to more or less continuous rain by the 17th. A succession of 'Atlantic' depressions brought in generally mild, unsettled and often stormy weather during the remainder of the month, and south-west gales with thundery showers were notably severe on the 19th, 22nd, 23rd and 27th.

MARCH.

A complex month opened with westerly gales in the north of the country but in the south a dramatic change, sunny and dry with temperatures well above average; winds light, south-westerly. Despite a weak trough and drizzle overnight on the 4th, parts of the South-West had more than eight hours sunshine on 5th. A depression from the south-west brought in rain late on the 5th and 6th. On 7th a cold front from the west, showers, then widespread rain on 8th with strong westerly gales in the Channel on 9th. The showery westerly airstream continued on 10th and 11th with temperatures slightly below average. Another deepening depression approached south-west districts on 12th bringing rain and snow to much of the south. On 13th showers and north-west winds gave way to warmer anticyclonic weather from the south-western approaches. From 14th to the 23rd, after scattered showers, the west to north-west winds became light, and calm fine sunny weather with temperatures a little above average prevailed except for 17th and 22nd as weak troughs crossed the country. Gales were still an everyday occurrence in Scotland and Northern Ireland.

The pattern started changing as a high moved east into Europe on 24th. With the south-west wind veering to north on 25th rain spread south. From 26th a complex low pressure system became established to the north and north-east of the British Isles and a northerly airstream from high latitudes brought a progressive fall of temperatures in all areas with wintry rain, hail and snow showers to end of month.

APRIL.

Some early morning frost on 1st followed by rain from the south-west and continuing throughout 2nd. From 3rd to 5th, with winds north-west, sunny and warm. Gales in the north spread south in eastern areas over 5th and 6th and north-east winds brought cold and rather wet weather to all southern districts from 6th to 12th. On 13th a ridge from the north brought mainly dry, sunny and warm days with early morning fog patches until 17th. Then a north-westerly airstream from higher latitudes brought colder air south but it remained fine. On 19th this pattern was interrupted by a depression and rain from west. Then north-west cold front weather with wintry showers over 20th/21st. Rain on 22nd then changeable until 27th with frontal rain from west alternating with sunny, dry periods and light variable winds. From 27th, with an anticyclone west of Ireland, it was much milder with prolonged sunshine.

MAY.

Started cooler with northerly winds bringing rain and hail showers. On 3rd south-east gales and heavy rain. Stormy weather, with belts of rain from south alternating with sunny periods continued until 7th. From 8th to 10th it was sunny with north-east winds. On 11th brighter with warm easterly 'subtropical origin' winds and rising temperatures: 12th-13th a few scattered thunderstorms followed by cooler drier weather. Winds north-east. Rain on 15th as depression 'lodged' over central southern districts. Cool and wet also on 16th/17th with a complex depression extending across southern England to Scandinavia. On 18th this gave way to sunny spells as a ridge of high pressure moved in from south-west. From 19th until 24th winds remained south-west then became variable. Fronts associated with a deep slow-moving depression west of Britain brought rain - a very wet period with particularly heavy rainfalls on 27th and 28th. The 29th was a sunny day with scattered thundery showers. Winds south-west. 30th similar with frequent thunderstorms. The 31st was dry and sunny as a ridge extended from south-west.



JUNE

With pressure high over the south of the country, dry and warm with good sunny periods but a little cooler with mist patches in coastal areas of the South-West between 1st and 6th. On 7th north-westerly winds caused a slight drop in temperature but in south-western districts it was mainly dry with long sunny periods. From 9th to 19th a long fine sunny spell with temperatures well above average and little measurable rain - 17th/18th were the warmest days. On 19th with the ridge withdrawing to the Azores, westerly winds accompanied by rain, sometimes heavy, spread in from the Atlantic. A series of wave depressions and associated fronts moved quickly through on 24th/25th causing heavy thunderstorms with consequent extensive flooding. On 26th with an intense depression over the Bristol Channel it continued raining; showers on 27th but renewal of more prolonged rain occurring 28th/29th. On 30th still and dry.

JULY.

Mainly sunny with just a few showers 1st-3rd but 4th/5th cooler, with cloudy weather spread from the south. However, 6th/7th warm and sunny. On night of 7th a rain belt passed through area from south-west but warm and sunny with temperatures in high 70's (°F) between 8th-15th. On 16th temperatures rose again but on 17th stormy, thundery rain and very warm. On 18th cloudy but fine becoming cooler. From 20th-24th sunny with occasional showers. On 24th successive belts of rain moved in from north-west but sunny on 25th/26th, cloudy wet and cool on 27th, dry fairly sunny on 28th, 29th wet and finally on 30th/31st warm again but with thundery showers.

AUGUST.

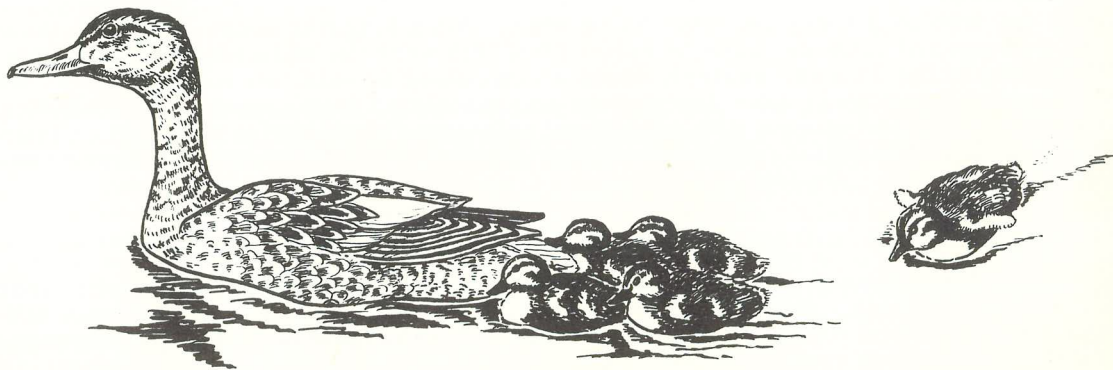
Cool and rather wet at first but dry and warmer later in the month. There was a prolonged period of westerly winds in early and mid-month periods and a developing intense depression off Iceland on 25th was the start of an increasingly violent spell of westerlies. Cloudy and wet on 1st and 2nd. Sunny periods with a few thundery showers on 3rd/4th, temperatures a little below average. 5th was dry and sunny but rain spread into area from west later same day, and it was cool and wet to 8th with thunderstorms until 11th. Showers, remaining cool on 12th, dry on 13th but cool rainy weather on 15th, sunshine and showers on 16th and 17th. Rain 18th/19th but fine warmer weather from north spread south on 20th. Some areas with coastal drizzle and fog but it remained fine generally until 24th. Variable cloud on 25th but dry and mainly sunny, warm weather continued until 30th when rain spread in from north-west.

SEPTEMBER.

A stormy beginning with strong westerly gales and successive belts of rain on 1st and 2nd followed by showers and high winds over the next few days. The gales subsided on 6th/7th and a much quieter sunny and dry period with a high from the Azores extending to the north-east from 7th to 10th. Winds light north to north-west. On 11th cloud and rain came through the area extending from the west and north but 12th was warmer and sunny. Rain came in from south-west to south coastal areas on 13th. It was sunny though occasionally hazy and warm in Bristol district until 16th/17th. But it became overcast with occasional thundery showers until 21st. Further rain spread in from the south-west late 22nd which was widespread and generally prolonged until 25th. On 26th there were intermittent periods of heavy rain and thunder, with winds south-west. 27th/28th was similar but longer periods of rain developed as general rain and overcast skies on 29th. After overnight clearance it was fine on 30th.

OCTOBER.

Unsettled weather moved into the area from south-west with gale force winds and heavy rain on 1st. Sunny and showery on 2nd but widespread gales and rain returned; then dry on 4th/5th but more rain from the Atlantic on 5th/6th. Temperatures were just a little below average but it became a little warmer on 7th. However widespread cloud and rain from south-west and west opened on 8th a series of generally wet days which continued until 12th. Fine briefly on 13th but gales and successive periods of showers and longer periods of rain, which gave changeable weather until 17th. Rainfall was particularly heavy on 16th. A cold dry sunny 18th was followed by three more wet days. It was fine on 22nd/23rd with a ridge moving east across the country. Dry 24th but widespread rain on 25th. Sunny with occasional showers on 26th and prolonged sometimes heavy rain 27th/28th and a notable drop in day maximum temperatures. Sunny intervals between showers on 29th, sunny 30th but rain came in on 31st.



NOVEMBER.

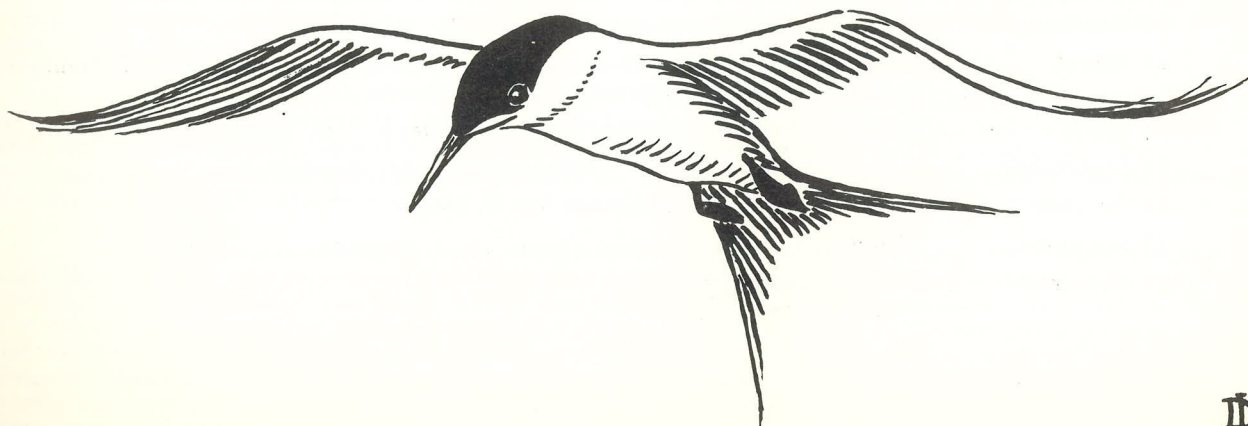
A stormy beginning with a deep depression centred over the country on 2nd; gales in the south and south-western approaches with rain and a fall in temperature. One or two bright periods on 3rd between the showers. Easterly gales, rain heavy and prolonged at times spread north on 4th/5th. Less cold with sunny spells on 6th. On 7th fine but quickly becoming cloudy with occasional rain. Sunny 8th but rain, successive rain belts, associated with southerly and later, westerly gales followed during 10th/11th. Cloudy, dry on 12th, but rain from west on 13th/14th. Showers 15th, cooler, dry and sunny 16th/17th with light air frost; milder generally on 18th. Fog and some drizzle on 19th, dry on 20th and 21st with a good deal of sunshine on 21st, cold with morning and evening fog patches; remaining fine until 24th when a trough moved in from the west bringing rain and lower temperature. A showery, sunny day followed with further rain on 27th and becoming milder. Showery unsettled weather affected the region on 28th to 30th with some sunny periods.

DECEMBER

From 1st to 3rd mainly fair but hill and coast fog and drizzle in some parts of the region. A cold northerly airstream developed and persisted. 4th and most of 5th was fine and sunny, however rain and drizzle extended south to reach all areas by nightfall on 5th. Colder weather became general on 6th after overnight wintry showers and light snowfall occurred on high ground, particularly in north of the region. A series of minor polar depressions moving south and east brought moderate snowfall, heavy in places to the south-west on 7th and 8th. Night temperatures fell sharply. Gale force winds from north-west swept the South-West and caused extensive drifting in parts of Hants., Dorset, Devon and Cornwall. By 11th warmer air from the north-west brought wet mild weather and for the next few days it was dull with occasional patches of drizzle and rain (15th). Sunny and cold on 16th, initiating a new cold outbreak and snow showers became frequent, but light in the region on 17th with prolonged snowfalls spreading south into all other parts of England. It was short-lived for mild wet weather spread in from the south-west on 21st and continued for the next few days. Gales in the north and high winds over much of the country on 23rd moderated on 24th except in our own region. The south-western approaches and coast suffered further westerly gales. Many areas had some rain on 25th. Strong to gale force northerly winds affected coastal districts during night but decreased on 26th. After widespread rain on 27th it became colder again and on 28th/29th wintry showers with sunny intervals developed. Further widespread rain on 30th was followed by sunshine and threat of snow showers on 31st.

ACKNOWLEDGEMENTS

My thanks are due to the Meteorological Office for help in compiling this summary and also to John Snell, Meteorological Officer, R. A. F. Filton, for much help and advice.



CLUB ACTIVITIES, 1967

The activities of the Club are determined, though not limited necessarily, by the General Committee attempting to fulfil the objects of the Club as laid down by its Constitution. Therefore in the first full year of the Club's existence the pattern of activities has followed this predetermined course and although the full potential range of activities has not been tried a genuine effort has been made to establish a curriculum catering for the wide and varied interests of members. Only a summary of the official programme can be given here - fuller details of some activities are given elsewhere in these pages and others have been reported in Bird News during the year.

Membership.

From the original 17 members who founded the Club in December 1966 membership has grown to over 140 at the time of going to press. The List of Members includes all members whose applications were approved up to 1 February 1968.

Publications

Bird News has appeared each month consisting of eight or more duplicated foolscap pages containing local records and news, national news and information and details of Club activities. This has been circulated monthly to all members free of charge. Michael Kendall, Don Ladhams and Robin Prytherch have been responsible for the mammoth task of producing this publication on a monthly basis, and members have shown their appreciation by sending in an ever increasing supply of recent records for analysis. Bird News has been described as the backbone of the Club keeping members in touch with local and national ornithology and providing a rapid method of communicating recent events to all members. Plans for the annual report for 1967 (appearing as Bristol Ornithology No. 1) were made in September, with Ray Poulding as Editor assisted by a sub-committee.

Indoor Meetings.

Regular monthly meetings were held from January to April in the Bristol Chamber of Commerce; one in September at Redland College, and from October to December at the Pembroke Hall, Pembroke Road. Accommodation has been, and still is, the Club's greatest problem - a rapidly rising membership brought increased attendance at meetings which towards the end of the year rose to 90 overflowing the new premises booked for the autumn and winter programme. The committee is determined to maintain the congenial 'club' atmosphere created at indoor meetings and a larger alternative hall providing the much appreciated catering facilities will have to be found for future meetings. Speakers and/or subjects for the meetings were as follows:-

20 January	Inaugural meeting. Bird film classics introduced by M. Kendall.
16 February	Ascension and its Seabirds. K. E. L. Simmons.
16 March	Films of Pied-billed Grebe and Great Crested Grebe. J. P. T. Bennett. Songs of summer migrants. D. Shepherd.
20 April	Some studies of Reed and Sedge Warblers. D. Shepherd.
21 September	Film - 'London Birds' - introduced by M. Kendall.
19 October	Radar studies of migration. P. R. Evans.
23 November	Migration in the Mediterranean. P. J. Hayman.
14 December	Annual General Meeting. Ornithological Quiz.

Field meetings.

Twelve localities of different habitat in the Bristol area were selected for a series of 15 field study groups each limited to five or six members in charge of a leader familiar with the study area. The programme was curtailed in November and December by the 'foot and mouth' disease restrictions on birdwatching on agricultural land. As an additional item to the field programme a migration watch was organised for 22 October when seven observation sites (six coastal and one inland) were covered by 25 observers. Dates and location of field meetings were as follows:-

30 April	Axe estuary and Sand Bay Leigh Woods and Stoke Leigh Forest.	15 October	Blagdon
6 May	Christon, Mendip.	22 October	Berrow Marsh. Migrant watch stations at Aust, Clevedon, Sand Point, Crook Peak, Brean Down, Berrow and Minehead.
7 May	Rowberrow Warren.		
4 June	Christon, Mendip.		
11 June	Shapwick Heath.		
17 June	Marshfield.	5 November	Chew Valley Lake
22 July	Chew Valley Lake.		
13 August	Clevedon to Woodspring Bay.		
24 September	Brean Down.		

Field studies.

Support for the Nature Conservancy's 'Small predators' survey was organised by the Club and a pilot survey on the distribution and biology of buntings in the Bristol area was started in April. Results of these surveys are given elsewhere in the Journal.

K. L. FOX. Hon. Secretary.

'SMALL PREDATORS' SURVEY, 1967

By R. J. PRYTHERCH

In 1964 the Toxic Chemicals and Wildlife Division of the Nature Conservancy organized a national survey of Kestrel, Barn Owl and Tawny Owl. It was based on the presence or absence of a breeding pair in a 10 km square of the national grid. The results of the survey have been published (Prestt and Bell, *Bird Study* 13:277). It was decided then to repeat the survey in 1967 (and at regular intervals thereafter) in order to provide a continuous record for these species.

The Club gave notice of the survey in the March, April and May issues of *Bird News*. We asked for details of occupied nests found, sightings during May and June particularly, and confirmed negative records. There was an excellent response to the appeals and the information received has been passed on to A. E. Billett, Ornithological Section of the Bristol Naturalists' Society, who had agreed to collate all of the data for the Bristol area.

A large number of records were received throughout the year. They were mainly sightings of birds and of course, include some individuals and pairs which were seen on many occasions. A "sighting" can involve only one bird, or a large number seen at once, but in our case from one to four birds were often recorded. The highest figure for one sighting during 1967 was of 18 Kestrels seen in the Tadhams Moor area of Somerset, on 12th August! Regular sightings in a small area during the early summer could mean that the birds are breeding nearby and additional careful observations can often lead to the nest site. However, the number of records received of confirmed breeding attempts or successes is low compared

to the number of localities from which regular sightings were obtained. Of course, there will not necessarily be breeding birds at every locality because, presumably, there are a number of non-breeding birds involved.

In Table 1 the figures for the breeding period cover three months as this gives a better indication of the numbers involved. The land area referred to is rather vague but is comprised mainly of Bristol and north Somerset (the part south to Highridge, Glastonbury and Shepton Mallet and east to Bath), with a few records from further south and in Gloucestershire.

TABLE 1
RECORDS OF PREDATORS IN BRISTOL AND NORTH SOMERSET IN 1967

Species	No. of sightings May to July	No. of localities May to July	Breeding success, broods. **	No. of sightings Jan. to Dec.
Kestrel	145	57	9	697
Barn Owl	5	4	0	54
Tawny Owl	31	21	10	95
Buzzard	54	19	4	205
Sparrow Hawk	110	25	2	420
Hobby	29	11	2	60
Little Owl	36	24	6	113

(**For all species, except perhaps the Hobby, these figures are certainly below the true ones, because breeding was suspected at many of the localities and in the case of the Buzzard there was another five sites where breeding was probable, but not confirmed.)

The details of brood sizes are less complete and in no instance do we know the original clutch size. Five of the Kestrel pairs fledged at least nine young (broods: one of 3; two of 2; two of 1). Four Tawny Owl pairs fledged at least eight (one of 3; two of 2; one of 1). The four Buzzard pairs fledged five (one of 2; three of 1) and the two Sparrow Hawk pairs only four (one of 3; one of 1). It is difficult to draw any conclusions from these figures, but on average the brood sizes are lower than what one would normally expect.

Finally, a word of sincere thanks to all members who have contributed to this survey. In addition I hope you will continue with your support of the investigation into the numbers and distribution of birds of prey by sending in all records for the monthly summaries in Bird News.

THE DISTRIBUTION AND BIOLOGY OF BUNTINGS IN THE BRISTOL AREA

INTRODUCTION



As part of the co-operative field study programme of the Club a long-term investigation into the distribution and biology of buntings (Emberizinae) in the area was started during 1967. Members were invited to report all sightings of buntings and also to take part in a more detailed study of the Reed Bunting at Chew Valley Lake. Although details of the investigation were not announced until the late Spring sufficient records had been received by the end of the year to compile a simple distribution map. The sketch map is subdivided into 5 kilometre squares and the species recorded in a particular square are indicated by the appropriate symbol. At this stage the main value of the map is to show where a bunting species was not recorded in 1967 so that members can make a special effort to locate the missing species in the blank or negative squares. The few records of Corn Buntings have been omitted from the map. Although full details of the census and other work on buntings planned for 1968 will be circulated later all sightings of buntings are required for this preliminary distribution stage of the investigation - records can be sent with your monthly observations for Bird News.

REED BUNTINGS AT CHEW VALLEY LAKE

The shore of this lake (ST/570600) consists for the most part of marshy or waterlogged ground, growing coarse grasses and sedges, with scattered bushes and small plantations providing cover. Willow and rushes extend into the water. Apart from the planted Alder and Willow (and conifers on the drier soil), bushes are mainly Willows, Elms and Hawthorns. Hedges tend to run inland from the lake as boundaries to pasture land, and are largely untrimmed. This foreshore was surveyed for Reed Buntings from May to July 1967. There appeared to be 27 breeding pairs, and a maximum of 73 birds was recorded in July; although territories are fairly clear, these figures cannot be precise. Roughly, ten strips of foreshore contained breeding territories and from map measurements the territory used by a pair averaged about 300 sq. yards. In some favoured spots this territory was as small as 120 sq. yards but in two strips, where pairs were widely spaced and the boundaries of each territory could only be inferred a single breeding territory may have amounted to over 600 sq. yards.

It was puzzling to note that six apparently suitable strips contained no Reed Buntings. These had rather less bushy vegetation so it may be that this cover was not quite suitable for five of the six strips had no hedges, or only short well-trimmed ones, and in the sixth, the hedges bordered only the landward side of a thick plantation. Kent (Bird Study 11:123) found that hedges are strongly favoured by both Yellow Buntings and Reed Buntings, and observations at Chew Valley confirmed this fact.

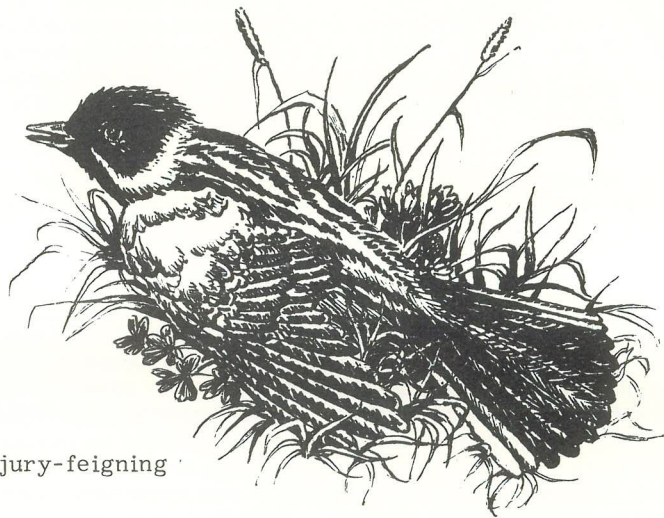
The adults, especially the males, guarded their territories and their young carefully by driving off other birds (including other species). The males always chose as a songpost, an exposed branch 5 to 10 ft. from the ground, such as they top of an isolated bush, or the end of a broken hedge, but never on an actual tree such as one of the Elms round the lake. It was observed that only bushes on the shore side of plantations were used in this way, and as feeding points for the young. Adults even perched on Willows well out in the water, and were seen feeding on the seed heads of water-plants such as *Persicaria*.

At the approach of a human intruder, a family behaved as follows: the young quietly retreated and scattered into cover whilst the parents called persistently in warning; sometimes the male sang on the top of a bush and even advanced towards the intruder. On one occasion the male crouched in the open on short grass, shuffling away from his family and feigning injury many times, with the feathers of the crown, nape and mantle raised and the tail and wings spread to display the black and white markings, as in the sketch.

The nature of the Reed Bunting song is of interest because most reed and marsh birds sing only within cover, the song being almost a continuous advertisement or warning, whereas in this species it is a short loud proclamation followed by a pause while the singer listens and surveys the territory for intruders or predators. It has been suggested that the Reed Bunting is still a countryside bird basically, like the Yellow Bunting and other common buntings, and although it has adopted a habitat with tall grass and reeds it has not yet adapted its behaviour accordingly.

It is likely that Reed Buntings take up positions inland from the lake, coinciding with the habitats of Yellow Buntings. In fact some records were received of single Reed Buntings well away from water and even on the Mendips, in the Spring. Club members will be investigating the possibility of overlaps of breeding populations of the two species.

D. E. Ladhams.



Male Reed Bunting injury-feigning

STATUS OF THE YELLOW BUNTING AT CHRISTON

As a contribution towards the pilot investigation into the distribution and biology of buntings records were kept of the Yellow Bunting during 1967 at Christon between the villages of Loxton and Banwell at the western end of the Mendip ridge (Grid. Ref. ST/380574). In addition to general observations a census of breeding pairs was undertaken on a plot of farmstead close to Christon. The area of observation covered approximately one square mile of undulating hill slopes facing mainly south-east and rising from the Land Yeo River valley at 50 ft. above sea level to over 500 ft. on Loxton Hill. The habitat is mainly farmstead of sheep pasture with a small acreage of cereal, interspersed with small woods and groves of scrub, stunted coniferous plantation and some more mature woodland.

Yellow Buntings were scarce in the winter of 1966-7 with only an occasional sighting of single birds passing over the hillside but small parties were reported close to farm buildings in the valley at the edge of the study area. The first record of a 'resident' was of one calling from a hedge on 23 February close to an area in which breeding subsequently

occurred. The first territorial song was heard in this same locality on 12 March when a male took up temporary residence at the edge of an overgrown plantation of conifers. During late March and April about twenty Yellow Buntings of both sexes fed daily in a recently sown 20 acre field of barley and oats. On 30 April only five were present as a feeding flock and by 6 May none were feeding regularly. By this date breeding had started in most territories although when disturbed adjacent pairs tended to amalgamate into small flocks and often flew several hundred yards to trees away from the nesting sites. In a census plot of just over 200 acres of farmstead, which included 20 acres of scrub woodland, only three pairs were located during May and June. Of the 180 acres of farm fields 40 acres were down to cereals (barley and oats) and the rest rough pasture mainly for sheep. The census plot included approximately six miles of hedgerow (including woodland edge) of which all but half a mile had been recently mechanically trimmed to less than six feet. The three resident pairs bred in an area of woodland scrub in fairly close proximity to each other.

Although no comparable census was attempted in the more fragmented higher reaches of the observation area along the ridge of Loxton Hill and part of Bleadon Hill, breeding Yellow Buntings were more numerous than in the census plot. The habitat was very favourable with abundant scrub and untrimmed hedges providing suitable nesting sites in contrast to the unsuitable environment of trimmed rectangular hedges of the census plot. Males in known breeding sites were heard in song as late as mid-August but by mid-September only the occasional bunting was seen at the top of the hills.

In late November several Yellow Buntings appeared in a 14 acre field close to Christon to feed amongst hay strewn for cattle. By the end of December numbers had increased to c. 40 (both sexes) and except for the occasional stray Chaffinch remained as a separate feeding unit of buntings. The flock was extremely wary and at the slightest disturbance flew to the top of a group of 50 ft. beeches and evergreen oaks. At dusk the buntings gathered in tall Cupressus sp. bordering a garden and here they almost certainly roosted.

From the first year's observations the general pattern of Yellow Bunting activity in this Mendip area appears to be winter feeding in and around farms in the lower reaches of the valleys. The return to hill breeding haunts occurs in February and March but breeding does not take place until late April or early May. Desertion of breeding areas takes place in late August or early September. No information was obtained on the species as a passing autumn migrant.

R. H. Poulding

SOME OBSERVATIONS ON FAMILIES OF GREAT CRESTED GREBES

by K. E. L. Simmons

INTRODUCTION

The Great Crested Grebe Podiceps cristatus is well known because of its elaborate courtship behaviour but its breeding biology is not nearly so well documented, particularly the chick-stage. Since I started watching grebes seriously in 1948 at gravel-pits in Berkshire, I have paid special attention to the behaviour of parents and chicks though it was not until 1957, at Theale, that I was able for the first time to follow three families from hatching until the departure of the last young. This detailed work was continued at Chew Valley Lake, Somerset, in 1967 when I studied another family on Herriott's Pool.

The present paper gives a factual summary of the observations on these four families, supplemented by data from numerous other families watched less fully, mainly in Berkshire between 1948 and 1962 and later in Somerset where, since September 1966, my grebe work has been supported by the Natural Environment Research Council.

Breeding Season

The Handbook gives the breeding season of the Great Crested Grebe as usually from May to July in the British Isles. However, first clutches are regular in March on some waters, such as the Berkshire gravel-pits, with the earliest occasionally even in February (in mild winters) and late ones in August or even September. Thus the breeding season is much more extended than was once believed.

Incubation

Although as many as five or six eggs may be laid, the normal clutch consists of three or four laid at 48 hour intervals. The eggs quickly stain from white to brownish and the full clutch is normally covered over with sodden material by the incubating bird when it is disturbed from the nest. Staining and covering functions to hide the eggs from predators, while covering also helps to maintain egg temperature - in both cases when the nest is unattended. Incubation lasts 28 days and starts with the first or second egg. Both sexes incubate in turn, taking equal shares. At one nest in 1952, 54 completed incubating - spells averaged $2\frac{1}{4}$ hours and ranged up to just over four hours (Simmons 1955).

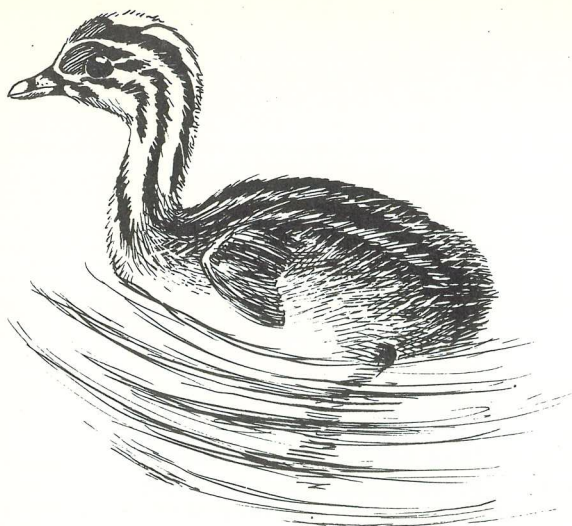
Brood size

Most surviving broods consist of one to three young. At Chew Valley in 1966 and 1967, 16 broods were of the following sizes: four of b/1, five of b/2, five of b/3 and two of b/4. I have not analysed my brood counts for the Berkshire gravel-pits yet but Tucker (1934) found that in this and adjoining counties broods of one or two were the most common, three and four much less so - though there was one record of a brood of five.



Great Crested Grebe incubating

Note: This and other figures in this paper are by Robert Gillmor from Simmons (1955)



Tiny Great Crested Grebe Chick

THE CHICK-STAGE

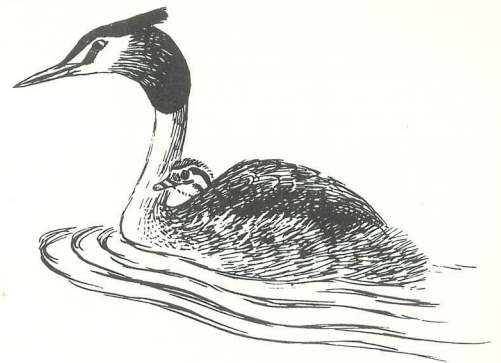
Hatching

As incubation starts before the completion of the clutch, hatching is thus staggered (asynchronous), at least for the last eggs laid, with a resulting size differentiation between the chicks, particularly the oldest and youngest. With four eggs, the hatching period may be extended for up to a week. There is some evidence that at least occasionally the parents may abandon the nest before all the viable eggs have hatched (Schiermann 1927). Each chick hatches very rapidly - within a few hours of the first pipping of the egg, presumably as a precaution against drowning in the wet nest (Nice 1962) - and soon scrambles up on to the sitting parent's back.

Behaviour of adults.

Both parents care for the chicks, carrying and otherwise protecting them while small and feeding them with animal food and feathers for many weeks.

Carrying - The young are brooded in the nest, not under the parent but up on its back, sheltered in the "tent" formed by the slightly raised wings and long scapular feathers. The family leaves the nest after the hatching of the last chick. The nest is not used as a dormitory as in some other grebes (e.g. the Little Grebe *Tachybaptus ruficollis*). At first, the parents continue to carry the chicks in turn, while the other brings food, changing over duties at intervals - though during rest periods they may share the young between them. Small chicks are assisted aboard by the parent's placing its feet out sideways close to the surface of the water and thus providing a "gang-plank" for them. Occasionally, the carrier dives with one or more chicks on its back - usually tightly imprisoned under the wings. At change-over, the young are deliberately "shed" by the carrying parent who rises in the water and shakes itself or flaps the wings. Re-boarding is discouraged by the adult's rotating as the chick tries to ascend, or by its swimming or diving away or rolling over to preen its belly. The whole brood is persistently carried for at least the first 10 days but thereafter the chicks, in order of age, spend an increasing amount of time in the water. The carrying-stage ends during the third week though individual young, particularly the last hatched, may secure occasional rides up to about 21 days. The chicks are carried because their own down is at first too scanty to protect them from the elements and they need the warmth from their parents' feathers (Nice 1962). During the carrying stage, their down gets thicker and also waterproof. Carrying also reduces loss from underwater predation, especially by Pike which seem to be a major enemy of small young on some waters (Tucker 1934). Although the chicks may sometimes be left alone as early as the third week while both parents hunt simultaneously, once all of the breed has taken permanently to the water, one adult at a time usually remains to guard it. Guarding lasts at least during the third and fourth weeks, in some cases longer - depending on the size of the family and whether it is "divided" or not (see below).



Adult Great Crested Grebe carrying young on back

Food and feathers - Although the staple diet of the chicks is fish, they seem to be fed mainly on minute aquatic invertebrates by their parents during the first few days of life. The adults also give small feathers from their own bodies to the young right from the start, usually during preening spells (Simmons 1956). The function of feather eating in grebes

is much debated but evidently has to do with digestion in some way. The fish given are at first tiny, but the adults tend to bring as large a prey as the young can manage (eating any themselves that are too large). I have seen a chick of only 18 days choke down a four inch fish, while older chicks swallow bigger ones still (up to a maximum of some six inches). At Chew Valley, however, the majority of feeds are of small fish - probably mainly Roach fry and Sticklebacks - throughout the period of dependency, whereas at the Berkshire gravel-pits large coarse fish were often given. The adults bring fish intermittently throughout the day, spells of feeding alternating with spells of loafing. The feeding frequency and number of feeding spells a day depend on a number of factors including the number of young in the brood and the average size of the prey. Data have yet to be analysed by the following examples are from the family at Chew Valley in 1967 (three chicks). In four hours on day 14, the parents brought 107 fish between them, mainly tiny or small ones up to three inches long - the male brought 81 in spells of 17, 24 and 83 minutes; the female 26 in spells of 43, 34 and 42 minutes. In five hours on day 20, they brought a total of 89 fish, including five larger ones (three of which the male had to eat himself) - the male brought 51 in spells of 69, 58 and 68 minutes; the female 38 in spells of 19, 79, 54 and 7 minutes. At Chew Valley, Black-headed Gulls Larus ridibundus regularly attend grebe families and attempt to snatch fish from the adults and - with more success - from the young. Regular parental feeding usually lasts at least 10 weeks, with reduced attention in the 11th and 12th weeks and occasional feeds up to the 15th in some cases (though many young have left the family for good long before this - see below).



Adult Great Crested Grebe feeding chick.

The fish is first incapacitated, then presented to the chick at or near water level and usually not released until the chick takes it. Older chicks may grab the fish and turn away from the adult to eat it.

Brood-division - At the Berkshire gravel-pits in 1948-61 broods comprising a single chick were fed by both or only one parent while broods of two were usually fed by both. However, broods of three or four were found to be "divided" between the parents - that is, each adult took over sole responsibility for certain chicks and did not feed the remainder, even showing overt hostility towards them (Simmons 1955). At Chew Valley, in 1966-67, brood-division was found in broods of two or more young. The chicks are divided evenly in the case of b/2's and b/4's and two and one in b/3's (in which case either parent may take on the larger responsibility). Such division does not take place until the carrying stage is well over, starting the fourth or fifth week and stabilised by the sixth at the latest. The two family units usually operate independently within the territory or range more widely, but meet up from time to time each day to loaf and preen together. However, in the pool family at Chew Valley in 1967, the male (two chicks) and female (one) did not associate at all once the brood had finally been divided and even showed hostility towards each other if they came close (though "making it up" after the young were independent). As well as not feeding the other parent's young, some adults also show preference for a "favourite" within their own group. Similarly, in b/2's which are not divided, each parent may show preference for individual young though also feeding the other at times. The phenomenon of brood-division should be remembered by observers counting grebe families for it is obviously possible to over-estimate the number of families and under-estimate their size. At Chew Valley, on 25 August 1967, no less than 27 out of 35 groups of young were tended by only a single adult; clearly a high proportion of divided broods were involved. Brood-division in the Great Crested Grebe would appear to function by increasing parental feeding efficiency in some way; it may also be an insurance that, in the event of one parent ceasing to feed the chicks (e.g. through death or injury), then only those dependent on that adult suffer (Simmons 1959)

Parental aggression - In families of two or more young, the parents show periodic hostility towards even their "own" chicks (in divided broods), including the favourite - especially after these have reached full size. They lower the head and swim at the

young, or dive after them and even occasionally seize them by the neck. The function of such aggression towards the other parent's chicks is clearly to reinforce the clear-cut division of the brood, but that (if any) with regards their own charges is less obvious - unless it "encourages" them to become independent as early as possible.

Second broods - Most pairs are single-brooded but genuine second broods do occur, at least occasionally. These require much further study but two factors are of most importance: (1) a favourable food-supply for the first brood young, and (2) a small first brood. In the few cases for which I have adequate details, the two cycles overlapped with the first egg of the second clutch laid in the sixth week of the previous chick-stage. Thus, the first brood young are more or less independent when the second lot hatch four weeks later. Of the three pairs at Theale in 1957, one was double-brooded and the male took over the entire care of the two first brood chicks during the second incubation-period.

Appearance and development of the young

Great Crested Grebe chicks are already covered in down at birth. This is pure white below, white conspicuously striped with black on the head and neck and buffish with dark brown stripes on the body. The bill is also striped with black, the distal portion being white and the base pink. Matching this pink on the bill, there are three bare patches of red skin on the head - one each side of the face above the eye and one on the centre of the forehead. The young reach full size by about the end of the seventh week, becoming fully feathered on the body in the eighth and on the wings in the eighth or ninth (when they are technically juveniles though still dependent). Although the body stripes have now disappeared, the stripes on the head and neck remain longer, gradually toning down in conspicuousness until by the 11th week there are usually only traces of striping on the face. However, such markings may still be shown by some juveniles of 17 or more weeks. The short crests or "horns", which the Handbook incorrectly states are absent, start to show in the seventh or eighth week and are very obvious thereafter. The facial patches "fill in" during the seventh week but the crown patch remains bare somewhat longer. The white on the bill changes to pink in the seventh week when the black stripes also begin to fade, the mandible becoming almost uniform pink in the eighth, though some young still show traces of the dark lines in the 10th week.

Behaviour of the young.

Great Crested Grebe chicks are precocial (nidifugous) but, unlike most ducklings and waders for example, do not feed themselves presumably because the catching of fish is too specialised an activity to be inherited functionally intact from the start. The chicks are active from birth with their eyes open and the effective use of the relatively well developed feet to scramble about the nest and parent and to swim and dive if necessary. Three tendencies are paramount for the chicks' initial survival: (1) to accept food and feathers from the adults, (2) to climb up slopes and (3) to follow moving objects, the last two of these ensuring that they reach the back of the parent, either on the nest or in the water, and are thus carried.

Boarding - The chick scrambles up on to the carrying parent's back usually from the rear, via the rump (with or without a "leg up" when in the water) or, less often, from the front at the base of the adult's neck. The chick gets most of its impetus from the legs and when ascending from the water it initially "rows" itself aboard after first placing the head and neck on the parent's rump or flank. The young persist in trying to board after their parents have ceased to carry them. At first their attempts are purely functional but later these become formalised into a stereotyped "mock-boarding" in which the chick merely lays its head on the parent's back, sometimes pushing its bill under the parent's wing, at the same time calling and "splashing" (see further below). When they have first taken to the water, the chicks have a marked tendency to stay very close the adults, this "safety radius" increasing and then disappearing in subsequent weeks.

Taking food and feathers - At first the chicks receive their food while sitting on the carrying parent's back though, even during the first few days of life, they will at times scramble off on to the nest or into the water to get closer to the feeding parent when particularly hungry. They actively take the prey and feathers offered to them, reaching towards the bill of the feeding parent, seizing the item and eating it without any assistance. Fish are swallowed head first right from the start. Later, when the young have taken to the water, they wait for the adult to return with food or accompany it on its fishing trips, swimming to meet the parent when it approaches with food.

Begging and submissive behaviour - Young Great Crested Grebes have a very complicated begging and submissive repertory (of which "mock-boarding" is a part). They are very vocal, often keeping up a continuous "worry peeping" when the adults are resting, this type of calling being a feature of fish-eating birds and provides a continuous stimulus to the adults to start hunting again. The chicks also peep vociferously when approaching a parent that is carrying food, thus focusing attention on themselves, and when alone they give repeated single peeps which probably informs the fishing parent of their general location. Peeping also accompanies begging and submissive postures and movements which develop after the carrying-stage is over, especially if the brood is large and divided. In simple begging, the chick lowers the head and retracts the neck, pointing the bill at the adult or sometimes even poking the bill at its flanks, especially while "cadging" feathers when the parents are preening. Particularly when approaching or retreating from one of the adults, it also "splashes" at the same time - sculling with its feet near the water surface with



Submissive "splashing" behaviour of young Great Crested Grebe

a circular motion. At higher intensity, the chick extends its neck, braces up its chin and gapes to show its red mouth interior while splashing and peeping and angling its body horizontally forward so that the base of its neck is awash and the tail-end (with tiny tail cocked) bobbing up in readiness to dive. Often it "cringes" with its body sunk at an angle away from the parent but with the head turned back to face it. At the highest intensity, older young "greet" the parent by splashing round it with only the head or even the bill showing above the water (rather like a periscope) and frequently diving, while perhaps also doing bathing movements.

All this behaviour functions in assuring the continuing attentiveness of the parent and in reducing its aggressiveness.

Diving and hunting - Grebe chicks are capable of diving as soon as they have dried out after hatching but in practice they do so infrequently during the carrying-stage unless frightened. Once they have taken to the water more or less permanently, they make brief (mainly vertical) dives apparently merely for the sake of it and, also, to escape or get close to the adult quickly - but not in search of food. However, especially from the fourth and fifth weeks onwards, the chicks spend an increasing amount of time "practising" hunting behaviour of a different type - submerging the head, or the head and neck to "peer" under the water, then "up-ending" or plunging from this position. Although they may pick up minute prey items of the water surface or from aquatic vegetation - or snatch gnats from the air - as early as the fourth week, the effective catching of prey (including small fish) does not mature until the end of the eighth week or in the ninth. Hunting behaviour, including diving, then develops quite rapidly and the juvenile may become semi-dependent in weeks nine and ten. At Theale in 1957, under exceptional circumstances when its parent, in a divided family, became incapacitated, one chick became totally independent in the 10th week (Simmons 1959) but the majority of young do not do so until the 11th or 12th - though they will accept any feeds going after this (up to at least the 15th week).

Relation between the chicks and precocious behaviour - Occasional and brief bouts of fighting among siblings may break out as early as the second week. For the most part, however, young grebes are peaceful among themselves though during the 11th week in the pool family (1967) one of the males persistently chased the female when it came near, the latter splashing and diving away. Of most interest, "pairs" of dependent young not infrequently perform adult-like courtship behaviour. Brief but often complete, mutual Head-shaking Ceremonies (with or without Habit-preening) occur as early as the third week onwards. I have also seen both the Discovery Ceremony (with Ripple-dive and Ghostly-penguin Display) and the Retreat Ceremony from older young - but in both cases lacking the typical Cat Display while a couple at one of the Tring Reservoirs went through all the preliminaries of the Weed Trick (including Turning-away, Sailing and the Slow-dive) but only one bird followed this through by surfacing with weed and doing the Weed Dance in front of the other. Even when diving normally, chicks sometimes bring up weed which they may then carry in the bill. Occasionally, individuals may Head-shake while thus holding weed and I have known a chick to add material to its parents second brood platform. At Heron's Green Bay (Chew Valley) in 1966, one juvenile Solicited on the water and then joined with a sibling in collecting nest-material which they proceeded to build up on the back of a third!

First flight and departure - One juvenile was seen to make a brief escape flight in its 10th week but normally the first "voluntary", sustained flight does not occur until the 11th. Soon after this, the chicks may leave for good. Of the study chicks, three departed permanently in the 11th week (days 75, 76 and 77) and three in the 12th (days 78, 82 and 84). Two others, however, both the "favourites" of their particular adult, remained in the territory until the 18th week (both leaving on day 120), though one had twice left and then returned before this. In three of the four study families, the female parent left before the last young (weeks 10, 12 and 17) but the males all remained, one still accompanied by his mate.

DISCUSSION

In this preliminary account, I have briefly indicated the likely functions of a number of individual habits, such as the rapid hatching of the chick, brood-division, submissive behaviour and so on. However, a wider view may be taken and there are indications that many adaptations shown by the Great Crested Grebe are inter-related. It is evident that this species, like certain other fish-eating birds, is liable to encounter variable food conditions while breeding, from the extreme of food shortage to that of food plenty, and its whole breeding system seems clearly adapted to cope with this situation. In the first place, pairs are formed in winter and breeding sites and territories staked early in the year. The breeding season is potentially long and second broods may sometimes be reared. Finally, the family size is "adjustable" in a surprising number of ways and the growth and dependency period of the young relatively long. Of course, other factors - such as weather, availability of cover and predation - are also involved, but this theme of the "co-adaptations" shown by nesting Great Crested Grebes in relation to food supply is of great current interest and will be developed in more detail elsewhere.

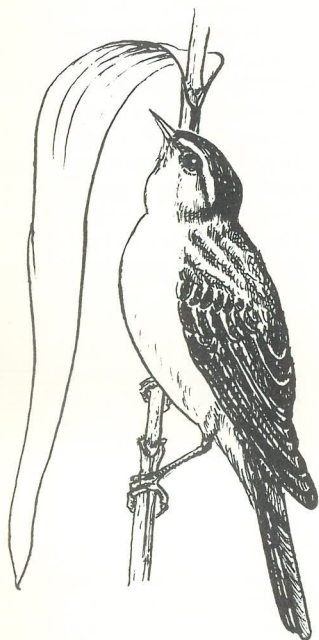
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SOME STUDIES OF SEDGE WARBLERS AT CHEW VALLEY LAKE

By D. SHEPHERD

Chew Valley Ringing Station



D

It is an established fact that many migratory birds are capable of depositing considerable quantities of subcutaneous fat, sometimes amounting to as much as 80-100% of their normal body weight, prior to their spring or autumn migration (see Mascher 1966 for references). Several authors have investigated the resting and flight energy requirements of various species (e. g. Odum, Connell and Stoddard 1961) and by correlation with fat levels, estimates of potential flight ranges have been made. Nisbet (1963) has reviewed this field comprehensively.

Evidence has been presented (Drury and Keith 1962; Nisbet, Drury and Baird, 1963) showing that at least one of the American wood warblers, (Parulidae), namely the Blackpoll Warbler Dendroica striata migrates in autumn from New England and Nova Scotia directly across the western North Atlantic to the Lesser Antilles, probably as far as Venezuela, a non-stop flight of 1800-2400 miles, and not largely overland via the Atlantic seaboard, Florida and the West Indies.

The majority of studies in this field have been carried out with New World species but many British species, particularly warblers, have been shown to begin fat deposition, as evidenced usually by weight increases, before their autumn departure. A number of ringing stations have demonstrated that, in particular, the Sedge Warbler Acrocephalus schoenobaenus is possibly the most adept among British migrants in this respect, and Gladwin (1963), in a speculative preliminary communication, has suggested that the Sedge Warbler is capable of flying 1500 miles non-stop from England to Africa.

The Reed Warbler Acrocephalus scirpaceus does not attain such heavy weights in autumn in Britain as does the Sedge Warbler. Another difference between these two species is exemplified by the foreign ringing recoveries, both in terms of the recovery rate and the distribution of recoveries. In the years 1956-65 a total of 29,860 Sedge Warblers ringed yielded 17 foreign recoveries, while 60 such recoveries were obtained from 17,216 Reed Warblers ringed during the same period. This represents a ratio of 6:1 in favour of the Reed Warbler; a remarkably high figure for a comparison of two fairly similar species. The autumn recoveries for Reed and Sedge Warblers for these years are shown in Fig. 1. It is apparent that there is a large concentration of Reed Warbler recoveries in Portugal, with several more in S. W. France and further south, along the Atlantic coast of Morocco. On the other hand, apart from one recovery in Portugal, the majority of Sedge Warbler recoveries are either in N. Spain and S. W. France or in northern or central France, including two in the Massif Central! It is for these and other reasons that the B. T. O. instigated, in 1967, an acrocephalus enquiry to continue for several years.

It is the purpose of this paper to present results of weight studies obtained by ringing Sedge Warblers at Chew Valley Lake in the summer and autumn of 1966 and in particular to demonstrate the usefulness of a continuous ringing study of a population over a period of several weeks.

It is hardly necessary in this report to describe the study area; suffice it to say that the birds were trapped in mist-nets of various sizes among young willows, oaks, pines and larches as well as in natural rides between clumps of reeds. The nets were visited at least once in every 30 minutes. Every bird trapped was ringed, or in the case of a previously ringed bird, its number noted, and in addition, all birds were aged, weighed using a spring balance accurate to 0.1g., wing-measured and the time noted. The site was visited most weekends from 6 April to 16 September with continuous cover from 14-26 July and 12-21 August.

During the year, 1730 handlings were made of 1104 individual Sedge Warblers comprising 917 juveniles and 187 adults including 42 ringed in previous years. The ringing of adult Sedge Warblers was concentrated mainly into two periods. The first period, 20 April-1 June was when the resident population was arriving and beginning to breed. By 1 June, most of the resident adults had been trapped, and Lincoln index calculations showed a population of about 150. The second period was 13 July-24 August, when autumn passage was occurring. Juveniles, however, were trapped mainly between 29 June and 18 September, with a peak at 10-24 August, and exhibited a considerable passage after the adults had departed. Because of the disparity between the departure dates of adults and juveniles and the considerably larger proportion of juveniles ringed, only juveniles are considered in the weight studies described.

Before an assessment can be made of the magnitude and significance of weight increases during the autumn, it is necessary to know the normal weight. This is shown in Fig. 2 as the diurnal weight variation during July. From the results of Fig. 2, an estimate of 10.4g. for the average fat-free weight of a Sedge Warbler can be made, while the average change in weight during the day is about 0.8g.

Some of the data for the juveniles trapped during August is shown in Fig. 3. If, during a period of continuous trapping, no new birds arrive in the area during the course of a particular night, it is evident that on the following day, there should be an increase in the proportion of birds trapped which already carry rings. Furthermore, if the population is generally increasing in weight due to fat deposition, as might well be expected in autumn, then an increase in the mean weight of the birds trapped for the first time on the following day is to be expected. In Fig. 3, after an initial stabilisation period of about 7 days, there is a strong correlation between retrap rate and mean weight of new birds, but little correlation of either with actual numbers ringed, suggesting that ringing totals on their own are not accurate indicators of population changes. Local fluctuations apart, the mean weight slowly increased during the period. The results suggest that birds are fattening up in the area.

Confirmatory evidence is shown in Fig. 4. After an initial drop on the day after ringing, which several other authors have noted, weight increase is quite rapid at about 0.5g/day until it begins to fall off at about the eighth day. This is only an average rate over all birds; some individuals deposit fat much more rapidly. Two extreme samples were 1.5g. in 27 hours and 10.2g. in 13 days.

In order to estimate potential flight ranges, it is necessary to know the fat-free weight, the average amount of fat carried at departure time and the rate of energy consumption (as fat utilisation) in flight. The average arrival weight in September was 16.5g. and the weight range plateaued at 19.0g. From the diurnal weight variation of 0.8g. lost over about 12 hours, an estimate of the resting energy consumption of about 0.0064g. fat/hour/g. weight may be made for the Sedge Warbler, a figure very similar to that of 0.0058 obtained for the Blackpoll Warbler (Nisbet et al. 1963). This estimate is if anything high since the value of 0.8g would include some contribution from gut content and not deposited fat. Nisbet (1963) has estimated a mean value of 2.0 for the ratio of flying energy consumption to resting energy consumption for a small far migrant, and if a mean departure weight of 19.0g. is taken (some individuals have reached 21.5g.), the total flying time available to the Sedge Warbler is some 95-105 hours. Flying speeds of small migrants (as obtained by radar studies) are known to be 20-25 knots, a low figure, probably to minimise water-loss by evaporation.

Thus in still conditions, a flight range of 2200-3000 miles is quite feasible, giving the Sedge Warbler the capability of accomplishing a non-stop flight to the savanna region of W. Africa, lush after autumn rain and some 2100 miles south of Britain. Such a migration could well explain the scarcity of recoveries of Sedge Warblers in S. W. Europe, but needs to be substantiated by more accurate estimates of departure weights and flight energy consumption rates.

Finally, I would like to express my gratitude to all those members of the Chew Valley Ringing Station who helped in this project: it is hoped that the results of this study will shortly be published in considerably greater depth in a national ornithological journal.

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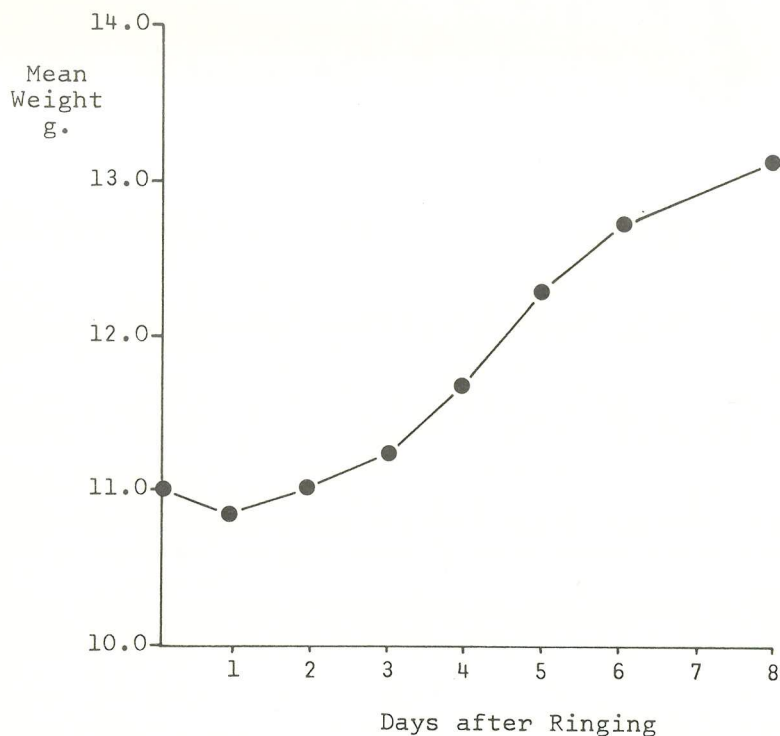


Fig. 4. The mean weight at first recapture of juvenile Sedge Warblers in August.

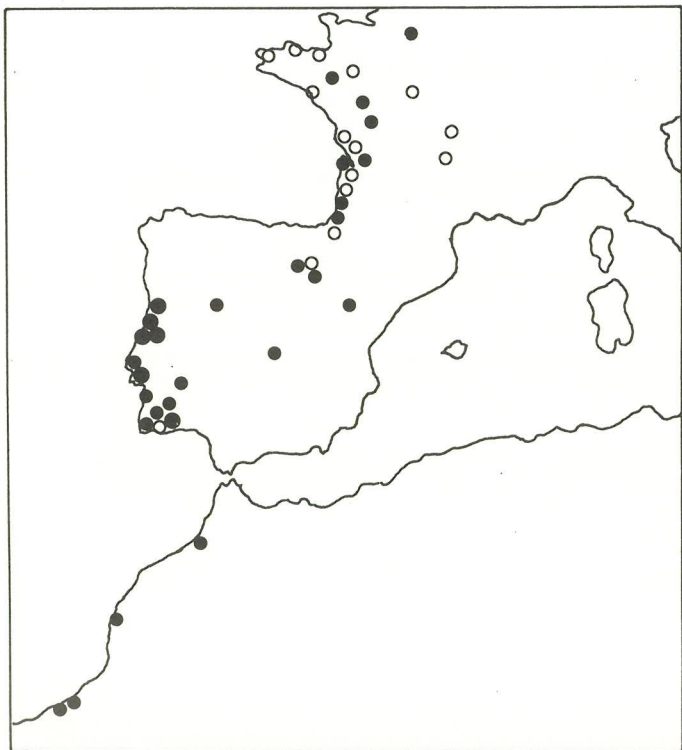


Fig. 1. Autumn foreign recoveries of Reed Warbler (●) and Sedge Warbler (○). Larger circles represent 5 recoveries in one area.

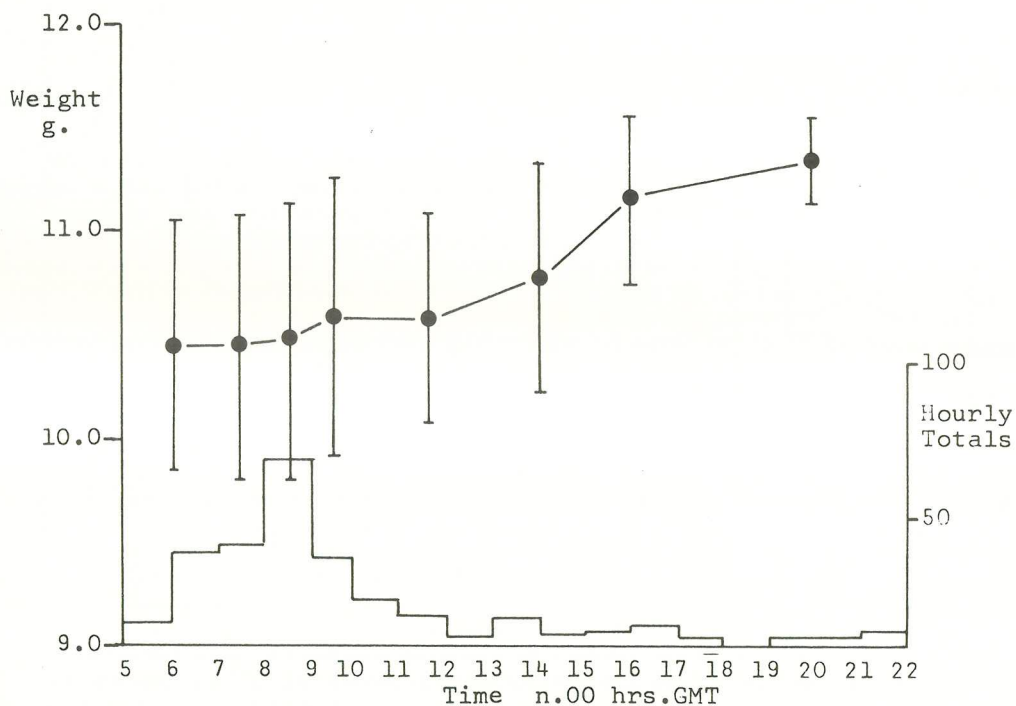


Fig. 2. Diurnal weight variation in juvenile Sedge Warblers during July. The histogram depicts numbers trapped per 1-hour interval while the graph is of the mean and standard deviation of the weights of trapped birds.

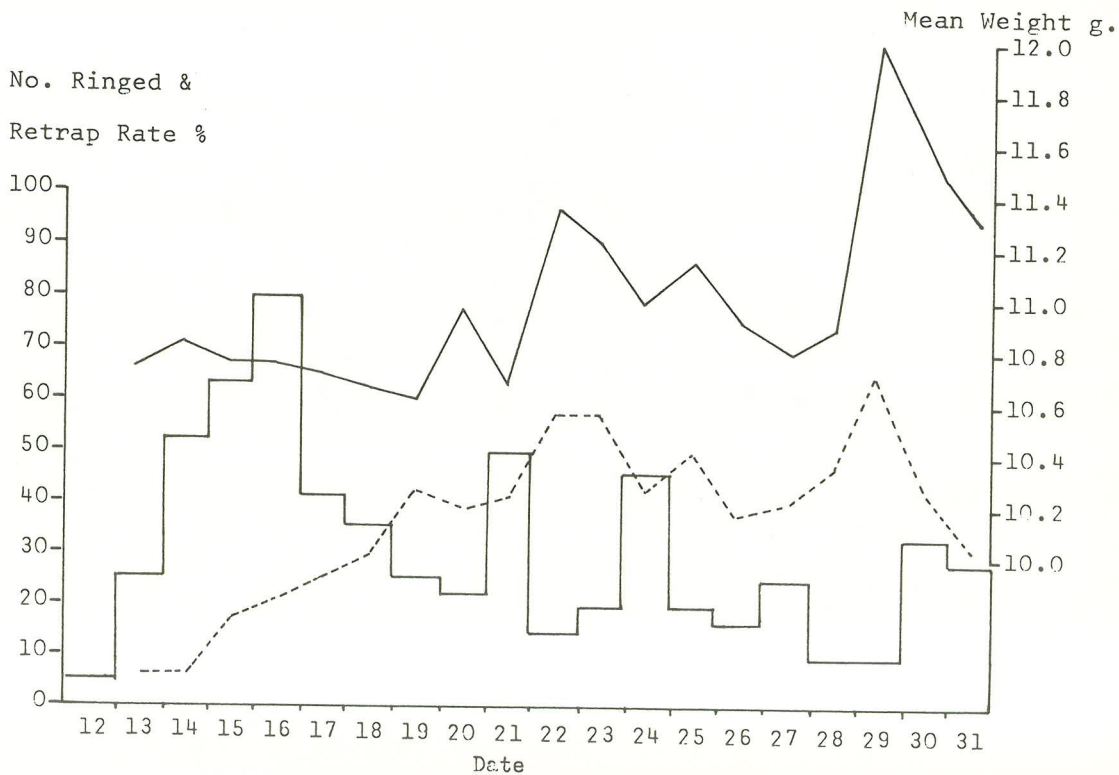


Fig. 3. Arrival characteristics of juvenile Sedge Warblers in August. The histogram depicts numbers trapped per day, while the continuous line represents the mean weight of birds ringed and the dashed line indicates the retrap rate.

THE INFLUENCE OF WEATHER AND SEASON ON THE FEEDING ECOLOGY OF THE REDSHANK

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INTRODUCTION

Winters in which prolonged frost and snow-cover occur often result in the deaths of many birds, a fact that was particularly well documented during the severe winter of 1962-3 (for example, see Dobinson and Richards, *British Birds* 57:373). However, less harsh winters may also result in large mortalities, at least in some species. This is because the low temperature at that time of year increases the birds' energy requirements and these may then be difficult to satisfy because the food supply may be sparse and, due to the short day-length, the time available for collecting it may be significantly restricted. Special conditions in some habitats may also impose further difficulties on some birds, a problem which I investigated in Redshank *Tringa totanus* on the Ythan estuary in Aberdeenshire. These birds posed an interesting problem because, in common with other birds which feed intertidally, their food supplies on the estuary were covered at high water for up to several hours each day. This raised the question of how Redshank obtained all their food requirements in mid-winter when there was a little as seven hours daylight for them to feed on the estuary. In this article, as well as describing the ways in which Redshank adapted to these apparently difficult feeding conditions, I will outline the general feeding behaviour and ecology of this population during autumn, winter and spring. The details of the methods employed and the results obtained are given in several papers now in preparation so that this article is only a summary.

The Ythan estuary is quite small, being only $4\frac{1}{4}$ miles long and never more than 800 yards wide so that observations there were relatively easy to make. Most (96%) of the feeding Redshank occurred on mud and mud/sand and both this substrate and Redshank were widely distributed over the estuary.

THE REDSHANK POPULATION

Regular counts were made between October 1963 and May 1965 of the numbers of Redshank on the estuary at low water. Only about 100 birds occurred there during the breeding season after which the numbers increased to a peak in September and October (maximum 910). This was followed by a rapid decrease in numbers during late autumn to the very variable numbers recorded on the estuary during the winter. A spring peak (maximum 740) was followed by a rapid decrease in April to the low breeding season numbers.

Alone these counts do not give an accurate picture of the population fluctuations in the area during the year although they do reflect the gross seasonal changes in abundance. This was because in late autumn, winter and early spring large numbers of Redshank fed in the adjacent fields. During the seasons of 1964-65 and 1965-66 (no data for 1963-4) in conditions when few or none occurred in the fields, there were roughly constant numbers on the estuary throughout the winter. These results suggest that there was a population of Redshank in the area during each winter which remained roughly the same size throughout and which utilised two habitats for feeding.

Small numbers of birds sometimes fed along the adjacent rocky coast but as their numbers were small compared to the estimated size of the overwintering population (about 450 birds in both seasons), little attention was paid to them.

THE DIET OF REDSHANK ON THE ESTUARY.

Redshank are mainly carnivorous and generally appear to detect their prey by sight. Typically, they wander about at a rate of approximately 10 metres a minute and may peck at the substrate at a very fast rate, often as high as 100 times a minute although slower rates are more usual. In the areas I have watched them they generally insert only the tip of the bill into the substrate although sometimes they may probe to much greater depths. Generally, however, they make brief jabs at the mud, and, unless they take something which requires a lot of handling, each feeding movement takes only a fraction of a second to execute.

The diet on the estuary was rather complex but, although eight prey species were recorded in all, only four of these were really important. The most important was Corophium volutator, an amphipod crustacean which grows to a maximum length of about 1 cm and lives in U-shaped burrows to a depth of 8cm. The remaining three species were Hydrobia ulvae, a small (up to 5 mm in length) gastropod mollusc which occurs in the surface 2 cm of the substrate; Macoma balthica, a bivalve mollusc which reaches a maximum size of about 2 cm and which lives to depths of about 10 cm; and Nereis diversicolor, the common ragworm.

A variety of extrinsic factors affected the relative proportions in which these four species were taken and the rate at which they were eaten. For example, in 1964/65 the temperature of the mud had a great effect on both the diet and the feeding rate in the two areas where these were studied. At temperatures about 6°C, the diet and feeding rate were independent of temperature and Corophium formed the bulk of the diet both numerically and in terms of biomass. At lower temperatures, however, the feeding rate decreased markedly and in one area Macoma, and in the other Nereis, were taken more frequently. Although both these were eaten in small numbers compared with Corophium, they contributed most of the biomass ingested because of their relatively large size. In one area these changes resulted in a considerable drop in the total biomass taken per unit time whereas in the other there was no change.

The influence of temperature on feeding behaviour was due to its effect on the behaviour of the prey. For example, whereas Corophium frequently protrude the head and appendages from their burrows at high temperatures, they stopped doing so at low temperatures (below 3°C), presumably as the general activity of the animals decreased. Changes in behaviour of this kind suggest that the decreasing temperature affected the availability of the prey with consequent effects on the birds' feeding behaviour. Similar observations were made during rainfall when Corophium again stopped appearing at the surface and the feeding rate of the birds was greatly reduced. It should be pointed out, however, that Redshank often took prey which were invisible to me so that the changes in prey behaviour described above merely reflect a gross change in behaviour and do not provide a direct measure of availability.

Other extrinsic factors affected the feeding behaviour of the birds, by again apparently influencing the behaviour of the prey. The dryness of the substrate and, perhaps, its depth affected the rate at which Corophium were taken, and of course, the relative densities of the different prey species in the substrate affected the diet. A complex of factors, then, had a considerable effect on both the diet and feeding rate of the birds feeding on the estuary.

THE DIET OF REDSHANK IN THE FIELDS

It was not possible in the time available to carry out detailed studies on feeding in both the fields and on the estuary, so that observations in the former were less extensive. Redshank occurred mainly on grass fields although during frost and snow they sometimes fed in fields in the process of being ploughed. A few birds were collected from both kinds of fields and their gizzards contained mainly earthworms and leatherjackets, but the factors affecting the diet and rate of feeding could not be investigated.

THE UTILISATION OF THE ESTUARY AND FIELDS

The relative use made by Redshank of the estuary and the fields depended on both seasonal changes in the daily feeding routine and on weather factors.

Seasonal changes in daily feeding routine

In autumn the birds were able to obtain all their food requirements (in the order of 40,000 prey items per day) from the estuary during the day. As the temperature at that time of year was generally above 6°C, the diet of the population as a whole consisted mainly of *Corophium*. The decreasing daylength and increasing food requirements associated with the approach of winter prevented the birds from collecting all their food from the estuary during the day even though they spent 96% of the available time in feeding. At this time of year a modification in their daily feeding routine occurred which had a great effect on the overall diet of the population. Firstly, instead of roosting at high water, as they did earlier in the season, the birds continued feeding in the fields. Secondly, the birds fed at night on the estuary (but never in the fields to my knowledge) and, instead of pecking at the substrate as was usual during the day, they fed by rapidly moving the opened bill through the substrate and so were evidently detecting their prey by touch. The small numbers of gizzards available suggest that the birds were eating molluscs, principally *Hydrobia*.

With the increasing temperature and daylength in spring, feeding at night and at high water stopped so that once again the birds were taking mainly *Corophium*.

Movements between the fields and estuary at low water

A varying number of Redshank fed in the fields at low water during late autumn, winter and early spring, and the proportion doing so depended largely on the weather. When the fields were frozen or snow-covered, very few Redshank occurred in the fields apart from those finding food by following a plough. By contrast, in rain few fed on the estuary and large numbers occurred in the fields. In the absence of these two influences, the numbers on the estuary were positively correlated with temperature so that as the temperature dropped an increasing proportion flew to the fields to feed.

The cause of these movements between the estuary and fields was probably the relative rate at which food could be collected in the two habitats. It is known that on the estuary the birds were more numerous where they obtained the most food per unit time, and it seems that the reciprocal distribution between the estuary and fields can be similarly explained. In rain, for example, the rising of earthworms to the surface would provide a readily available source of food which would presumably allow a faster rate of feeding than was possible on the estuary at the same time where rain decreased the rate of feeding. Similarly, the low rate of feeding in some areas of the estuary at low temperatures would explain the preference of Redshank for the fields in these conditions. Of course, when the food on the fields was made unavailable by snow and frost, the birds had to return to the estuary.

These changes in the daily routine and distribution and the effect of temperature on feeding behaviour on the estuary resulted in complex seasonal changes in the diet of the population as a whole. Although there are not enough data to describe this precisely, it seems that in autumn and spring most of the food of the majority of the birds consisted of *Corophium* (except during hard spells and rain), whereas in winter, *Hydrobia*, *Nereis*, *Macoma*, earthworms and leatherjackets figured largely in the diet as well.

DISCUSSION

It is obvious that in autumn and spring the Redshank were able to obtain all their food requirements each day. This was shown by their not having to feed at high water or at night, which they certainly could have done had it been necessary. By contrast, during the winter, as an adaptation to the conditions at that time or year, they spent a very large proportion of each 24 hours in feeding and this might suggest that they were having difficulty in obtaining their daily requirements. Nevertheless, the counts failed to show any winter decrease in numbers, although, of course, without further information, the possibility that emigration and/or mortality was balanced by immigration cannot be excluded.

Extremely severe and prolonged hard weather will obviously result in either massive mortality or emigration because the feeding grounds would be entirely denied the birds (cf. the winter of 1962/63). However, periods of less severe frost would also reduce the chances of the birds obtaining all their food requirements for several reasons. The fields could not

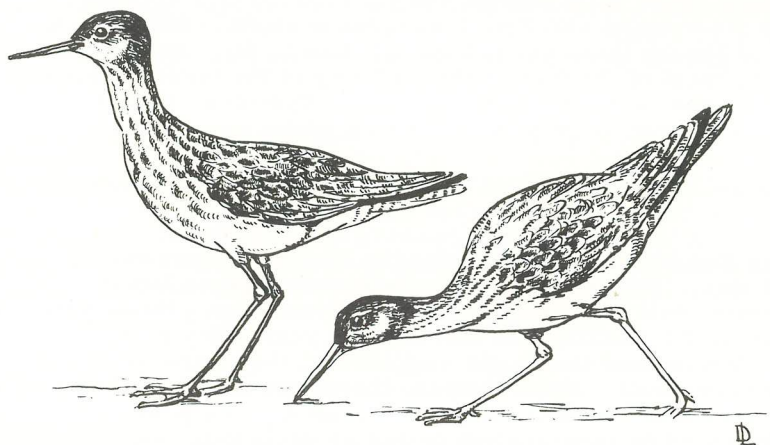
be utilised at either high or low water, unless some were being ploughed, so that the birds would be forced to obtain all their food from the estuary. During the low water period this would involve a decrease in the rate at which the food could be collected. Also, large areas of the estuary are sometimes frozen over so that the birds would be forced to feed in areas where normally they occur in only low densities. This again would probably involve a drop in feeding efficiency. At high water, apart from collecting a small amount of food from the shallow water near the tide line, the birds would be unable to feed except at neap tides. As it is common for the areas of mud exposed at neaps to be iced over, even this source of food would be denied the birds.

In severe weather, then, there are several reductions in the rate at which the food can be collected which, if the conditions persisted long enough, might prevent some birds from obtaining all their food. It is perhaps significant that the only two Redshank corpses recovered during three winters work were found during a cold spell in which the fields and large parts of the estuary were frozen over. During two other severe spells, the numbers of birds in the area were extremely low, presumably due to a temporary emigration.

It would be interesting to have systematic observations on seasonal changes in the daily routine of feeding of Redshank in the South West where the warmer winters and longer daylength may make it less difficult for the birds to obtain their food requirements. Comparison between normal and severe winters should then reveal the ways in which these birds react to varying degrees of winter severity, and determine the degree and length of severity the birds can withstand before emigration or deaths occur.

ACKNOWLEDGEMENT

This work was carried out during the tenure of a Research Studentship, for which I wish to thank the Natural Environment Research Council.



BERNARD KING, HONORARY LIFE MEMBER



Honorary life membership of the Bristol Ornithological Club may be offered (in the legal terminology of its Constitution) to 'those who are considered to have rendered distinguished service to local ornithology', and it was with great pleasure therefore that the Club learnt in January 1967 that Bernard King had accepted the invitation from the Committee to become the first Honorary Life Member.

Born in Bristol of Cornish parents Bernard attended Bristol Grammar and Kent College, Canterbury, before taking an Honours Diploma in Ceramics at Stoke-on-Trent. During the war he saw service in Africa attached to the Royal West African Frontier Force, and later campaigned in Norway with the army of liberation. In 1945 he joined the Admiralty staff in Bath as a civilian. His contribution to local ornithology is unique: the volume and continuity of records over many years to the county reports of Gloucester, Somerset, Cornwall and Dorset testify to the prodigious amount of field work he does locally each year and this is but one facet of his ornithological endeavours. Since 1947 Bernard has been Regional Organiser for wildfowl counts in Somerset; conducted an annual census of heronries in Somerset for the B. T. O. for the last 15 years; acts as Honorary Warden at the Wildfowl Trust, and has been Vice-President of the Bristol Naturalists' Society. He has contributed over sixty short notes and a joint paper to *British Birds*, and fifteen notes and two joint papers to *The Wildfowl Trust Report* in addition to contributions to local reports. Bernard's expertise in field identification has provided many 'first records' for the counties of the South-West and perhaps it was not entirely unexpected that he would eventually add a new bird to the British list - a Parula Warbler on the Scillies in October 1966.

The photograph was taken at Chew Valley Lake in February 1968 by Maurice Tibbles.

EXPLANATORY NOTES ON THE INCOME AND EXPENDITURE ACCOUNT

INCOME

Subscriptions Of £129. 5s. 6d. derived from subscriptions, £8 is advance payments for 1968 and an additional £4 is part of a five year advance payment.

EXPENDITURE

Indoor Meetings Following an overall loss on refreshments at meetings during January to April it was decided not to handle this item ourselves at future meetings.

Production and distribution of Bird News. This item is our largest single expense - the £17 consists mainly of envelopes and duplicating paper whilst the Editor's expenses are largely due to the cost of posting Bird News to Members.

Miscellaneous expenses. The solicitor's fee of £4. 14s. 6d. was for advice on the Constitution and Rules of the Club, and this expense should not occur again.

COMMENT

The sum of £40. 11s. 9d. as 'cash in hand and at Bank' at the end of the financial year may appear to be a reasonable balance for the first year of the Club's existence. As noted above £12 of the subscriptions received were advance payments, and in addition a late invoice of £5. 5s. 0d. was not included in the accounts. Therefore the balance of over £40 as shown on the next page is inflated for these reasons - £23 would be the true excess of income over expenditure for 1967. In addition the Club in its first year has not produced an annual report because the first one is this issue, the cost of which will be shown in the 1968 accounts. The cost to the Club of producing and distributing the annual report will be approximately £80 and if this expense had occurred during 1967 the Club would be over £50 in debt. Although membership is continually rising to provide a growing income from subscriptions fund-raising projects must be organised to enable the Club to maintain a firm financial structure without increasing the annual subscription.

I would like to thank Trevor Silcocks, the Honorary Auditor, for his services to the Club, and also Mike Allen, my predecessor, whose excellent book keeping enabled me to take over the Club's financial affairs with the minimum of effort at short notice.

Rosemary Lovell - Honorary Treasurer.

BRISTOL ORNITHOLOGICAL CLUB

INCOME AND EXPENDITURE ACCOUNT FOR YEAR TO 30 NOVEMBER 1967

RECEIPTS

	£.	s.	d.
Subscriptions	129.	5.	6.
Donations		15.	0.
	<u>130.</u>	<u>0.</u>	<u>6.</u>

EXPENDITURE

	£.	s.	d.			
<u>Indoor meetings</u>						
Hire of rooms	19.	19.	0.			
Speaker's expenses	8.	4.	0.			
Projectionists fees	5.	3.	0.			
Refreshments:						
Loss in January	2.	12.	0			
LESS Profit on period						
February to April	<u>2.</u>	<u>7.</u>	<u>6</u>			
		4.	6	33.	10.	6
<u>Production & Distribution of Bird News</u>						
Stationery, including block	17.	0.	0			
Printing of covers	6.	18.	0			
Editor's expenses	<u>10.</u>	<u>16.</u>	<u>3</u>	34.	14.	3
<u>Miscellaneous Expenses</u>						
Officers' Expenses:-						
Chairman	1.	16.	0			
Secretary	3.	10.	0			
Treasurer, Dec. 66-Jul. 67	1.	14.	9			
Jul. - Nov. 67	<u>16.</u>	<u>4</u>		7.	17.	1
Stationery				6.	17.	5
Solicitors fees - advice re Rules				4.	14.	6
Unrecorded payment by previous Treasurer				1.	7.	6
Cheque book	10.	0				
- less refund on unused cheques						
from Westminster Bank, Bath	<u>2.</u>	<u>6</u>		<u>7.</u>	<u>6</u>	
				21.	4.	0
				89.	8.	9
Cash in hand and at Bank				<u>40.</u>	<u>11.</u>	<u>9</u>
				<u>£130.</u>	<u>0.</u>	<u>6</u>

LIST OF MEMBERS

(up to 1st February 1968)

HONORARY MEMBER

King, B. Mayfield, 9 Uplands Road, Saltford, Nr. Bristol.

MEMBERS

Adams, Miss J. E. Flat 4, Westward, Long Ashton, Bristol.
Airey, A. F. 1 Lingmoor View, Great Langdale, Ambleside, Westmorland.
Alder, L. P. Tystie, Church End, Slimbridge, Gos.
Allen, M. J. Cambridge University, Board of Extra-Mural Studies, Stuart House, Mill Lane, Cambridge.
Andrew, P. 13 Hillburn, Henleaze, Bristol.
Angles, R. c/o Postmaster, Post Office, Filton, Bristol.
*Baggott, G. 46 Bellevue Crescent, Bristol 8.
Balfour, J. R. Garden Cottage, Bathampton, Bath, Somerset.
Barnes, Mrs R. G. Hungerdown House, Seagry, Chippenham, Wiltshire.
Beakes, G. 18 Elmleigh Road, Mangotsfield, Nr. Bristol.
Bennett, C. J. 5 Maple Gardens, Bear Flat, Bath, Somerset.
Bennett, J. P. T. Parsons Hill, Compton Martin, Nr. Bristol, Somerset.
Blackman, G. M. 3 Pendock Road, Winterbourne, Nr. Bristol.
Bland, R. Clifton College, Clifton, Bristol 8.
Blofeld, G. S. 51 Hansford Square, Combe Down, Bath, Somerset.
Bomford, T. Patefra, Cliff Road, Worlebury, Weston-super-Mare, Somerset.
Boswall, J. Natural History Unit, B. B. C. , Whiteladies Road, Bristol 8.
Brock, J. R. Natural History Unit, B. B. C. , Whiteladies Road, Bristol 8.
Bundy, J. G. 22 Winstow Road, Churchdown, Gos.
Byford, G. Patch Farm, Slimbridge, Gos.
Bywater, M. J. 53 Stonebridge Park, Upper Eastville, Bristol 5.
Cameron, Miss I. L. 44 Kellaway Avenue, Bristol 6.
Campbell, A. M. 79 Pembroke Road, Clifton, Bristol 8.
Caola, Miss S. 25 St. Martins Road, Knowle, Bristol. 4.
Castree, J. 26 West Town Park, Brislington, Bristol 4.
Chapman, S. E. Wayside, Bishop Sutton, Bristol.
Charlesworth, B. 36 Albert Road, Clevedon, Somerset.
Cleaves, T. R. Rockleigh, Beaconlea, Kingswood, Bristol.
Coate, P. West End House, Blagdon, Nr. Bristol.
Cocker, M. A. 38 Ravenswood Road, Redland, Bristol 6.
Cottle, D. A. 4 Eaton Drive, Stockwood, Bristol 4.
Crampton, Miss D. M. The Chestnuts, Norton Malreward, Pensford, Somerset.
Cullen, D. A. C. Lark Rise, Church Road, Hanham, Bristol.

Curber, R. M.	11 Weatherly Avenue, Odd Down, Bath, Somerset.
Curry, P.	172 Milton Road, Weston-super-Mare, Somerset.
D'Alessandre, L. E. J.	12 Henrietta Street, Bath, Somerset.
Davis, A. H.	119 Hillside Road, St. George, Bristol 5.
Dennison, Miss M.	6 Woodland Terrace, Bristol 6.
Diamond, A. W.	95, Church Lane, Backwell, Nr. Bristol, Somerset.
Dolton, P. J.	50 Kinsale Road, Knowle, Bristol 4.
Eatough, J. A.	116 Newbridge Road, Bristol 4.
Eddolls, K. E. K.	35 Leighton Road, Southville, Bristol 3.
Evans, Miss A. J.	42 Somerset Street, Kingsdown, Bristol 2.
Everett, Miss P. S.	80 Parry's Lane, Bristol 9.
Finch, Miss C.	1 Iddesleigh Road, Bristol 6.
*Fox, K. L.	221 Redcatch Road, Knowle, Bristol 4.
Gaymer, R.	Dept. of Zoology, University of Bristol.
Gervis, G. R.	Malthouse Mead, Harting, Petersfield, Hants.
Gibbs, Miss S.	14 Chantry Road, Clifton, Bristol 8.
Gibson, T.	Burwalls, Leigh Woods, Clifton, Bristol 8.
Goodwin, P. J.	3 Hillsdon Road, Westbury-on-Trym, Bristol.
Goss-Custard, J.	Dept. of Psychology, University of Bristol.
Gotham, Mrs J. E.	2 Northleigh Avenue, Milton, Weston-super-Mare, Somerset.
Graham, Miss C.	81 Redland Road, Redland, Bristol 6.
Graham, Miss V. E.	81 Redland Road, Redland, Bristol 6.
Gyle-Thompson, Miss R.	Old Quarry House, North Park, Gerrards Cross, Bucks.
Hall, K. J.	12a Cotham Road, Redland, Bristol 6.
Hamilton, G. H.	504a Gloucester Road, Horfield, Bristol 7.
Hargraves, Miss A. J.	6 Pembroke Road, Shirehampton, Bristol.
Harkness, R.	Sunnyholme, Wells Road, Chilcompton, Nr. Bath, Somerset.
Harrison, M. C.	Dakyns House, Clifton College, Clifton, Bristol 8.
Hending, P. F.	13 Orchard Close, Keynsham, Bristol.
Hending, Mrs P. F.	13 Orchard Close, Keynsham, Bristol.
Highway, Mrs H.	Whitegate, 29 Coneytrowe Lane, Taunton, Somerset.
Hoare, M. D.	Moorledge Farm, Chew Magna, Somerset.
Hollingsworth, Miss J.	13 Hampton Park, Redland, Bristol 6.
Holt, E. G.	The Croft, Brent Knoll, Somerset.
Holt, N. G.	Barleycombe Lodge, Christon, Nr. Axbridge, Somerset.
Holt, Mrs R.	Barleycombe Lodge, Christon, Nr. Axbridge, Somerset.
Hughes, Mrs C. E.	44 Druid Stoke Avenue, Stoke Bishop, Bristol 9.
Hyam, Miss H.	Upper Flat, 33 Cecil Road, Weston-super-Mare, Somerset.
Joy, T. R.	2 Codrington Road, Bishopston, Bristol 7.
*Kendall, M.	Tadorna, Clewer, Wedmore, Somerset.
King, Mrs M.	Mayfield, 9 Uplands Road, Saltford, Nr. Bristol.
Kington, B. L.	49 Stonebridge Park, Upper Eastville, Bristol 5.
Lacy, N. T.	43 Woodland Grove, Combe Dingle, Bristol.

*Ladhams, D. E. Willow Lodge, Breach Hill Lane, Chew Stoke, Somerset.
Lance, H. R. H. 22 Julian Road, Bristol 9.
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*Lovell, Mrs R. White Cottage, Butcome, Nr. Blagdon, Somerset.
*Lucas, A. D. 40 Royal York Crescent, Clifton, Bristol 8.
McGeoch, J. A. 15 Ash Grove, Wells, Somerset.
Manisty, M. E. Hiatt Baker Hall, Stoke Bishop, Bristol 9.
Mead, Mrs O. M. 55 Park Avenue, Chippenham, Wilts.
Mead, S. H. 55 Park Avenue, Chippenham, Wilts.
Meade-King, M. G. 5 Worcester Crescent, Clifton, Bristol 8.
Meek, J. M. c/o Redlands, Almondsbury, Nr. Bristol.
Moody, J. R. 28 Stroud Road, Patchway, Nr. Bristol.
Moon, S. J. 19 Coronation Avenue, Fishponds, Bristol.
Mumford, W. R. Coley House, East Harptree, Somerset.
Mumford, Mrs W. R. Coley House, East Harptree, Somerset.
Neal, H. W. 70 Trym Side, Sea Mills, Bristol 9.
Neville, Miss M. 7 Belmont Road, St. Andrews, Bristol 6.
Oades, R. D. 54 Reading Road, Wokingham, Berkshire.
Ogilvie, M. A. The Wildfowl Trust, New Grounds, Slimbridge, Glos.
Ormond, F. 1 Chapel Hill, Farleigh, Backwell, Nr. Bristol, Somerset.
Palmer, Miss E. M. Highfield, Sandford Hill, Bridgwater, Somerset.
Parry-Jones, J. 10 Nithsdale Road, Weston-super-Mare, Somerset.
Parsons, A. J. 7 Church Street, Crewkerne, Somerset.
Partridge, C. A. 247 Park Lane, Frampton Cotterell, Bristol.
Perrett, D. H. Greyllynch, Folly Lane, North Wootton, Shepton Mallet, Somerset.
Perriman, D. 34 Osborne Road, Weston-super-Mare, Somerset.
Poole, D. E. 9 Orchard Road, Keedwell, Long Ashton, Bristol.
Poulding, M. R. 10 West Park Road, Downend, Bristol.
*Poulding, R. H. Barleycome Lodge, Christon, Nr. Axbridge, Somerset.
Price, R. Willow Cottage, Wood Street Green, Guildford, Surrey.
*Prytherch, R. J. 38 Ravenswood Road, Redland, Bristol 6.
Rabbits, B. 4 Longwood, Broomhill Road, Brislington, Bristol 4.
Radford, A. P. 2 Wyck Beck Road, Brentry, Bristol.
Reece, S. J. M. 28 West Shrubbery, Redland, Bristol 6.
Richardson, A. Beadesert Park, Minchinhampton, Glos.
Richardson, R. A. 1 Carmarthen Road, Henleaze, Bristol.
Robinson, R. H. The Old Rectory, Biddisham, Nr. Axbridge, Somerset.
Roscoe, P. 14 Lincombe Road, Downend, Bristol.
Rutter, C. Churchill Hall, Stoke Bishop, Bristol 9.
Scott, C. S. 32 Grove Road, Coombe Dingle, Bristol 9.
Scott, P. The Wildfowl Trust, Slimbridge, Glos.
Selway, C. 39 Rock Road, Midsomer Norton, Nr. Bath, Somerset.
Selway, G. 8 Redfield Grove, Midsomer Norton, Nr. Bath, Somerset.

Senior, R. J.	20 Gilda Close, Wells Road, Bristol 4.
Shepherd, D.	Hillcot, 7 Yew Tree Way, Croydon, Surrey.
Silcocks, T. B.	Bryher, Kenmeade Close, Shipham, Winscombe, Somerset.
*Simmons, K. E. L.	11 Ash Grove, Clevedon, Somerset.
Slade, B. E.	11 Sutherland Avenue, Burnham-on-Sea, Somerset.
Smith, C. E. D.	5 Downleaze, Stoke Bishop, Bristol 9.
*Smith, K. D.	4 All Saints Road, Clifton, Bristol 8.
Smith, Miss R.	Fairways, South Esplanade, Burnham-on-Sea, Somerset.
Smith, R.	9 Grove Park Avenue, Bristol 4.
Sparks, J. S.	Natural History Unit, B. B. C. , Whiteladies Road, Bristol 8.
Stocker, Mrs J.	25 Shaldon Road, Bristol 7.
Stone, W. J.	69 Niblett's Hill, St. George, Bristol 5.
*Thearle, Mrs P.	16 North Road, St. Andrews, Bristol 6.
*Thearle, R. F.	16 North Road, St. Andrews, Bristol 6.
Thornhill, H. A.	Heddon, 50 Church Lane, Backwell, Bristol.
Threlfall, G. P.	99 Sommerville Road, Bristol 7.
Tibbles, M.	Shearwater, 18 Lime Grove, Alveston, Glos.
Upton, W.	Glen Lynn, St. Saviours Road, Larkhall, Bath, Somerset.
Vine, I.	7 Richmond Dale, Clifton, Bristol 8.
Vinicombe, K. E.	3 Withypool Gardens, Whitchurch, Bristol 4.
Walsh, T. P.	76 Kingshill Road, Dursley, Glos.
Walton, Miss G.	5 The Worthings, Lympsham, Weston-super-Mare, Somerset.
Walton, M.	Badock Hall, Stoke Bishop, Bristol 9.
Warden, D.	Centaur, Ham Lane, Bishop Sutton, Nr. Bristol, Somerset.
Webb, N. R.	45 Egerton Road, Bishopston, Bristol 7.
Webber, W. J.	Thornfalcon, Ballfield Road, Minehead, Somerset.
Welshman, M. D.	Hiatt Baker Hall, Stoke Bishop, Bristol 9.
Willis, Miss A.	Rectory Cottage, Ubley, Somerset.
Young, K. B.	12 Clifford Gardens, Shirehampton, Bristol.
Young, Mrs M. J.	12 Clifford Gardens, Shirehampton, Bristol.

* General Committee Members.

ACROSS

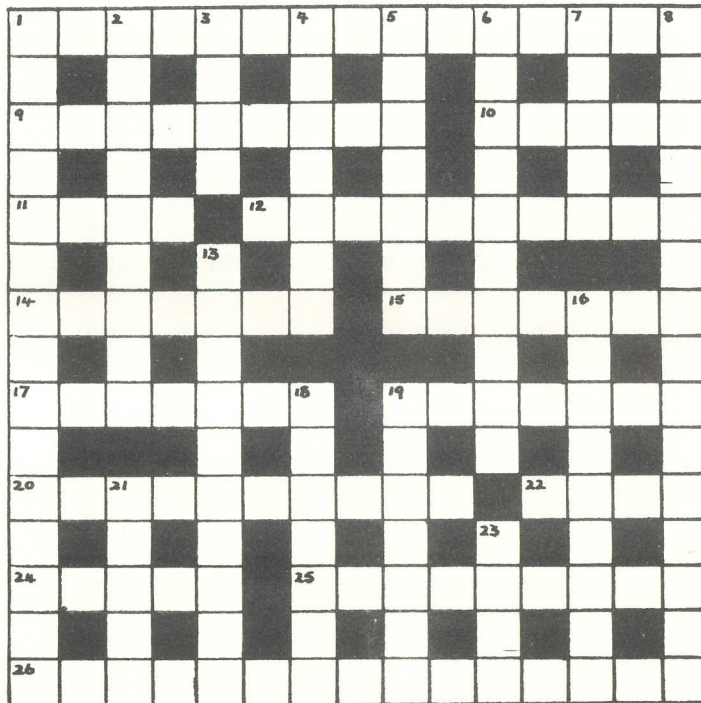
1. These are not fly-by-nights (7,8)
9. Some are spotless
10. My heart is in Malta or Tangiers
11. 15 across is one
12. Does this bird frolic on the sands? (6,4)
14. Bitterns in the spring
15. Bird in the back room with a female
17. All past when around (4,3)
19. Aquatic sub-order
20. Not pinioned (4-6)
22. Bunting
24. John and I find a mythical bear
25. Home to those thin entwined endoparasites (2,3,4)
26. African runner (8,7)

DOWN

1. Bird of North African deserts (6,9 — English name no longer in common usage)
2. All agreed
3. Not a bird perch
4. "When three gray wrangle for the seed" (Tennyson's 'Guinevere')
5. Water may go up in this (2,5)
6. but not this (5,5 — see 13 down)
7. Roman opera
8. Authors of African avifaunal work (5,3,7)
13. You can see this at Slimbridge
16. Ornithological family
18. A Latin fisher in a pond
19. Cats I pet are not infected
21. Place in Sarawak
23. 6 down may be on this

Eighteen answers have an ornithological connotation. Answers should be sent to the compiler, K.D. Smith, 4 All Saints Road, Clifton, Bristol 8, by 18 May 1968. A book token to the value of 30/- will be given to the sender of the first correct solution opened on this date. Please mark the envelope Xword.

BrOC CROSSWORD No.1



Please use the loose copy for your competition entry.

CONSTITUTION AND RULES

These rules shall comprise the constitution and rules of the Club.

1. Name. The name of the Club shall be the 'Bristol Ornithological Club'
2. Objects. To promote, encourage and co-ordinate the scientific study of ornithology in all its branches in the Bristol area, by:-
 - 1) Holding regular indoor and field meetings throughout the year.
 - 2) Publishing a monthly bulletin, known as 'Bird News' and also an Annual Report.
 - 3) Helping and encouraging beginners in ornithology through assistance in the field and special indoor meetings.
 - 4) Supporting and assisting conservation projects through active co-operation with local organisations.
 - 5) Promoting field research through co-operative and individual studies.
 - 6) Promoting the establishment of special study areas at Chew Valley Lake and other suitable sites.
3. Membership.
 - 1) Membership shall be open to anyone interested in ornithology.
 - 2) There shall be two classes of members:
 - (a) Ordinary members, who shall pay an annual subscription, and
 - (b) Honorary Life Members, who shall not pay a subscription.
 - 3) Honorary Life Members shall be those who are considered to have rendered distinguished service to local ornithology and who must be elected by a two-thirds majority at the Annual General Meeting. Nominations shall proceed from the General Committee. The number of Honorary Life members shall be FOUR.
 - 4) Each applicant for membership shall sign an application form and shall be proposed by an existing member. The general Committee shall consider each application and have the power to approve or refuse membership by a simple majority vote.
 - 5) The amount of the annual subscription shall be decided at the Annual General Meeting by a simple majority vote; it shall become payable on January 1st.
 - 6) The General Committee shall have the right to terminate the membership of any person who in its opinion has acted against the interests of the Club or any person whose subscription is three months in arrears.
 - 7) Any person whose subscription is in arrears shall forfeit his rights as a member until his subscription is paid.
4. Officers and Committees
 - 1) The administration of the Club, including its financial affairs, shall be vested in a committee of not more than twelve persons which shall be called the General Committee.

- 2) The General Committee shall consist of the three officers mentioned below (sub-section 3) and not more than nine other members.
- 3) The principal officers of the Club shall be:
 - a) the Chairman
 - b) the Secretary, and
 - c) the Treasurer.The General Committee shall have the right to create other officers from among its own members.
- 4) Any two members of the General Committee shall have the right to call a General Committee meeting by giving all other members of the General Committee fourteen days notice in writing.
- 5) A quorum for a General Committee meeting shall be five.
- 6) The General Committee shall have the right to co-opt up to three additional members for special purposes, but these co-opted members shall NOT have a vote and their appointment shall be reviewed at each General Committee meeting.
- 7) The General Committee shall have the right to appoint sub-committees from its members to be responsible to the General Committee, and to furnish it with regular reports.
- 8) The General Committee shall have the power to fill such temporary vacancies as may occur among the officers and members of the General Committee between one Annual General Meeting and the next.
- 9) The three Officers mentioned in sub-section (3) above shall be elected annually at the Annual General Meeting and shall be eligible for re-election.
- 10) The nine other General Committee members shall be elected at the Annual General Meeting for a term of three years, and three such members shall retire annually; these shall be eligible for re-election.
- 11) Nominations for Officers and for vacancies on the General Committee shall be in the hands of the Secretary at least four weeks before the Annual General Meeting.

5. Business Meetings.

- 1) An Annual General Meeting shall be held in December each year on a date fixed by the General Committee at least six weeks beforehand; notice of any resolution shall be in the hands of the Secretary at least four weeks beforehand and the agenda circulated to all members two weeks beforehand.
- 2) The main business to be transacted at the Annual General Meeting shall be as follows:
 - (1) Chairman's address.
 - (2) Secretary's report.
 - (3) Treasurer's report.
 - (4) Review of annual subscription.
 - (5) Election of Officers.
 - (6) Election of General Committee members.
 - (7) Election of Honorary Auditor.

3) At least twenty-five members may petition any member of the General Committee to call an Extraordinary General Meeting. All Club members must be notified in writing at least six weeks before the date of such meeting.

6. Dissolution of the Club.

- 1) The Club may only be dissolved by a Special Resolution, circulated beforehand to all members at a properly constituted General Meeting. It must be passed by a three-fourths majority vote of the total membership.
- 2) In the event of the dissolution of the Club assets shall be sold and all money shall be donated to such organisation (s) for the furtherance of ornithology as shall be decided by a simple majority vote at the same General Meeting.

(Approved by the General Committee 6 April 1967)



