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LAKELAND
BIRDLIFE

1920 — 1970

By

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INTRODUCTION.

Lakeland is the area of north-west England comprising the counties of Cumberland and Westmorland with the Furness division of the County Palatine of Lancashire. On its western seaward side it is bounded by the Solway Firth and part of the Irish Sea: further south by Morecambe Bay. Its eastern boundary is mainly the Pennine fells, beginning with the Tindale fells to the east of Brampton and continuing south to the Winton fells east of Kirkby Stephen. The coastline is mainly low-lying, with numerous salt-marshes adjoining the Solway Firth from Rockcliffe to Skinburness: to Maryport open coastline with areas of sand-dunes; then an industrial area from Workington to Whitehaven culminating in the red sandstone cliffs of St. Bees Head that rise to 365 feet. South of St. Bees Head the coastline becomes low-lying and open, with sand dunes about the Ravenglass estuary, then the Duddon estuary with its salt-marshes. Morecambe Bay, which forms its southern boundary, is an area of outstanding natural beauty, with limestone fells presenting a combination of flat cervical pavement and aboriginal woodland. There is a considerable area of limestone country in the triangle formed by Shap, Ravenstonedale and Appleby.

The main fells of Lakeland, with their attendant lakes, fill most of the centre of Lakeland, with four fells reaching above 3,000 feet altitude. They are often craggy and precipitous, in places boulder-covered, the vegetation usually grass or bracken, many have juniper bushes or remnants of aboriginal oak-woods on their flanks. The Pennine fells which form the eastern border have a smoother outline and often peat-covered summits and reach their highest altitude in the plateau-summit of Crossfell, altitude 2,930 feet, and home of the "helm wind" which, in full blast, is the scourge of the Eden valley from Appleby to Kirkby Stephen. In many places these Pennine fells are girdled with mural escarpments of limestone and sandstone and locally of whin sill, a form of basalt.

Between the northern Lakeland fells and the Solway Firth lies the plain of Cumberland, devoted entirely to stock-farming and extending on its north-eastern edge to the uplands of Bewcastle and Spadeadam, parts of which are now planted with conifers.

During the fifty year period with which this book deals there have been considerable changes in the farming techniques of this area. The tractor has replaced the horse, the combine the self-binder, the

stackyard has practically disappeared from most farms, and many former milking-byres are now milking-parlours and the cows are housed loose in large sheds and feed themselves at the silage pit. Hay-making has largely given way to silage-making, turnip-fields only occur on the more conservative farms, and barley is the main cereal crop.

This is a personal record by one naturalist of the changes he has noticed in the bird life of the area over fifty years, and is based entirely on the writer's fieldwork during that period. I have not copied from any book or individual, and all records and data are based entirely on my own knowledge and experience.

R. H. BROWN.

Lakeland Birdlife

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THE RAVEN *Corvus c. corax*.

In the spring a pair of Ravens will soar to a considerable height above the breeding-crag, the pair almost meeting then widely separated: planing upside down and calling with clear bell-like notes, finally diving head first and planing upside down close to the actual nest-site. At a nest ready for eggs a pair of Ravens suddenly came over the crag-tops: one bird, presumably the hen, flew away without any outcry. The cock circled around and planed upside down three times, calling the "pruk-pruk" notes repeatedly: then flew slowly along with head and neck outstretched, wings with primaries separate, and tail used as a rudder. It finally settled on a top crag where it called for some time.

A clutch of five eggs on 25th February is the earliest record but in most years egg-laying begins in the last two or three days of February. A six-egg clutch is common and one seven-egg clutch has been seen. The young are in the nest for up to forty-six days before flying: the earliest brood flying on 30th April, the latest on 13th June. The young Ravens call and flap their wings a good deal in the final two or three days before they leave the nest. The adults show great emotion at times when their young are threatened by the approach of human beings: they will hover with legs outstretched a few feet above the nest: alight on a rock-face nearby and pull up grass or heather; fly around a few feet above the intruder's head, with primaries separated, uttering the deep "pruk-pruk" notes.

The young, on leaving the nest, will remain about the breeding-crag for five to six weeks with the adults still in attendance on them.

There are usually two or more alternative nest-sites about the breeding-crag: the same nest-site may be used for four years in succession or again a different site may be used in each of the four years.

One May day a pair with well-grown young in the nest were about their breeding-crag when a strange pair entered the valley: at once the breeding-pair attacked them and drove them out of the valley. Another May day three young Ravens, on the wing, were chased about the crags by the breeding-pair of Peregrines that shared

the crags with the Ravens. The Peregrines chased the young Ravens from one end of the crags to the other: the young Ravens were never struck but there were several "near misses" and they were forced to alight on the crags and cower down. The young finally returned to the end of the crags where the nest was and one young Raven at once flopped into the nest where it was twice fed by an adult. At another crag where Raven and Peregrine were breeding, the Falcon chased an adult and two young about the crags, on one occasion the Falcon dived headlong at the adult Raven which turned on its back to present its talons to the attacker.

The majority of fell nest-sites lie between 1,000 feet and 2,000 feet altitude with occasional sites up to 2,400 feet. A common nest-site is a sloping ledge with an overhang: one nest-site used four years in succession was partially shaded by a wild-rose bush. Tree nests have been in alder, larch, Scots pine, mountain ash and large hawthorn bush.

One July day, as I was passing a known breeding-crag, what I assumed to be the two adults were "sporting" with each other when the cock attempted coition in mid-air but was repulsed by the hen.

It is seldom that a Raven is seen feeding at the carcase of a dead sheep—their main diet—but a Raven and a Buzzard have been seen disputing over the carcase of a red deer. Both adults and young throw up their undigested food in the form of pellets. One October day a pair of Ravens persistently dived down on a pair of Carrion Crows and drove them away from the carcase of a dead sheep near some crags which the Ravens evidently considered to be their property. Again one December afternoon a pair of Ravens were about their breeding-crag when a solitary Carrion Crow came up the valley: at once both Ravens attacked it and drove it down the valley.

Some breeding-pairs frequent their breeding-crags throughout the year: non-breeding birds flock and wander about the fell-tops. Thus a flock of twenty birds in late August about Harter Fell: fourteen birds in October and November about the High Street fells: sixteen in March on the plateau-summit of Crossfell.

At the Pennine roost visited one December day, forty Ravens were present by dusk; three years later in October twenty-one birds were present. Numerous white faeces droppings and odd scattered primary-feathers indicated the actual roost-site on the crags. Birds were soaring and gliding in pairs—some in threes and fours—above the crags or bunched together in a loose flock, dropping gradually to alight on the crags. Calling was frequent—the deep "pruk-pruk" also the clear bell-like double note with occasionally the harsh grating-call. A Peregrine, disturbed from a range of lower crags below the Raven roost, silently winnowed along the face of these lower crags, then with a graceful upward sweep alighted on a small perpendicular outcrop where it remained.

In late December a flock of eleven Ravens passed over Sunbiggin Tarn shortly after mid-day, coming from the direction of the Tebay fells and heading for this Pennine roost.

This Pennine roost is no longer used. In July, 1954, many white faeces droppings and numerous scattered flight-feathers about another range of crags some miles further south indicated another Raven roost.

A Raven was flushed from four eggs in a crag-nest on 25th April: on 2nd May the nest was empty, then on 15th May a Kestrel was flushed from four eggs in this nest and young were safely reared. A rock-ledge occupied by Buzzards one year was occupied the following year by Ravens, whilst in crags occupied by Ravens and Peregrines a regular exchange of nest-sites may occur, the Peregrine laying in last year's Raven nest and the Raven nesting on the ledge formerly occupied by the Peregrine.

Eight breeding-pairs to 180 square miles of fell devoted entirely to sheep farming is a good average breeding density. Recoveries of ringed birds indicate a local migration from the Lakeland fells in a S.E. direction to the Yorkshire dales and moors.

THE HOODED CROW *Corvus c. cornix*.

The Hooded Crow is an irregular autumn and winter visitor to the Solway coast and the lowland farming area. Largest flock, forty birds feeding in a standing field of oats north of Bassenthwaite in October, 1927.

THE CARRION-CROW *Corvus c. corone*

The Carrion-Crow is abundant throughout Lakeland, especially where there are no gamekeepers to keep the species in check. Nest-building is from mid-March onwards, both sexes building the nest and also lining it with wool. Full clutches by the end of the first week in April: two pairs, breeding in localities at altitudes of 300 feet and 1,300 feet respectively, had clutches of four eggs by 8th April. A tree-nester on the fells it often nests in hawthorn bushes; two occupied nests in hawthorns were 55 yards apart. It breeds up to 1,800 feet altitude on the fells: one pair built a nest on a rock-ledge on low crags and within one hundred yards another pair nested in a mountain-ash. First broods are flying from 20th May onwards.

On 25th April, 1925, a Carrion-Crow was flushed from a nest in an oak tree that held five eggs of the Crow and one egg of a Tawny Owl. Presumably during the interval between the Crows finishing the nest and beginning laying the Tawny Owl took possession and laid one egg only to be ejected by the rightful owners. As Crows are notorious egg-stealers, it is strange they had not eaten this egg. On two occasions a Carrion-Crow has laid in an old tree nest of a Buzzard, in mountain-ash and hawthorn, and in each case no fresh lining was added by the Crow.

Seven pairs nested one year on a 200 acre lowland farm and five pairs on a 120 acre lowland farm, the nests of the five pairs being about 400 yards apart. Three pairs nested in alders along a one-mile stretch of fellside beck. In a small Scots pine plantation a Carrion-Crow with four eggs was sited thirty yards from a Kestrel with five eggs which were in an old nest of a Crow. In a fellside ghyll a Carrion-Crow with three fledged young in a mountain-ash was 180 yards from a Kestrel with six small young in an old nest of a Crow in a Scots pine.

Carrion-Crows are very noisy about their nesting trees in November and December, with three to five birds calling and chasing one another, and it is possible some form of pairing-up takes place. In wooded river valleys a regular winter roost of several dozen birds may take place: one winter a flock of twenty-four birds roosted in a group of pines by the water's edge at Haweswater.

There is constant friction between the Carrion-Crow and both the Kestrel and the Sparrowhawk. The Kestrel often has to take refuge in a tree to escape the attacks of the Carrion-Crows, calling loudly, whilst the Crows repeatedly dive at it. A pair of Carrion-Crows will also pester the Sparrowhawk, diving on the hawk as it circles to gain height. On one occasion a Sparrowhawk had struck down an adult Lapwing in a stubble-field, and began plucking the Lapwing, which was still alive, when a pair of Carrion-Crows repeatedly dived at the hawk and forced it to leave hold of the Lapwing, which promptly flew off in one direction and the hawk in another direction with the Crows still in pursuit. The Carrion-Crow will also pester any fox about in the daytime, calling and swooping down on the fox as it trots along by a hedgerow or across the base of a fell.

The Carrion-Crow is most destructive in the spring when the eggs or small young of other nesting birds are taken: known nest-sites in gardens are regularly visited, especially around dawn, when human beings are not astir, and this raiding is carried on until the end of June.

THE ROOK *Corvus f. frugilegus*.

The Rook breeds throughout the lowland farming area up to the fell-bases, with rookeries commonly sited around large country houses or farm-houses or churchyards, and in roadside trees or small woods, and wherever there is plenty of good grassland.

In March, 1930, birds were nesting in stag-headed beech trees around a farm-house at Kirkbride: one tree held nineteen nests. It nests in deciduous trees or conifers and rookeries are visited almost daily throughout the year. Coition can take place from December onwards: 9th December, a pair about a nest-tree, the hen fluttered her wings and the cock flew to her and mated, the hen then flew to the nest in an adjacent tree and laid a twig on the nest. Twenty-third

December, a pair in a grassfield, the hen fluttered her wings and opened her beak wide, the cock mounted and mated. Feeding of the hen by the cock noticed from 9th January onwards.

Nest-building is general from the last week in February in most years: thus on 23rd February, 1951, nest-building was continuous at the rookeries at Eskrigg, Aikton, Evening Hill and Gill: a distance of *c.* nine miles from Eskrigg to Gill. Both sexes build, one usually on guard against stick-pilfering by other Rooks, with the bird bringing the sticks working them into the nest. The nest-lining of dead leaves is also carried by both sexes.

From late May until the end of July the birds of a rookery will roost in a hedgerow near the rookery: the main roost is not used before the end of July and thence throughout the autumn and winter months until early March. Birds of several rookeries join up to form the main roost.

Outside the breeding season the rookery is visited almost daily except during wild and stormy weather. Thus one November day the Rooks arrived at Eskrigg rookery about 7 a.m., circled around above the nest-trees for a while, then settled in the trees. One Rook took sticks from an unoccupied nest and worked them into its own nest, its mate leaving the nest to allow building. Another day in late November a pair arrived in a nest-tree whereupon the hen fluttered her wings and elevated her tail as if desiring coition. One December day, with six inches of snow on the ground and hard frost, the Rooks were sitting about the nest-trees at Gill rookery, fan-tailing and cawing and, at times, groups of three birds were performing the "follow-my leader" slow-motion flight. The Rooks arrive shortly after daybreak over the rookery, and will circle around above the trees for up to ten minutes, occasionally alighting in the trees and then quickly rising with much cawing. Finally all settle in the trees. In the evening the birds forming the roost usually assemble in a field nearby and then about dusk fly with much cawing into the roost-trees.

Egg laying is from mid-March, and in most years the first broods are flying by the end of the first week in May, with 4th May as the earliest record.

On the Solway coast the Rooks visit the mussel-beds in the autumn and winter months in company with the Oyster-Catchers: in July and August flocks in the fell-districts visit the fell-tops for the craneflies and other insect life. Acorns are taken in the autumn and visits made to harvest fields, especially where the corn has been "laid" by heavy rain and wind. In the spring Rooks visit the arable fields, chiefly when cultivating and harrowing are in process, in order to get the earthworms and wireworms and beetles thus exposed. In winter during frost they turn over scaled muck in search of insect life, and visit sheep and cattle-troughs for any possible food.

On calm sunny days in September and October there is often a great aerial display by the entire flock of a rookery, the birds circling around to a considerable altitude, then diving earthwards at great speed, twisting and side-slipping during the descent, to the accompaniment of much cawing from all the birds taking part in the display.

THE JACKDAW *Corvus monedula spermologus*.

The Jackdaw is often associated with the Rook in the winter flocks and roosts: in the early spring when the Rooks have ceased roosting at the main winter-roost, as they are then roosting at their rookeries, small parties of Jackdaws will still frequent the winter roost up to mid-April. Also small flocks of Jackdaws have been found feeding on the fells up to 1,500 feet altitude during the last week of April.

In the lowland farming areas the Jackdaw commonly breeds in holes in parkland trees or if allowed in house chimneys: a disused quarry-face or a rock-face in a wood are common nest-sites and on the lower fell-slopes a disused lime-kiln or the odd rabbit hole.

Regular visits are made to the nest-sites throughout the autumn and winter months, the flock circling above the quarry-face or rock-face with much "chacking," the birds making repeated headlong dives to within a few feet of the quarry-top or rock-top, finally to settle in pairs outside the holes where they breed. Coition noted from 7th November onwards. Nest-building by both sexes from early April onwards, earliest clutch five eggs on 24th April. In most years young are hatched from mid-May onwards, 10th June earliest date for fledged young.

The Jackdaw feeds commonly with the Rook in the grass fields and arable fields and takes a good deal of insect life, especially beetles. Hazel bushes are visited in the autumn for the nuts. It is a notorious egg-stealer and will take the small young of garden nesting birds.

In May, 1930, a nest of five eggs, with a very deep cup and slightly arched over with sticks, was found eighteen inches below a Heron's nest with three young in a tall spruce tree at Over Water. The five eggs hatched out but about ten days later the young had disappeared: probably the Herons had taken the young Jackdaws to feed to their own three young which were successfully reared. Another stick-nest with four eggs was found in an oak tree in May, 1939.

AVERAGE BROOD REARED BY CORVIDAE

SPECIES	No. Broods	5 Young	4 Young	3 Young	2 Young	1 Young	Av. Brood
Raven	... 92 ...	3 ...	34 ...	33 ...	17 ...	7 ...	3.16
C.-Crow	... 48 ...	5 ...	14 ...	20 ...	7 ...	2 ...	3.26
Rook	... 130 ...	— ...	10 ...	41 ...	51 ...	28 ...	*2.25
Jackdaw	... 41 ...	— ...	13 ...	17 ...	7 ...	4 ...	2.95

*Low average brood of the Rook may be partly accounted for by the annual spring shooting that is carried out at most large rookeries.

RECOVERIES OF RINGED RAVENS*.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
406410	Skiddaw Fells, Cumb. 9.4.49	Mossdale Moors, Hawes, Yorks. 1.5.50	45 Miles S.E.
408162	Skiddaw Fells, Cumb. 11.4.53	Nr. Leyburn, Wensley- dale, Yorks. —.12.53	55 Miles S.E.
408174	Skiddaw Fells, Cumb. 25.4.54	Stowgill Moor, Kaber, West. 20.10.54	40 Miles S.E.
409584	Skiddaw Fells, Cumb. 16.4.55	Melmerby Fell, Cumb. 21.7.58	20 Miles E.
412110	Helvellyn Fells, Cumb. 20.4.58	Warcop, West. 5.6.59	25 Miles S.E.
412180	High St. Fells, West. 20.4.58	Gt. Whernside, Yorks. 4.1.62	35 Miles S.E.
410486	Skiddaw Fells, Cumb. 30.4.60	Askrigg, Yorks. 6.8.61	45 Miles S.E.
414466	Skiddaw Fells, Cumb. 30.5.62	Orton Scar, Appleby, West. 29.2.64	25 Miles S.E.
414469	Keswick, Cumb. 28.4.63	West Burton, Yorks. 28.5.64	40 Miles S.E.
423463	Skiddaw Fells, Cumb. 26.4.64	Where ringed 18.5.64	—
417598	Helvellyn Fells, Cumb. 19.4.64	Wikerfield, Appleby, West. 13.10.64	20 Miles S.E.
425250	Bassenthwaite, Cumb. 18.4.68	Nr. Askham, West. 23.10.68	25 Miles E.
426915	Skiddaw Fells, Cumb. 19.4.69	Holwick Fell, Teesdale, Yorks. 21.4.71	55 Miles E.
426916	Skiddaw Fells, Cumb. 19.4.69	Whinfell, Penrith, Cumb. 18.4.71	15 Miles E.S.E.
426919	Skiddaw Fells, Cumb. 19.4.69	Denton Fell, Brampton, Cumb. 2.5.71	18 Miles N.E.
423402	Bassenthwaite, Cumb. 26.4.70	Greenodd, Ulverston, Lancs. 10.1.71	35 Miles S.S.E.

The oldest Raven recovered was 3½ years old. The pronounced movement to the south-east may be accounted for by the presence of a winter roost in that area.

*All the birds recovered of the various species were ringed as nestlings unable to fly apart from an adult hen Redstart and adult hen Swallow.

RECOVERIES OF RINGED CARRION-CROWS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
27112	Nr. Skirwith, Cumb. 24.5.26	Where ringed —.4.27	—
28757	Nr. Skirwith, Cumb. 3.6.27	Alston, Cumb. 17.4.29	10 Miles N.E.
AH424	Nr. Skirwith, Cumb. 15.6.30	Kirkoswald, Cumb. 19.5.31	6 Miles N.N.W.
327696	Kirkland, Cumb. 10.6.46	Clappergate, West. —.7.48	26 Miles S.W.

RECOVERIES OF RINGED ROOKS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
75838	Nr. Renwick, Cumb. 30.4.25	Alston, Cumb. 12.7.25	10 Miles E.
77387	Nr. Renwick, Cumb. 30.4.25	Where ringed —.4.28	—
78936	Nr. Renwick, Cumb. 23.4.26	Nr. Penrith, Cumb. 14.4.28	9 Miles S.W.
77383	Nr. Renwick, Cumb. 30.4.25	Nr. Kirkoswald, Cumb. 2.2.29	5 Miles W.
78949	Nr. Renwick, Cumb. 23.4.26	Lilburn, Northd. —.8.29	30 Miles N.E.

RECOVERIES OF RINGED JACKDAWS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
77438	Nr. Dalston, Cumb. 11.6.25	Carlisle, Cumb. 24.2.27	4 Miles N.
RR1884	Mungrisedale, Cumb. 13.6.28	Greystoke, Cumb. —.5.31	5 Miles E.
RT4271	Dalston, Cumb. 2.6.32	Where ringed 14.4.34	—

The oldest Carrion-Crow recovered was 2 years 1 month old, and showed the furthest movement, yet no more than a local movement.

The oldest Rook recovered was 3 years 10 months old, and showed little movement: another at 3 years old was reported from the rookery where ringed as a pullus, and was presumably breeding there. A third bird was recovered in Northumberland and showed the furthest movement, and again no more than a local movement.

The oldest Jackdaw recovered was 2 years 11 months old and indicated only slight local movement.

THE MAGPIE *Pica pica pica*.

The Magpie, regarded as "vermin" by gamekeepers and sportsmen, is fairly widespread throughout the lowland farming area and occurs in the more sheltered and wooded fell-valleys up to 1,200 feet altitude.

In early autumn Magpies will gather in small parties in a clump of trees or hawthorn bushes where displays of a ceremonial nature take place. 17th October is the earliest date for such an autumn assembly, but during February and March such assemblies are common, which suggests a connection with courtship. A typical display was seen on 16th February when seven birds were chattering in the top branches of an oak tree, chasing one another about the branches, at times uttering a series of softer "chōōk, chōōk" notes. Also at intervals three birds would fly from the tree, separately, perform a short flight, then return to the same branch.

When allowed the Magpie will use the same tree for nesting during several years, and will build a new nest on the foundations of the old nest. Nest-building begins from mid-February onwards and one year the nest, complete with lining, was ready for eggs by 15th March. Both adults build the main structure but the lining, usually of fibrous roots, is probably the work of the hen. At nests visited early on a morning moist earth has been found adhering to the roots, suggesting that the Magpie collects live roots for the nest-lining.

Although fibrous roots are the usual lining, nests have been found lined entirely with binder-twine or horse-hair or even waste paper. One nest built in a sycamore tree was lined entirely with oak leaves.

Data on seventy-nine nest-sites gave 42 in hawthorn; 12 in Scots pine; 7 in larch; 5 in crab apple; 4 in oak; 3 in silver birch; and 2 each in alder and ash and sycamore.

6th April is the earliest date for a clutch of five eggs, with 10th—22nd April as the average laying period for first clutches. An eight-egg clutch is not unusual. As with all the Corvidae family the number of young reared varies according to the food available and when food is scarce one or more young "disappear" from the nest.

Magpie and Jay often breed in the same wood or plantation. Thus a brood of four young Magpies in a tall hawthorn bush was 70 yards distant from a brood of six young Jays in another hawthorn; also a brood of three young Magpies in an oak tree was 55 yards distant from five young Jays in a silver birch. I have also a record of three fledged Magpies in a nest in a Scots pine only 25 yards from an eyrie of five young Sparrowhawks in another Scots pine.

Reliable data on the breeding densities of Magpie and Jay are not easy to obtain owing to both species being treated as "vermin," but a certain wooded area of the Shawk valley, two miles in length, with odd wooded ghylls extending up to three hundred yards in length

running off it, will normally support up to seven pairs of Magpies and three pairs of Jays.

One year a pair of Wood-Pigeons nested in the same hawthorn bush as a pair of Magpies, the two nests distant three feet apart, each built against the main stem, the Magpies occupying the upper nest. The Magpies reared two young: the Wood-Pigeons hatched out two young but these vanished when about half-fledged and I imagine the Magpies were responsible for their disappearance.

Both Magpie and Jay are expert egg-stealers. I have on a few occasions seen a Magpie rob a nest and usually the eggs are carried away singly, laid on the ground, broken and eaten.

Magpies will perch on the backs of sheep searching the fleeces for insects, and throughout the winter months will overturn the dung-platts of cattle in search of grubs or beetles. In late autumn parties of Magpies hunt for slugs and beetles in young clover-hay fields exposed after the corn crop has been harvested.

Winter roosting in pine plantation or silver birch wood or even a dense hawthorn thicket occurs up to the last week in April. The largest roost recorded was ninety birds.

THE JAY *Garrulus olandarius rufitergum*.

The Jay is locally numerous in the deciduous woods around all the major lakes, with the central lake region as its stronghold, but in the game-preserving woods it is not tolerated.

The Jay is more secretive in its courtship display than the Magpie, but one December day a party of four Jays were very noisy in a hedgerow oak, one bird bowing with elongated body in a very exaggerated up-and-down motion. Another Jay, presumably in reply, was fluttering its wings and raising its head crest: unfortunately the birds saw me, screeched, and flew off. I have come across small parties of three to seven birds in March in oak trees or hazel bushes where variations of this display were taking place. In a typical display one March day five Jays were gathered in an oak tree, chasing one another about the branches, whilst two Jays performed a "slow-motion" flight from this oak to an adjacent tree, the whole performance carried out to loud harsh notes. One Jay, in the intervals of chasing, stretched out both wings fully as if to emphasise not only the black and white areas of the wings but also the white rump.

Nest-building is not usual before April but in two years nests ready for eggs were found during the last week of March. The usual nest-lining is fibrous roots, but one nest was partly lined with black horse-hair from the mare.

Data on thirty-six nest-sites gave 14 in ivy-clad hawthorn: 8 in silver birch: 4 each in oak and wild cherry: 2 each in Scots pine and spruce fir: and 1 each in holly and blackthorn. A crotch in the main

stem or an outspreading branch, especially if partially hid by ivy, is a favourite site for the nest. The earliest date for a clutch of six eggs is 5th May, with the general laying-period from 5th—12th May and, in most seasons, the Jay is at least three weeks later than the Magpie in starting to breed.

As with the Magpie all the young hatched are not reared, with one or more nestlings "disappearing" during the fledging-period, due presumably to lack of food for them. Several nests have been watched for short periods but except on one occasion, when an adult brought the head of a short-tailed fieldmouse, it was not possible to see on what the young were fed.

In addition to these normal cases where one or two nestlings disappear, I have seven records of the whole brood disappearing from the nest before they could fly and none of these disappearances in my opinion was due to human interference. In the case of a brood of four young in a blackthorn thicket it was possibly a Sparrowhawk that was responsible as the hen Sparrowhawk was seen to strike down one of the adult Jays and began plucking it at once. On my near approach the Sparrowhawk flew off and, as the Jay was little harmed beyond the loss of a few body-feathers, I ringed it and then released it. Two days later the young Jays had vanished from the nest and what I took to be their remains were found on one of the killing-blocks of this Sparrowhawk.

In two of the other cases I suspected a pair of Tawny Owls of taking the young Jays, as in both cases a pair of Tawny Owls were rearing young in an old nest of the Carrion-Crow in a Scots pine located barely 45 yards from the nests of the Jays.

The adult Jay will mew like a cat when its young are threatened.

The hedgerow oaks are visited in the autumn for acorns and, at times, several birds of both species, Magpie and Jay, have been busy in the same tree. I have never seen a Jay bury an acorn: every Jay I have watched has either swallowed the acorn when perched on a branch or else flown out of sight with the acorn in its bill. Jays feed commonly on wild cherries and elderberries and in a late harvest will visit the oat-stooks in the harvest field. Ivy berries are also taken and the moss on a dry stone-wall is searched for beetles or other insects.

The Jay is fond of a water bath but I have never seen the Magpie take a bath.

The largest autumn flock noted was twenty birds one November day.

AVERAGE BROOD REARED BY MAGPIE AND JAY.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	Av. Brood
Magpie	41	4	6	14	10	7	3.76
Jay	21	4	6	4	6	1	4.29

RECOVERIES OF RINGED MAGPIES.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
75027	Nr. Dalston, Cumb. 15.6.24	Where ringed —.4.30	—
RX 3342	Cumdivock, Cumb. 10.6.36	Where ringed 20.11.38	—
AD4198	Shawkfoot, Cumb. 29.5.48	Calthwaite, Cumb. —.4.50	10 Miles S.E.
335685	Nr. Welton, Cumb. 24.5.49	Nr. Southwaite, Cumb. 9.6.50	8 Miles E.
335694	Sizergh Castle, West. 5.6.49	Where ringed 21.11.49	—

The oldest Magpie recovered was 5 years 10 months old and was reported where ringed. Only very local movement is indicated by the birds recovered.

I have had no Jays recovered.

THE STARLING *Sturnus vulgaris vulgaris*.

During the last few days of May the first broods of young Starlings leave their nests in barn-walls or under roof slates or in knot-holes of trees and by mid-June most broods are on the wing. Odd pairs have two broods which fly by mid-July.

In August the flocks begin to chorus on an evening from a large beech or oak tree before passing on to the winter roost, which is usually in a growing spruce or larch plantation. More than one roost may be used during the winter. Non-breeding adults may frequent the roost during the summer months, as small parties have been noted going to roost in mid-May and up to the first week of June.

Coition noted from the last week of January onwards. Nest-holes are visited from early February onwards, with nest-building by both sexes by early April.

The Starling feeds chiefly in grassfields and on lawns and in August has been found feeding at 2,700 feet altitude in the Pennines.

It fly catches after flying ants in September and early October and will attack the plums and pears in an orchard when ripe.

AVERAGE BROOD REARED BY STARLING.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	Av. Brood
Starling	... 77 ...	4 ...	32 ...	24 ...	12 ...	5 ...	4.23

RECOVERIES OF RINGED STARLINGS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
25045	Cumdivock, Cumb. 21.5.24	Thursby, Cumb. 20.5.26	3 Miles N.W.
Y6059	Dalston, Cumb. 16.5.25	Cumdivock, Cumb. 1.5.26	3 Miles S.W.
Y6060	Dalston, Cumb. 16.5.25	Where ringed 13.4.33	—
Y8816	Nr. Welton, Cumb. 29.5.25	Nr. Lisburn, Co. Down, Ireland, 26.12.25	—
V3594	Cumdivock, Cumb. 19.5.27	Powfoot, Dumfries 24.12.30	15 Miles N.W.
V3607	Dalston, Cumb. 21.5.27	Carlisle, Cumb. 29.1.30	5 Miles N.N.E.

The oldest Starling recovered was 7 years 11 months old, and was reported where ringed. Only local movement is indicated by the other recoveries, apart from Y8816 recovered in Co. Down, Ireland, seven months after ringing.

THE HAWFINCH *Coccothraustes c. coccothraustes*.

The Hawfinch, in the breeding season, keeps chiefly to the well-wooded and secluded grounds around large country houses. Three breeding records refer to a brood of two young reared in an apple orchard at Dalston in June, 1925; a nest of five eggs in a cypress tree in a secluded garden at Bassenthwaite in June, 1948; and a brood of five young reared in a lime tree in a large secluded garden near Kendal in June, 1950.

Occasional birds have also been seen during the summer months in the Patterdale and Ambleside areas.

THE GREENFINCH *Chloris c. chloris*.

The Greenfinch breeds commonly in gardens and roadside hedges and about the outskirts of small copses. The bat-like display flight of the cock as he circles around twittering loudly above the garden begins in April and continues into late July or even August. During the nest-building and incubation period the hen is fed regularly by the cock with regurgitated food.

Earliest clutch, five eggs on 28th April: latest clutch, four eggs on 14th August, with the latest date for a brood to leave the nest 10th September. By the time the young leave the nest the nest rim is often covered with their faeces.

One August four pairs nested successfully in a 120 yards length of privet-hedge surrounding my garden, two occupied nests were eight yards apart, the other two were fourteen yards apart.

Three pairs nested one July in a 400 yards stretch of roadside hawthorn hedge and in May one year nests of Greenfinch and Chaffinch, both with five eggs, were 15 feet apart in the same hawthorn hedge.

The birds begin to flock from late August onwards, with flocks of up to 250 birds in November, either by themselves or associated with Chaffinches and Yellow Buntings about the hedges and stack-yards. Even in the upland fields around Penton, flocks of 80 birds have been counted in stubble-fields in December. At Arnside one December a flock of *c.* 120 Linnets and Greenfinches were feeding on the seeds of the sea-pink, whilst in the upland regions around Penton and Uldale flocks have frequently been seen feeding on the seeds of the roadside umbelliferous plants, also the seeds of the rose-hips, whilst the disc-like seeds of the elm are also taken. One March day a flock of thirty birds were feeding on insects obtained from the open cone-scales of Scots pines. Small parties of Greenfinches feed in the newly-sown cornfields up to the first week of May.

A small flock was watched one November day about a roadside hedge near Over Water: on one occasion two cocks fed two hens with regurgitated food.

THE GOLDFINCH *Carduelis carduelis britannica*.

The hen Goldfinch alone builds the nest, often at the end of a horizontal branch or else against the main trunk, the cock usually accompanying her to and fro from the nest. Orchards and large gardens are common nesting-sites and occasionally roadside trees. He sings a good deal whilst she is busy nest-building—which may take up to seven days—often begins in mid-April and continues into August, but a slight flourish of song can be heard on any mild day in autumn or winter. The singing cock will sway his body from side to side and at times glide down to the hen with vertical wings fluttered rapidly. Frequently a “trio of birds” is about the nest-site whilst the nest-building is proceeding.

It is often the last fortnight of April before nest-building begins: earliest clutch four eggs on 13th May, latest date for a brood to leave the nest 24th September.

Largest flock noted one of seventy birds, with flocks of up to forty birds not uncommon, especially where large beds of thistles abound, but in general smaller parties of half-a-dozen to a dozen birds are more usual. The Goldfinch feeds extensively on the seeds of roadside umbelliferous plants, also the knapweed, and during hard weather will cling to snow-covered grasses to get at their seeds. The elder-berry bushes and willows are followed in the autumn and, with the Lesser Redpoll, it visits the alders and larches for small seed or insects.

THE SISKIN *Carduelis spinus*.

The Siskin is a winter visitor, chiefly from November until March, and usually to be found feeding in the alders by the beckside. Largest flock one of eighty-five birds in March in alders fringing the Caldew near Sebergham. A majority of the flocks seen have averaged forty to forty-five birds. The birds are usually quiet whilst feeding on the alder seeds, but begin calling prior to flying and usually continue calling whilst flying. In most flocks there is a majority of birds in female or immature plumage.

THE LESSER REDPOLL *Carduelis flammea cabaret*.

The trilling courtship-flight of the Lesser Redpoll, in which three or even four birds may take part, begins in late April and continues until mid-August: commonly above a group of silver birches or young conifers, occasionally a straggling hedgerow or a large orchard, the birds gliding through the air with quivering outspread wings whilst trilling repeatedly or circling around in wavering flight with pronounced wing-beats and trilling loudly.

The nest, built by the hen, the cock usually in attendance and trilling at times, is often built in the crotch of a straggling hawthorn, about four to six feet up, small and neat and lined with feathers or vegetable down: one nest was lined with dandelion seed. When built in a conifer or silver birch it is usually placed against the main trunk and sometimes as much as forty feet above the ground. Hazel bushes and overhanging wild rose bushes are also used. The hen will add vegetable down to the nest-lining whilst egg laying is in process.

Earliest date for a clutch of four eggs, 7th May, with young fledged by 31st May: latest date for a brood to leave the nest 20th August, with most broods fledged during June and July. The adults can be very agitated and noisy if the nest is closely approached when the young are about ready for flying.

Flocking begins from early September onwards: a flock of fifty birds on 8th September feeding on the seeds of the silver birch increasing by October to a flock of up to ninety birds in the silver birches and alders, either by themselves or associated with Greenfinches and Goldfinches. One December day forty Lesser Redpolls with nine Goldfinches were feeding on the alder seeds: likewise one March day fifty Lesser Redpolls and forty Greenfinches were busy in a clump of silver birches. In February flocks of ninety Lesser Redpolls have been counted in alders and flocking in most years continues until mid-April, latest date 18th April.

The Lesser Redpoll also feeds on the seeds in larch cones and the seeds of herbacious plants such as meadow-sweet and willow-herb and knapweed.

THE TWITE *Carduelis flavirostris pipilans*.

The Twite is a regular visitor in the autumn and winter months to the salt-marshes of the Solway Firth coastal region, usually in small parties of a few birds up to a score or more, feeding on the seeds of the sea-pink. I have a record of a single bird flushed from a patch of heather in the Longsleddale valley one June day.

THE LINNET *Carduelis cannabina cannabina*.

The Linnet breeds throughout the area, usually on gorse-clad commons and waste land up to the fell bases, but it also nests in hedgerows adjoining arable fields. It nests commonly in gorse-bushes and by the time the young leave the nest the nest rim is often covered with faeces. Earliest clutch, five eggs on 28th April: latest date for young to leave the nest 5th September.

Flocks of up to three hundred birds are not unusual in the autumn and winter months, feeding on the seeds of weeds in the turnip fields or of sea-pinks on the salt marshes. A musical twittering refrain is often heard from the entire flock, and one dull and over-cast November day was agreeably enlightened by the continuous twittering from a flock of seventy Linnets in some willow bushes.

THE BULLFINCH *Pyrrhula pyrrhula nesa*.

The Bullfinch has been found feeding on the seeds of the heather up to an altitude of 2,000 feet in the Skiddaw fells during the autumn and winter months, with flocks of twenty-one birds in November, eleven birds in December and fourteen birds in February. A party of eleven birds—seven cocks and four hens—fed for several weeks in early autumn on the seeds of the sycamore that littered the ground beneath a large sycamore tree in Dalston village. Small parties also feed on the seeds of the silver birch whilst nettle seeds and ivy berries and rose-hips and haws and odd apples are also taken.

The Bullfinch nests in thickets, often in gorse or hawthorn, and the hen sits very tight and has almost to be touched before she will leave the eggs. Earliest clutch five eggs on 10th May with young fledged by 7th June. Latest date for a brood to leave the nest, 20th August.

The Bullfinch keeps very much to its own species, often in small parties of four to six birds, and is seldom found associating with other species of the Fringillidae family. It prefers to haunt the larger secluded gardens with plenty of shrubberies for cover or the overgrown tangled hedgerows and dense thickets that still occur along country lanes. Its clear piping-note is often the first indication of the bird's presence.

THE CROSSBILL *Loxia curvirostra curvirostra*.

The earliest date for immigrant Crossbills is 3rd August when a flock of nine birds, two in the red plumage of the adult cock, were

feeding in larches at Haweswater. Another date—18th October—a flock of fifteen were feeding in a twenty-year-old larch plantation near Rose Castle, Dalston. Three were in the red plumage of the adult cock, the rest in greenish plumage. As they fed on the cones, nipping them off by the stalk, one bird called out a loud “pip-pip-pip” very distinct and clear. In flight above the tree-tops the birds were frequently calling a jingling series of bell-like notes. A third date, 2nd December, a flock of twelve, four in scarlet plumage, the rest in greenish plumage, were feeding in a larch plantation near Coniston. The birds were opening the scales of the cone with the cones still attached to the branches: one bird broke off a cone and held it with its feet whilst working the cone with its bill. The birds flew off uttering the jingling “pip-pip-pip” notes. Finally, on 28th March, 1964, in a party of eight birds feeding on larch cones, a red-plumaged cock was seen to feed a greenish-coloured hen, the hen fluttering her wings whilst the cock placed his bill inside hers. As this feeding suggested possible breeding, several visits were made to this plantation in April and May, but without success. The following March another five birds were watched in this plantation but again no breeding was proved.

THE CHAFFINCH *Fringilla cœlebs gengleri*.

The Chaffinch is in song from early February until the last week of June, with occasional song on sunny mornings from August to October. In display on the ground the cock will move sideways and in a circle around the hen, with head inclined to one side. On one occasion a hen fluttered her wings and elevated her tail, then called, whereupon the cock flew to her and mated. Only the hen builds the nest and, whilst most nests are lined with hair, the odd nest will be profusely lined with feathers. In the early spring there is often an interval, at times as long as a fortnight, between the finish of the nest, usually a very neat little affair, and the start of egg-laying.

The Chaffinch breeds commonly in gardens and hedgerows throughout the lowland farming area and up to 1,500 feet altitude on the fells wherever there are suitable hawthorn bushes. Earliest clutch, four eggs on 15th April with young fledged by 13th May, but many pairs do not start to breed until May. Latest date for a brood to leave the nest 28th July. One record of a six-egg clutch. The nestlings are brooded daily for the first seven days. In the case of a pair which reared young in my garden, the cock frequently searched the lawn for small earthworms to feed to the young, and which he listened for with his head on one side like a Thrush.

Flocking begins in the last week of June, earliest date 28th June, and continues into April, latest date 10th April. Most flocks have varying proportions of both sexes, with some flocks predominantly more cocks and others more hens. The Chaffinch also flocks with Yellow and Reed Buntings, also with Greenfinches and Bramblings

about stackyards or on scaled muck on grassfields or stubble or about the weeds in turnip fields or potato fields or the beds of compositae by roadside grass verges.

Flocks of up to two hundred birds were common on scaled muck in the fields during the period October to February before the widespread use of insecticides as sprays, but since 1960 onwards this species, as well as the Linnet and Greenfinch, and the Yellow and Reed and Corn Buntings, has declined considerably.

Three pairs nested one summer in the hawthorn hedges surrounding a seven-acre field and two pairs in a four-acre deciduous copse containing hazel and hawthorn bushes. Another year two nests, both with four eggs, were forty yards apart in the same hawthorn hedge.

THE BRAMBLING *Fringilla montifringilla*.

The Brambling, a winter visitor, is present from late October—earliest date 25th October—until mid-April—latest date 10th April. The largest flock noted consisted of one hundred and fifty birds feeding on the seeds of cocksfoot and other roadside grasses near Uldale one December day. Another large flock of one hundred and thirty birds was in a stubble-field near Durdar one January day, and again in January a flock of seventy birds with Chaffinches of both sexes feeding on beech-mast under beech trees near Dalston. Two smaller flocks of sixty birds have been seen—one under beech trees at Clappergate in December and the other in a stubble-field at Talkin Tarn in January. Other records refer to single birds seen or small parties of three to six birds, either by themselves or associated with Chaffinches.

THE CORN BUNTING *Emberiza calandra*.

The Corn Bunting used to be widely spread but fairly plentiful throughout the Solway Firth area, especially the coastal areas and also the Eden valley until c.1963, but since then a considerable decrease has occurred and many former breeding areas are no longer occupied. In the coastal areas flocks of up to twenty birds were common during the autumn and winter months: inland in a few areas birds were present throughout the year, otherwise there was a return to the inland breeding areas from the end of March onwards.

In the farmland around Cumdivock unmated cocks would appear at the beginning of April, occupy a stretch of hawthorn hedge with one or two song-posts, sing more or less continuously until the end of May, and then if no hen had appeared they would disappear. In the dry stone-wall country between Penrith and Skirwith, birds were often present throughout the year and song or snatches of song could be heard in every month, even with hard frost.

The favourite nesting-site is in clover-hay fields, especially those bounded by dry stone-walls, also in cornfields and turnip fields. Nest-

building is by the hen alone, the cock usually escorting her to and from the nest. Earliest date for a clutch of three eggs, 3rd June: latest date for a two-egg clutch, 6th August, with young fledged by 30th August. Most young are fledged between the end of June and the end of August.

THE YELLOW BUNTING *Emberiza citrinella citrinella*.

The Yellow Bunting begins to sing in mid-February and when it was more abundant its rather droning song could be heard in the "dog days" of July and August when most other bird-song is stilled. Roosting in pairs is general from mid-January onwards and some pairs roost together throughout the winter months, usually in gorse-bushes or small clumps of hawthorns. In courtship display the cock will crouch on a hedge-top, wings arched, with head and bill pointing skywards. A similar display has been seen by the hen, except that her head has moved slowly from side to side. The cock often assists in nest-building, carrying the nest material and he will also take part in incubation.

The Yellow Bunting breeds throughout the lowland farming area to the fell bases, and one year a cock was heard in song almost at the summit of Hardknott Pass, altitude 1,290 feet. In most years odd pairs have full clutches by the last week of April: earliest date for a clutch of four eggs, 16th April, latest date for a brood to leave the nest, 6th September, whilst on 14th September, 1934, a nest of two eggs was found. A favourite nesting-site is the grassy bankside below a hawthorn hedge fronting a country road or lane, but of late years a tendency has been noted for birds to build on level ground a few yards away from the bankside. This was specially marked in 1946 when on 27th April a nest of three eggs under a bracken-spray in a grass field was distant ten yards from the hedge: on 3rd May a nest of four eggs under a grass tuft in a fallow field was fifteen yards from the nearest hedge; and on 23rd July a nest of three eggs in a thistle-clump was three yards from the hedge.

There is one record of a six-egg clutch in June. Two occupied nests in the grassy bankside below a hawthorn hedge were 46 yards apart: two pairs nesting in a three hundred yards length of country lane is an average density. Flocks of up to thirty-five Yellow Buntings about stackyards and stubble-fields in the autumn and winter months used to be normal and when associated with Reed Buntings and Chaffiches and Greenfinches flocks of up to one hundred birds could be noted. Like the Corn-Bunting it has declined considerably since 1963.

THE REED-BUNTING *Emberiza schæniclus schæniclus*.

The lipping song of the Reed Bunting is heard from late February onwards until July. It can be found in mild weather in the winter months still about the upland regions as one 16th December when a

party of twelve birds—nine hens and three cocks—were in a stubble-field at Penton. It also occurs frequently in the coastal areas during these months, either by itself or associated with Yellow Buntings and Chaffinches. Thus a large mixed flock of at least one hundred birds in a clover-hay field at Monkhill one February day and the same day a flock of forty birds feeding on scattered oats on the roadside near Cardurnock, with a majority of hens in the flock. On another day near Burgh-by-Sands a flock of twenty birds were mainly cocks. In April a few Reed-Buntings are seen with the returning Meadow-Pipits about the smaller tarns and on the lower slopes of the fells.

The Reed-Bunting breeds thinly throughout the lowland farming area, in marshy pasture fields or swampy places around the smaller tarns up to the rushy allotments on the lower fell slopes. Earliest date for a five-egg clutch, 12th May; latest date for a four-egg clutch, 27th July, and fledged young in the nest until 14th August. Injury feigning from the nest is usual in this species: both sexes when flushed from eggs or young will run along the ground with tails fanspread and touching the ground, and with wings held half vertical.

THE SNOW-BUNTING *Plectrophenax nivalis nivalis*.

Another winter visitor, the Snow-Bunting, arrives in November—earliest date 11th November—and stays until March—latest date 13th March. The largest flocks have been seen on the Pennine fells, a flock of one hundred birds on 22nd December at an altitude of 2,200 feet, where field wood-rushes and moor grass predominated: this flock held a large number of adult cocks. Then on 14th February a flock of one hundred and thirty birds on the plateau summit of Crossfell, altitude 2,930 feet. A flock of thirty-six birds on 19th November were feeding in a patch of moor grass above High Cup Nick, altitude 2,000 feet. On the fells of the Lake District the largest flock has been thirty-five birds on Saddleback at an altitude of c.2,400 feet in February: thirty birds in the Upper Ennerdale valley in December and twenty-six birds on Eel Crag in January. The birds are usually silent as they feed but on flying they utter a series of trilling notes. At times the flock will alight on a scree face and trill for several seconds.

In the coastal areas flocks of up to thirty-five birds were noted amongst the marram grass and sea-pinks of Skinburness, but of late years only odd pairs or even single birds have been seen. An unusual record concerns a flock of fourteen birds, including five adult cocks, feeding on scaled muck in a field at Cumdivock, altitude 300 feet, on 20th January, 1960. During fifty years residence at Cumdivock this is the only occasion I have met with the Snow-Bunting "at home."

THE TREE-SPARROW *Passer montanus montanus*.

The Tree-Sparrow breeds in knot-holes of trees and in barn-walls, but is local in distribution and has declined considerably during

the past ten years, with many nesting-sites no longer occupied. In song from the first week of March. Both sexes take part in nest-building and, where plentiful, several pairs will nest in the same barn-wall. Like the Goldfinch and the Lesser Redpoll, a "trio" of birds is often seen about the nest-site. Nest-building from the last week of April. Earliest date for a five-egg clutch, 17th May, with young fledged by 14th June. Latest date for a brood to leave the nest, 6th September.

The young, especially in the later stages of development, keep up a continuous chirping in the nest. They are largely fed on caterpillars and other insect food. Two broods have been reared in one season from the same hole in a barn-wall, the first brood left the nest-hole on 19th June, the second brood the same nest-hole on 22nd August.

AVERAGE BROOD REARED BY FRINGILLIDAE.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	Av. Brood
Greenfinch ...	49	1	14	21	10	3	3.88
Goldfinch ...	21	—	6	6	4	5	3.62
Lesser Redpoll	23	—	4	8	9	2	3.60
Linnet ...	36	—	10	16	10	—	4.00
Bullfinch ...	18	3	5	7	2	1	4.38
Chaffinch ...	41	—	9	21	8	3	3.88
Corn Bunting	10	—	—	—	2	8	2.20
Yellow Bunting	51	—	—	12	29	10	3.04
Reed Bunting	24	—	6	12	6	—	4.00
Tree-Sparrow	10	—	—	3	7	—	3.30

I have had no recoveries of any ringed birds of the above species.

THE SKYLARK *Alauda arvensis arvensis*.

Flocks of four hundred to five hundred Skylarks were not unusual in the winter months of December and January up to c.1960 and, at times, these flocks would settle in the trees surrounding the stubble-field or clover-hay field where they had been feeding. But since 1960 these flocks have declined in numbers and likewise the numbers of breeding pairs in the lowland farming area and on the salt marshes.

Song becomes general from the first week of February onwards and continues until mid-July with occasional outbursts on mild sunny days in September and October. Most continuous song is heard in June, but one May day a Skylark sang continuously for fourteen minutes above the summit of Black Combe.

The Skylark breeds, though in diminished numbers, throughout the lowland farming area and on the salt marshes. It also breeds on the fells of the Pennines and the Lake District. It breeds fairly continuously throughout the length of the Cumberland and Westmorland Pennines, up to 2,900 feet altitude on the Crossfell plateau. It breeds extensively throughout the Skiddaw fells up to 2,900 feet altitude on

Saddleback. It breeds the length of the High Street fells, from Moor Divock to 2,400 feet altitude on Kidsty Pike. In the Helvellyn range it breeds up to 2,580 feet altitude on Watson's Dodd and Stybarrow Dodd, and on the fells on the west side of Thirlmere. It breeds on Hen Comb and Gt. Bone in the Buttermere fells, on Red Crag above Bleng and on Black Combe.

Earliest clutch four eggs on 26th April, but on the salt marshes fledged young have been found in the nest by 10th May, which suggests c.15th April for completion of the clutch. 25th July is the latest date for a brood still in the nest on the salt marshes.

One seven-egg clutch was found on Rockcliffe Marsh in May, 1937, and one six-egg clutch in a wheat field at Cumdivock in June, 1945. In quiet country lanes nests are occasionally found in the grass verges on either side of the lane.

Odd Skylarks will hiss and trail a wing when flushed from a nest of eggs or small young.

THE TREE-PIPIT *Anthus trivialis trivialis*.

The Tree-Pipit is a summer visitor, its song heard from 14th April onwards and is most plentiful in wooded countryside. It has decreased since 1945 in many lowland areas: at one time—1921 to 1945—it nested regularly in quiet country lanes within a ten-mile radius of Carlisle, but these breeding sites are now deserted.

Earliest date for clutch of six eggs, 8th May, in a two-year-old larch plantation at Cumdivock. 2nd July is the latest date for a five-egg clutch in the bankside below a dry stone-wall. The usual nesting-sites are amongst the herbage in country lanes and in grassy banksides below hawthorn hedges or dry stone-walls: also in railway embankments and in young conifer plantations.

On the fells it breeds as far as the tree-limit, and song and parachute-like flight are general from mid-April until the end of the first week of July. Display of wing and fan-spread tail occasional when the bird is flushed from eggs. As well as small insects and caterpillars, white grubs and small earthworms are also fed the young in the nest, and a pair that reared a young Cuckoo brought flesh-brown caterpillars and small grey moths for the interloper.

In June, 1928, a brood of seven young was reared in a nest in a grassy bankside below a hawthorn hedge near Holme Hill, Dalston.

THE MEADOW-PIPIT *Anthus pratensis*.

The Meadow-Pipit breeds on the salt marshes, also on commons and open spaces in the lowland farming area, then on the upland moors and commonly throughout the fells of the Pennines and Lake District. The return to the upland moors and fells, often in the company of Pied Wagtails and Reed Buntings, is from the end of March onwards. Thus one year on 30th March several hundred birds

were on the lower fell-slopes at Haweswater; another year on 5th April dozens of Meadow-Pipits with Pied Wagtails and Reed Buntings were in a grassfield at Over Water: on 22nd April in a third year several hundred Meadow-Pipits were in a field at Mardale.

Song and parachute-like flight is general from the last week of March until mid-July. 26th April is the earliest date for a five-egg clutch in a meadow by Moorhouse Tarn: latest clutch three eggs on Rockcliffe Marsh on 20th July. A brood of fledged young was found on Robinson, altitude 2,400 feet, on 23rd July one year: on 2nd August a brood on Crossfell, c.2,700 feet altitude, and on 5th August a brood on Saddleback, c.2,500 feet altitude.

The distraction-display from the nest by the adult with arched wings and fan-spread tail is more common than with the Tree-Pipit, and is often accompanied with hissing notes.

The birds begin to collect on the fells in late July, and throughout August and September there is a steady passage of birds throughout the fells and down to the lowlands and salt marshes, often in company with Pied Wagtails. On 1st August forty were gathered on Red Pike, whilst on 5th August eighty were on Harter Fell: then on 11th September forty-odd were on Scawfell Pike and on 17th September one hundred and ten were on the summit of Melbreak, and on 6th October fifty were on Hart Crag. In general, the fells are deserted from the end of October until March, but odd birds or even small parties are sometimes present in mild winters as one January day when forty-five Meadow-Pipits were disturbed amongst short heather on Faulds Brow, above Caldbeck, whilst one December day twenty-four birds were flushed from bracken on a fellside above Measand Beck, Haweswater.

In the lowland farming areas it is present in the autumn, often with the Pied Wagtail, in the turnip fields, and both species feed readily on any wire-worms exposed during turnip pulling.

Two six-egg clutches have been found. Three nests, two with four young each, the other with five young, were found within a radius of 150 yards on the lower slopes of Saddleback one June day. In another area two nests with four and three eggs were twenty yards apart on the bracken-clad fell.

THE ROCK-PIPIT *Anthus spinoletta petrosus*.

The Rock-Pipit is an occasional winter visitor to the salt marshes, usually singly, from October to February. I have seen it at St. Bees Head in the summer but have no records of breeding.

THE PIED WAGTAIL *Motacilla alba yarrellii*.

The return of the Pied Wagtail at the end of February to its former breeding-haunts is one of the first signs of spring. In small parties of two to six birds, they usually appear first on the spring ploughing, flitting about the newly-turned furrows and displaying

their very clear black and white plumages. The cock usually makes for the nearest farmhouse or farm buildings, there to take up a commanding position on the highest roof from which he can call "chizit-chizit" to attract any passing hen.

One April day a cock was displaying to a hen with tail fully fan-spread to show the white outer feathers, wings outspread and rather arched. Twice he circled the hen, who stood with tail held almost vertical, coition took place, the cock circled the hen again, then flew away. Another cock glided down to a hen in a cornfield and crept around her mouse-like whilst the hen stood with uplifted tail, and coition occurred. In late October a hen was seen running towards a cock with her tail uplifted, but he made no response.

The Pied Wagtail breeds throughout the area and follows the Lakeland valleys as far as farm-houses or stone-buildings are found.

With early mated pairs nest-building begins in the last week of March and often the cock alone builds the nest whilst the hen lines it with feathers or horse-hair. A dry stone-wall is a favourite nest-site: also a hole in a barn-wall or under roof slates and sometimes in old haystacks: upturned tree-roots or ivy on walls or trees: or the coping-stones of beckside bridges. Exceptionally the nest is built inside the disused nest of a Thrush or Blackbird in a shed.

25th April is the earliest date for a five-egg clutch: 16th August latest date for a brood of three young to leave the nest. The cock will help in brooding the small young, which are fed entirely on insects, including horse-flies and their larvæ, also dung-flies and wire-worms. A pair of Pied Wagtails and a pair of Grey Wagtails nested within eight yards of one another on a footbridge over the Caldew, the Pied Wagtail had five young and the Grey Wagtail three young during the same period in June. Another Pied Wagtail reared five young on a rock-ledge by the Gelt in a typical Grey Wagtail nest-site. In the Kentmere valley in June, 1951, a nest with eight newly hatched nestlings and two infertile eggs was found in a dry stone-wall. Five pairs nesting on a one mile stretch of country road with suitable farm buildings or dry stone-walls is the maximum breeding density noted.

The cock often circles above the stone-wall, singing, when the young are about ready to leave the nest. One August day a cock was circling and singing above a dry stone-wall when the four young flew out from the nest, whereupon the cock alighted on the stone-wall, then approached in a crouching attitude, wings outspread and arched, head forward with bill pointing downwards. It ran about the stone-wall in this attitude, calling excitedly, for several minutes.

The autumn passage is very pronounced, beginning about the last week of August and lasting into October: often by themselves alone or in company with Meadow-Pipits and Reed Buntings. The salt marshes in August and September attract many birds and all the main passes through the Lake District as, for example, the Kirkstone

Pass and Shap and Dunmail Raise have a constant succession of birds making their way south. One September up to forty-five birds roosted for several nights in willow-bushes by the Eden at Carlisle.

THE WHITE WAGTAIL *Motacilla alba alba*.

There is a late spring passage of White Wagtails in most years during May, the birds often roosting for the night under gorse-bushes or roadside willow-bushes. Parties are not usually more than a dozen to eighteen birds. The species is entirely a passage migrant, and the autumn passage is less clearly marked, usually in late September or early October, and seldom exceeding three to six birds in a party.

THE GREY WAGTAIL *Motacilla cinerea cinerea*.

The Grey Wagtail, nesting mainly by the beckside, is more restricted in its breeding range than the Pied Wagtail, but it is to be found in beautiful sites, often where a small waterfall drops the clear water of the beck a few feet into a small pool, overhung by rowan or alder, and with a mossy bankside or rock to provide a nesting-site. Often it has the Dipper for a nesting companion, the two nests within a few feet of each other, and occasionally the Grey Wagtail will build its own nest within an old unoccupied nest of a Dipper.

In early March the birds begin to appear on the quiet becks, often in pairs, and by the first week of April the nest on a rock-ledge or amongst the exposed tree-roots of a beckside tree or the weep-hole of a bridge is ready for eggs. Occasionally it will breed some distance from the beck, up to one hundred yards distant on a ledge in a dis-used quarry or in a dry stone-wall. Earliest clutch, four eggs on 7th April, with young fledged by 7th May: latest clutch, two eggs on 29th July. In most years several broods are on the wing during the period 10th May—15th May. When the young are about to leave the nest the adults frequently show great anxiety, perching on nearby tree branches and calling loudly and repeatedly.

One May day a cock, in full song, flew slowly above a beck, wings moving in a Sandpiper-like manner, tail held horizontal. It then alighted on a large rock where it ran about for several minutes with humped back and depressed tail. In September the cock of a pair will often indulge in a little song, either gliding with arched wings and singing, or running forward on the ground with arched wings whilst singing.

From mid-August until early October a passage of small parties of four to six birds, or sometimes just a pair or even a single bird, occurs throughout the area, and except in very mild winters when the odd bird can be flushed from the beckside or tarn, the building-sites are deserted until the following spring.

The Grey Wagtail breeds up to 1,500 feet altitude on the fell becks, with three pairs breeding on a one mile stretch of the Dove: four pairs to 1½ mile stretch of the Caldew: and five pairs on a two

mile stretch of the Shawk. Two occupied nests on a beck on Wild Boar Fell were 180 yards apart and two occupied nests on the Caldew were 250 yards apart.

In the Kentmere valley one June all three species of Wagtail—Pied, Grey and Yellow—were found breeding within a 400 yards radius. A Grey Wagtail had three young in a nest in a weep-hole of a retaining wall one June, and within ten yards a Spotted Flycatcher had four young in a nest in another weep-hole.

THE YELLOW WAGTAIL *Motacilla flava flavissima*.

The Yellow Wagtail is a summer visitor, appearing from mid-April onwards, and staying until the last week of August, with stragglers in September. It is more abundant in Westmorland than in Cumberland, meadow hayfields and rushy moorland pastures being its principal breeding-sites, also the marshy areas around the lakes and larger tarns, but during the past ten years it has deserted several moorland nesting areas in Cumberland.

The brilliant-hued yellow cock, as he sits and sings on a wire-fence crossing a moor, is a charming sight on a fine May morning with, perhaps, the lingering notes of a Cuckoo sounding in the distance. At times the cock will leave the fence to fly with slow up and down wing-beats or he flies around in arc-like flight with fan-spread tail. Nest-building seems to be entirely the work of the more sober plumaged hen, the nest built in a tuft of grass or small juncus clump.

Nest-building is from the first week of May onwards; earliest clutch four eggs on 14th May with young fledged by 11th June, latest clutch, three eggs on 15th July. A hen flushed from six eggs in a grass tuft shuffled along the ground, wings arched, tail fan-spread and trailing. When the young are almost fledged both adults will show great anxiety, flying around and calling, a few feet above the ground, with tails fan-spread and wings arched. Other breeding adults nearby will join in the protest and a medley of four to six adults will circle and call excitedly above the nesting-site.

Odd pairs occasionally rear young on the salt marshes. I have breeding records for Rockcliffe Marsh and also Port Carlisle. In 1938 six pairs bred on a one mile stretch of moorland in Cumberland: two occupied nests were within one hundred yards of each other.

From mid-August onwards passage begins and birds can be met with on the salt marshes in small numbers into September with 26th September as the latest date.

In early May there is a passage of paired adults through the Solway coastal area, the birds usually frequenting the arable fields that are being worked for potatoes or turnips.

THE TREE-CREEPER *Certhia familiaris britannica*.

The Tree-Creeper is present throughout the woodland areas, whether deciduous or coniferous woods, and during the autumn and winter months usually one pair is associated with the wandering flocks of Tits.

Song is from mid-March until early June. Earliest clutch, four eggs on 18th April, with young fledged by 18th May. Latest date for a brood to leave the nest 4th July. A majority of the broods hatch out from mid-May to mid-June. Most nest-sites are behind the loose bark of a tree, or behind the ivy stem that climbs the tree or else in a crack in a tree branch. In May, 1949, a Tree-Creeper had a brood of four young behind the ivy-stem that climbed an ash tree, the nest about eight feet from ground level, and twelve feet higher up a Redstart had a nest of six eggs behind the ivy-stem.

A double row of wellingtonias lining the road to Rose Castle, Dalston, had several small holes scooped out in the soft bark and Tree-Creepers used these for roosting purposes during the winter months.

One mid-November day a pair were about the apple trees in my orchard. One bird crept up the main trunk of a tree with wings arched and bill open, then tried to seize the other bird with its bill, whilst uttering a loud call-note. The Tree-Creeper will, at times, climb the masonry of a river bridge or even the wall of a house.

THE NUTHATCH *Sitta europæa affinis*.

I have only one record for the Nuthatch, a bird at Brotherswater in June, 1936, at times uttering rapid trilling notes comparable to the sound of a stone travelling across ice.

AVERAGE BROODS REARED BY LARKS, PIPITS AND WAGTAILS.

SPECIES	No.	7	6	5	4	3	2	1	Av.								
	Broods	Young															
Tree-Pipit	19	...	1	...	1	...	10	...	4	...	2	...	1	...	—	...	4.57
Meadow-Pipit	49	...	—	...	1	...	11	...	23	...	10	...	2	...	2	...	3.85
Pied Wagtail	73	...	—	...	12	...	30	...	20	...	9	...	2	...	—	...	4.56
Grey Wagtail	45	...	—	...	4	...	12	...	19	...	7	...	1	...	—	...	4.20
Yellow Wagtail	31	...	—	...	5	...	13	...	8	...	1	...	3	...	1	...	4.42
Tree-Creeper	18	...	—	...	2	...	6	...	10	...	—	...	—	...	—	...	4.55
Skylark	55	...	—	...	1	...	2	...	15	...	21	...	11	...	5	...	3.01

RECOVERY OF RINGED TREE-PIPIT.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
E6949	Dalston, Cumb. 28.6.26	Nelas, Portugal —, 9.29	—

RECOVERY OF RINGED MEADOW-PIPIT.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
F4746	Nr. Skirwith, Cumb. 29.5.27	Cap Breton, Landes, France, 25.9.29	—

RECOVERIES OF RINGED PIED WAGTAILS

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
C9622	Carlisle, Cumb. 16.6.25	Where ringed 2.12.25	—
XJ635	Edenhall, Cumb. 12.6.46	Southsea, Hants 10.2.47	275 Miles S.S.E.
J8886	Haweswater, West. 8.6.50	Nr. Vizeu, Beira Alta, Portugal, —.12.50	—
A52663	Aikton, Cumb. 14.6.55	Waverton, Cumb. 14.5.56	5 Miles N.E.
C44836	Cumdivock, Cumb. 12.6.57	Montjean-sur-Loire, France, 15.1.60	—

The recovery of the Tree-Pipit when 3 years 3 months old in Portugal, and the Meadow-Pipit when 2 years 4 months old in S.W. France, indicate the southward route of these two migrants.

The five recoveries of Pied Wagtails reveal two with little movement, both in their first year, but the other three birds show migration to South England, N. France and Portugal, with the oldest bird 2 years 7 months old.

THE GREAT TIT *Parus major newtoni*.

The Great Tit is present throughout the wooded areas, in the wooded fell-valleys ascending as far as the tree-limit.

Song from mid-January onwards, even during frosty weather, until early June: mild sunny days in September and October also bring forth a little song.

By the end of February birds are in breeding-pairs: display by the cock consists chiefly of gliding through the air with horizontal wings and separated primaries. Hen appears to do all the nest-building, cock usually accompanying her and singing.

Earliest clutch, eight eggs 30th April, with young fledged by 4th June. Latest date for brood to leave the nest, 20th July. A nest in a hole in a barn-wall held four partly-fledged young and two dead: these latter had been dragged from the nest to the entrance hole: the four young were successfully reared.

In autumn and winter all species of Tits usually flock together and roam the woodland trees and hedgerows for food, but occasionally small parties of this species with only the odd other pair of Tits are encountered: thus ten Great Tits with a pair of Coal Tits feeding on

beech-mast at Derwentwater and fourteen Great Tits with a pair of Coal Tits feeding on beech-mast at Penton.

THE BLUE TIT *Parus caeruleus obscurus*.

The distribution of the Blue Tit is very similar to the Great Tit. Song from early February. In late January a pair about my garden, the cock crept circle-wise around the hen, body inclined to one side, tail fan-spread: gliding through the air with horizontal wings and separated primaries as in the Great Tit.

Although commonly nesting in holes in trees or walls, an open nest with four eggs was found in the bankside of a beck at Cumdivock in June, 1930.

Earliest clutch, nine eggs, 4th May, with young fledged by 5th June. Latest date for a brood to leave the nest, 28th June.

THE COAL-TIT *Parus ater britannicus*.

The Coal-Tit is most prevalent in conifer plantations and beech woods throughout the year. Song from mid-January onwards, with a good deal of song at times during the early autumn—September to November—usually two to four high-pitched notes followed by a sad little refrain.

Nest-building by both sexes, often in a bankside or in a dry stone-wall. In June, 1951, a nest of four eggs was found in the old nest-hole of a Woodpecker in a silver birch. Earliest clutch, four eggs, 13th May, with young fledged, 14th June.

The Coal-Tit feeds extensively on beech-mast and in early autumn birds will bury mast in holes or crevices about the tree: gardens with beech trees are regularly visited by Coal-Tits for this purpose. Flocks of up to forty Coal-Tits alone counted in August, but it flocks readily with other species of Tits. In open country, such as commons, it feeds a lot amongst gorse-bushes: it will search for insects amongst the dead leaves collected about the shoots of small branches growing out from the main trunk of an oak tree; it gets seeds of mosses which it hammers open on a tree branch.

THE MARSH-TIT *Parus palustris dresseri*.

The Marsh-Tit is mainly confined to the limestone areas of Westmorland, such as the woodland areas about Whitbarrow Scar and Scout Scar, likewise the woodland areas around Windermere and the Grasmere valley. It nests in dry stone-walls. 30th May, 1949, nest with five fledged young; Whitbarrow Scar and 5th June, another brood of four fledged young. The double-noted "pitcha" call is distinctive.

THE WILLOW-TIT *Parus atricapillus kleinschmidti*.

The loud nasal "tay-tay-tay" notes of the Willow-Tit are heard chiefly in damp alder and birch woods, especially in valley bottoms,

throughout the northern part of Lakeland. The bird is in song from the end of January until May: a creaking note repeated several times then a lively trill.

The nest-hole is usually excavated by both sexes in a dead stump of alder or birch or elderberry, often no more than three or four feet from the ground, but occasionally as much as twelve feet up. Chips from the excavation usually left below the nest-hole: one pair, however, nested in a natural hole in an alder without any excavation. Birds often noisy whilst excavating. The sitting bird sometimes fed in the nest-hole by its mate: occasionally it comes out to feed on hearing its mate call.

The birds begin boring the nest-hole from first week of April onwards: I cannot say when the clutch is laid as I have never opened up such nest-holes, but have notes of seven fledged young which flew from a nest-hole in a fencing post on 7th June: another brood left nest-hole on 12th June: third brood flew on 17th June.

THE LONG-TAILED TIT *Aegithalos candatus rosaceus*.

The Long-Tailed Tit breeds throughout the area, especially about gorse-clad commons and quiet country lanes, with secondary growth of gorse and hawthorn and about the edges of woods. A long spell of hard frost and cold east winds adversely affects this species more than the other species of Tits.

Display in early February with pairs chasing each other, displaying fan-spread tails.

Nest-building by both sexes from mid-March onwards: the beautiful lichen-covered nest takes on an average eighteen days to build, including lining it with feathers and odd pieces of rabbit fur. In one nest, after the young had flown, 1,614 feathers were counted. Majority of nests are in gorse-bushes, often no more than three or four feet from the ground: also in blackthorn and juniper and hawthorn bushes: once about twenty feet up in the crotch of an oak tree.

Earliest clutch, nine eggs, 8th April, with young fledged by 3rd May, but in most years egg-laying is during the second fortnight of April with young on the wing from mid-May onwards. Largest brood one of fifteen young, both adults feeding them on green caterpillars, before they settled for the night, with a great deal of twittering and chissicking in a hawthorn bush. In May, 1950, two occupied nests, one with five young in a gorse-bush, the other with six young in a hawthorn bush, were 450 yards apart. In May, 1951, three pairs nested in gorse-bushes in a 600 yards stretch of the Shawk valley, whilst in May, 1956, a two mile stretch of the Shawk valley held six breeding pairs.

The largest flock consisted of thirty-seven birds one July day: although usually keeping to its own species, the Long-Tailed Tit will, at times, flock with other species of Tits. A flock about a hedgerow

one autumn day, one bird alighted on the ground, inspected a leaf or two, then flew up. This is the only occasion I have seen the bird on the ground. At times the birds will perch on low brambles or on grasses only a couple of feet from the ground.

AVERAGE BROOD REARED BY TITS.

SPECIES	No. Broods	15 Young	13 Young	11 Young	10 Young	9 Young	8 Young	7 Young	6 Young	5 Young	4 Young	3 Young	Av. Brood
Great Tit	21	—	—	—	1	—	3	6	3	3	3	2	6.04
Blue Tit	11	—	1	2	—	2	2	2	1	3	—	—	8.55
Coal-Tit	13	—	—	—	—	—	—	3	2	2	6	—	5.15
Long-Tailed Tit	19	1	—	2	5	1	3	2	2	3	—	—	8.47

I have had no recoveries of any Tits ringed.

THE GREAT GREY SHRIKE *Lanius excubitor excubitor*.

Four records of the Great Grey Shrike over the fifty years:—One in November about the coastal moss at Glasson; one in February about a felled wood near Edenhall, Penrith; one in early April on a hawthorn bush by the Eden at Carlisle; and one caught alive in a garden near Dalston, ringed and then released in late January.

THE WAXWING *Bombycilla garrulus garrulus*.

Waxwings have been seen in four winters. In 1937 nineteen birds were seen in Dalston parish between 9th March and 24th March. In 1946-47 fifty-nine were seen between 20th December and 10th February, of which twenty were at Hutton-in-the-Forest, the rest in Dalston parish. In 1963 five were seen at Sedgwick near Kendal, and in 1965 fifty-three were seen in Dalston parish between 29th November and 5th December.

The birds were feeding on the fruits of the dog-rose, the guelder-rose and the hawthorn and, at times, they called a series of high-pitched trilling notes with crests erected. They were rather clumsy when feeding: rose-hips were sometimes swallowed whole, on other occasions pecked and eaten in pieces. After a feed of rose-hips the birds constantly flew to a gutter and drank the water. On one occasion Greenfinches and Fieldfares were feeding in the same hedge with the Waxwings on the rose-hips without any display of hostility. When in flight, direct and heavy like a Starling, the tail was often fan-spread and showed the yellow basal spots.

THE SPOTTED FLYCATCHER *Muscicapa striata striata*.

The few squeaky notes that comprise the song of the cock Spotted Flycatcher are usually not heard before mid-May—one record of a bird on 8th May—and when a hen arrives the cock shows great excitement. shuffling along a branch, body humped, moving head from side

to side, or he may erect both wings vertically before the hen, then horizontally, then up and down in quick succession. Sometimes a pair will arrive together in the wood or garden where they intend to breed and, after the actual nest-site has been chosen, the nest is built and lined within five days. The usual nest-site is a knot-hole or fork crotch in a tree, often ivy-covered, or a hole in a barn-wall, or the beam in an old shed, or even the old nests of Blackbird or Thrush inside a building.

Earliest clutch, four eggs on 23rd May, with young fledged by 20th June: latest date for a brood to leave the nest 12th August, with a majority of broods hatched in June and July. In most years birds are about their building-sites until mid-August when migration begins and continues until the last week of September, latest record, 24th September.

In some cases within three or four days of the brood leaving the nest the whole family leave the garden and vanish, but one year a family party of five stayed about the farm-house where they were reared until 1st September. One day a young bird made a sally at a cabbage white butterfly, missed it, and before it could swoop again a Swallow came along and took the butterfly in its flight. Wasps are occasionally taken by the adults.

THE PIED FLYCATCHER *Muscicapa hypoleuca hypoleuca*.

From 20th April onwards the attractive black and white cock Pied Flycatchers begin to return to the deciduous woods and wooded valleys of Lakeland and are found throughout central Lakeland, as far north as Penton, and spread across to several wooded valleys of the Pennines, and west to Wastwater and Ennerdale.

The clear pebbly-like song is usually delivered from the topmost branch of an oak or ash until a mate is obtained: cock may have a knot-hole in view which he will enter, come out and sing and raise his wings and persuade the hen to enter. If the knot-hole is approved by the hen, the nest is quickly built in four or five days, usually lined with oak leaves, chiefly by the hen. Knot-holes in oak or ash, from ground level up to forty feet, or in old nest-holes of Woodpeckers are commonly used, and once a cock was seen inspecting a hole in a house wall. Nesting-boxes are readily appreciated. Both Pied and Spotted Flycatchers will breed in the same stretch of woodland, and Great Tit and Tree-Creeper have been found nesting in the same trees as Pied Flycatcher.

Earliest clutch, six eggs, 16th May, with young fledged 14th June. Latest date for a brood to leave the nest, 10th July. Within a few days of the young leaving the nest the entire family leave the wood and I have no record of a Pied Flycatcher about its breeding-site after 15th July. It breeds to the tree-limit in some valleys. Like the Redstart, the adults gather a good deal of food on the ground. Both

the stoat and the red squirrel have been known to take young from the nest.

Food fed to the young in the nest consisted chiefly of caterpillars and small flies and small moths and then earthworms. During incubation the hen is usually called off the eggs by the cock and fed by him: otherwise she is fed on the nest by the cock. There is often an excess of unmated cocks who cannot get a mate although in possession of a nesting-tree with suitable knot-holes for breeding. Six breeding-pairs along a one mile stretch of wooded valley is a fair average density. One deciduous wood that held nineteen cocks, all in song one 11th May, only ten pairs eventually bred, although all the cocks were in possession of trees with suitable knot-holes for breeding. In May, 1959, a hen Pied Flycatcher was caught and ringed on a clutch of eight eggs in a nest-box which I had placed in a thick holly-bush in a wood: the eight young hatched out, but on 13th June when the nest-box was visited with a view to ringing the young, it was found they had disappeared and several large holes had been bored in the nest-box: further search revealed a pair of Great Spotted Woodpeckers were feeding young in an oak tree about seventy yards from the holly-bush and it seems a reasonable assumption that the Woodpeckers had taken the young Pied Flycatchers and fed them to their own young.

THE GOLDEN-CRESTED WREN *Regulus regulus anglorum*.

The Golden-Crested Wren is present throughout the wooded areas, both coniferous and deciduous woods, and is often associated outside the breeding season with wandering flocks of Tits and odd pair of Tree-Creepers. The needle-like treble song begins in March and continues into October.

One November day two Goldcrests were a few feet apart on the branch of an apple tree in my orchard. One burst into song, fluttered its wings, and lowered its head to the bird opposite, then erected and expanded its crest so that for a few seconds the head seemed to be one mass of flaming colour.

The nest is either between an ivy-stem and the tree-trunk or else at the far end of a branch, slung under the branch and secured by moss wrapped around the twigs for support.

Earliest clutch, seven eggs, 30th April, with young fledged by 25th May: latest date for brood to leave the nest 23rd August, whilst I have a record of young on the wing still being fed by the adults on 7th September. Some pairs are undoubtedly double-brooded, but several of the late breeding dates may refer to pairs that had their first and, sometimes, their second layings destroyed before they finally reared a brood.

AVERAGE BROOD REARED BY FLYCATCHERS AND
GOLDCREST.

SPECIES	No Broods	8 Young	7 Young	6 Young	5 Young	4 Young	3 Young	2 Young	Av. Brood
Spotted Flycatcher	32	6	17	8	1	3.88
Pied Flycatcher	41	5	8	13	4	8	2	1	5.71
Colden-Crested Wren	10	...	1	...	3	4	2	...	4.40

I have no recoveries of any ringed birds of any species of Flycatchers or Golden-Crested Wrens.

THE CHIFFCHAFF *Phylloscopus collybita collybita*.

The last few days of March or the first few days of April are the average arrival period of the Chiffchaff: 24th March the earliest date, 9th April the latest. This species is easiest identified in the field by its song, a measured repetition of the two notes "chiff-chaff," but one June a bird was heard that sang the normal chiff-chaff notes for several seconds and then ended with part of the song of the Willow-Warbler.

The Chiffchaff is confined almost entirely to woodland areas, chiefly deciduous woods with a good undergrowth of small branches or brambles which provide nesting-sites, but of late years more Chiffchaffs have been found frequenting coniferous woods with bramble undergrowth, no doubt partly due to the larger acreage now planted with conifers as compared with hardwoods. One year in early April a Chiffchaff was in song from a hawthorn hedge bordering a country lane, but it has never been found nesting in such a situation. With the Chiffchaff, as with all the species of Warblers under consideration, there is often a proportion of unmated birds each year that sing persistently throughout the spring and early summer and never get a mate, although in possession of a suitable breeding-ground with nest-sites.

In the first week of June, 1936, seven Chiffchaffs were in song along a one mile stretch of oak tree shaded road, with plenty of undergrowth running along the base of Muncaster Fell. In a one mile wooded stretch of the Shawk valley the number of Chiffchaffs in any year has varied from one to four, with an average of two singing birds for a normal year.

The normal song period is prolonged by unmated cock birds until the third week in July, but when the birds begin moving south in August and September song is again heard. This southward movement, as evidenced by birds passing through my garden at Cumdivock, begins in the third week of August and lasts until the end of September, with one record for 1st October, when a cock enhanced the autumnal quiet with a series of chiff-chaff notes from a

beech. In 1945 I heard what presumably was the same cock, for on 11th September he spent most of the day singing in my neighbour's orchard, on the 12th he sang in my orchard, whilst on the 13th he was heard in another neighbour's orchard, a distance travelled of about three hundred yards in three days, but no doubt the Indian summer weather prevailing at the time accounted for his leisurely movements.

Earliest clutch, six eggs, 3rd May, with young fledged by 31st May: latest date for a brood to leave the nest 9th August, but in my experience the Chiffchaff is single-brooded and late broods indicate a second or third attempt before a brood is reared. All nests were in deciduous woods, built either in brambles or hawthorn or gorse and from one to three feet above the ground.

One April day a Chiffchaff, in the intervals of singing, was seen to catch several bees that were busy about the flowering pollen of a willow tree.

THE WILLOW-WARBLER *Phylloscopus trochilus trochilus*.

The Willow-Warbler, or the bird with the delicate air, for his pleasant little song has no harsh notes, arrives in April. I have only one March record, one in song at Over Water on 31st March: throughout the fifty years the average arrival date is 14th April, varying between 5th April and 18th April. Although the cock usually arrives before the hen, I have several records of cock and hen arriving paired. A cock Willow-Warbler usually frequents my orchard at Cumdivock each year: generally a hen arrives later and the pair nest in the orchard or on the roadside grass verges outside. In two separate years the cock and hen arrived together, whilst in several years no hen arrived and the cock, after singing continuously for about three weeks, deserted the orchard.

Before the arrival of a hen, the cock, during the intervals between singing, will slowly raise both wings up and down several times. When the hen arrives the cock continues his wing-raising, often with tail slightly depressed, and will also glide through the air with vertical wings. The hen replies with a similar wing-raising exhibiton and the cock may stretch out his head and neck, at the same time moving the head in a sideways direction. The wing-raising of the hen seems to indicate that she is willing to pair with the cock. A cock was singing in an apple tree when the hen flew with rather slow-motion flight and alighted on a branch in a nearby apple tree, where she raised her wings half vertically several times: the cock at once flew to her and mated. On several occasions coition has followed this wing-raising by the hen, the cock often uttering a harsh rasping note prior to mating.

Although the nest is normally built and lined with feathers by the hen, I have two records which suggest that the nest was built by the cock before the hen arrived. Earliest clutch, six eggs, 3rd May, with

young fledged by 31st May with 20th May average date for a full clutch. Five to seven eggs is the normal clutch, occasionally eight eggs. The nest, usually on the ground except when it is built in a grassy bankside beneath a hedge, is skilfully hidden in orchards and roadside verges and country lanes, on commons and open spaces and in deciduous woods. When the nest is built in a natural hole in a bankside, there is occasionally no roof to the nest. The very odd nest is unlined. It breeds up to 1,000 feet altitude on wooded fells. In Geltsdale one year a pair had a nest with six eggs about 15 feet up in a hole in an alder tree, although normal nesting-sites were available on the bracken-clad fellside where the tree was. Another year in the Langdales a pair had a nest with six eggs between two stones on top of a six-foot high dry stone-wall, although again normal nesting-sites were available in a nearby grassy bankside.

The young are fed chiefly on green caterpillars and small flies: a pair by the shores of Ullswater fed their young on mayflies whilst the insects lasted. Although usually silent when handled, the young occasionally give a hissing note when disturbed. I have several records of injury-feigning by the adult Willow-Warbler when flushed from young, whilst a cock, when disturbed in late May from a nest ready for the feather lining, trailed his wings as if injured. The most pronounced case of injury-feigning was by a hen flushed from a brood of newly-hatched young in a bankside: she fluttered to the ground with both wings outstretched and, in this manner, crept along the ground for several yards. In the case of an adult with fledged young out of the nest, the adult, I think a hen, half-ran half-fluttered along the ground with wings held half-vertical.

In general only one brood is reared but a few pairs may rear two broods, the second nest usually built near the site of the first. During the fifty years I have lived at Cumdivock, a pair have often reared a brood in my orchard, and invariably within 24 to 30 hours of the young leaving the nest, the entire brood and the adults have left the orchard. I have never known any attempt at a second brood in my orchard. Latest date for a brood to leave the nest is 31st July, presumably a second brood. This is the only Warbler I have found victimised by the Cuckoo: unfortunately the young Cuckoo vanished from the nest when about half-grown.

Passage movement begins in the second week of July, with birds starting to drift either singly or in two's and three's through orchards and gardens and along hedges, with occasional visits to cornfields and turnip fields and on the lower fell-slopes to bracken patches. A rush of birds is often noticed during the second and fourth weeks of August, also the first two weeks in September. A good deal of song comes from these passing visitors and can be heard in most years up to the last week in September.

One August day a juvenile Willow-Warbler was noticed displaying to its own reflection in a ground-floor window of my house, with wings arched and turning its head from side to side.

The heaviest breeding density has been four pairs to four hundred yards stretch country lane, also four pairs to four hundred yards stretch open ground, with small bushes and brambles and odd silver birch. Six pairs breeding along a one mile stretch of country road or lane is a good average density. Of four pairs nesting in a half mile stretch of the Kentmere valley two nests, both with six young amongst low brambles, were fifty yards apart. Five pairs nesting in one thousand yards stretch of country lane, two nests were sixty-five yards apart and the third ninety yards apart. Two nests, both with seven young, were eighteen feet apart in an oak wood at Bassen-thwaite.

THE WOOD-WARBLER *Phylloscopus sibilatrix*.

The song of the Wood-Warbler has not been heard before 30th April, with 4th May as the average date. The cocks usually arrive first, frequenting chiefly woods of oak and beech and silver birch, preferably with little undergrowth. The song is a rising repetition of the one note increasing in speed and ending in an explosive trill: the bird shivers with its wings as this loud trill is given and may then give voice to a series of mournful "deur, deur" notes and fly from tree to tree as it ends its song. Display consists of a slow butterfly-like flight by the cock from tree to tree when the hen is near and on closer approach to her he will, whilst singing, elevate the head feathers, then move his wings up and down in a fluttering manner.

Nest-building is usually the work of the hen, but one May day I watched a cock Wood-Warbler, after singing, begin nest-building in a bankside in a wood and four days later the nest held one egg. A hen Wood-Warbler, watched nest-building one June day in a bankside under a sapling oak, was collecting dead grasses, tugging vigorously at them, and as soon as it held a beakful flying straight to the nest: after leaving the nest it usually flew to an overhanging branch of the oak; and in this connection when feeding young the adults invariably work their way down to the nest by an overhanging branch if possible.

Earliest clutch, seven eggs, 17th May, with young fledged by 14th June, but many pairs are just hatching-out in mid-June, with late breeders feeding young until the last week of July, and song can be heard until the beginning of July. All nests found have been in deciduous woods, often in a slight bankside in the wood and partly shaded by bracken or bluebell clump or stump of oak or hazel. It breeds up to 1,250 feet altitude on wooded fells.

I have no records of any passage movements in the autumn apart from a single record of a bird in my garden at Cumdivock in early September.

Five cocks were located one May in a deciduous wood of c.70 acres and three pairs eventually nested: six cocks located in a deciduous wood of c.100 acres and four pairs nested.

THE GRASSHOPPER-WARBLER *Locustella naevia naevia*.

The Grasshopper-Warbler arrives from 23rd April onwards with 30th April as an average date. It fluctuates considerably from year to year, one year several cocks may be heard reeling from a gorse-clad common or a young plantation, the next year, in the same locality, no birds are heard or just a solitary bird. Always there seems to be an excess of cock birds, and after reeling for several days and nights, if no hen arrives, the cock vanishes to another locality. Whilst the reeling is most frequently heard early morning or late evening, the birds will also reel during the day. Thus one May day a cock reeled from a young Scots pine plantation from dawn until eleven o'clock, then from two to four in the afternoon, and in the evening from half-past seven onwards. One June afternoon a cock reeled from two o'clock until four o'clock in bright sunlight from a bed of willows bordering a meadow hayfield. The cock has been timed reeling for as long as eighty-nine seconds without a pause.

When the cock is reeling for a mate he will often sit in full view on a gorse or hawthorn bush: the best view I ever had of a bird reeling was at eight o'clock one April morning when a cock suddenly appeared on top of a hawthorn hedge at Cumdivock and reeled away for a good half minute.

I have only five breeding records, two from young plantations and two from gorse-clad commons and one in a cut-over wood.

THE SEDGE-WARBLER *Acrocephalus schænobæus*.

The last week of April—earliest date 24th April, with an average arrival date of 5th May—brings the avian mimic, the Sedge Warbler who, not content with his own song, a vigorous and rather creaking refrain, will also utter the songs or part songs of several more species whilst you listen on a sultry spring evening by the tarn edge. He frequents the sedges and willows around the lakes and tarns and brickfield ponds, also the sedgy ditches on the outskirts of the mosses and low-lying marshy pasture fields, but there are large stretches of suitable countryside where no Sedge-Warblers are found.

In display the cock glides through the air with half-vertical wings, whilst singing vigorously and, at times, performs a "slow-motion" flight. It nests commonly in beds of meadow-sweet or nettles or low brambles. Earliest clutch, four eggs, 4th May, with young fledged by 31st May, but in most years it is mid-June before the young are fledged, with many broods hatching and flying in July, with the latest brood still being fed in the nest on 29th July. Most breeding-sites are deserted by the third week of August—with 15th August latest date for birds still present at the breeding-site—and passage movement occurs during that month.

THE GARDEN-WARBLER *Sylvia borin*.

The rich hurried bubbling song of the Garden-Warbler, with a liquid undercurrent running through it, is usually heard from the second week of May onwards—earliest date, 5th May—in the shrubberies and thickets of small bushes in wooded valleys or the outskirts of deciduous woods. In some years unmated cocks are still arriving at the beginning of June and these birds, anxious for a mate, display themselves freely in the tree-tops, singing with wings half-open and shaken at times.

When a cock Garden-Warbler takes possession of a blackthorn thicket or a clump of brambles besides singing his hurried bubbling song from various song-posts, he will begin building a series of nests in the thicket or brambles. These are often very flimsy affairs, just a shallow bundle of fine grasses, especially at the beginning of the season, but later efforts are more substantial, and the hen, if and when she arrives, may make use of one as a foundation for the actual nest. I have note of such cock nests by 20th May and have found as many as five in the one blackthorn thicket.

Very little display has been seen: the cock raising one wing half-vertically to the hen whilst singing, or with head and neck outstretched fluttering along the ground. An incident noted one June day may have some connection with display. A pair had a brood of three young in a bramble clump. Both adults approached the nest with food, the cock with a beakful of green caterpillars, the hen with a crane-fly. The cock presently fed the young, after a good deal of "churring" notes from both adults. Then the hen with the crane-fly in her bill approached the cock: he at once put out both wings horizontally and fluttered them, whilst warbling quietly: the hen in reply put out her wings horizontally and fluttered them.

Blackthorn and bramble and beds of nettles and clovers or clumps of wild raspberries are most often used for nesting. Food fed to the young consists mainly of small green caterpillars and small flies and crane-flies.

15th May is the earliest date for a five-egg clutch with young fledged by 12th June, but most broods do not hatch out until the first or second week of June, whilst a nest with two eggs was found on 19th July one year, and a brood of two fledged young on 24th July another year. A brood of five young in low brambles scuttled out of the nest and called noisily in reply to the adults' warning "churring" notes.

There is often a considerable excess of cock birds and as many as six cocks may sing vigorously about the blackthorn thickets and bramble clumps in the open spaces of a deciduous wood during the latter half of May, with perhaps only two or three birds securing mates and breeding. In a one mile stretch of the wooded Shawk valley the number of breeding pairs has fluctuated from two to five pairs each year, although in the last week of May up to nine cocks have been heard singing. Occupied nests of Garden-Warbler and

Sedge-Warbler were found one year only six feet apart in beds of cleavers and nettles in a ditch bottom.

Passage movement, usually just individual birds, has been noted in August and September, latest date, 9th September.

THE BLACKCAP WARBLER *Sylvia atricapilla atricapilla*.

The Blackcap Warbler has the most beautiful song of all the Lakeland nesting Warblers: at times the Garden-Warbler can approach him very closely for beauty of song but the Blackcap scores in richness of tone. Twenty-third April is the earliest date of arrival with 30th April as an average date. One year on 17th May a nest with five half-fledged young, estimated to be six days old, was found in brambles at Leighton Moss, and assuming an incubation period of eleven days, this would give 30th April for the five-egg clutch.

The raising and lowering of the head feathers by the cock, or the raising of the wing half-vertically, accompanied by a slow flight from bush to bush form the chief display by the cock. With fledged young in the nest the cock will sometimes display on the ground with extended flapping wings or hang head downwards from a bramble spray whilst twisting its head in various directions. One cock, with young in a nearby bramble-clump, approached to within a few feet of an adult Tawny Owl perched in broad daylight on a tree-stump and imitated the alarm notes of a Jay.

The nest of the Blackcap is even more flimsy than that of the Garden-Warbler, with daylight often showing through the base. Nests are usually in bushes such as rhododendron or gooseberry or young sapling trees, also in bramble clumps, and the cock has twice been found incubating eggs: once on five eggs in a nest in a sycamore sapling; the other also five eggs in a young spruce fir in a plantation.

In a one mile stretch of wooded Shawk valley never more than two or three breeding pairs. Blackcap Warblers and Garden-Warblers frequent very much the same type of breeding area and occupied nests of the two species have been found fifteen yards apart — the Blackcap in a gooseberry bush, the Garden-Warbler in a bed of cleavers. Although fledged young have not been found later than 2nd July in any year, on the other hand the cock has been heard in full song as late as 23rd July.

THE WHITETHROAT *Sylvia communis communis*.

The Whitethroat has been recorded arriving in April in thirteen years, the earliest date being 17th April, with a pair arriving together one year on 24th April, but the other years all have an arrival date in the first week of May. He is full of restless energy, especially when newly arrived, flinging himself into the air above a hawthorn hedge, bursting into ecstatic song and then as hurriedly retreating into the comparative safety of the hedge. A quiet form of display was seen one May day when the cock, with a piece of vegetable down in his beak, displayed his tail fan-wise, the hen

replying by raising her wings like a Hedge-Sparrow: more boisterous display occurs when the cock chases the hen up and down the length of a hedge whilst in full song. If the cock and hen arrive together, as sometimes happens, then the nest-building is done entirely by the hen, but when the cock precedes the hen by a varying number of days or may not get a hen at all, then he spends part of his time building two or three cock nests in his chosen territory and these nests are usually lined on the rim with vegetable down and occasionally the nest bottom also.

The cock Whitethroat, after singing, has been seen to carry a beakful of dry grasses into a meadow-sweet clump whilst in the case of a nest in low brambles, which the cock was seen to visit and no hen was ever seen near, as in fact he never got a mate, was found four days later with the nest-rim decorated with vegetable down and the cock was heard singing close at hand. One day in June another cock was flushed from an empty nest in herbage beside a hedge, the nest-rim of which was freely decorated with vegetable down. If and when a hen arrives she may use one of these cock nests. Thus a nest in meadow-sweet with five eggs had the rim decorated with vegetable down; another nest with one egg amongst the grass growing up through a sapling spruce fir had the rim decorated with cottongrass down; a nest of five eggs in a heather-clump had pieces of willow-down on the rim; two nests of five eggs each, sited about twenty-five yards apart in gooseberry bushes in a garden, both had vegetable down on the nest-rim. But the majority of nests that hold eggs are without these rim decorations and the nest is usually lined with black hair.

The Whitethroat breeds commonly about hedges and country lanes and commons and open spaces on the outskirts of woods and plantations: in fact, in very similar areas to the Willow-Warbler and occupied nests of both species have been found only twenty-five yards apart

Nests are usually in ditchside herbage such as meadow-sweet beds or nettle-clumps or low brambles or raspberry clumps: a number are built amongst the grasses growing-up through a small bush or sapling in a plantation.

One six-egg clutch found in May. In the hot summer of 1943 a hen was flushed from newly-hatched nestings on 22nd May, and assuming an incubation period of twelve days, this would give 10th May as earliest date for a five-egg clutch. In most years the last week of May is the average period for a full clutch. Occasional broods of young are still in the nest until the last week of July, with 14th August as the latest date for fledged young still in the nest. Some of these late broods may be second broods, others may just be second or even third attempts to rear a brood.

Injury feigning by the adult, usually fluttering along the ground with outspread wings and tail, has been noticed when flushed both from eggs and young.

The cock has been seen to feed the sitting hen. Food fed to the young is mainly green caterpillars and small flies and moths.

Three pairs breeding in ditchside herbage along a 450 yards stretch of country road is the highest density noted. Two occupied nests in low hawthorn bushes on a common were 130 yards apart.

Passage movement, often associated with the Willow-Warbler, begins during the third week in July and continues until the last week of September: at first only single birds or odd two's and three's, but in August there is often a considerable rush of migrants during the second and fourth weeks. The Whitethroat on autumn migration is found oftener in cornfields and turnip-fields than the Willow-Warbler.

From 1967 onwards there has been a marked decline in the number of Whitethroats breeding in Lakeland, and this decrease in breeding birds was most pronounced in 1969, when from being one of the most abundant Warblers it became one of the scarcest. Although search was made over a large area no nest was found and only one bird was heard in brief song.

THE LESSER WHITETHROAT *Sylvia curruca curruca*.

The loud brief song of the Lesser Whitethroat is pleasant, but it is the low warbling which runs on without a break for several seconds that gives the beauty and, in addition, there is a bell-like note, very silvery and clear, that reveals the identity of the singer. In display the cock will fly with vertical beats of its wings whilst in full song. It arrives about the third week in May—21st May an average date—and leaves towards the end of August.

It has been found breeding in Dalston parish, usually in tall unkempt hedges at heights of five to six feet. A hen was flushed from five eggs in June, 1936, and from four eggs in June, 1938: broods of two young still in the nest in July, 1941, and two fledged young out of the nest in August, 1943.

It occurs in the Solway coastal area between Abbeytown and Kirkbride. One record of passage in mid-September.

AVERAGE BROOD REARED BY WARBLERS.

SPECIES	No. Broods	8 Young	7 Young	6 Young	5 Young	4 Young	3 Young	2 Young	Av. Brood
Willow-Warbler	181	4	47	72	31	17	6	4	5.76
Wood-Warbler	36	—	2	6	20	6	2	—	5.00
Sedge-Warbler	24	—	—	—	6	10	4	4	3.75
Garden-Warbler	31	—	—	—	10	12	7	2	4.00
Blackcap	18	—	—	—	10	5	2	1	4.33
Whitethroat	73	—	—	—	30	29	10	4	4.16
Chiffchaff	10	—	—	4	—	—	4	2	4.00

RECOVERY OF RINGED GARDEN-WARBLERS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
J1819	Cumdivock, Cumb. 12.6.29	Iholdy, Basses Pyrenees, France 9.9.29	—

THE FIELDFARE *Turdus pilaris*.

From the end of the first week in October flocks of Fieldfares, either alone or with Redwings, begin passing through the lowland areas of the Solway Plain. The earliest date noted is 5th October, but in most years the bulk of the passage is during the last fortnight of October and the first fortnight of November. Flocks can vary from a few dozen birds to as many as five hundred: they feed in the pasture fields and visit the hedges for rose-hips and haws. This daylight migration is most noticeable on a morning, often from seven to about ten o'clock, and in a westerly direction. The birds pass over and around Cumdivock, which lies seven miles south of Carlisle, from the east and making west to north-west.

On 10th November, 1923, from 11 a.m. onwards, a continuous stream of Fieldfares was flying north-west across the Solway Firth from Skinburness and this movement has been noted in other years.

From the end of November until the end of March varying sized flocks will stay about the neighbourhood as long as the weather remains open and food is available. If slight frost sets in the birds will visit orchards to feed on fallen apples, and the scaled muck in pasture fields for anything eatable. They visit the fells, feeding on the rowan berries and the seeds of the field wood-rush, and range up to 2,800 feet on Saddleback and High Street,

The flocks will roost in hawthorn clumps or elderberry bushes or conifer plantations: also in turnip fields and "seeds" fields.

The return migration begins during the last week of March and continues until the end of the first week of May, the latest date being 14th May. The great bulk pass through in April, the birds often gathering in oak trees with much chattering about dusk, then move off in an easterly direction. On three nights in April, 1963, a total of nine hundred birds assembled in oak trees at Cumdivock, with a few Redwings amongst them, then around dusk made off in an easterly direction. On 22nd April, 1967, numerous large flocks were assembled in pasture fields between Penrith and Skirwith, and by dusk all had gone. In other years flocks of from fifty to one hundred and fifty birds have been seen as late as 7th May and 9th May.

THE MISTLE-THRUSH *Turdus viscivorus viscivorus*.

The "skirl" of the Mistle-Thrush is usually the first indication of the bird's presence: the wild challenging notes of its song are heard from early February onwards, in mild weather from mid-

January. One year a bird was in full song on 22nd January, a mild time with the honeysuckle in leaf and the gorse in flower. Nest-building, chiefly by the hen, the cock accompanying her, begins in March, and for these first nests will take up to eight days, but later in the season can be built in three to four days. Earliest date for a four-egg clutch, 14th March, with young fledged by 17th April. Latest date for a brood to leave the nest, 21st July. The young are fed by the adults for up to a fortnight after leaving the nest. A second brood is often started as soon as the first is reared: the hen will build a second nest and lay the eggs whilst the cock is feeding and looking after the first brood. Thus the pair with four young that left the nest on 17th April, the hen began building the second nest on 14th April and was sitting again on a four-egg clutch on 21st April and these hatched on 5th May. The young are usually brooded during the day until they are nine days old and at night until twelve days old.

The nest is usually built at a moderate height in a tree, either in a crotch or out on a branch: it is often decorated externally with wool. Sometimes the birds build in unusual sites, thus a nest in a roof gutter and a nest on the window-ledge of a bathroom, both sites c.30 feet from the ground. Another unusual site was a nest three feet from the ground in a gorse-bush at the base of a fell: immediately across the fell road was a farmhouse with a shelter belt of mature trees that would have provided more conventional nesting-sites. Another nest was built on top of a fence rail that bridged the gap in a hawthorn hedge, the nest placed against the upright post that held the rail in position.

The adults will attack in defence of their young. A pair that reared several broods over the years in a weeping-ash tree on my lawn, both adults would attack and strike both my father and myself on the head if we approached the nest too closely. When the day came to ring the young I was frequently pecked on my face and hands by the outraged adult.

Earthworms are the staple food for the young: later in the season the raspberry canes are raided and on the fells the bilberries are taken in July—a party so engaged on John Bell's Banner one hot July day. Wild cherry trees are raided with gusto and later the rowan berries, also the berries of the privet and yew. In hard weather fallen apples are eaten and heather-clad fells are visited for the heather seeds.

Flocking begins at the end of June and continues into October with the larger flocks often travelling in a northerly direction. Thus on 14th October, 1925, a flock of fifty birds passed along the base of Saddleback heading north: on 30th October, 1928, fifty-seven passed over Catterlen, nr. Penrith, heading north-east: whilst on 1st October, 1939, no less than one hundred and forty-five birds passed over Faulds Brow, Caldbeck, an upland moor, altitude 1,200 feet, heading north.

In October and November there is often a good deal of "scrapping" and "skirling" amongst the resident birds of a locality: one November day three birds started "scrapping" in an old yew tree and singly others came in until nine birds were chasing and skirling at one another. Attempted coition has been seen in October and it is possible that the birds pair at this period of the year and certainly when the breeding-sites are occupied in February or early March many birds are already paired.

It breeds throughout the lowland farming area to the fell-bases, breeding commonly in gardens or roadside shelter belts of trees. Up to six breeding pairs have been known along a one mile and half stretch of country road, with farmhouses and gardens and orchards for breeding-sites, but since 1960 a decided decrease has been noticed in the Carlisle-Dalston-Thursby area, with many breeding-sites deserted.

A pair each of Mistle-Thrush and Song-Thrush nested in the same yew tree, the nests about ten feet apart, and both held four eggs on 27th March. In my garden one year a pair reared three young in an apple tree only nine yards from a Song-Thrush with three young in a golden yew bush and thirteen yards from a Blackbird with four young in a rhododendron bush. Another pair reared four young in a yew tree twenty yards from a Song-Thrush with five young in a box-bush.

THE SONG THRUSH *Turdus ericetorum ericetorum*.

The song of the Song-Thrush is general in most years from the end of January until the end of July: in very mild weather it may begin at the end of December. Part-song may also be heard on mild mornings in October and November. The Song-Thrush, when it starts in January, invariably begins to sing shortly after dawn in contrast with the Blackbird which, when it begins to sing in February, starts singing just before dusk.

Earliest clutch, four eggs on 14th March: latest date for a brood to leave the nest, 19th August. In an average year from one-half to two-thirds of the first layings come to grief through the depredations of Carrion-Crows and Magpies and egg-collecting boys. It breeds commonly throughout the area, nesting especially in gardens with suitable bushes and in roadside hedges, with odd pairs in the more open and mature deciduous woods. Only rarely does it build at any considerable height in a conifer. Odd pairs nest inside old farm-buildings. Nests in hawthorns on fellside up to 800 feet altitude. When a brood is successfully reared a new nest is usually built for the second brood, but sometimes the same nest is used for both broods. Nest-building is entirely by the hen. The young are brooded during the day until eight or nine days old, at night until eleven or twelve days. One pair whilst the hen brooded the young at night the cock roosted in a nearby empty nest. One very cold May, with prolonged east winds,

two broods reared in my garden were brooded during the day until they flew from the nest.

The young are fed by the adults for up to nineteen days after leaving the nest. Earthworms are the staple food for the young in the nest, with green caterpillars later in the season. Snails are regularly hunted for and the shells broken on a stone or clod of earth, and in very dry weather black slugs are eaten. It is not so destructive to fruit as either Blackbird or Starling. It has been found eating bilberries on Eagle Crag and from late July to September is regularly flushed from bracken on the lower fell-slopes and also in early February. In the autumn it will feed on ivy seeds and the berries of the elderberry and alder.

Two pairs usually breed in my half-acre garden with one or two pairs of Blackbirds, occupied nests of the two species barely twelve yards apart. In a hawthorn hedge occupied nests of Song-Thrush and Blackbird, both with eggs, were nine yards apart. One pair of Song-Thrushes reared five young in a yew bush only six yards from another pair with four young in a cypress. Two nests with eggs in gorse-bushes were fifteen yards apart, and two nests in a hawthorn hedge were thirty-five yards apart.

THE REDWING *Turdus musicus musicus*.

5th October is the earliest date for the arrival of the Redwing, either in flocks by itself or associated with Fieldfares, the quieter "seep-seep" notes of the Redwing contrasting with the harsher chattering notes of the Fieldfare. Although it is often heard passing overhead at night, there is also a daylight passage across country from east to west during the last fortnight of October and the first fortnight of November. An outstanding daylight passage occurred on 31st October, 1959, when, in the aggregate, over a thousand birds in varying sized flocks, passed over Cumdivock making west, in company with a few Fieldfares.

In 1946 a large roost was formed in a larch plantation at Rose Castle, Dalston, and on 22nd November at least six thousand birds were assembled in the trees by dusk. Above this plantation are several groups of oaks and Scots pines in which a fair-sized flock of Rooks and Jackdaws has roosted for many winters. It was noted that the Redwings were all settled for the night in the larch trees before the Rooks and Jackdaws, assembled in a grassfield by the Caldew, rose up in a black mass to settle, with much cawing and chacking, in the oaks and Scots pines. By 19th January the roost was down to three thousand birds, then seven weeks of frost followed during which period the roost was abandoned.

On 26th February, 1957, and also on 25th January, 1960, a Redwing sang from the top of an oak tree in a meadow at Cumdivock. The bird on 26th February sang for several minutes, and I may say

that during thirteen trips to Norway I am well acquainted with its song.

Redwings often feed in open spaces in deciduous woods, turning over leaves in search for food and also feed commonly in pasture fields. When continuous frost sets in flocks have been known to spend up to three days in such pasture fields or cleared potato or turnip fields, although the ground was frozen, and it was difficult to understand what food they got under such conditions. Holly and hawthorn berries are taken during frosty weather.

THE RING-OUZEL *Turdus torquatus torquatus*.

A pair of Ring-Ouzels at Haweswater on 25th March is the earliest arrival date: song has been heard by 26th March, a bird amongst the screes on Illgill Head, Wastwater, and as late as 21st August one was still in song from Yewbarrow Crag, on the opposite side of the deepest Lakeland lake. The clear piping notes, usually delivered from a large boulder or juniper bush, harmonise well with the rugged nature of the screes and boulder-clad fells which it frequents. It breeds throughout the Lakeland fells and the north Pennines. I have only one record of its spring passage through the lowlands: a bird flushed from a snow-covered hawthorn hedge at Cumdiveock on 6th April, 1958.

Earliest clutch, four eggs, 20th April, with young fledged 19th May, and in most years several broods are on the wing by the end of May. Latest date for a brood to leave the nest, 7th July. The usual clutch is four or five eggs: the nest is commonly on a rock-ledge sheltered by heather clump or bilberry plant, or in a steep heather-clad bank. The young are fed chiefly on earthworms, also moths such as the oak-eggjar.

In May, 1929, a pair reared three young on a heather-clad rock-ledge only twenty yards from the breeding-ledge of a Peregrine with three young: in May, 1946, a pair reared four young in a rock-crevice only thirty-five yards from a Raven with three young. Most nest-sites lie between 1,000 feet and 1,700 feet altitude. In 1931 six breeding pairs were established in a two mile stretch of Lakeland valley: in 1961 three pairs bred in another valley one and a half miles in extent.

One August day a flock of twenty birds were feeding on bilberries on High Stile: in mid-September a party was busy amongst the berries on a rowan tree in Stake Pass.

Latest date recorded is a pair, cock and hen, flushed from a holly-bush in the Dove valley on 9th October.

THE BLACKBIRD *Turdus merula merula*.

It is usually the end of February before the Blackbird begins to sing, a month after the Song-Thrush, and it invariably begins on an evening, shortly before dusk, in contrast with the Song-Thrush which

begins shortly after dawn. Like the Thrush, odd birds continue in song until the end of July. Its output of song is undoubtedly affected by rain: a gentle shower of rain, especially on a mild spring evening, will induce all the cocks in a neighbourhood to sing one against the other and there is then a feast of beautiful, carefully modulated song, to satisfy the most critical students of bird-song.

A cock displaying in late February before a hen on a stone-wall ran up and down the wall with tail depressed and slightly spread, wings depressed, neck outstretched and neck feathers raised. Another cock and hen, tails erect, faced each other and pecked the ground.

Earliest clutch, four eggs on 28th March, with young fledged by 25th April. Latest date for young to leave the nest 15th August. Three records of a six-egg clutch. Breeding-sites similar to the Song-Thrush, chiefly in gardens and roadside hedges with odd pairs in deciduous woods, and the occasional pair nesting inside old farm-buildings. It frequents the fells up to 1,000 feet altitude. It will nest in trees up to thirty feet from the ground. The hen alone builds the nest, average four to five days. Two broods sometimes reared from the one nest in a season. Young, fed chiefly on earthworms, are fed by the adults for up to seventeen days after leaving the nest.

The Blackbird will steal earthworms from the Song-Thrush and will also chase the Starling from food, but the Fieldfare can chase it from fallen apples. It is more destructive to fruit than the Song-Thrush and is especially fond of blackcurrants and raspberries.

Communal gatherings, chiefly of adult cocks, occur from November to February, with up to nine birds taking part. Three cocks will chase one another, beaks open, wings drooping, and running with short steps: or will display with humped backs, tail dispersed and fan-spread, and beaks pointing earthwards, or pecking at the ground. Only exceptionally is there even one hen present at these gatherings, usually on a lawn or a country road.

In hard weather conditions up to thirteen birds, of both sexes, have been noted feeding on rotten apples in an orchard without any appreciable hostility, and then usually a cock chasing a hen from food and occasionally a hen chasing a cock. One October day six cocks were feeding peacefully on hawthorn berries, scattered by a strong wind, on the ground. It will eat sloes and ivy berries and slugs to a limited extent.

Pair with four young in a laurel bush only five yards from a Song-Thrush with four young in a golden yew. Nests of Blackbirds and Song-Thrush, both with four eggs, were nine yards apart in the same hawthorn hedge, whilst in a large plum tree against a garden wall, occupied nests of Song-Thrush and Blackbird were twelve feet apart. In a hawthorn hedge two nests with eggs of the Blackbird were twenty-five yards apart.

AVERAGE BROOD REARED BY THRUSHES AND OUSELS.

SPECIES	No. Broods	5 Young	4 Young	3 Young	2 Young	Av. Brood
Mistle-Thrush ...	40	6	19	13	2	3.73
Song-Thrush ...	172	21	92	41	13	3.76
Ring-Ousel ...	25	2	12	9	2	3.56
Blackbird ...	96	11	44	34	2	3.61

RECOVERIES OF RINGED SONG-THRUSHES.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
97229	Gamblesby, Cumb. 20.4.20	Where ringed 24.3.23	—
Y5972	N. Welton, Cumb.	Where ringed	—
Y5669	26.4.25	—4.26	
Y5986	Dalston, Cumb. 3.5.25	Tralee, Co. Kerry, Ireland, 6.1.26	
Y5684	N. Welton, Cumb. 17.4.26	East Kilbride, Lanark 14.3.28	80 Miles N.W.
W3662	Dalston, Cumb. 15.6.26	Hollymount, Co. Mayo, Ireland, 8.2.30	
V8482	Carlisle, Cumb. 2.5.28	Nr. Merthyr, Glam. 28.1.29	260 Miles S.
AN4740	Cumdivock, Cumb. 27.6.31	Where ringed 25.4.33	—
TB281	Cumdivock, Cumb. 28.6.43	Maryport, Cumb. 25.10.43	20 Miles S.W.
S64905	Dalston, Cumb. 28.4.56	How End, Thursby 3.1.62	5 Miles W.

RECOVERIES OF RINGED BLACKBIRDS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
S10564	Cumdivock, Cumb. 9.6.55	Carlisle, Cumb. 16.7.55	7 Miles N.
V31912	Nr. Keswick, Cumb. 18.5.57	Where ringed 23.6.57	—
CP62702	Staveley, Kendal, West. 8.6.69	Kentmere, West. 7.7.69	4 Miles N.

The oldest Song-Thrush recovered was 5 years 9 months old. Two recoveries in Ireland, one in Co. Kerry in January and the other in Co. Mayo in February, indicate the wintering area of this species when hard weather conditions in Cumberland force it to migrate. The recovery in Glamorgan in January also suggests migration to a milder winter area, whilst the recovery in mid-March from East Kilbride, suggests the bird was perhaps on a return journey from Northern Ireland.

The three recoveries for the Blackbird indicate slight local movement: all three were reported barely one month after ringing.

THE WHEATEAR *Oenanthe oenanthe oenanthe*.

In most years the Wheatears begin to arrive during the second half of March: 19th March, two hens on Melbreak, is the earliest record, and by the end of the month the cocks are in song from boulder to stone-wall, often with a display of fan-spread tail. The song is as clear as the water of the beck alongside which the bird is found. It breeds in coastal areas, lowland moorland areas, and throughout the fells up to 2,900 feet altitude in both the Pennines and the Lake District. Nest-building seems to be entirely the work of the hen, but the cock helps in incubation as on various occasions over the years several cocks have been flushed from eggs. Earliest clutch, five eggs on 6th May, with young fledged by 4th June, but in two years fledged young were flying by 31st May. Latest date for a brood to leave the nest, 10th July. Four records of a seven-egg clutch.

Usual nest-sites are natural holes in the ground, or under a boulder or in a dry stone-wall: exceptionally down cracks in large boulders. One nest-site, a natural hole in a bank, has been used by successive pairs since 1925, usually every other year, once for two successive years. A number of hens have been caught on young at this site and ringed, but it has always been a new hen each time. Two nests with young were thirty-five yards apart: another two were 120 yards apart. In the case of a brood of four young in hole under a heather-tuft, the cock often perched on the topmost spray of a 20 foot tall Scots pine.

Food for the young consists of small earthworms, weevils, brown or grey caterpillars and ants.

After mid-July very few adults are seen on the fells, chiefly juveniles flitting about from boulder to boulder. Migration is pronounced on the coastal marshes from mid-July until mid-October, also through the lowland farming areas in late August and early September. Latest record a juvenile on Hart Crag, Helvellyn range, on 26th October.

The spring passage of the Greenland race is most noticeable in the coastal areas in early May and up to 20th May. One May day on Burgh Marsh fifteen birds were seen during a quarter-hour walk along the marsh-brow. It also occurs in arable fields in the lowland farming areas during this period.

THE WHINCHAT *Saxicola rubetra*.

Apart from an exceptional record of a pair of Whinchats at Cumdivock on 7th April, 1922, the end of April usually sees the arrival of the Whinchat to gorse-clad common or bracken-clad fellside: it is also found about sedgy moorlands and railway embankments. 27th April a cock and hen about railway embankment at

Dalston is the next earliest record. Its presence is more often betrayed by its rather metallic-like alarm note than its brief song. It has been heard in song at 1,300 feet altitude in Skiddaw forest.

The nest, often well hidden, is usually at the base of a large grass or herbaceous clump or under gorse. Usual clutch is five or six eggs with one record of a seven-egg clutch. Earliest clutch, six eggs, 20th May, with young fledged by 18th June: latest date for a brood to leave the nest, 25th July. During the summer of 1927 two broods of young Whinchats were found in a roadside locality—the first brood on 17th June, the second brood on 25th July—where only the one pair of adults was seen and it is possible this pair had reared two broods, although normally it is single-brooded.

Five breeding pairs along a one mile stretch of bracken-clad fellside at Haweswater in June, 1946, and three breeding-pairs along a one mile stretch of bracken-clad fellside at the base of Crossfell in June, 1947, are the heaviest breeding densities recorded.

On 1st September, 1921, between forty and fifty Whinchats were assembled in a large pasture field at the base of High Pike in the Skiddaw fells.

Passage of adults and juveniles occurs during August and September through the lowland farming areas and more occasionally in the coastal areas: latest records, a juvenile at Cumdivock on 13th October and a pair—cock and hen—about gorse-bushes at Wetheral Shields on 29th October.

THE STONECHAT *Saxicola torquata hibernans*.

Until the successive inclement winters of 1940-1942, with heavy snowfalls and prolonged frosts, the Stonechat was relatively abundant on gorse-clad commons and heather-clad fells as well as gorse-clad headlands and dunes by the sea.

It was resident throughout the year on many inland commons and on fells up to 1,500 feet altitude. Since 1943 these inland breeding haunts have in many cases become deserted, and only the coastal breeding haunts have been maintained. Gradually from 1947 onwards it has begun to re-colonise some of its former inland breeding haunts, but many are still deserted. It bred amongst the heather up to 1,500 feet altitude in the Skiddaw fells, the Buttermere and Thirlmere and Ennerdale fells, and the Haweswater fells in pre-1940 years: also Cumrew fell in the Pennines. It nested on Bowness Moss up to 1940.

Nest is often well hidden under gorse or bracken-clump: the bird is double-brooded in most years, and can be heard in song until mid-July. Earliest clutch, five eggs, 14th April, with young fledged, 13th May: latest date for a brood to leave the nest 14th August. On 12th November, 1939, a pair still had two young with them about the gorse-bushes at Dubmill Point, Allonby. Food fed to the young has mainly consisted of craneflies, wireworms and small moths.

On 10th November, 1923, at least a score of birds were about the gorse-bushes at Grune Point. In 1960 there were four breeding-pairs on St. Bees Head.

There is a spring passage in limited numbers, often a cock or hen by itself, during February and March: the autumn passage, either single birds or with up to four birds in a party, occurs during September and early October.

THE REDSTART *Phœnicurus phœnicurus phœnicurus*.

In most years the period 15th April to 21st April sees the arrival of the beautiful cock Redstart to begin another nesting-season about the tree-lined stretches of dry stone-wall that border many country roads and lanes in Lakeland. Its clear-cut and rather jingly song is invariably given from the top of a tall tree: if after several days' song no hen has arrived the eager cock moves on another half-mile or mile to begin afresh from another tree. By the end of the month it may be paired, and nest-building begins either in dry stone-wall or knot-hole or cracked branch of a tree or behind the thick ivy-stem that clasps the tree.

Earliest clutch, seven eggs, 9th May, with young hatched 23rd May and fledged by 5th June. Latest date for a brood to leave the nest, 6th August. A minority of pairs rear two broods in the season. Most broods are on the wing during the period 10th June to 25th June, and in the deciduous fellside woods where they breed the young commonly hide-up behind bracken-clumps for the first two or three days after leaving the nest.

Nests have been found at ground level amongst tree roots in deciduous woods, and twice on the ground under a large boulder, and once under a limestone slab on Whitbarrow Scar, with apparent suitable breeding-sites in nearby trees.

In June, 1964, a brood of eight young and two infertile eggs was found in a nest under a large boulder on bracken-clad fellside above Brotherswater.

Food is collected extensively on the ground: green and hairy caterpillars and small winged insects are fed to the young. Adults with young are still about the nest-sites up to the first week of August. A brood of eight young in a knot-hole in an alder was seventy yards distant from a brood of seven young in a knot-hole in a hawthorn bush.

The heaviest breeding densities have been five pairs nesting in 1,200 yards stretch of tree-lined dry stone-wall in the Skirwith area: three pairs nesting in 600 yards stretch similar road in the Elterwater area: and three pairs nesting in mature oats in 350 yards stretch Caldew valley.

The autumn passage, either singly or adults and young in company, occurs during August and September, with 21st September as the latest record.

THE ROBIN *Erithacus rubecula melophilus*.

The Robin is chiefly a garden-hunting species but a few pairs are found breeding in deciduous woods. It is one of the few species which maintains a definite "territory" throughout the winter months, driving off all other Robins and any Hedge-Sparrows that encroach on it. In February pair-formation begins, with the cock feeding the hen from March onwards. The slightly melancholy song begins in January and lasts until July, then heard again in August for a short period.

It nests mainly in grassy banksides below hawthorn hedges, also in walls or ivy-covered surfaces or inside disused buildings: one record of a nest of six eggs 14 feet from the ground in the fork of a tree. One record of eggs covered with oak leaves during the laying period.

Display with tail held vertical, neck outstretched, and head moved from side to side.

Earliest clutch, five eggs, 31st March, with young fledged 26th April: latest date for brood to leave the nest, 22nd July.

THE HEDGE-SPARROW *Prunella modularis*.

The high-pitched little trill of the Hedge-Sparrow's song is heard chiefly during the first six months of the year, but odd outbursts can be heard in every month. It is another garden haunting species and is the avian "picker-up of trifles," usually arriving at the bird-table after most of the food and all the other birds have gone.

It has been found breeding amongst the heather on the Skiddaw fells up to 1,000 feet altitude.

In display the cock raises both wings half-vertically, with tail fan-spread. The cock has the habit of pecking rapidly at the cloaca of the hen.

Earliest clutch, four eggs, 13th April, with young fledged 11th May: latest date for a brood to leave the nest, 22nd August.

In January, 1941, during a spell of prolonged frost and snow nine Hedge-Sparrows in a loose flock fed amongst the hay and straw on the ground of a Dutch barn.

AVERAGE BROOD REARED BY CHATS.

SPECIES	No.	8		7		6		5		4		3		2		Av. Brood	
	Broods	Young	...														
Wheatcar	70	...	—	...	2	...	16	...	27	...	18	...	3	...	5	...	4.73
Whinchat	36	...	—	...	1	...	8	...	14	...	6	...	2	...	5	...	4.58
Stonechat	26	...	—	...	—	...	4	...	8	...	4	...	6	...	4	...	4.08
Redstart	107	...	3	...	17	...	40	...	16	...	13	...	7	...	1	...	5.03

THE WREN *Troglodytes troglodytes troglodytes*.

The Wren occurs throughout the area, from lowland hedge and garden to crags around 2,000 feet altitude, haunting such even in mid-winter when icicles festoon the wetter rocks and the higher ridges are covered in snow. The loud and explosive-like song is heard mainly from February to July, but sudden outbursts can be heard during the last four months of the year.

Display by the cock with vertical wings and pivoting in a half-circle.

The cock will build several nests, usually starting early April, in hedge or ivy or wall, the hen alone lining it with feathers. The odd nest is built inside the unoccupied nest of a Swallow. These cock nests are built in two to four days.

Earliest clutch, five eggs, 27th April, with young fledged 28th May: latest date for a brood to leave the nest, 27th August.

Both sexes will feed the young in the nest but I have two records of only one adult, presumably the hen, feeding the young in the nest. The young are fed chiefly on insects and caterpillars and small moths for up to fourteen days after leaving the nest. One brood, after leaving the nest, were noted to roost in a knot-hole in a pear tree; also one November afternoon, nearing dusk, a party of ten Wrens were watched going to roost in a knot-hole in an oak tree.

One year a pair nested in a rambler-rose that grew against the front of my house and on one occasion, when the nest held eggs, two adults, presumably the cock and hen, were noticed near the nest. One adult sang a snatch of song then flew to the nest and disappeared inside: the other adult burst into song for several seconds then flew away.

One November day a pair of Wrens, presumably cock and hen, were together on the garden wall; the cock singing frequently with one wing held horizontal. About fifty yards away a single Wren was perched on a hawthorn hedge and every time the cock sang this single bird also burst into song and held one wing horizontal.

THE DIPPER *Cinclus cinclus gularis*.

The Dipper, like the Robin, maintains a territory throughout the year and its song, rising above the noise of the running water, can be heard in every month of the year. Pair-formation probably occurs in October or November when a good deal of pursuit and song takes place, with two to four birds involved. Nest-building by both sexes begins in early March: the nest-cup is usually lined with oak leaves, dipped in the water before being placed in the nest: the moss of the outer nest is also dipped in the water before being placed in position.

Earliest clutch, five eggs, 17th March, with young fledged by 19th April: latest date for a brood to leave the nest, 9th August.

The young are fed chiefly on worms and small fish which are hammered on a stone by the adult before feeding to the young. Both adults and young will dive and swim under water, using their wings for progress. The adult, swimming on the surface of a lake or tarn, will dive and re-appear after four or five seconds with a small fish in its bill. Young Dippers have a very tenacious hold, as anyone who has handled them for ringing will know, and I suggest the young birds "walk" under water by clinging to the pebbles and small stones of the beck with their claws.

The usual nest-site is in a bankside beside a waterfall, or under a bridge or amongst the exposed tree roots by a beck. A nest may be built in the "weep-hole" of a retaining wall under a bridge: twice on an isolated large boulder in mid-stream and once at the end of a large alder branch overhanging a deep pool.

In April, 1950, nine breeding pairs were located on a six mile stretch of river Caldew, and three pairs on two mile stretch of Gowk Beck, Ullswater. The bird has been heard in song at altitude 2,700 feet Crowdandle Beck.

AVERAGE BROOD REARED BY WREN AND DIPPER.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	1 Young	Av. Brood
Wren	... 38	... 10	... 17	... 10	... 1	... —	... —	... 4.95
Dipper	... 93	... 2	... 29	... 37	... 18	... 6	... 1	... 4.00

RECOVERY OF RINGED WHEATEAR.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
J8898	Ulpha, Cumb. 13.6.50	Contis-les-Bains, Landes, France 24.8.52	

RECOVERY OF RINGED WHINCHAT.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
MW20	Dalston, Cumb. 20.7.25	Cunha Baixa, Mangualde, Portugal 7.10.25	

RECOVERY OF RINGED REDSTART.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
H8750	Howtown, West. Adult ♀, 4.6.29	Where ringed 16.6.30	

THE SWALLOW *Hirundo rustica rustica*.

6th April is the earliest arrival date in any year for the Swallow, with the period 12th-19th April the average week for arrival over the fifty-year period. Although normally the cock arrives a few days

before the hen I have several records of both cock and hen arriving together.

A nest can be built in three or four days if the pair are in a hurry, or it may take up to eight days, both sexes working at the nest and lining it with feathers. Often, however, last year's nest in byre or calf-shed is used again and lined with feathers. This usually happens when the same adults return to the farm where they nested last year. A pair arrived together at one farm on 15th April one year, re-occupied a last year's nest and the first egg was laid on 28th April: in another case a pair arrived together on 13th April and the first egg was laid on 1st May. Two broods are normally reared and I have two records of three broods reared in the same nest in one season. The bird breeds commonly in farm buildings used by cattle or pigs or poultry.

Earliest clutch, five eggs, 2nd May, with young fledged by 5th June: latest date for a brood to leave the nest 10th October, with four records of young still in the nest during the first week of October. A six-egg clutch is not unusual, and one record of a seven-egg clutch.

No sequence is followed in feeding the young: whichever youngster puts its head up first gets the food. At one nest an adult alighted on the nest with a beakful of insects, called the sharp "whit-whit" note several times, but the young never opened their beaks and the adult flew away: shortly afterwards the other adult arrived with food, also called several times, and finally one youngster opened its beak and was fed. Usually only the one youngster is fed each time: an average of twenty-five to thirty-five visits an hour by the two adults is a usual rate. As long as the young are still being fed in the nest they are usually brooded each night by one adult and sometimes by both adults. When the young leave the nest they may return to roost in it for several nights.

There is a steady coastal migration in April, with birds passing at the rate of 140 birds per hour. In the autumn birds can be found hawking insects above fell summits such as Saddleback and Helvellyn, altitude 2,900-3,000 feet.

In the summer of 1933 a white hen Swallow was mated with a normal coloured cock at Cardew Farm in the parish of Dalston.

Most breeding-pairs and young have left by mid-October, but stragglers from further north pass south up to 8th November.

The breeding density per 1,000 acres can vary over a period of years from fifteen pairs to thirty-three pairs. It appears from the ringing returns that only a small minority of young return to the farm where they were bred: the majority appear to return to within a five to ten mile radius of where they were bred. On a farm of 150 acres as many as eight or nine pairs may breed for several years, then due to losses on migration only three or four pairs may return and it takes two or three years before the breeding density is again built up to eight or nine pairs.

THE HOUSE-MARTIN *Delichon urbica urbica*.

The House-Martin fluctuates considerably in breeding-pairs from year to year, more so than any of the *Hirundæ*. 12th April is the earliest date for a pair to arrive and the birds invariably fly up to and inspect the old nests under the roof gutters. Thus on 1st May one year four birds flew into a farmyard about mid-day, the first seen that year, flew around calling and then in pairs flew up to and inspected the old nests under the roof gutters. The next day one pair started building a new nest under the gutter. Another year, on 15th May, one bird arrived in the farmyard about 10 a.m., the first arrival that year, a second bird by noon, and by 4 p.m. four birds had arrived and two were sitting side-by-side on a gutter stanchion near an old nest. A new nest is normally built in eight or nine days, both adults working, exceptionally in four or five days or an old nest may be repaired but the House-Martin is very "dilettante" in its building and for no obvious reason will leave a nest after building it. It is much plagued by the House-Sparrow stealing its nest.

Earliest date for a brood to leave the nest, 29th June, whilst in a number of years young have still been fed in the nest during the first week of October. 30th October is the latest date for a bird still to be about its breeding-site. It nests chiefly on farm buildings, country houses and, occasionally, on town houses on the outskirts of small country towns. It will rear two broods in the same nest if undisturbed by House-Sparrows, but owing to the House-Sparrow stealing its nest it often takes it the whole summer to rear one brood. Both adults will roost in the nest at night with the young.

The heaviest breeding density has been twenty-seven pairs to one thousand acres, but owing to the rapid fluctuation in breeding-pairs from year to year, a farm with six to eight pairs one year may have none the next year and may remain in that position for two or three years and then suddenly have an influx of several pairs. In the summer of 1960 three pairs suddenly arrived and built three nests under the roof gutter of my house at Cumdivock, where I had not had any breeding birds for several years, and then as suddenly left the nests, although undisturbed by House-Sparrows, and I have not had any House-Martins build at the house since.

In the summer of 1927 a pair reared young in a nest on the crags on Carrock Fell.

One year a dead adult was found hanging out of the nest entrance with the left wing firmly embedded in the hard clay of the nest, the nest being under a roof gutter. Inside the nest was a thriving brood of four young.

In company with Swallows and Swifts it has been found hawking insects in August above the summit of Saddleback, altitude 2,900 feet in the Skiddaw fells.

THE SAND-MARTIN *Riparia riparia riparia*.

30th March is the earliest date for the arrival of the Sand-Martin and 18th October the latest date for a bird on Burgh Marsh. The normal nesting-sites are river banks and sand quarries, also the banks of salt marshes: it also nests in the weep-holes in retaining walls.

Earliest clutch, five eggs, 30th April, with young fledged by 30th May: latest date for a brood to leave the nest, 6th September. Both adults can be found in the nest tunnel at dusk. Numbers in a sand quarry may be as high as seventy or eighty pairs. In August flocks of up to one hundred and fifty birds on the telegraph wires near Dalston green beside the Caldew were not uncommon prior to 1940, but of late years much smaller numbers have assembled.

THE SWIFT *Apus apus apus*.

27th April is the earliest arrival date for the Swift with the period 1st May-8th May as the average week for arrival. On 3rd May, 1964, twenty birds were flying above Bassenthwaite Lake in the early morning. The latest record is a single bird on 8th September, the majority leaving in August. On 11th July, 1937, a flock of two hundred birds was about 1,000 feet up in the vicinity of Carrock Fell, screeching loudly, and maintaining a compact flock, but of varying shape, each bird flying to and fro within the flock, but never going outside the boundaries. On 26th May one year many birds were hawking craneflies over the plateau summit of Crossfell and one pair copulated in mid-air. In late July flocks of up to fifty birds used to hawk insects above the hayfields, especially when the fields were being cut, but of late years only the odd Swift has been seen. One June a pair spent several days trying to drive a pair of House-Sparrows away from an old nest of the House-Martin under the roof gutter in front of my house but were unsuccessful.

All nesting-sites that I have known have been under the slate-roofs of houses or churches or in narrow cracks in stone-walled houses and it has been impossible to get at them.

AVERAGE BROOD REARED BY SWALLOWS AND MARTINS.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	1 Young	Av. Brood
Swallow	895	... 33	... 327	... 355	... 133	... 41	... 6	... 4.18
House-Martin	73	... —	... —	... 23	... 37	... 12	... 1	... 3.12
Sand-Martin	30	... 1	... 8	... 16	... 5	... —	... —	... 4.17

RECOVERIES OF RINGED SWALLOWS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
TV160	Dalston, Cumb.	Where ringed	—
	Adults ♀, 21.6.29	(Breeding)	
		23.6.30	

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
TX486	Cumdivock, Cumb. 20.7.29	Castle Sowerby, Cumb. 28.7.31	7 Miles - S.S.E.
NH327	Cumdivock, Cumb. 26.6.32	Tarraby, Cumb. 23.5.33	9 Miles N.
EJ931	Dalston, Cumb. 25.6.38	Where ringed (Breeding) 6.5.39	—
EK955	Cumdivock, Cumb. 7.7.41	Where ringed (Breeding) 21.5.42	—
CH647	Cumdivock, Cumb. 9.8.43	Carlisle, Cumb. —6.44	6 Miles N.
B9246	Cumdivock, Cumb. 16.8.47	Wigton, Cumb. 25.6.48	8 Miles W.
L2574	Nr. Kendal, West. 4.8.50	Middleton, West. 17.5.52	11 Miles S.E.
L2589	Cumdivock, Cumb. 12.8.50	Where ringed (Breeding) 29.6.51	—
LT354	Cumdivock, Cumb. 10.6.52	Grimsby, Lincs. 25.5.53	145 Miles S.E.
C22955	Cumdivock, Cumb. 18.6.56	Welton, Cumb. (Breeding) 28.5.57	4 Miles S.
AB56771	Howtown, West. 11.6.61	Lyulph's Tower, Ullswater 27.5.62	3 Miles S.E.
AK82820	Wiggonby, Cumb. 1.7.63	Baldwinholme, Cumb. (Breeding) 9.6.64	4 Miles E.
AN30221	Cumdivock, Cumb. 9.6.64	Beighton, Derby 7.9.64	120 Miles S.E.
AN60132	Parton, Wigton, Cumb. 22.8.64	Thursby, Cumb. (Breeding) 20.5.65	3 Miles S.E.
AR85302	Cumdivock, Cumb. 8.7.65	Sebergham Castle, Cumb. (Breeding) 10.5.66	5 Miles S.
AN60141	Cumdivock, Cumb. 27.8.64	Kirkbride, Cumb. 23.8.66	10 Miles N.W.
AX32298	Parton, Wigton, Cumb. 13.8.66	Lower Withington, Cheshire 21.9.66	110 Miles S.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
AX54002	Parton, Wigton, Cumb. 13.8.66	Brough, Hull, Yorks. 24.9.66	125 Miles S.E.
HP33736	Parton, Wigton, Cumb. 8.7.68	Thorpe Culvert, Wainfleet, Lincs.	175 Miles S.E.
HR73361	Wiggonby, Cumb. 25.6.68	4.9.68 Nr. Sheffield, Yorks. —9.68	120 Miles S.E.
HP33778*	Ghyllhead, Wigton, Cumb., 7.8.68	Nr. Rochford, Essex 22.2.69	275 Miles S.E.
SE76463	Eskrigg, Wigton, Cumb., 29.8.68	Thornby, Wigton, Cumb. (Breeding) 31.5.69	4 Miles S.E.
HK51660	Parton, Wigton, Cumb., 27.6.69	Onwi, Ejiso, Ghana, W. Africa, 20.10.69	—
KC958	Cumdivock, Cumb. 3.7.35	Bethlehem, Orange Free State, S. Africa 11.11.36	—
AX32290	Cumdivock, Cumb. 11.8.66	Kimberley, Cape Province, S. Africa 3.3.67	—

(*Skeleton only of HP33778 found on 22.2.69).

RECOVERY OF RINGED HOUSE-MARTIN.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
NN287	Kirkbride, Cumb. 29.6.51	Chesterfield, Derby 28.9.51	130 Miles S.E.

The oldest Swallow recovered was 2 years old. TV160, an adult hen caught on eggs, was caught again the following year on eggs in the same nest. The next year another hen was caught at this nest. There are three records of birds ringed as nestlings one year and caught the following year on eggs at the same farm: twelve records of birds ringed as nestlings and caught the following year or in their second year at farms within varying distances of three to eleven miles from their birth-place. Five records of nestlings recovered in September of the year ringed from Cheshire, Derbyshire, Yorkshire and Lincolnshire, indicating their movement south on the autumn migration. The nestling ringed at Cumdivock in June and recovered the following May at Grimsby could possibly be intending to breed there. The two nestlings ringed at Cumdivock and recovered in the Orange Free State and Cape Province respectively indicate the wintering area of birds reared in Cumberland, whilst the nestling recovered in Ghana, W. Africa, in October, suggests a passage down the west coast of Africa en route to South Africa.

THE NIGHTJAR *Caprimulgus europæus europæus*.

10th May is the earliest date for the Nightjar which used to be fairly widespread on coastal mosses and lowland woods, and on fells such as Lazonby fell. It has decreased since 1955 and many former breeding-sites are no longer tenanted. Earliest clutch, two eggs on 9th June, young hatched, 28th June. Latest date for a brood to leave the nest, 14th August.

THE HOOPOE *Upupa epops epops*.

A single Hoopoe frequented a lane near Cumdivock from 7th September to 9th September, 1962. It spent most of its time in an oak tree, perhaps resting after a long flight. It fed on the ground, and showed pinkish upper-parts with head crest and boldly barred black and white wings very prominent in flight.

THE KINGFISHER *Alcedo atthis ispida*.

The Kingfisher used to be flushed in the autumn and winter months from the creeks of the salt marshes, but since 1950 it has seldom been met with on these marshes, and it has also declined on the rivers and becks where it used to breed. Both sexes, working in turn, excavate the nest-tunnel, about two feet long. Earliest clutch, five eggs, 5th April, with young fledged by 19th May. Latest date for a brood to leave the nest 28th July.

At two nests with young that were watched, both adults fed the young, one working up-stream, the other down-stream. In one eight-hour period the young were fed thirty-three times, the food consisting entirely of small fish. The adults uttered a shrill piping note as they arrived at the nest-site.

AVERAGE BROOD REARED BY KINGFISHER.

SPECIES	No. Broods	7 Young	6 Young	5 Young	4 Young	3 Young	A. Brood
Kingfisher	10	2	2	4	1	1	5.30

THE GREEN WOODPECKER *Picus viridis pluvius*.

The Green Woodpecker was breeding in the Windermere area in 1937, but since 1947 it has spread throughout Lakeland and by 1952 was in the Penton area of North Cumberland and also at Haweswater. In June, 1949, occupied nest-holes in ash trees were found in the Longsleddale and Duddon valleys, and in June, 1952, both Green and Great Spotted Woodpeckers were breeding in Brandlehow Wood, Derwentwater. In June, 1956, it was found at Wastwater and in 1962 at Ennerdale.

It is more of a ground-feeder than the Great Spotted, and is specially fond of mossy banksides or mossy knolls for insects: on one occasion a bird was flushed amongst the gorse-bushes on a salt marsh. One bird flushed on the lower slopes of a steep fell descended to a

tree in a series of rapid turns and side-slips, whilst calling out vigorously. One bird was flushed at dusk from an old nest-hole in a silver birch, where presumably it was intending to roost.

Nest-hole is excavated in early May, with young hatching during second week of June and flying by the beginning of July. I have tried on several occasions, assisted by friends, to enlarge these nest-holes sufficiently to extract the young for ringing and to determine the brood size, but the hardness of the wood has always defeated us.

THE GREAT SPOTTED WOODPECKER *Dryobates major anglicus*.

In March the loud "chik-chik" notes of the Great Spotted Woodpecker are heard from the tree-tops as two or even three birds chase one another about the trees, and in April a pair may be seen circling round each other with outspread wings. Nest-boring begins in early April and "jarring" by cock on a dead branch with its bill or using a crevice in a live branch heard from mid-April until the end of June. In the case of one pair, the hen was busy inside the nest-hole whilst the cock "jarred" on a nearby branch. Twice a pair have nested in a knot-hole in a tree—an oak and an alder—and there were no external signs that the knot-hole had been enlarged. One knot-hole in an oak tree was used for three successive years and young reared each year: another pair used a knot-hole in an alder directly below a large branch and reared young for two successive years.

On two occasions the nest-hole was no more than eight feet from the ground in a silver birch, whilst at the other extreme it has been forty feet up in a large beech. As the young grow in size, they become noisier in the nest, keeping up a continuous calling that can be heard up to thirty yards distance. Both adults feed the young, chiefly on small flies and caterpillars, and after feeding the young the adults usually wipe their bills on the tree branch or trunk. Sometimes the cock will "jarr" on a branch with his bill after feeding the young. Several nest-holes have been enlarged sufficiently to extract the young for ringing and the brood has been either three or four young. One brood was judged to be fully fledged by 8th June and in most years young are fledged by the second or third week of June. Three breeding pairs along a three mile stretch of wooded Caldew valley is the heaviest breeding density recorded.

In the autumn and winter months single birds can often be found following the hedgerow trees away from the woods. Pine-cones are "worked" a good deal by the birds in the autumn and winter, the cones often inserted in a crevice of a branch, the better to hammer them with their bills.

LESSER SPOTTED WOODPECKER *Dryobates minor
comminutus.*

There is only one record for the Lesser Spotted Woodpecker, a single bird about roadside trees near Durdar on 4th August, 1944.

THE CUCKOO *Cuculus canorus canorus.*

21st April is the earliest date for the arrival of the Cuckoo: it is still plentiful about the fells and upland regions, but has declined during the past ten years in most lowland areas. The Hedge-Sparrow in the lowland areas, and the Meadow-Pipit in the fell areas, have been the commonest foster-parents: in different years a pair of Willow-Warblers and a pair of Blackbirds were found rearing a young Cuckoo but in each case the young Cuckoo disappeared from the nest before fledging. In August, 1965, a pair of Meadow-Pipits reared a young Cuckoo on a coastal moss and what was judged to be the same young Cuckoo was still about the moss on 6th October.

Adult Cuckoos have been seen on the fells up to mid-July and in the lowland areas until the last week of August, latest date 26th August.

18th June is earliest date a young Cuckoo has been seen on the wing. One September day a juvenile Cuckoo was perched on a fence post on a coastal marsh: four times it flew to the ground, seized a black slug, and returned with it to the post: after shaking the slug it tossed it in the air, then caught and swallowed it.

THE LITTLE OWL *Athene noctua vidalii.*

In June, 1949, an adult Little Owl was perched on a fence near Silecroft in broad daylight: it flew off with a speed that would not have disgraced a Sparrowhawk. In June, 1951, another adult was perched on a fence near Plumpton, Penrith. On 24th May, 1957, a hen was sitting on two eggs in a hollow branch of an alder near Askerton Castle, Brampton, with the cock in a nearby tree. On 12th June one young about twelve days old was hatched out: its eyes were shut and it was just beginning to feather on the mantle. Nine days later its eyes were open, the mantle was feathered and the quills of the flight-feathers were out.

On 20th May, 1959, a pair was flushed from a large knot-hole in an ash tree at High Heskett, but despite further visits, no evidence of breeding was obtained. In April, 1968, an adult was seen about a farmyard at Littlebampton, Wigton, but again no breeding date obtained. In May, 1969, a pair nested in a knot-hole in an apple tree in an orchard at Micklethwaite, Wigton, but the eggs were deserted. In June, 1970, a brood of three young was reared at this farm.

THE LONG-EARED OWL *Asio otus otus.*

The Long-Eared Owl has decreased very much as a breeding species throughout the area during the past thirty years and is now

confined almost entirely to isolated fellside and moorland plantations, with an occasional pair on the mosses. It is the most nocturnal of all the Owls, sitting close-up against the bole of a conifer or bushy holly tree. Its wavering four-noted call used to be heard in October and November as well as in March. Its food consists of field-mice and brown rats, as well as a fair proportion of small birds, up to the size of Blackbirds and Starlings.

During the past ten years two breeding records were obtained. On 13th June, 1964, a single fledged young was in the old nest of a Wood-Pigeon about five feet up in a spruce-fir on Spadeadam moor. On 13th May, 1968, a brood of three fledged young flew from the old nest of a Carrion-Crow in a spruce-fir in an isolated fellside plantation. The brood was located through hearing the young calling for food, a mournful note rather similar to that of a Golden Plover. An adult replied with a barking note. The vivid orange iris of the young owls was very noticeable in the dusk. A fortnight later the young owls were still calling mournfully for food in the plantation. Visits were made to this plantation in the spring of 1969 and 1970 and, although an adult was flushed on several occasions, no evidence of breeding was obtained.

THE SHORT-EARED OWL *Asio flammeus flammeus*.

In April, 1952, a nest of six eggs of the Short-Eared Owl was destroyed during heather burning on a Ravenstonedale moor and in June, 1952, a nest of eight eggs was found amongst rushes on Wild Boar Fell. In May, 1953, a pair undoubtedly had young in hiding on a moor near Killington Reservoir: one adult was flying around in a very agitated manner, barking and wing-clapping, but the young were not found. In May, 1957, two nests with young were seen: one nest in a young plantation on Spadeadam moor held one nestling and two infertile eggs on 5th May and fourteen days later this nestling was well fledged with the quills of the flight-feathers ready for bursting. On 11th May another nest with four nestlings of various sizes and two eggs was seen in a clump of rushes in a large pasture near Askerton Castle. Fourteen days later the nest was empty but one young owl was found near the nest: it was fully fledged but the quills of the flight-feathers were just beginning to burst. At each site only the one adult was seen, presumably the hen, and it flew around barking and wing-clapping. In June, 1958, a pair evidently had young in hiding on Spadeadam moor: one adult was in the air, barking and wing-clapping, the other adult was flushed from rushes. In May, 1964, and throughout April and May, 1968, a pair frequented a young moorland plantation, sometimes soaring to a considerable altitude, then descending and indulging in a bout of barking and wing-clapping, but no young were found.

THE TAWNY OWL *Strix aluco sylvatica*.

The Tawny Owl has occupied many former breeding-sites of the Long-Eared Owl and occurs throughout the area wherever there are

woodlands or groups of trees, either coniferous or deciduous, up to 1,500 feet altitude on the fells. Both the rufous and the grey types occur and will breed with each other. It is chiefly nocturnal and if disturbed from its roosting-place in a tree will usually make for another tree, but one October afternoon, in bright sunlight, one was flying to and fro above a pasture field, whilst one November day, about noon, one was flushed from a hedge with a mouse in its talons. It will at times hoot during the daytime, especially on an afternoon, but the hooting is more prolonged on frosty nights during September to November and again during February and March.

Knot-holes of trees or hollow branches or hollow tree-trunks are the usual nest-sites: occasionally in the trunk-forks of large mature trees; also in old nests of Carrion-Crow or Magpie or even Buzzard or Wood-Pigeon; whilst tree-roots and disused barns are exceptionally used. Two or three eggs is the normal clutch with five records of a four-egg clutch. Earliest clutch, three eggs on 11th March, with young fledged by 12th May, but the last fortnight of March is the general laying period with young fledged by the last week of May. In one year a young owl was still being fed by the adults in mid-August.

The nestlings are brooded during the day until the eldest is about sixteen days old, but all the nestlings hatched are not always reared, and often the last born nestling or nestlings disappear, usually whilst they are being brooded by the adult, and it may be that the adult kills and eats these nestlings, especially if food is scarce, as only once have remains of partly-eaten nestlings been found in the nest.

Some adults are very pugnacious in defence of their young, and will not hesitate to attack, usually striking with their talons at the nape of a man's neck two or three times, then will settle on a branch and hoot mournfully.

I have records of three cases in which the adults presumably removed their small young to another nest-site because they evidently considered the safety of the young was threatened.

Food brought to the young consists chiefly of field-mice and shrews and brown rats, young rabbits and birds up to the size of Thrush or Starling. Exceptionally moles, frogs and water rats are also fed to the young.

In March, 1927, two pairs were breeding in hollow trees only 240 yards apart in the Caldew valley, but in general a plantation of up to ten acres will only harbour the one pair.

One July afternoon two fledged young were found basking in the sun on a ledge in a fellside gorge, whilst in early April adults have on several occasions been found basking in the sun in secluded woodland haunts. When young are reared in a wood and have left the nest the adults at times will feed them during the day with mice caught during daylight.

THE BARN-OWL *Tyto alba alba*.

Although still fairly abundant throughout the area, the Barn-Owl has decreased locally in some parts and many nesting-sites in barns and hollow trees are no longer occupied. Although chiefly nocturnal like the Tawny Owl, it is oftener seen hunting in daylight during the period December to March than the Tawny Owl, often in pairs, and as late as 13th April three Barn-Owls were hunting at noon in the Bewcastle district above a young plantation.

One December afternoon an adult was flying slowly above a road-side gutter, its legs hanging down, now and then hovering above a place where it thought a mouse was moving. Suddenly it dropped feet first and wings vertical on the bankside where it rested with wings outspread and with its beak seized a mouse, as I heard the mouse squeak, and later saw the movements of the back of the owl's head as it swallowed the mouse.

At times the Barn-Owl will roost in a conifer, the ground beneath usually littered with pellets. One winter a Barn-Owl roosted in a golden yew in my garden.

The usual clutch is four or five eggs, laid on the hay in a barn or else on the wall-plate, or else in a hollow tree and, occasionally, in an unused chimney. 26th March earliest date for a four-egg clutch with most clutches laid during April to July. Latest date for a brood of three young just beginning to fly is 5th December.

The fledging period of the young is prolonged. During two years it was possible to watch closely a pair of Barn-Owls that nested amongst the hay in a barn beside my house. In the first year three young were reared from four eggs laid: these hatched on 22nd, 24th and 26th May, the fourth egg being infertile. By 15th June they were covered with the long silky down and their long faces were noticeable: they were first heard snoring on this date. By 22nd the flight and tail feathers were well sprouted, faces almost feathered. The nestlings lay on their backs and used their talons when disturbed. By 29th the flight and tail feathers were further sprouted and the mantle feathers were visible under the silky down. The nestlings were upright and walking about the hay. On 6th July the plumage was more perfect and the nestlings were waving their heads from side to side and adopting various attitudes of defiance. By 12th they had moved from the hay to the wall-plate, and on 15th they were judged to be in full juvenile plumage but they made no attempt at flight when handled. On 23rd July they had moved further along the wall-plate yet still made no attempt to fly, but on 29th July they flew the length of the barn when disturbed, the fledging-period thus being sixty-four to sixty-eight days.

The following year five eggs were laid and hatched, but only three young reared, as the eldest and youngest nestlings were found dead in the hay when about thirty-two days and twenty-four days old respectively, and in the silky down stage, and it has been noticed

with other broods that this is often the stage when casualties occur. The first egg was laid on 10th April, the fifth egg on 18th April and the young hatched during the period 13th to 21st May. By 1st June the three eldest were in the silky down stage, other two not. On 14th June only three young were alive and by 6th July these had left the hay and were on the wall-plate: on 17th they were judged to be in juvenile plumage, but made no attempts at flight when handled. Five more visits were made to these young, but it was not until 8th August that they flew the length of the barn, fledging-period thus being eighty-one to eighty-six days.

The food of these young Barn-Owls consisted chiefly of field-mice, brown rats, moles, and an occasional small bird such as Chaffinch or Skylark. The adults started hunting an hour before dusk in the evening and continued until eight o'clock in the morning. Four visits with food in one hour was the most recorded and the adults hunted as far as one mile from the barn. With a brood of newly-hatched nestlings as many as ten field-mice have been found at the nest-site, but as the nestlings grow and begin to feather and need more food, it is apparently eaten as soon as it is brought in by the adults. Shortly after eight o'clock one morning three moles lay by the nest-site in the hay for the three young that were beginning to feather: by midday the moles had been eaten.

Heaviest breeding density, four pairs breeding in barns along a two mile stretch of country road. In July, 1967, two pairs were feeding young in disused house chimneys at Wampool, the two sites about four hundred yards apart.

AVERAGE BROOD REARED BY OWLS.

SPECIES	No. Broods	4 Young	3 Young	2 Young	1 Young	Av. Brood
Long-Eared Owl	10	—	4	2	4	2.00
Tawny Owl	40	—	6	23	11	1.88
Barn-Owl	19	2	13	4	—	2.89

RECOVERIES OF RINGED TAWNY OWLS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
404717	Askham, West. 2.6.46	Ulverston, Lancs. 22.2.47	32 Miles S.S.W.
AE5406	Nr. Brampton, Cumb. 14.5.53	Wetheral, Cumb. 27.4.57	5 Miles S.W.

The two records show local movement: one bird was 3 years 11 months old.

THE PEREGRINE FALCON *Falco peregrinus peregrinus*.

Although the normal courtship-display of the Peregrine Falcon is confined to the spring months of February and March, there are

occasions in the autumn, especially during the period September to November, when both birds of a pair in occupation of a suitable range of crags, will fly restlessly from ledge to ledge, the one following the other about. Then if the tiercel settles on a rock-spur and begins calling — a high-pitched creaking note — the falcon flies backwards and forwards across the face of the crags, uttering rapidly the long drawn out whining “querk,” at times interrupting her flight to alight for a few seconds on a ledge, then off again. This may continue for a half-hour or longer, ended perhaps by the tiercel leaving his perch and diving down on the falcon, and the pair will fly along together, in turn diving down then circling around one another.

With the turn of the year and the lengthening days the birds become more restless about their breeding-crags: soaring and wheeling together in company, varied with restless flights from ledge to ledge, both tiercel and falcon giving voice. By March the birds' tempers are rising, with warning dives on trespassing Ravens and Buzzards more frequent, and the calls of both adults louder and more pronounced, the tiercel's note sounding more like the creaking of a rusty gate, whilst the falcon's note becomes more of a long-drawn squeal. The tiercel will dive down incessantly on the falcon, finally to alight on a rock-spur or tree branch. Coition may occur, the tiercel alighting on the ledge beside the falcon and calling loudly, a note like the creaking of a rusty gate-hinge, will pair with hen.

The first fortnight of April is the normal laying period, but I have three records of a full clutch laid by 31st March. Three or four eggs is the usual clutch. I have been unable to find the exact incubation period owing to repeated robbings by egg collectors, but one four-egg clutch, found when the first egg was laid, was still unhatched with no signs of any eggs chipped twenty-eight days later, when the falcon was flushed from the eggs, but at my next visit three days later the eggs had disappeared.

The nesting-ledge is often scraped clean by early February, and from then onwards the falcon makes frequent visits to it. Young may be reared two years running on the same ledge, then for the third year a new ledge is often chosen. An old nest of Raven or Buzzard may be used and again if two broods are reared consecutively in it a new nest-site is chosen. Peregrine, Raven and Buzzard take a delight in using each others nest-sites, more especially when the three species share the same range of breeding-crags.

Both sexes assist in incubation, although normally the falcon does the major part. One April afternoon a falcon had been perched for some considerable time on a topmost crag, when she suddenly left the crag and dived down in a long circular sweep to alight on a ledge on a central buttress where she called the whining “querk” notes quietly for several seconds: presently the tiercel rose off the eggs, the falcon took over, and the tiercel flew up to the topmost crag vacated by the falcon and there perched on guard. One May morning the

tiercel was perched on the top crags where he watched three flights of Homing-Pigeons go by, hugging the crags, without attacking them. He then left the top crags and alighted on the nest-ledge on the central buttress; the falcon flew off the eggs, calling out as she did so: the tiercel went forward on the ledge, turned the eggs with his beak, then settled on them.

Another day the tiercel was soaring around above the nesting-crag when the falcon suddenly left the eggs and joined him and the pair soared and wheeled in the bright sunlight for a half-hour, the falcon at times diving down close by the nesting-ledge. During fine sunny weather the birds delight in circling and soaring, and it is not unusual to see a pair of Peregrines and a pair of Buzzards soaring around in a small area of sky without any disagreement.

Once the young are hatched the falcon becomes very noisy and her long drawn "querk-querk-querk" seems to fill the sky with noise and when specially worked-up she will dive headlong at you, whilst any intruding Raven or Buzzard gets short shrift. A pair of Ravens will be glad to take refuge on the crags and crouch low down as the irate falcon swoops on them, whilst the Buzzard is more mercilessly dealt with: twice I have seen a Buzzard sent to the ground, the falcon striking it on the rump, the Buzzard elevating its wings almost vertically, then falling headlong to the ground. At one eyrie a Buzzard with a broken wing was found on the ground close by its eyrie of three eggs which was about seventy yards from the Peregrine's eyrie with three young.

The fledging-period varies from thirty-five to forty days, partly due to weather conditions, as the young feather and progress more quickly during a spell of warm, sunny weather, than a cold and wet spell. The young will remain about the nesting-crag for at least three to four weeks with the adults in attendance. At one eyrie the two young flew on 17th June, and yet on 4th August one young bird was still present with the falcon: the young bird was busy plucking a pigeon and, despite the warning cries of the falcon, I was able to approach within a few feet of it before it flew off with the pigeon in its talons.

The young are brooded until about eighteen to twenty days old, usually by the falcon, the tiercel bringing in the prey. About six o'clock one evening I was at an eyrie when the tiercel came in with prey and called—a clear, high-pitched note from a rock-spur—and, on hearing it, the falcon flew towards him, he left the rock-spur, and when the two were about to meet he turned over sideways and put out his feet with the prey, the falcon likewise turned sideways, put out her feet and took the prey from him. In the exchange a small portion dropped and at once the tiercel dived and caught it in a split second. The falcon then fed the young whilst the tiercel kept guard. At another eyrie the tiercel came in with prey, called, the falcon flew towards and below him, on her close approach he dropped the prey

and she turned over and caught it in her talons. The young keep up a continuous squealing whilst being fed. At times the tiercel will feed the young: when I visited one eyrie the falcon was on guard and flew around calling and the tiercel was flushed from the young which he had been feeding. A favourite feeding time is early morning up to 10 a.m., and then again in the early evening up to 7 p.m., and occasionally in the afternoon. If the tiercel is not away hunting then both adults are invariably about the breeding-crag as long as the young are still on the nesting-ledge.

At two eyries where young were being reared, an intruder falcon has appeared and soared around with the breeding pair for some time, occasionally uttering a series of notes resembling the croaking of a Woodcock, the two falcons playfully diving at each other, then finally the intruder falcon has flown away.

One April day a falcon was brooding eggs on a ledge, the tiercel perched on a topmost crag, when an intruder falcon approached the crags. The tiercel dived several times at it, the intruder falcon somersaulting to avoid being struck, the brooding falcon watching the combat and calling out at times and, finally, the intruder falcon disappeared. Another day in May a falcon was brooding eggs, the tiercel soaring around high up in the sky, when an intruder falcon came in and began soaring around with the tiercel: at times almost as if soliciting coition, wings outspread and tail quivering, the tiercel diving almost playfully at her. Then the brooding falcon saw her and began calling, the tiercel made more determined dives on her, twice making her somersault to avoid being struck: finally the brooding falcon left the eggs and made for the intruder falcon which promptly disappeared from sight and the rightful pair were left to soar around by themselves. At a third eyrie the intruder was a tiercel and he began diving playfully at the falcon but the rightful tiercel at once dived with great speed at him and chased him out of sight.

Once a month, for three years, six occupied breeding-crags were visited to find what prey the Peregrines were taking: two breeding-crags adjoined grouse-moors, but Red Grouse never accounted for more than 9% of the prey noted in any year. Thrush, Starling, Wood-Pigeon, Stock-Dove, Homing-Pigeon and Blackbird accounted for more than half the total prey over the three years. Pigeons are favourite prey but any species will be taken especially when feeding young. A favourite mode of hunting is a soaring flight to gain height, then a headlong dive at great speed on its prey which is struck, usually on the rump, with the falcon's talons. One June afternoon two Stock-Doves on roughly parallel courses, came flying past the front of a breeding-crag and keeping about three hundred feet above ground level. High up in the sky, well above the summit of the crags, the two Peregrines were soaring around: at sight of the Stock-Doves each Peregrine dived headlong at the prey, coming down with terrific speed, and within seconds each Stock-Dove was sent hurtling

to the ground, one to finish at the foot of the crags, the other on the far side of a plantation. A Peregrine will come down in twisting flight after a Swallow or House-Martin and gather up the bird in its talons. Occasionally the Peregrine will skim along a few feet above the ground, twisting and turning, to take any bird that may be startled into flight. Remains of Buzzard and Kestrel have been found at the plucking-places on the breeding-crags.

One May evening I was walking along a path above a fellside beck when two birds were noticed struggling together in a patch of heather: they were a Peregrine and a Red Grouse. Presently the Grouse broke away from the Peregrine and disappeared into the heather: the Peregrine left it and flew towards me, a few feet above the heather, its head turning from side to side, obviously on the lookout for another Grouse, and passed close by me without deviating in its flight. I made for the patch of heather where the Grouse had disappeared and flushed the bird. It flew strongly away, half of its tail-feathers missing, otherwise apparently unharmed. Evidently when the Peregrine had found it feeding in the heather and dropped on it, the Grouse had sprung forward so that instead of taking the bird by the rump the Peregrine had only caught the tail-feathers. One June afternoon a Homing-Pigeon entered a valley where a pair of Peregrines were perched on crags about half-way up the valley: both Peregrines immediately gave chase, pursued it to the head of the valley, but by quick turning and keeping amongst the scattered trees as much as possible, the pigeon eluded them and, flying the length of the valley again, got clear away.

On several occasions flights of Homing-Pigeons have passed in front of the breeding-crags when one or both Peregrines have been perched, without the Peregrines molesting them. One July afternoon a pair of Peregrines were perched on the breeding-crags above a heather-clad slope where two coveys of Grouse, one of six birds and one of eight birds, were at intervals flying into the air to re-settle in another part of the heather, yet during a three-hour watch neither Peregrine made any attempt to strike down a bird. One sunny November afternoon a steady stream of various-sized flocks of Fieldfares were passing down the length of a valley, in their steady flight passing close in front of a breeding-crag where a single Peregrine was perched. At times the Peregrine would leave the crags and soar around above in the bright sunlight for several minutes, then resume its perch on the crags, whilst the chattering Fieldfares passed close by with impunity.

Since 1960 there has been a marked decline in the number of breeding pairs in Lakeland, with cases of breeding birds breaking and eating their eggs through the chemical toxics present in their bloodstream from the eating of birds containing pesticides. If robbed of their first laying, the birds invariably desert and leave the crag: whether they attempt a second laying at another crag is not known.

Prior to the use of pesticides a breeding pair, if robbed of the first laying, invariably stayed about the crags and laid a second laying about three weeks later. This second laying was also often taken by the egg collectors but the birds still frequented the crags. Over the past ten years the birds seem to have "lost heart" and if the first laying is robbed the crag is deserted.

I have a record of a brood of three downy young on a rock-ledge, one youngster was dead but swarming with maggots. This maggot-infested youngster was cleared off the ledge, together with any stray maggots, otherwise there was a possibility that the other two youngsters could have become infested and presumably killed with the maggots.

One sunny July afternoon, at an eyrie where three young had been reared, the adult falcon and the three young, in single file and keeping perfect formation, were diving down past a large rock-face: the sun cast their moving shadows on the rock-face so that for a brief moment it seemed that eight birds, in two parallel lines of four birds, were passing across the face of the rock.

THE MERLIN *Falco columbarius æsalon*.

By the end of February the Merlin has returned to the heather-clad valley where it intends to breed and, if successful, it may remain in the area until the end of September. Up to 1930 a pair always bred on one of the coastal mosses but since then breeding-pairs have only been found on the heather-clad fells. A heather-clad sloping valley, with a beck running down it, is the ideal site for these beautiful little hawks. Prior to the young hatching the Merlins are seldom seen and unless one is in the valley in early spring, when the hawks are playing and diving down on one another, there is often little to show, apart from odd fæces splashes on boulders and, perhaps, an occasional pellet, that the valley is occupied.

Three or four eggs is the usual clutch, with three records of a five-egg clutch. Earliest clutch, three eggs on 8th May, with young hatched by 7th June and fledged by 2nd July, but in many years it is the second or third week of July before the young are on the wing. The nest, usually in a slight hollow below a heather-clump, is often well-made of moss and lined with small heather twigs. Twice a pair have reared young in an old nest of the Carrion-Crow. The little "jack" or tiercel has been flushed from the eggs in one of the tree nests: otherwise the falcon sits tight on the eggs amongst the heather and only a direct approach to within a few feet will flush her. When the young are hatched her warning "eep-eep-eep" notes are heard as soon as the breeding-site is approached.

Once the young begin to feather they become very pugnacious, lying on their backs and striking out with their talons, and as they get older calling with shrill high-pitched notes, whilst the falcon flies swiftly around, to settle on a boulder, then fly impetuously into the

air, and dive down on an intruding Buzzard, all the time uttering her warning notes. Should the "jack" now come in with prey, his notes are added to the falcon's, and presently both will settle on a boulder or patch of scree, where the falcon takes the prey from him. The falcon may fly direct to the young with the prey, or fly from boulder to boulder and then eventually to the young, or she may even refuse to visit the young whilst a person is present.

The young may frequent the breeding-site for up to five weeks after leaving the nest. Before the young are fledged, which takes from twenty-five to twenty-seven days, the nest-site is usually flattened down and in a dirty state, with remains of small bones and feathers, and the young may move to a fresh site in the heather for the last few days of fledging. In two years two broods of young were reared within half-mile of each other.

The Merlin frequents the coastal marshes and open stretches of coast during the autumn and early winter months. One February day a Skylark was reluctant to rise at my approach on Burgh Marsh: when it did a Merlin rose up in pursuit and the two birds gradually worked their way across the waters of the Solway Firth until lost to sight, the Skylark holding its own with the Merlin, usually rising sharply upwards in the air as the little falcon dived on it, and occasionally uttering a slight burst of song. One January day on Rockcliffe Marsh two Merlins set up a Meadow-Pipit and began diving in turn on the bird, and when last seen the Meadow-Pipit was still avoiding their successive dives.

The prey of the Merlins is small birds, usually passerine species. I have never found the remains of any game birds, either adults or young, at the killing places or eyries of either the Merlin or the Kestrel or the Sparrowhawk during the fifty years I have studied these three species.

THE KESTREL *Falco tinnunculus tinnunculus*.

A certain deserted quarry-pool has odd clumps of gorse-bushes growing in the sandy soil, and during the winter months a pair of Kestrels roost under these bushes. About half-hour before dusk the Kestrels will appear above the quarry-face and fly around calling shrilly at times, diving down and playing with one another, then alight on a tree branch. Finally, a twisting, diving flight takes them under the bushes, and occasionally a Kestrel that has retired rather earlier than usual to roost, will make a sudden sally at a passing bird. Frequently throughout the autumn and winter months Kestrels are seen in pairs, and at roosting places three or even four Kestrels will soar around and dive down on one another. On these occasions the tiercel has a very clear metallic call-note that he sometimes uses. By March there is just the one pair about the nesting-site, usually a rock-ledge or else the unoccupied old nest of a Carrion-Crow or Magpie. Pairing has been noted in early April: the falcon calls a shrill note and the tiercel flies to her and the pair unite.

One April day both tiercel and falcon were creeping about on the nest-ledge, backs arched and tails fan-spread: both birds were calling and the falcon flew slowly to a tree branch, alighted, and the tiercel followed and was about to attempt coition when an intruder falcon suddenly appeared and circled above the tree branch, whereupon the rightful falcon at once chased her away whilst the tiercel remained on the tree branch.

The usual clutch is four to five eggs, sometimes six, with the last week of April the normal period for laying, but in 1957, a good vole year, birds had begun laying by mid-April. Earliest date for a fledged brood, 22nd June, but in many cases, especially with fell-nesting Kestrels, broods are not fledged before mid-July. An old nest of a Carrion-Crow in a Scots pine was used each year for six consecutive years by a pair of Kestrels, the birds using larch twigs in some years to line the nest. The old nest of a Buzzard is occasionally used and twice the old nest of a Raven: in one year the Ravens had laid and been robbed and the Kestrels laid and reared a brood in it the same season.

Prey is chiefly voles and field-mice and small birds up to the size of a Blackbird or Starling.

In 1957 two pairs nested and reared young in the same range of crags, the two eyries c.250 yards apart. In 1950 a Kestrel with six young in a Scots pine was distant 360 yards from a Buzzard with one young in an alder and 280 yards from a Carrion-Crow with three young in a mountain ash. Another year on a stretch of fell-base with numerous large and scattered hawthorn bushes, a pair of Kestrels had five eggs in the old nest of a Carrion-Crow in one bush and within 200 yards a pair of Buzzards had a nest with one egg in another hawthorn.

An adult tiercel was caught alive one summer when it dropped to a nest of Willow-Warblers below a small hawthorn bush in a bankside and became entangled in the bush. On another occasion an adult tiercel was found perched on top of a hawthorn hedge with a brood of young Chaffinches in a nest just inside the hedge: the tiercel flew away but whether it returned and was able to retrieve the young is not known.

Kestrels are often pestered by Rooks and, to a lesser extent, by Carrion-Crows, and seem to play a regular game of "tiggy" with the Rooks. A dozen or more Rooks will chase and chivy a Kestrel about in the sky for several minutes or longer, and only when the Kestrel takes refuge in a tree, usually calling loudly, do the Rooks desist.

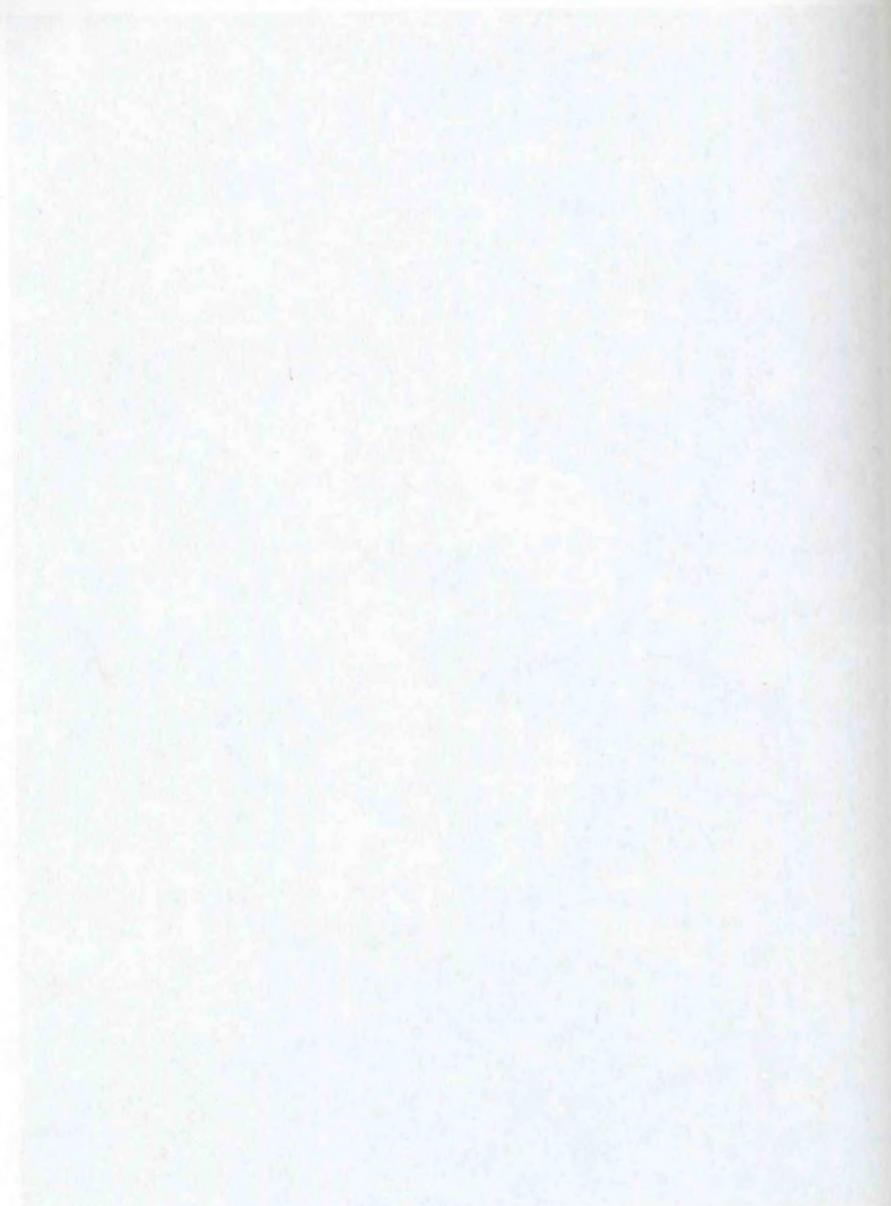
One July day an adult tiercel and two young were hovering close together above a patch of fellside. The tiercel was noticed to drop an object, a young bird dived after it and caught it, then in turn it dropped the object, the other youngster dived and caught it, then dropped again, the adult tiercel caught it: the whole performance of

(Photographed by C. Jex)

LAKELAND BUZZARDS



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dropping and catching by all three birds continued for ten minutes or longer then, finally, the object was left on the ground and the birds drifted away. It was a medium-sized piece of sheep's dung.

THE GOLDEN EAGLE *Aquila chrysaëtus chrysaëtus*.

On the late afternoon of 29th March, 1969, a dull overcast day with slight drizzle at times, Mr. G. Horne and myself had the great pleasure of flushing a Golden Eagle from its eyrie on a crag which held one egg. On 4th April Mr. G. Horne re-visited the site with the late Mr. E. Blezard and the Eagle was flushed from two eggs. A police guard was posted at the site for the Easter weekend, but by the middle of the following week it was decided that the Eagle had forsaken the eggs which were removed, under licence from the Nature Conservancy and on examination both eggs were found to be fertile and normal as regards size and weight and colouration.

On 26th March, 1970, Mr. G. Horne and myself again visited the site and found that last year's site was not being used: the Eagles had built two eyries in an adjoining range of crags, an upper and a lower eyrie, and as there was evidence of roosting about the lower eyrie, in the form of the odd dropped feather and pellets, we decided that the Eagles were intending to lay in the lower eyrie which that day was empty. We did not visit the upper eyrie, but as we returned from the lower eyrie an Eagle, carrying a small piece of branch in its talons, flew in towards the lower eyrie. The following day, I understand, Mr. J. Birkett visited the upper eyrie and flushed the Eagle from one egg. A 24-hour guard was at once posted at the site and I understand a single nestling hatched out c.12th May.

On 4th June Mr. G. Horne and myself visited this upper eyrie and found an adult brooding the young bird: it flew off when we were about 300 yards from the eyrie, but later returned and settled down beside the nestling. Remains of more than one lamb and of a hare were about the eyrie. The nestling sat up in the eyrie and wing-flapped at times. On 19th July the young Eagle appeared to be fledged: no down to be seen on the head: an adult came down the valley and soared around where it was pestered by a Raven. The remains of two more lambs about the eyrie. I understand this young Eagle flew on 29th July.

THE COMMON BUZZARD *Buteo buteo buteo*.

In common with the other species of hawks there is often a certain amount of display by the Buzzard during the autumn: parties of from four to six or even eight birds will soar and circle around in the sky, often with much calling, the birds drifting apart and diving down on one another, with one bird of a pair turning over on its back and presenting its talons to the oncoming bird, the two meet talons to talons, hold for a few seconds, then drift apart. This display can be carried on into April and May. At all times of the year the

Buzzard is a sociable bird amongst its own kind, and during incubation birds will leave their eggs to soar around and drift in ever widening circles higher and higher in the sky. One pair, after soaring and circling with one another, will float across to the next valley where another pair are breeding, and if that pair are also on the wing the four birds will soar and circle around each other for some time.

In early February a pair will begin to renovate an old eyrie on a rock-ledge and by the end of March the egg-cup is lined with bracken or heather spray or tufts of grass. On the Pennine fells dead thistle stems are often used for the nest and one such nest was lined with wool, the Buzzard later flushed from three eggs in it. A pair was watched building in an oak tree: the cock came in with a small branch and laid it on the nest-rim, mewing all the time; then the hen arrived with a large twig and worked it into the nest-rim, then settled in the nest and shaped it with her body, moving round in a circle. The nest-rim is usually decorated with green foliage throughout the breeding period, and where no tree foliage is available a spray of heather or bilberry is used.

One March day a hen Buzzard was perched on a boulder at the base of a fell when the cock flew to it and paired, then both flew further along the fell-base, nearer to the eyrie, and each settled on a separate boulder.

Up to c.1965 the majority of eyries were on fell-crag, with only the odd eyrie in a tree, but during the past five years most eyries have been in trees, usually oak or larch or Scots pine. The almost complete disappearance of the rabbit from the fells, due to myxomatosis, may account for this shift from crags to trees, because when rabbits were plentiful on the fells the young Buzzards were fed almost entirely on them. Now the adults nest more in the fellside plantations and hunt towards the fields and woods of the upland region adjoining the fells whilst the fells are almost devoid of Buzzards.

Two or three eggs is the usual clutch, with eight records of a four-egg clutch. Earliest clutch, three eggs on 15th April with the average laying-period during the second and third weeks of April. Eyries up to 2,000 feet altitude on the fells. In 1930 four pairs reared eight young on a fairly high-lying stretch of fellside, between 1,200 feet and 1,800 feet altitude, and within an area of three square miles. In 1950 three pairs reared five young in a two mile stretch of fellside. Two tree nests in 1947, one in oak, the other in silver birch, were within four hundred yards of each other in the same wood, also occupied nests of Buzzard and Sparrowhawk 250 yards apart in another wood.

For several consecutive years a pair of Peregrines and a pair of Buzzards reared their respective young on crags on the same stretch of fellside and within four hundred yards of each other. I have several records of Peregrine, Buzzard and Raven all rearing their

young in the same range of crags in a season, and also a record of Buzzard, Merlin and Kestrel all rearing young in the one valley in a season.

The only record of injury-feigning refers to a Buzzard flushed from a nest of four eggs on a rock-ledge: she fluttered to the ground and flapped along with expanded wings for several yards before taking to flight. The incubation period is at least thirty days or longer, with the fledging period forty to forty-five days. If a bird is robbed of her eggs only very exceptionally does she lay again that season. Both adults assist in incubation, the change-over seen on several occasions. Whilst the young are in the eyrie invariably one adult and often both adults are close at hand, mewing to the young. The very odd pair mew very little, whilst other pairs are excessively noisy. All the young hatched are not reared, often the last born nestling or nestlings disappear. I have on several occasions seen the eldest nestling, in the downy stage, seize a younger nestling by the nape of the neck and shake it vigorously, like a terrier shaking a rat, and on my next visit the younger nestling had gone.

When rabbits were plentiful they formed the principal food of the young, and up to nine rabbits have been counted at an eyrie with young: also field-mice and voles, water-rats, moles and stoats with small birds such as Skylarks and Meadow-Pipits, and an occasional Wood-Pigeon or even a Red Grouse. One pair, nesting in an oak tree in a low-lying area, fed their single youngster principally on frogs: the adults were often watched flying to the eyrie with a frog dangling from their talons.

With the virtual disappearance of the rabbit, due to myxomatosis, from most fells the Buzzard has declined considerably as a breeding species and many former nesting-sites on crags are no longer tenanted. Where the birds still manage to breed in such areas more birds, such as Starlings and Jackdaws and Rooks, are fed to the young and in June, 1966, a five-inch trout was found in a tree eyrie on the fellside, which held one youngster. Presumably the trout had been left behind in an overspill pool due to the beck overflowing its banks: when the water receded an adult had obviously seen this trout in the small pool and taken it. In general, the average brood reared now is smaller than when rabbits were plentiful.

The adults take many dung-beetles, especially in the late summer, as evidenced by the pellets left at feeding places, which are full of beetles' remains. Carrion is taken at all seasons and the Buzzard competes with the Raven in winter over the carcase of a dead sheep.

The usual hunting flight is a slow flapping flight at no great height, the bird circling around to hover like a Kestrel. I was standing one day at the mouth of a little ghyll on a fellside watching a Grey Wagtail running about by the beckside, when a Buzzard came gliding down the ghyll a few feet above the ground, as it approached the Wagtail it dropped its talons to seize the bird but the Wagtail

sprang into the air, burst into song, and easily eluded the Buzzard which made no further attack on it but flapped away with its usual rather heavy flight. Another afternoon a Buzzard was watched making a determined effort to catch a Wood-Pigeon settled on a tree branch. The two birds chased and dived and wheeled amongst the tree branches, but finally the Wood-Pigeon got clear away and speedily outdistanced the hawk. A Buzzard was watched hovering like a Kestrel above a boulder-strewn slope where rabbits were feeding: it dropped to earth after a rabbit, missed it, and settled on a small boulder, then began fluttering and hopping from boulder to boulder after the rabbit, but without success. Another Buzzard glided down on an incubating Lapwing in a pasture field, seized it, and flapped away pursued by all the other Lapwings in the field.

At one Pennine rock-ledge eyrie the single youngster took off on its first flight as my companions and I approached the eyrie. One of the adults, soaring around, at once closed its wings and dived down to the youngster, dropping its talons as it approached to within a few feet of the young bird, which kept flying on, with the adult now barely a few inches above it, still with its talons down, and finally the young bird came safely to rest on the fellside whereupon the adult shot up into the air and soared around at a safe height.

One sunny August afternoon three Buzzards were soaring around at a considerable height above a fellside valley when one of the Buzzards, presumably an adult, dropped what looked like a mouse. The mouse dropped for several hundred feet, then the second Buzzard, presumably a juvenile, closed its wings and dived down at an angle on the falling mouse. When this juvenile Buzzard came to within striking distance of the falling mouse, it came on to a level course, up shot its wings, its feet stretched out and it caught the mouse in its talons. This Buzzard then soared around on a thermal current until it reached the altitude of the two adults: it continued soaring for several minutes then deliberately dropped the mouse: it allowed the mouse to fall for several hundred feet whilst it continued soaring around, then closing its wings, it dived a second time after the falling mouse and again successfully caught it in mid-air.

THE HARRIERS *Circus* sp.

During the fifty years occasional sightings of both the Marsh-Harrier (*Circus aeruginosus aeruginosus*) and the Hen-Harrier (*Circus cyaneus cyaneus*) have been obtained during the autumn months, whilst during the past ten years two moorland areas have been visited several times in the period April-July in an effort to find the Hen-Harrier breeding there, but without success.

THE SPARROW-HAWK *Accipiter nisus nisus*.

On mild sunny days in autumn and winter the Sparrow-hawk will sport and play with its mate. One December day a pair were

circling around and diving down on one another, the cock often turning on its back to show its whitish underparts. Finally, the hen alighted on a fence rail and the cock repeatedly dived down at her then threw up. Eventually both flew off together on the hunting flight to separate further on. Another day in January a Sparrowhawk was slowly flying around in a wide circle above a field bordering a wood, when every now and then it dived earthwards at a moderate angle, then shot steeply upwards to resume its circular flight and so continued for at least half-hour.

In March the birds begin nest-building and by early April the nest is ready for eggs, but egg laying is not general before the second week of May, the second and third weeks of the month being the average laying period. The usual clutch is four to five eggs, more rarely six eggs, and one record of seven eggs. Although the same plantation may be used for several consecutive years, the birds usually choose a new nest each year: for preference a tree with a good "look-out" view, and a certain amount of open space around it, so that the hen can make a quick "get-away" if necessary. In my experience incubation is entirely the work of the hen: the cock has never been flushed from eggs. On occasion the hen has been watched back to the eggs: usually she has turned the eggs with her beak before settling down to incubate.

Two nests were found as the birds were building them and as the eggs were laid, with one exception on alternate days, each egg was marked with the date of laying in order to discover in what order they hatched and also the exact incubation period. Each clutch consisted of four eggs, but in one clutch the fourth egg was infertile: at each nest incubation did not begin until the third egg was laid. In each nest the first egg laid was the third to hatch, in one nest about forty-six hours, in the other about twenty-six hours, after the second and third eggs laid had hatched. The second and third eggs in each nest hatched on the same day, but it was not discovered which egg hatched first. The incubation period for the first nest was thirty-five to thirty-seven days: for the second nest thirty-two to thirty-three days. The exact chipping period for one egg was found: at twenty-two hours on 18th June, the egg was beginning to chip and at 12½ hours on 20th June, just as I reached the nest, the nestling emerged from the shell, chipping period 38½ hours. The fledging period is twenty-seven to twenty-nine days.

With the Sparrowhawk, as with other species of hawks, there is considerable individual variation in the birds' behaviour at the nesting-site. Some hens are noisy when flushed from eggs, others streak away without any outcry. Most hens become noisy when the young are hatched, the wood echoing with their cries, but one pair that reared four young in a Scots pine in a conifer plantation never once called out during several visits paid to the nest.

The cock does most of the hunting whilst the young are small and brings the prey to the wood, where he gives his high-pitched

tittering call: the hen may fly to him at once and take the prey or she may stay motionless, despite his repeated calls and, finally, he flies to her with the prey. There are several plucking stations, such as a tree stump or fallen tree or earth mound, within a thirty yards radius of the nest tree where the prey is plucked before it is taken to the young. As the cock is not a large bird the prey he brings is usually small hedge-haunting species such as Finches and Tits and Bantings, with an occasional Thrush or Blackbird or Starling and even the odd Swallow. The last week the young are in the nest the hen may go off hunting, to help feed them, and bigger birds are then brought in. After leaving the nest the young stay about the wood for up to four weeks or longer: they are fed by the adults for up to three weeks after leaving the nest, then they begin to hunt and feed themselves.

One afternoon I watched an adult hen and two young gliding in single file down the side of a hawthorn hedge, then across the top of the hedge to the far side, a further glide down that side, then over and across to the near side: a lesson in hunting tactics.

Only occasionally does the last born nestling disappear from a Sparrow-hawk brood: most broods are successfully reared (although there may be an odd infertile egg) due, I imagine, to food being fairly plentiful.

In 1935 two pairs of Sparrow-hawks reared broods of three and four young within 350 yards of each other in a wooded valley, and within 150 yards and 385 yards respectively of a Kestrel that reared five young on a quarry ledge.

The birds will nest impartially in either conifers or deciduous trees: one nest was no more than twelve feet up in a hazel bush.

Previous to the normal hunting flight, the hawk may begin soaring around with several wing beats, then a circular glide, gradually rising higher in the sky until a certain height reached, the hawk closes its wings and dives earthwards in a long slanting glide. The hunting flight is a few rapid wing beats, then a long glide, a few feet above the ground-level, or if following a hedge, first one side of the hedge then a quick switch across to the far side, another glide, then back to the near side. I have followed in my motor-car several hawks when they were hunting along a roadside hedge and invariably found their speed to be 30 m.p.h.

Twice a cock Sparrow-hawk has stunned itself against a window-pane whilst chasing a small bird.

On several occasions a Sparrow-hawk has been disturbed from a Starling or a Blackbird that it had just struck down and the Starling or Blackbird has flown off in one direction, the Sparrow-hawk in another. The hawk will start plucking the bird whilst it is still alive: I think the bird is usually killed by the hawk pulling off its head.

A hen Sparrow-hawk was flushed one evening from under a hawthorn bush where lay the headless and partly plucked body of a

Song-Thrush. The prey was not disturbed and one hour later the hawk was flushed from the same site and only the skull and legs of the carcase were left.

Several Lapwings were scattered over a pasture field when a Sparrow-hawk suddenly appeared, gliding swiftly a few feet above the ground. The Lapwings rose and flocked together: the hawk rose up to them, dived, and struck down a Lapwing, followed after it, and alighted on it. I ran across the field and the Lapwing flew away uninjured, with the hawk making off in the opposite direction, pursued by a pair of Carrion-Crows calling loudly as they dived down on it.

Yet the Sparrow-hawk is not always after prey. On numerous occasions a hawk has been seen to make a sudden sally amongst a flock of Starlings or Swallows, as if to scare them, and then pursue its flight without any attempt to take a bird. One October day a Sparrow-hawk made a sudden sally amongst a flock of Pied Wagtails, set them up in the air, calling excitedly, then returned to a silver birch where it perched and took no further interest in the birds.

Since 1955 there has been a marked decline in the number of breeding pairs, and many former breeding-sites are no longer tenanted, even apart from the fact that in bygone years the hawks were mercilessly shot and trapped in the interests of game preserving by gamekeepers and shooters. The continued use of insecticides and pesticides on a large scale in agriculture and horticulture has infested their prey and, consequently, the hawks themselves.

AVERAGE BROOD REARED BY HAWKS.

SPECIES	No. Broods	6 Young	5 Young	4 Young	3 Young	2 Young	1 Young	Av. Brood
Peregrine Falcon	35	—	—	5	11	10	9*	2.34
Merlin	19	—	1	5	9	4	—	3.16
Kestrel	43	1	5	16	14	5	2	3.47
Buzzard	142	—	—	3	23	56	60	1.77
Sparrow-hawk**	48	2	11	21	3	7	4	3.71

*At least three of these 1-Young Broods are due to Falconers taking the rest of the brood.

**Prior to 1955, thirty-two broods of Sparrowhawks averaged 4.15 young. Since 1955 sixteen broods have averaged 2.81 young. No 1-Young brood prior to 1955.

RECOVERIES OF RINGED PEREGRINE FALCONS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
402306	Cumberland 9.6.35	Asby, Westmorland 1.4.43	—
404715	Cumberland 21.5.46	S. John's, Isle of Man —, 4.52	—

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
404716	Cumberland 21.5.46	Loch Finlas, Ayrshire 9.12.46	—
426924	Cumberland 14.6.69	Forest of Bowland, Yorks. c.—.4.71	—

Distance from place ringed to place recovered omitted so as not to give any information regarding breeding-sites to egg collectors or Falconers.

RECOVERIES OF RINGED MERLINS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
77829	Skiddaw Fells, Cumb. 24.6.25	Nr. Carlisle, Cumb. —.12.26	10 Miles N.E.
79710	Skiddaw Fells, Cumb. 19.6.26	Lydiate, Lancs. 23.3.34	60 miles S.
79713	Skiddaw Fells, Cumb. 19.6.26	Nr. Formby, Lancs. 11.3.27	80 Miles S.
342716	Skiddaw Fells, Cumb. 16.7.50	Nr. Hexham, Northd. 30.8.50	42 Miles N.E.

RECOVERIES OF RINGED KESTRELS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
RR223	Nr. Keswick, Cumb. 26.6.26	Nr. Wexford, Ireland 1.4.27	—
RR1904	Nr. Troutbeck, Cumb. 7.7.28	Where ringed 31.12.28	—
RR1915	Nr. Sebergham, Cumb. 18.6.29	Nr. Carlisle, Cumb. 17.5.32	8 Miles N.
RR1918	Nr. Sebergham, Cumb. 18.6.29	Nr. Cockermouth, Cumb. 18.5.32	20 Miles S.W.
RT4278	Cumdivock, Cumb. 12.6.32	Walby, Cumb. Summer, 1933	10 Miles N.E.
RV9851	Cardewlees, Cumb. 25.6.35	Gretna, Dumfriesshire 29.6.36	12 Miles N.
340711	Gaitsgill, Cumb. 27.6.49	Glassonby, Cumb. 6.9.49	10 Miles S.E.
3013096	Bassenthwaite, Cumb. 25.6.61	Nr. Chesterfield, Derby 28.2.62 Released 10.3.62 Scales, Lorton, Cumb. 3.11.65	120 Miles S.E. 10 Miles S.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
3013097	Bassenthwaite, Cumb. 25.6.61	Vitry En Artois, France 25.3.63	—
3023006	Bassenthwaite, Cumb. 14.6.64	Beaumont le Roger, France 27.9.64	—
3023010	Mosedale, Cumb. 22.6.64	Greystoke, Cumb. 23.1.65	6 Miles E.
ED41605	Mell Fell, Cumb. 25.6.68	Nr. Preston, Lancs. 30.12.68	55 Miles S.

RECOVERIES OF RINGED COMMON BUZZARDS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
AB6147	Pennines, West. 28.6.36	Marske, Yorkshire 28.10.36	70 Miles E.
500725	Skiddaw Fells, Cumb. 30.6.46	Newbiggin, West. —, 11.47	30 Miles S.E.
406418	Duddon Valley, Lancs. 7.6.49	Where ringed 1.12.49	—
406419	Duddon Valley, Lancs. 7.6.49	Ravenglass, Cumb. —, 1.50	10 Miles W.
406420	Duddon Valley, Lancs. 7.6.49	Where ringed 28.1.52	—
407347	Skiddaw Fells, Cumb. 18.6.50	Nr. Ingleton, Yorks. 30.10.51	35 Miles S.E.
409600	Skiddaw Fells, Cumb. 8.6.56	Nr. Cockermouth, Cumb. 7.6.57	15 Miles W.
410791	Helvellyn Fells, Cumb. 7.6.59	Langholm, Dumfries 1.3.60	45 Miles N.
410494	Pennines, Cumb. 18.6.60	Lazonby, Cumb. 7.1.61	10 Miles N.W.
425229	Skiddaw Fells, Cumb. 23.6.66	Where ringed 21.9.66	—
426913	Pennines, Cumb. 29.6.68	Nr. Penrith, Cumb. 27.2.69	10 Miles W.
426921	Nr. Kendal, West. 8.6.69	Nr. Hawkshead, Lancs. 3.1.70	10 Miles W.

RECOVERIES OF RINGED SPARROWHAWKS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
77838	Welton, Cumb. 3.7.25	Raughton Head, Cumb. —.12.26	3 Miles N.E.
77839	Welton, Cumb. 3.7.25	Wigton, Cumb. 2.12.25	6 Miles W.N.W.
78090	Curthwaite, Cumb. 16.7.25	Nr. Brampton, Cumb. 24.4.28	15 Miles N.E.
78092	Curthwaite, Cumb. 16.7.25	Carlisle, Cumb. 30.12.25	6 Miles N.E.
78093	Curthwaite, Cumb. 16.7.25	Carlisle, Cumb. —3.26	6 Miles N.E.
RR1850	Hesket New Market, Cumb. 19.6.27	Nr. Penrith, Cumb. —6.29	12 Miles E.S.E.
RR1856	Hesket New Market, Cumb.	Penrith, Cumb. 24.9.27	12 Miles E.S.E.
RR1938	Welton, Cumb. 27.6.29	Carlisle, Cumb. 27.10.29	8 Miles N.N.E.
RR1926	Curthwaite, Cumb. 26.6.29	Nr. Dalston, Cumb. 4.6.30	3 Miles N.E.
RS3506	Curthwaite, Cumb. 24.6.30	Gaitsgill, Cumb. 12.7.31	4 Miles E.
RS3511	Curthwaite, Cumb. 24.6.30	Penrith, Cumb. 23.3.31	16 Miles S.E.
RT1310	Cardewlees, Cumb. 27.6.31	Solway Moss, Cumb. 21.8.31	12 Miles N.
RT4687	Hesket New Market, Cumb. 26.6.32	Nr. Penrith, Cumb. 12.12.32	12 Miles E.S.E.
RT4689	Hesket New Market, Cumb. 26.6.32	Borrowdale, Cumb. 25.4.33	15 Miles S.W.
RV9857	Cumdivock, Cumb. 1.7.35	Calthwaite, Cumb. 27.8.35	12 Miles S.E.
RW6422	Cumdivock, Cumb. 14.7.35	Westward, Cumb. 24.12.37	10 Miles S.W.
RX3348	Welton, Cumb. 27.6.36	Where ringed 14.7.37	—
RX3349	Welton, Cumb. 27.6.36	Nr. Wigton, Cumb. 3.12.36	8 Miles W.
RX9210	Dalston, Cumb. 5.7.37	Thursby, Cumb. 14.9.37	3 Miles W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
RX9213	Welton, Cumb. 9.7.37	Plumpton, Cumb. 6.5.38	10 Miles S.E.
305810	Dalston, Cumb. 30.6.38	Calderbridge, Cumb. 21.6.39	30 Miles S.W.
305811	Dalston, Cumb. 30.6.38	Armathwaite, Cumb. 2.6.39	10 Miles S.E.
305812	Dalston, Cumb. 30.6.38	Where ringed 25.3.39	—
3031615	Scaleby Moss, Cumb. 30.6.66	Kirkoswald, Cumb. 9.10.69 (Released)	15 Miles S.S.E.
		Armathwaite, Cumb. 10.5.70 (Released)	12 Miles S.S.E.
ED24940	Kirkbampton, Cumb. 6.7.67	Where ringed 29.1.69	—
ED24945	Scaleby Moss, Cumb. 11.7.67	Where ringed 19.3.69	—
EF12458	Scaleby Moss, Cumb. 14.7.69	Burley-in-Wharfedale, Yorks. 12.11.69 (Released)	80 Miles S.S.E.
EF12459	Scaleby Moss, Cumb. 14.7.69	Nr. Dumfries 10.7.71 (Breeding: Released)	35 Miles N.W.
EF12484	Scaleby Moss, Cumb. 15.7.70	Carlisle, Cumb. 27.9.70	6 Miles S.S.W.
ED50430	Nr. Durdar, Cumb. 14.7.69	Nr. Wigton, Cumb. 18.9.69	9 Miles W.
EF12454	Nr. Durdar, Cumb. 14.7.69	Hutton-in-the-Forest, Cumb. 10.11.71	14 Miles S.S.E.

Of four Peregrines recovered, the oldest was 7 years 10 months, and was shot in the adjoining county, and could have been breeding there. The second oldest, 5 years 11 months, was presumably breeding in the Isle of Man, whilst the bird recovered in Yorkshire in its second spring could have been attempting to breed there.

Of four Merlins recovered, the oldest was 7 years 9 months, and was shot on the Lancashire coast in March, which was the fate of another young of the same brood. Another Merlin was shot near Hexham a month after ringing.

Of twelve Kestrels recovered, eight show local movements up to 55 miles from where ringed; one movement to Derbyshire, where it was caught alive, then released ten days later and, finally, found dead within ten miles of where ringed when 4 years 5 months old. One showed movement to Co. Wexford, Ireland, in its first April: and

two to north France, one in its first September, the other in its second March.

Of twelve Buzzards recovered, one showed movement to the Yorkshire coast in its first October, a distance of 70 miles: another travelled 45 miles north to Dumfriesshire: a third 35 miles in its second October to Yorkshire: and a fourth 30 miles in its second November to Westmorland. The rest showed local movement of up to 15 miles from the place of ringing.

Of thirty-one Sparrowhawks recovered, twenty-nine were recovered within a 16-mile radius of where ringed; one was shot 30 miles from where ringed the following June and, presumably, was breeding there: another was trapped at the nest two years later in Dumfriesshire and released; and one ringed in July was caught and released in November 80 miles south in Wharfedale, Yorkshire. The oldest bird was ringed in June, 1966, and caught alive in a byre in October, 1969, and released, then caught alive in another byre in May, 1970, and released when it was 3 years 11 months old, the oldest Sparrowhawk recorded.

THE COMMON HERON *Ardea cinerea cinerea*.

The breeding data concerning the Heron was obtained at Floriston and Crofton in the Solway area, and at Over Water near Bassenthwaite. Isolated visits were made to the small heronries at Derwentwater and Elterwater. The Floriston heronry survives but Crofton and Over Water are extinct. Over Water re-colonised in 1971, three pairs nesting amongst Rooks in nearby rookery. The nests at Floriston are in mature Scots pines: at Crofton they were chiefly in willows and sycamores; at Over Water in spruce firs. The maximum breeding-pairs in any year at Floriston was twelve pairs: at Crofton twenty pairs, at Over Water eight pairs. The data covers the years 1924-1940.

At Crofton birds began to return to the heronry and occupy nests from early February onwards according to weather conditions. Birds already in occupation would greet incoming birds with raucous calls, which the newcomers would repeat. Birds of a pair face one another on the nest, necks upright, bills raised. One heron standing upright on the nest stretched its neck to the fullest extent and bents its head backwards. During nest-building and renovation one heron occupied the nest whilst the other brought in sticks, neck outstretched like a swan. Crest erected and greeting-call uttered as the heron alighted on the nest tree: the standing heron likewise erected its crest and called and also indulged in wing-flapping. All intruders were driven away from the nest tree. Coition took place on the nest without any display. The sitting bird was fed on the nest by its mate.

In mild springs young could be fledged by the last week of April and in most years fledged young were found in the nests by the end of the first week of May. On 2nd May, 1934, all the young herons

were found dead on the ground under the nest trees at Crofton, and the seventeen occupied nests held eggs, the majority a four-egg clutch. On 20th June the young from these clutches were large enough to ring.

On 9th May, 1935, I was ringing the young at Crofton and a fledged youngster flew down to the ground from an adjacent nest and began wading across the pond, the heronry being on a small island, to the mainland. A pair of Mute Swans, with a nest of eggs on the island, at once swam after this young heron, cut it off from the mainland and, closing in on it from each side, struck it down into the water with their wings and trampled on it until it was drowned. It was a beautiful May evening, the temperature rising after a slight shower of rain, the sun shining, and the thrushes and blackbirds in full song—the swans' deed seemed all the more wanton and cold-blooded.

Over Water had one pair in 1924 and birds bred regularly until April, 1940, in which year there were five breeding-pairs. No further visits were made until 1946 when the heronry was found unoccupied and the trees were felled in the 1950's. On 1st May, 1927, two pairs were breeding: one nest held two young c. fourteen days old; the other nest, from its faeces-splashed state, had obviously held young, and there was an addled egg in the nest. On 21st August the nest that had held two young on 1st May again held two young, presumably a second brood.

The adult herons feed the young to the sound of much clapping and calling. Food disgorged by the young during handling for ringing consisted chiefly of eels, water-rats, minnows and small trout and chub. Also many pellets were found consisting of the remains of water-rats.

One September day over Derwentwater a pair of herons, from an estimated altitude of c.2,000 feet, planed steeply down in company with right and left beats of their wings, one bird repeatedly making a half-roll at frequent intervals during the rapid descent.

AVERAGE BROOD REARED BY THE HERON.

No. Broods	4 Young	3 Young	2 Young	1 Young	Av. Brood
132 ...	19 ...	69 ...	36 ...	8 ...	2.75

RECOVERIES OF RINGED HERONS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
104007	Floriston, Cumb. 9.5.25	Ferryhill, Co. Durham 24.6.25	60 Miles E.S.E.
103992	Floriston, Cumb. 12.5.25	Nr. Lochmaben, Dumfries —5.27	25 Miles N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
104033	Floriston, Cumb. 12.5.25	Nr. Carlisle, Cumb. —.1.27	4 Miles S.E.
104038	Floriston, Cumb. 8.5.26	Glenluce, Wigtown 24.2.27	72 Miles W.
104043	Floriston, Cumb. 8.5.26	Burgh Marsh, Cumb. —8.26	2 Miles W.
104045	Floriston, Cumb. 8.5.26	Kingussie, Inverness —7.26	150 Miles N.N.W.
104090	Floriston, Cumb. 30.4.27	Aspatria, Cumb. 28.6.27	18 Miles S.W.
104636	Floriston, Cumb. 5.5.28	Morayshire 12.11.28	170 Miles N.
104639	Floriston, Cumb. 5.5.28	Prestwick, Ayr 20.1.29	75 Miles N.W.
105926	Floriston, Cumb. 5.5.28	Nr. Dalston, Cumb. —3.30	8 Miles S.E.
105929	Floriston, Cumb. 12.5.28	Southwaite, Cumb. 5.5.32	15 Miles S.E.
106570	Floriston, Cumb. 9.5.29	Kintyre, Argyllshire 16.5.32	110 Miles N.W.
106572	Floriston, Cumb. 9.5.29	Matterdale, Cumb. —3.30	25 Miles S.
104625	Nr. Uldale, Cumb. 29.4.28	Greystoke, Cumb. 17.2.29	12 Miles E.S.E.
104628	Nr. Uldale, Cumb. 29.4.28	Nr. Bathgate, W. Lothian 25.2.30	100 Miles N.
105933	Nr. Uldale, Cumb. 1.7.28	Keswick, Cumb. —3.29	10 Miles S.
106595	Nr. Uldale, Cumb. 7.6.29	Cockermouth, Cumb. —4.30	10 Miles S.W.
106565	Nr. Uldale, Cumb. 27.6.29	Union Mills, Isle of Man 18.1.30	c.70 Miles S.W.
106600	Nr. Uldale, Cumb. 4.5.30	Armathwaite, Cumb. —1.35	20 Miles N.E.
107001	Nr. Uldale, Cumb. 4.5.30	Greystoke, Cumb. 11.2.31	13 Miles S.E.
107006	Nr. Uldale, Cumb. 31.5.30	Where ringed 10.5.34	—
109174	Nr. Uldale, Cumb. 15.5.32	Nr. Lockerbie, Dumfries 22.12.32	28 Miles N.N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
105940	Crofton, Cumb. 1.5.29	Arrochar, Dunbarton —,4.30	130 Miles N.W.
109163	Crofton, Cumb. 5.5.32	Welton, Cumb. 8.3.34	6 Miles E.
113071	Crofton, Cumb. 20.6.34	Newtown, Montgomery 10.9.34	130 Miles S.
113070	Crofton, Cumb. 20.6.34	Bootle, Cumb. 9.2.40	40 Miles S.W.
113072	Crofton, Cumb. 20.6.34	River Petteril, Cumb. 16.3.35	10 Miles N.E.
113076	Crofton, Cumb. 20.6.34	Glassonby, Cumb. —,9.40	18 Miles S.E.
113077	Crofton, Cumb. 20.6.34	Langholm, Dumfries —,3.35	30 Miles N.E.
114526	Crofton, Cumb. 9.5.35	Powfoot, Dumfries 3.1.36	15 Miles N.W.
114529	Crofton, Cumb. 9.5.35	Langwathby, Cumb. 16.8.44	20 Miles S.E.
114524	Crofton, Cumb. 8.5.36	Bolam, Northd. 9.4.37	55 Miles N.E.

The oldest Heron was 9 years 3 months old. Half the recoveries show local movement in Cumberland: the other half — apart from four isolated recoveries of one each in Northumberland, Co. Durham, Isle of Man and Montgomery, N. Wales — show movement northwards into Scotland, as far as 170 miles north. The recovery of 104045, ringed in May and reported in July at Kingussie, shows how swiftly a young heron can move away from its native heronry.

THE WHOOPER SWAN *Cygnus cygnus*.

25th October is the earliest date for the autumn appearance of the Whooper Swan—a party of three adults and one immature bird on Buttermere. The latest spring dates have been three adults on Over Water on 13th April and one adult on Moorhouse Tarn on 1st May. What may have been a summering bird was seen on 6th August, 1967, an adult Whooper, in company with a pair of Mute Swans, on the river Esk adjoining Rockcliffe Marsh. The three birds kept close together, showed no hostility, and the Whooper twice called loudly to announce its identity. The largest flocks have been seen on Derwentwater and Bassenthwaite, with thirty-five birds on Derwentwater in January and February, and thirty-two birds on Bassenthwaite in early April. One April day a flock of eleven birds on Over Water were calling for several minutes, close inshore by the roadside wood, with the echoes resounding from the wood, and the continuous

"double-whooping" was most impressive and lingered in the memory.

Of four adults on Thurstonfield Lough one April day three had mandibles a bright orange-yellow, the fourth bird had mandibles a very pale lemon in colour.

One March day on Derwentwater a flock of ten Whoopers were up-ending for food with five Widgeon swimming close around and eagerly seizing any food displaced to the surface by the Whoopers' actions.

In February, 1955, a flock of thirty Whoopers fed extensively on a field of uncut oats near Eskrigg, Wigton. In March, 1962, thirty birds were on flooded pasture at Linstock.

No hostility has been noted between Whoopers and Mute Swans when both have been present on a lake or tarn.

A flock of seventeen Whoopers consisted of twelve adults and five immature birds; one of eighteen Whoopers held ten adults and eight immature birds, twelve Whoopers held six adults and six immature birds, eleven Whoopers held eight adults and three immature birds, and of ten Whoopers there were four adults and six immature birds.

BEWICK'S SWAN *Cygnus bewickii bewickii*.

Bewick's Swan has not been seen before 28th October in any year, and the latest sighting has been 18th March. The largest flock has been twelve birds at Thurstonfield Lough in December of 1953 and 1954. In March, 1956, a party of six Bewick's were present with nineteen Whoopers on Thurstonfield Lough and the individuals of the two flocks intermingled without any hostility.

THE GREY LAG-GOOSE *Anser anser anser*.

During the period 1920—1940 small flocks averaging c.forty—sixty birds frequented the Solway coastal marshes from the last week of September onwards until late April, but for the past thirty years only an occasional flock has been seen during November—March in any year, most flocks on reaching the Solway Firth now appear to fly south to the Morecambe Bay salt-marshes for the main wintering. This passage, often in daylight, can begin as early as 19th September and continue into early November: as many as 250 birds have been counted in the one flight. In November and January flocks of up to 300 birds have been counted on the Kent estuary and on the Silverdale and Arnside salt-marshes.

In January, 1954, a flock of seventy-five Grey Lags flew north up the Kentmere valley, following the windings of the valley and keeping just below the mist-level on the fells: in late March, 1959, a flock made north via Dunmail Raise and in early April a flock was noted passing along the base of Skiddaw where it fronts on to Bassenthwaite. In the 1950's the Bassenthwaite marshes were visited by a flock of Grey Lags.

THE WHITE-FRONTED GOOSE *Anser albifrons albifrons.*

Small flocks of six to ten birds have been seen during the period late December to February on Rockcliffe Marsh on three occasions, whilst one December afternoon a party of ten flew just above the telegraph wires at Welton road-end, their white foreheads very distinct.

THE BEAN GOOSE *Anser fabalis fabalis.*

In February, 1947, a flock of c.300 Bean Geese frequented Rockcliffe Marsh during a spell of hard weather with snow and frost. They were very dark plumaged birds, with orange-coloured legs and bills predominantly black.

THE PINK-FOOTED GOOSE *Anser fabalis brachyrhynchus.*

The Pink-Footed Goose is the predominant Grey Goose on the Solway marshes, the flocks arrive from the north-east as early as 10th September, and many follow the valleys of the Black Lyne and the White Lyne. They feed on the salt-marshes when undisturbed, pulling up the grass by the roots, and giving the ground a pock-marked appearance with the numerous little holes thus left. Body-feathers and odd mantle-feathers strew the feeding area: any small hummock in running water is usually covered with goose droppings. They also flight inland to large pasture fields and feed chiefly in the centre of the field, keeping well away from the hedges, odd birds acting as sentinels whilst the others feed and squabble. They roost on the mudbanks on the Solway and wash and preen in the shallow pools left behind on the mudbanks by the retreating tide.

By the end of September up to three thousand birds may be present on Rockcliffe Marsh and during October there is a steady movement of Geese south-east from the Solway Firth presumably to the Humber and Lincolnshire marshes. The return movement is usually in late February and March.

From 1930 until 1937 an albino Pink-Foot was present amongst the flocks frequenting Rockcliffe Marsh.

The bulk of the flocks leave during the last week of April or first week of May with 14th May the latest date for birds still present on the marsh. On 9th May, 1936, what was probably the largest spring assembly for many years, an estimated ten thousand birds all departed that day for their breeding grounds.

The average wintering flocks over the years on Rockcliffe Marsh are usually between six hundred and eight hundred birds, but numbers can build up quickly according to weather conditions, with up to eight thousand geese on the marsh by early March.

On 24th February, 1952, Mr. G. Bowe, of Shawk Lodge Farm, Cumdivock, shot a Pink-Footed Goose out of a flock of one hundred birds feeding in a pasture field on his farm. It was ringed with an

Icelandic ring and had been ringed in Central Iceland the previous July as a juvenile. On 22nd January, 1958, he again shot a Pink-Footed Goose out of a flock of eighty birds feeding on kale on his farm: it also was ringed and had been "netted" two years previously as an adult in Lincolnshire. These are the only two geese he has ever shot during a lifetime spent on his farm.

THE BARNACLE-GOOSE *Branta leucopsis*.

Up to 1960 the largest flock of Barnacle-Geese never exceeded 200 birds, but in March, 1962, 350 birds were on Rockcliffe Marsh, whilst in March, 1963, 500 Barnacles and 1,500 Pink-Footed Geese were feeding together at midday on Burgh Marsh: individuals of the two species were intermingled on the marsh but the birds fed quietly and no squabbling was seen. It is usually October before the birds arrive and most have departed by mid-April.

On 11th October, 1970, an estimated 2,000 Barnacles were feeding on new marsh adjoining the river Esk on Rockcliffe Marsh. The Barnacles were in two long lines, feeding eagerly, with a good deal of calling, and when a close approach was made to the feeding birds they all took off, but within five minutes had returned again and resumed feeding. They appeared very hungry as if they had just arrived from a long flight.

THE BRENT GOOSE *Branta bernicla*.

Three records—a single bird on Newton Arlosh Marsh in early October and two January records of four birds and a single on the foreshore at Allonby.

THE SHELD-DUCK *Tadorna tadorna*.

On 28th July, 1927, two large flocks of Sheld-Duck, c.450 birds altogether, left Rockcliffe Marsh about dusk, with a clear sky and no wind, and flew up the Eden. Since that date many more flocks have been seen leaving the marsh on a July evening on their moulting-migration to Heligoland Bight. On 21st July, 1956, two large flocks, estimated at least 600 birds, left the marsh between 8-30 p.m. and 9-30 p.m. and made up the Eden, at an estimated altitude of 1,200 feet, with a clear sky and no wind. They begin to return from December onwards and the build-up continues throughout the winter with flocks of up to 300 birds by early March.

Courtship displays on the mudflats take place in small parties from mid-February onwards until early June: the drake with bobbing head and laughing call-note, the duck replying with a scooping motion of the head. Coition usually on water. From the second week of June onwards broods of downy ducklings, usually six to eight or nine in number, occasionally as many as twelve, appear on the marsh creeks or even in a quiet lane some distance from the marsh if the birds have nested in a rabbit-hole in a bankside. Both adults are usually

present with the young, flying restlessly around and calling: occasionally one adult will shuffle along the ground with trailing wings or perform the "false brooding" action. Later two or three broods will join forces and as many as twenty-eight ducklings have been found in one group, with two or even three adults in attendance. These ducklings will "skate" along the water or dive and swim underneath for as long as thirty seconds, covering a distance of twenty to twenty-five yards using their feet, their wings held rather loose. Frequently they whistle as they dive.

Flocks of up to eighty immature birds are common on the mudflats and sandbanks in August and September, whilst even in June occasional flocks of up to sixty birds have been seen on the mudflats.

THE MALLARD *Anas platyrhynchos platyrhynchos*.

The courtship display of the Mallard occurs from early December onwards, the drake bobbing his head up and down, touching his breast with his bill: coition may follow, both sexes splashing water over themselves after the mating. As early as 13th April one year a duck was found with six small young in a creek on Rockcliffe Marsh, and another year on 19th April a duck had six young on the Wampool, but over the years it has usually been the last fortnight of April before the young are hatched. On 30th September, 1929, two ducks were sitting on eggs under a hedge adjoining a small reservoir near Whitehaven. Broods of up to fifteen young are not unusual, with an average brood when first hatched of eight to twelve, which may result in no more than three or four young flying.

With one exception—an adult drake in April flushed from a marsh creek where the duck with small young was found—the duck only has been found with the young, and she invariably uses various wing-flapping and injury-feigning devices to lead the intruder away from her brood. In May, 1963, a duck was sitting on eleven eggs in a clump of rushes in a wet pasture field on Warnell Fell and invariably two drakes escorted her to and from the nest.

On two occasions a duck has laid her eggs in the old nest of a Carrion-Crow: one nest was c.40 feet up in an ash, the other c.15 feet up in an alder. The ducklings in the alder hatched and were found swimming in the nearby beck, but the fate of the other brood is unknown.

By early September flocks of several hundred birds are common on the upper coastal marshes of the Solway Firth and when the harvest is in full swing the stubble-fields are regularly visited, even in these days of combines. Flocks of 300 and 400 birds feeding in November, 1970, on cleared barley fields in Rosley parish. Whilst when the self-binder was used and the corn sheafed and stooked, if wet weather set in, thus delaying the leading-in, the birds would feed on the oat-stooks.

Monthly visits to Haweswater during the autumn and winter over the years 1950—1960 have twice yielded a count of 450 Mallard for November and twice a count of 400 Mallard for October. On Derwentwater during the same period 128 Mallard in December was the maximum: and at Bassenthwaite 228 Mallard in November was the maximum. Even a small tarn such as Moorhouse Tarn, near Wigton, had 115 Mallard in October, and on the Caldew above Rose Bridge eighty-seven Mallard were present in November and on the Shawk beck thirty Mallard in October.

THE GADWALL *Anas strepera*.

Single birds have been seen on Bassenthwaite in September and October and a pair in February: also a pair on Thurstonfield Lough in December. A pair were present on Rockcliffe Marsh during the summer 1950, but no evidence of breeding was obtained.

THE TEAL *Anas crecca crecca*..

In August and early September flocks of up to 300 birds assemble on the pools on Rockcliffe Marsh, birds diving down to the water with sudden sharp descents and side-turns. In November the drakes chase the ducks, calling "crikk-crikk" notes, making sudden rushes along the surface and throwing up spray.

Odd pairs breed on the coastal marshes: from a nest of eleven eggs found on 18th May one year nine young hatched ten days later, the duck flapping along the ground to lead the intruder from the young hiding in a creek. In 1938 several pairs nested on Rockcliffe Marsh: from two broods of two well-grown young found in early July in creeks, both ducks flipped along the water uttering a high-pitched quack, whilst the young dived to surface about twenty yards further along the creek. In July, 1948, three broods—two of seven young, one of six, were found on the marsh.

Occurs during the autumn and winter months on various tarns and lakes, with seventy birds in September on Thurstonfield Lough, fifty-seven birds on Haweswater in November, and sixty birds on Crofton in November.

THE WIGEON *Anas penelope*.

In June, 1938, a nest of eight eggs was found on Rockcliffe Marsh and the eight young were successfully hatched, but the species is chiefly a winter visitor and passage-migrant, from early September until April, with single birds or even pairs present until May. The clear whistling "whee-ou, whee-ou," of the drake is a pleasant sound on a fine autumn or spring morning, and from December onwards a good deal of chasing and "scrapping" occurs amongst the birds of a flock, which may number from three hundred to six or seven hundred birds, the larger numbers more in the early spring. It is

abundant on the Solway Firth from early autumn to spring and also occurs on most of the lakes and tarns during this period.

Whilst the largest flocks have occurred on the Solway Firth, flocks of 300 birds have been found on Thurstonfield Lough in February and 250 on Whins Pond, Penrith, in December, 150 on Crofton in November and March, and 130 on Ullswater in December.

The Wigeon feeds in a compact flock on the short grass around the tarns, then suddenly all the birds will rise and fly to the water. At Talkin Tarn the Wigeon will wait closely on a Coot diving for food and attempt to seize the weed from it as it comes to the surface.

THE PINTAIL *Anas acuta acuta.*

A single bird at Whin's Pond, Penrith, in November, a pair at Haweswater in October and another pair at Leighton Moss in January.

THE SHOVELER *Spatula clypeata.*

Nests with eggs have been found on Burgh and Rockcliffe Marshes in May and broods of young seen on Thurstonfield Lough in June and a pond at Hutton-in-the-Forest in July. As many as forty Shovelers have been counted on Thurstonfield Lough in February, and a flock of twenty on this lough in early March included twelve drakes displaying with bobbing heads up and down, calling a series of "took-took" notes, and repeated rushes at one another, especially when a duck approached the displaying drakes.

THE COMMON POCHARD *Aytaya ferina.*

The first week of August sees the return of the Pochard and it is present in fair-sized flocks on most of the lakes and tarns until the end of April, with a maximum of 230 birds, mainly adult drakes, on Derwentwater in December. However, single adult drakes or occasionally a drake with one or two ducks often spend the summer months on the smaller and more secluded tarns. The flocks consist chiefly of adult drakes: if only two or three Pochard are present on a tarn they will often "team-up" with a like number of Tufted Duck.

The Pochard feeds largely on weeds which it dives for and eats on the surface: a majority of timed dives give a minimum of 10 seconds and a maximum of 25 seconds.

THE TUFTED DUCK *Aythya fuligula.*

On 6th August, 1937, two broods of three and four young were on Sunbiggin Tarn, Westmorland: the duck was present with each brood and the young were diving vigorously, averaging 15 seconds for a series of dives. On the same tarn the following August a brood of three young was present. On 24th June, 1939, a brood of eight small young was on Over Water: both duck and drake were present with the ducklings; the drake was diving persistently, averaging 25-27 seconds for a series of dives, with a pause of 15-18 seconds on

the surface. In subsequent years other broods of young, averaging from three to five in number, have been seen on this tarn. In July, 1947, a duck with one fledged young was on Whin's Pond, Penrith.

As a winter visitor it is found on most of the lakes and tarns from mid-October onwards, with a maximum of 182 birds on Bassen-thwaite in October, and fifty birds on Tindale Tarn in November.

The majority of dives timed have averaged from 17-28 seconds, occasionally up to 30 seconds, but an adult drake on Blelham Tarn in four consecutive dives gave 70-50-50-60 seconds. At Esthwaite one November day a Coot and two adult female Tufted Ducks were diving side by side. The Coot averaged 14-15 seconds for a series of dives: the Tufted Ducks averaged 20-21 seconds for a similar series. The Tufted Ducks dived in quietly and emerged quietly: the Coot took a header out of the water and came up with a splash.

THE SCAUP DUCK *Aythya marila marila*.

Flocks of fifty to sixty birds are common on the upper reaches of the Solway Firth from October to March, with odd pairs or individuals up to mid-May. Larger flocks of 300-400 birds occur during the winter months off Allonby Bay, and often an excess of adult drakes in these larger flocks.

THE GOLDENEYE *Bucephala clangula clangula*.

From mid-October until the end of April, with stragglers into mid-May, this restless diving duck can be found on the rivers and lakes and tarns of the area. There is a distinct "rattle" from its wings as an adult drake flies overhead: birds when feeding will dive and be carried along with the river current for a certain distance, then rise off the water and fly higher up the river to begin feeding again. One February day a flock of thirty-nine birds, which included eighteen adult drakes, was on the Eden adjoining Burgh Marsh, drifting along with the river. The drakes were calling a good deal, a double-noted wheezing call, accompanied with head shakes and they also turned over on their sides to display their white underparts. A similar display was seen by a smaller flock on Derwentwater another February day.

The stretch of the river Eden from Castletown to the point of Burgh Marsh is a favourite feeding area for the Goldeneye and up to ninety-five birds, distributed in three or four flocks, have been found here from December until mid-April. The numbers of adult drakes show considerable variations: flocks totalling eighty-seven birds in December had ten adult drakes and flocks with ninety-three birds in mid-April also had ten adult drakes, whilst flocks with forty birds in March had twenty-seven adult drakes, and flocks with fifty birds in April had eight adult drakes, yet again in early April flocks with forty-four birds had thirty adult drakes.

The call is a harsh grunting-note often uttered as the bird rises from water on seeing an intruder.

The majority of dives timed have averaged from 20-30 seconds, with a minimum of 10 seconds and a maximum of 40 seconds.

On 1st June, 1949, an adult drake was on Killington Reservoir, Westmorland, in company with a winged duck, and on 1st September, 1962, an adult drake was on the river Esk adjoining Rockcliffe Marsh.

THE LONG-TAILED DUCK *Clangula hyemalis*.

An adult female Long-Tailed Duck on Loweswater on 5th December, 1970.

THE COMMON EIDER *Somateria mollissima mollissima*.

On 25th June, 1949, in company with Messrs. R. Millard and N. Redfern, an Eider duck was found on a nest of four eggs on a shingle-bed on Walney Island. The bird was clearly visible from a distance of fifty yards on an open nest-site on top of a ridge. On 19th June, 1952, a brood of four ducklings was in the sea a few yards offshore from the same shingle-bed on Walney Island and further offshore were seventeen adults.

THE COMMON SCOTER *Melanitta nigra nigra*.

Flocks offshore in open water throughout the year and birds have also been seen on Ullswater and Derwentwater and Haweswater. The Velvet-Scoter (*Melanitta fusca fusca*) has occurred on several occasions on the Eden adjoining Burgh Marsh between October and March, whilst a pair was present on Moorhouse Tarn, Wigton, in October, 1947.

THE GOOSANDER *Mergus merganser merganser*.

A sunny calm day in February will often induce the Goosander to display: thus in a flock of fourteen birds, four adult drakes and ten ducks or "brown heads," about a gravel-bank in the Eden one mid-February day, a drake with crest erect and head bobbing, calling the harsh "karr-karr" notes, would approach a duck, only to be repulsed by a determined rush from the duck. At times one drake would rush at and dive at another drake or a duck or "brown head" would rush and dive at one another. In the first week of March coition has been noted, a pair on Haweswater: after pairing the duck dived and swam under water and on emerging flapped its wings energetically: the drake stayed on the surface.

In April, 1948 and 1949, a pair of Goosanders frequented the same wooded stretch of the river Liddle, near Penton, but despite a prolonged search in both years the nest-site was not found, although in April, 1948, the drake was displaying with head-motions to the duck: presently both flew up the river and disappeared round a bend: later the drake alone returned.

On 8th September, 1951, a brood of four fledged young were on the Eden opposite Burgh Marsh Point. On 30th August, 1958, two broods of six and seven fledged young were on the Eden opposite Castletown, and in four other years broods of ducklings with adult female have been seen on this same stretch of the river Eden.

On 7th May, 1961, a nest of four eggs was found in a hollow alder tree on the White Lyne and on 15th May, 1965, a brood of ten ducklings were on the river Irthing, and on 16th June a brood of four on the upper Gelt had both adult Goosanders in attendance on them. On 12th June, 1968, a duck Goosander on Ullswater had ten young, four sitting on her back, the rest in single file behind her.

Three flocks on Ullswater one January day totalled forty-six birds and held eighteen adult drakes: two flocks on Over Water one March day totalled thirty-two birds and held fourteen adult drakes: and twenty-four birds on the Eden by Castletown one March day held sixteen adult drakes. A majority of timed dives were in the range of 22-28 seconds.

THE RED-BREASTED MERGANSER *Mergus serrator*.

On 17th August, 1938, a brood of three juvenile Red-Breasted Mergansers were on the river Esk adjoining Rockcliffe Marsh: they skated along the surface of the water, calling a harsh grating note. On 13th August, 1939, a brood of four juveniles were on this same stretch of the river Esk, then yearly until and including 1950, one to three broods of young were on the Esk in July and August and into September: then no more broods were seen until August, 1955, and every year since then one or more broods have been seen. The largest brood consisted of twelve ducklings on 30th June, 1968, but by the end of August the average brood was four to seven birds. Each of these broods had a duck in attendance, swimming with a bobbing motion of the head and usually diving first as a signal to the ducklings to follow suit. The ducklings often skated along the surface, throwing up a curtain of spray, before diving and swimming under water for an average of 20-22 seconds before surfacing.

In 1959 a brood of nine ducklings on the Esk on 15th August contained a very light-coloured duckling and by 20th September, when there were only five ducklings left, its plumage was white and, except that I could not see whether its eyes were pink, it appeared to be an albino.

On 20th August, 1967, a flock of twenty-nine Red-Breasted Mergansers came up the Esk with the incoming tide, diving and catching fish: at the same time an adult duck emerged from a creek mouth with a brood of five small ducklings behind her. On 28th June, 1970, a duck with fourteen small ducklings was on Ullswater.

THE SMEW *Mergus albellus*.

Two records from the Esk adjoining Rockcliffe Marsh in February and March, in each case a drake and duck.

THE CORMORANT *Phalacrocorax carbo carbo*.

A pair attempted to nest at Haweswater in 1952 but the nest in a Scots pine was destroyed by anglers. Up to twenty-five birds have been counted roosting in conifers by the lakeside. Dives lasting up to 65 seconds have been recorded for birds fishing in the lake, with a majority of dives in the 25-30 seconds range. When fishing in the Eden estuary, if an eel is caught, the Cormorant often has quite a tussle before the eel is swallowed, especially if the eel twines itself around the bird's neck.

In January, 1949, more than six hundred birds were counted one morning as they flighted down the channel of the Solway Firth by Port Carlisle shortly after nine o'clock.

Pairs have been noted on the ledges of St. Bees Head in July but no young have been seen.

THE STORM PETREL *Hydrobates pelagicus*.

Odd birds seen close inshore on the open coastline between Silloth and Maryport in the months of October and November.

THE FULMAR PETREL *Fulmarus glacialis glacialis*.

In July, 1948, six pairs were breeding at St. Bees Head and in June, 1949, seven pairs were present. In other years birds have been noted in pairs on the breeding-ledges by mid-March and are about the headland until mid-September.

THE GREAT CRESTED GREBE *Podiceps cristatus cristatus*.

From 1928 onwards Great Crested Grebes bred annually on Esthwaite, with as many as five pairs in one year. Blelham Tarn usually had one pair each year and occasionally two pairs, but during visits in June of the years 1964-1968 no Grebes were seen. In 1939 two pairs nested on Over Water and have continued erratically over the years, breeding successfully some years, other years not being present or only present in early spring, then disappearing.

On 22nd July, 1945, a brood of three young was on Rydal Water: on 2nd September only two young were noted, diving by themselves for food. On 25th October, 1955, five Great Crested Grebe were in a group on Bassenthwaite, two adults and three immature birds, but whether they had been reared on the lake is unknown.

Nest-building begins in March, interspersed with bouts of head-shaking, both birds facing each other or again both birds float on the water with necks outstretched.

Two or three young is the average brood, usually the end of June before they appear on the open water, although in one year young were hatched in the last week of May. The young are fed by the adults until they are full grown: they keep up a continuous calling of "peep-peep-peep" notes and will dive with the adults before they

are full-grown. Adults will swim at times with heads under water, and dives for food can range from 10 to 50 seconds duration. An adult Grebe on Haweswater one March day reached 68 seconds for the longest of six dives.

During the autumn and winter months birds can be found on most of the large lakes, provided open weather prevails, and also on the waters of the Solway Firth, with a maximum of fourteen birds off Skinburness Point in late October.

RED-NECKED GREBE *Podiceps griseigena griseigena*.

One record for the river Eden in February, also a pair in February on Crummock Water and a single bird in December on the same water. The pair averaged 23-28 seconds for a series of dives and twice brought fish to the surface.

THE SLAVONIAN GREBE *Podiceps auritus*.

The Slavonian Grebe has been met with on a number of occasions between early October and mid-February, both on the waters of the Solway Firth and also on Thurstonfield Lough, Over Water and Haweswater. Dives for food, usually fish, have ranged from 12-25 seconds. One bird at Haweswater emerged on the surface with a fish in its bill, then dived again with the fish in its bill before it swallowed it.

THE BLACK-NECKED GREBE *Podiceps nigricollis nigricollis*.

Two records—one in early November on the Waver estuary, Solway Firth, and one on the last day of May on the river Eden opposite Castletown.

THE LITTLE GREBE *Podiceps ruficollis ruficollis*.

The Little Grebe breeds on the more secluded tarns and on the smaller lakes such as Brotherswater and Rydal Water and Esthwaite and Over Water. The rippling trilling notes can be heard into November. Four or five young is the usual brood hatched, not recorded before late May, but with an average of two or, at the most, three young reared. One day in late November a pair on Rydal Water were still feeding two young. The majority of dives timed have ranged between 15-25 seconds, with a maximum dive of 35 seconds. The bird swims under water with legs held straight out, its wings used with an up and down stroke. Small fish are occasionally caught, otherwise it has been difficult to decide with certainty what food the bird has brought up.

THE GREAT NORTHERN DIVER *Colymbus immer*.

Two records—one in February on river Eden at Carlisle and one in March in Allonby Bay.

BLACK-THROATED DIVER *Colymbus arcticus arcticus*.

An immature bird on the river Esk adjoining Rockcliffe Marsh in June.

THE RED-THROATED DIVER *Colymbus stellatus*.

Three records of single birds for the months of December, March and May from the river Eden between Burgh Marsh Point and Carlisle. A series of dives timed have ranged from 20-26 seconds.

THE WOOD-PIGEON *Columba palumbus palumbus*.

From late January onwards, in mild weather, the gentle "cooing" of this pigeon is heard in the woods and also the shrubberies of large gardens: it can still be heard in the first week of October. The aerial display, as the bird flies steeply upwards and wing-claps, occurs from mid-March onwards.

Earliest clutch, two eggs, 28th March, in a cypress, young hatched 4th April and fledged 13th May. On one occasion an adult brought a twig to the nest where the other adult was incubating: it placed the twig on the nest, then both birds flew off. The young, after leaving the nest, may be fed by the adults for up to fifteen days. Latest date for a brood to leave the nest, 23rd November, but many late broods in October and November are blown out of the nests with the strong autumn gales and killed.

It nests commonly in conifers, less commonly in deciduous trees and straggling hedgerows. For three consecutive years a pair nested inside a Dutch barn on a farm at Aikton, the nest built on a cross-beam against an upright girder at one end of the barn and young were successfully reared, two broods each year. When the Wood-Pigeon nests in trees and hedgerows many of the clutches laid in April and May are destroyed — by birds of the crow family or by human beings — and it is often July or August before a brood is reared.

Two occupied nests in a hawthorn hedge were 30 yards apart and two occupied nests in a conifer plantation 40 yards apart. On two occasions an adult, brooding young in a nest, has flown down to the ground when disturbed, then fluttered along the ground giving the "broken wing" display. The fledged young whilst still in the nest will snap their bills in defiance. One adult flying hastily off young knocked one nestling to the ground. Another adult, brooding well-grown young in the nest, "cooed" loudly for several seconds.

Flocks of up to 600 birds have been counted in November feeding on acorns, and 200 feeding on beech-mast in December. Newly cleared stubble-fields and clover-hay fields are regularly followed, likewise newly sown cornfields. In hard weather conditions growing turnips are attacked, whilst in the spring young cabbage and cauliflower plants in private gardens are eaten. Seeds of the yellow rattle are eaten in July in the meadow hayfields.

THE STOCK-DOVE *Columba ænas*.

The Stock-Dove breeds in disused quarry faces and on the wall-plates of little used barns, and in hollow trees. On the fells it breeds in natural holes or clints on heather-clad crags. From January onwards periodic visits are paid to the nest-sites in quarry faces. Earliest date for a clutch of two eggs, 8th April, but fledged young have been found by 10th May. Latest date for a brood to leave the nest, 23rd October. Although the normal clutch is two eggs, in two different seasons an adult has been flushed from four eggs in a nest on a wall-plate in the same disused barn, and on each occasion only the one pair has used the barn: both clutches were unfortunately robbed. One year a pair of Tawny Owls reared two young in a hollow trunk of an alder: the following year a pair of Stock-Doves reared two young in the same trunk in late August.

THE TURTLE-DOVE *Streptopelia turtur turtur*.

Two records—one in late May by the river Lune, near Tebay, and one in mid-June at Thurstonfield Lough.

THE COLLARED DOVE.

Four pairs located in private gardens at Skinburness in May, 1966, and in August, 1966, a pair reared two young in a beech tree in a private garden at Cardew in Dalston parish. The bird has also been noted in public gardens in Carlisle and about a farm at Burgh-by-Sands.

AVERAGE BROOD REARED BY PIGEONS.

SPECIES	No. Broods	2 Young	1 Young	Av. Brood
Wood-Pigeon	... 48 ...	36	... 12 ...	1.75
Stock-Dove	... 18 ...	15	... 3 ...	1.83

RECOVERY OF RINGED WOOD-PIGEON.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
3013051	Cumdivock, Cumb. 29.8.56	Dalston, Cumb. 12.10.56	3 Miles N.

RECOVERIES OF RINGED STOCK-DOVES.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
78098	Warnell Fell, Cumb. 6.8.25	Greystoke, Cumb. 13.1.32	10 Miles S.E.
SS66773	Littlebampton, Cumb. 19.8.71	Wigton, Cumb. 15.12.71	5 Miles S.W.

The recoveries of both Wood-Pigeon and Stock-Dove indicate very local movement: the oldest bird recovered, a Stock-Dove, was 6 years 5 months old.

THE BAR-TAILED GODWIT *Limosa lapponica lapponica*.

From the third week of July onwards—earliest date 22nd July—parties and small flocks of Bar-Tailed Godwits begin arriving on the open sandy coastline of the Solway Firth in ever-increasing numbers to a maximum in September and October. Many flocks pass on, but if the weather remains mild and open flocks of between one thousand to two thousand birds can be present during the period November to March. The first arrivals in late July and early August usually have a number of red-breasted birds: a party of twenty-one birds on 2nd August had two in red breeding plumage: on 26th August a flock of seventy-seven birds had fifteen in red breeding plumage, the rest in silver-grey plumage; a party of six on 12th September had one in red breeding-plumage, whilst another party of six had four in red breeding-plumage. Although often by themselves, at times they associate with flocks of Knots or Oystercatchers. Thus one February day a flock of eight hundred Godwits were associated with nine hundred Oystercatchers on the open coastline: as the birds took flight the black and white of the Oystercatchers contrasted with the grey and white of the Godwits. Another January day five hundred Godwits were present with at least one thousand Knots on the open coast: one September day eight hundred Godwits with two hundred Knots.

The Godwits feed chiefly on the mudflats and sands, often on the tide-line, either picking food off the mudflat or sand, or else boring into the mudflat or sand to the full extent of the bill, and chattering as they fly from one part of the mudflat or sand to the next part. One sunny January day a flock of at least one thousand birds in the silver-grey plumage were on the tide-line, and when disturbed flew around at a fair altitude, sometimes in v-formation, then into one long line, then bunching in a compact flock, to dive earthwards and flatten out to skim along the surface and, finally, settle amongst a flock of Oystercatchers. The largest flock seen was in January, 1965, when an estimated two thousand birds were in Allonby Bay.

In early May small parties pass along the coastline on their way to their Arctic breeding grounds, whilst in some years in June and early July flocks of non-breeding birds, up to a maximum of 180 birds, can be found on the mudflats of the upper Solway Firth.

THE BLACK-TAILED GODWIT *Limosa limosa limosa*.

In May, 1947, and also in May, 1948, an adult in breeding-plumage was present most of the month on a salt-marsh, but no second bird was ever seen. Single birds have been most met with on the salt-marshes during the period July to September: five birds in early October is the maximum noted.

On 28th May, 1970, the Warden on Rockcliffe Marsh showed Mr. G. Horne and myself a nest of three eggs in a slight grassy mound on the edge of a colony of Brown-Headed Gulls, with occasional

Common terns, and near the outer fringe of the several hundred strong nesting Lesser Black-Back Gulls. The bird flew around at a moderate altitude with rather quick wing-beats and feet projecting beyond its tail. On 6th June the nest-site was visited in company with Mr. R. Stokoe, as the Warden had stated the young had hatched a few days previously, but despite a prolonged search of over an hour, no signs of either adult or young were found and a further visit on the evening of 10th June in company with the Warden and Mr. G. Horne was also negative.

THE COMMON CURLEW *Numenius arquata arquata*.

In February flocks of Curlews up to 180 birds strong begin to appear in the pasture fields in the lowland coastal areas, and as March holds sway with the east winds and patches of blue sky, the flocks begin to break-up into individual pairs that settle in the larger pasture fields and upland regions where they will endeavour to breed and rear young. By the end of the month the courtship-flight and song begins: as the courting bird flies steeply upwards he utters a series of bubbling notes that ripple on the quiet air and fill the surrounds with beauty. Both birds of the pair will take part in the courtship-flight, and coition can be very prolonged with the cock flapping his wings to keep his balance and calling all the time. The nest-scupe is made by the cock with his feet, wings arched, the bird uttering a penetrating call all the time, the hen usually standing nearby and silent.

The Curlew breeds throughout the lowland area, from the coastal salt-marshes to the higher slopes of the fells: nests with egg have been found up to 2,500 feet altitude on the Skiddaw fells and up to 2,600 feet altitude on the Pennine fells and the Mallerstang fells.

17th April is the earliest date for a four-egg clutch in the lowland farming area, with young hatched by 15th May. In a four-egg clutch, which is the normal clutch, from the chipping of the first egg to the hatching of the fourth nestling, can take four days. Both adults are present with the young as they wander from field to field, but if the brood gets split up, then usually one adult will be found with part of the brood, the other adult with the remainder. Yet over the fifty years I have most records of both adults with only one or two young, especially if the young were well-grown. Some adults show great emotion if the safety of the young are threatened, flapping along the ground and calling frantically. One June day a brood of three downy nestlings were found in a meadow hayfield with both adults flapping along the ground and calling loudly, then finally both flew up into the air and circled overhead calling loudly and piteously.

In most years broods of newly-hatched nestlings can be found from 20th May onwards: the latest date for newly-hatched nestlings is 5th July, whilst fledged young unable to fly have been found in a hayfield on 29th July. The young are fed chiefly on insect life, especially beetles.

In 1937 twelve pairs and in 1938 ten pairs bred on an area of one square mile of farmland in the lowland area south of Carlisle: in 1967 and in 1968 the same area had one breeding pair. I blame this decline in breeding numbers on the decline of the rabbit due to myxomatosis, with the consequent result that foxes no longer have rabbits to feed to their young and hence prey more on the ground-nesting birds such as Curlews and Lapwings and Golden Plover, and take their young more frequently, not only during the night but also during the day, as on more than one occasion I have seen foxes hunting for young Curlews with often three or four adult Curlews frantically trying to lead the fox away from the young. Young Curlews apparently leave a strong scent as they wander across a field: most dogs can run them down, and to a fox with its "nose" I imagine it is a "gift from the Gods" to come across a brood of young Curlews.

Two pairs breeding in a 15 acre hayfield is the heaviest breeding density. Four broods of young, ten young altogether, were found within one mile radius of Skegges Water in June, 1956. Cornfields and turnip fields are occasionally used for nesting. Flocks of non-breeding birds occur during the summer months, with a maximum of seventy birds at dusk one June evening amongst the young heather growth of a felled pine-wood, the birds at times uttering the rippling breeding-notes of spring.

By the end of June small parties begin flying to the Solway Firth from inland breeding-areas, and the build-up of flocks on the coastal marshes begins: by 20th August a flock of 1,500 birds present on Rockcliffe Marsh. Flocks also occur inland during the autumn months: 150 birds in a grassfield at Great Corby in October and 200 birds at Hethersgill in late December. One foggy November night Curlews were calling throughout the night as they passed down the Kentmere valley towards the Kent estuary.

THE WHIMBREL *Numenius phaeopus phaeopus*.

The clear tittering notes of the Whimbrel are the first indications of the bird's presence: on the autumn passage 18th July is the earliest date, 20th September the latest date, often just a single bird flying overhead at no great height and calling incessantly. On the flight-line from the eastern end of the Solway Firth to the Ravenglass estuary, used fairly regularly in autumn by the Whimbrel, a flock of six birds passed over Cumdivock on 21st July making south-west: on 22nd August four birds passed over Cumdivock making south-west. In both cases the birds were calling incessantly and no more than one hundred feet up. On 4th March, 1930, a flock of seven birds passed over Cumdivock in the afternoon, coming from the eastern end of the Solway Firth but heading south-east. They were calling repeatedly. This is the only record I have during fifty years residence at Cumdivock of Whimbrel flying south-east from the Solway Firth, but the reverse flight-line from the south-east to the

Solway Firth is used by the Whimbrel in May, and in five separate years since 1962 I have records of Whimbrel, varying in numbers from one to three birds, coming from the south-east and passing over Cumdivock, calling incessantly, and making for the Solway Firth.

There is also in May a regular route more or less the length of the Solway Firth in a north-easterly direction: earliest date for this passage is 11th May, when eight birds passed over Burgh Marsh at an estimated altitude of 1,500 feet, heading north-east and calling incessantly: five birds over Allonby on 12th May making north-east and calling: the latest date is 9th June when a single bird passed over Rockcliffe Marsh late in the evening, travelling very fast at c.1,000 feet altitude, calling and heading north-east. In one record concerning passage over Rockcliffe Marsh on 16th May, three flocks passed over during the afternoon, first a flock of ten birds c.300 feet up, heading north-east and calling: an hour later six birds passed over c.1,500 feet up, calling and heading north-east: finally, a third flock high up amongst the overhead cloud, their presence revealed by their incessant calling.

THE WOODCOCK *Scolopax rusticola*.

The Woodcock breeds in the leaf-littered deciduous woods throughout the area, and more occasionally in the coniferous plantations. The courtship-flight begins at the end of February, at dusk, the bird flying just above tree-height, keeping approximately to a triangular course, and uttering four croaking notes of equal pitch, ending with a loud bat-like squeak. Often a second bird flies behind it: the two meet and dive down out of sight amongst the trees, to re-appear in single file above the trees and continue the flight. As the days lengthen the courtship-flight can begin earlier, as much as two hours before dusk in mid-June. One bird flushed on 25th May from a patch of heather amongst some trees began the courtship-flight, following a triangular course above the tree-tops, and croaking, in broad daylight with the sun shining from a blue sky. Normally in June the flight begins about two hours before dusk and again at four in the morning.

Earliest record, four eggs, 6th April, young hatched 30th April. Latest record four eggs in a clump of rushes in a roadside grass verge adjoining a coniferous plantation on 28th July: also a brood of small young hiding under spruce branches in a spruce plantation on 5th August. One record of a five-egg clutch and one record of six young brooded by the adult in a roadside gutter. If an adult is flushed from downy nestlings, and there is a mound of moss nearby, the nestlings will disappear into the moss in a matter of seconds, and presumably stay thus hidden until the adult returns and calls to them.

In September and October the bird is often flushed from bracken-clad fellsides, also in March and early April, in these spring months up to 2,000 feet altitude on the fells.

In May, 1934, two pairs nested in a ten acre oak wood.

In November there is usually an increase in the number frequenting any large leaf-littered deciduous wood. The bird is now usually flushed under holly or hawthorn bush, or a gorse bush on a bankside, or a clump of bracken or bramble. On these occasions the bird will fly away low down if space permits, otherwise it will tower up to clear the tree-tops. Even when frost sets in some of the birds will frequent the wood as long as there is any unfrozen ground. In late February, 1947, after a spell of very prolonged frost, three Woodcock were flushed from a bankside c.10 yards by 5 yards in an alder copse, leaf-littered, and the afternoon sun shining full on it. In January, 1956, during another spell of hard frost, seven birds were flushed in the wooded Shawk valley: four birds together in a leaf-littered area, c.15 yards by 10 yards.

The first three months of 1963 had almost continuous frost, and about mid-day on 5th February a Woodcock flew the length of the road at Cumdivock, from the plantation close by the church, keeping just above the roadside hedge, and finally settled in the stackyard of the farm adjoining my house where, presumably, it was able to find food. On 24th February two Woodcock were flushed from bramble cover in the wooded Shawk valley and on 18th March, with the frost an average of two feet deep in uncovered soil, a single bird was flushed under bracken in the Shawk valley.

THE GREAT SNIPE *Capella media*.

On 19th November, 1923, a large Snipe was flushed from a boggy patch of ground on Hawksdale Common, Dalston. As it flew away on a straight course its half-expanded tail showed a great amount of white. It kept on a straight course, never zig-zagged in flight, and never called out.

THE COMMON SNIPE *Capella gallinago gallinago*.

The Snipe breeds from the salt marshes and throughout the low-land farming area where there are wet or boggy pasture fields, and not uncommonly up to 2,000 feet altitude on the fells, with odd pairs up to 2,500 feet altitude. In early March the courtship-flight begins, the bird making a "bleating" sound as it dives steeply down with expanded tail, and this "bleating" can be heard into the last week of July. A double-noted "jick-jack" call is also heard during the flight, and quite often, as it alights on the ground, a creaking note. Both birds of a pair will fly together and call the "jick-jack" notes, and often glide with wings held half-vertical. Occasionally the courting bird, when not "bleating," will make a half-roll and glide upside down for a second or two.

11th April is the earliest date for a four-egg clutch in a grass-tuft with young fledged by 15th May, and in most years young are flying during the last fortnight of May. One adult flushed from eggs flapped

along the ground, then stopped with the point of its bill on the ground, wings outstretched, and tail fanspread and at right angles to its body. It then flew silently away. Most adults flushed from eggs call the "scape" note as they fly or glide away from the nest: odd birds fly away silently either with zig-zag flight or gliding with wings held half-vertical.

Passage-migrants can be flushed from the gutters and creeks on the salt marshes from mid-July onwards, and if the weather keeps open up to twenty birds can be flushed in a flock as late as December. Even on the fells the Snipe has been flushed at 2,200 feet altitude in late December. A party of six birds was flushed from a patch of shingle at Port Carlisle, Solway Firth, one October day, whilst two birds were flushed from a rock pool at Allonby in early November.

Two nests, one with eggs, the other with newly-hatched young, were six feet apart on Caldbeck Common.

In 1961 a boggy patch, c.100 yards by 70 yards, in a 30-acre pasture field near Dalston was visited every third day between 21st February and 25th March, and a total of seventy-six Snipe was flushed. In 1962 the same boggy patch visited every third day between 1st February and 13th April yielded seventy-eight birds. In 1963, with almost continuous frost for the first three months, only one Snipe was flushed.

Roadside gutters are often visited in frosty weather.

THE JACK SNIPE *Lymnocryptes minimus*.

The Jack Snipe has been met with from the end of September—earliest date, 28th September—to the end of February, latest date, 27th February, with most records in December and January. Most records refer to single birds, apart from two birds flushed together from a wet meadow at Great Orton in September, and five birds on Skinburness Marsh in January and three birds on Hawksdale Common in January. No bird has ever called out when flushed, and most have settled within thirty yards of where flushed. Boggy places on salt marshes, or about meadows or pastures have been most frequented by this Snipe. I have not met with the species since 1964.

THE TURNSTONE *Arenaria interpres interpres*.

26th July is the earliest date for the arrival of adult Turnstones still in their tortoise-shell breeding plumage on the open coastline from Port Carlisle westwards, and their numbers increase during August and September. One September day thirty birds, some still in the tortoise-shell plumage were on a pebble ridge at Allonby Bay: one bird busy turning over pebbles. Another September day sixty birds were gathered on a shingle bank at Bootle with a high tide and, as the tide ebbd, small parties of Turnstones began bathing in the little pools left behind amongst the seaweed-tangled rocks. In mid-November sixty birds were counted on a one mile stretch of coast

on Walney Island. Mussel-scars and seaweed-tangled rocks are favourite feeding sites when the tide is out, and seaweed is turned over by the birds as well as pebbles.

The spring passage can take place between 21st April and 20th May, usually just small parties of three or four birds in adult breeding plumage, but on 17th May, 1936, a flock of thirty birds in breeding plumage was on a pebble-ridge at Allonby Bay.

THE KNOT *Calidris canutus canutus*.

Two red-breasted Knots on 17th July is the earliest date for the arrival of this Arctic breeding bird: a party of fifteen birds on 26th August included two red-breasted adults, the rest in juvenile plumage. By the third week of September flocks of one thousand birds can be found on the open coastline of the Solway Firth, and with mild sunny weather flocks of this size can be found into November, but the larger flocks of between four thousand and five thousand Knots are not usual before the turn of the year. In January, 1950, at least four thousand five hundred birds were gathered, with a high tide, on a shingle bank in Allonby Bay, and in the second week of April, 1963, an estimated six thousand birds were present.

A flock of fifteen hundred birds, disturbed one sunny February day, rose in a dense flock, then split into two, diving seaward, then turning rapidly, with a rustling noise like the sound of wind amongst dead leaves, spread out into a long line, showing grey then white as they turned in the sun to form a dense flock once more. A Sparrowhawk flew after the flock but the Knots quickly outdistanced it, flying at a good height, and twittering loudly as they passed overhead.

At high tide the Knots are often congregated with Bar-Tailed Godwits and Oystercatchers and Curlews: like the Godwits, they feed mainly on mudflats and stretches of sand, often in the tidal shallows.

Flocks of sixty to eighty birds seen during early May are presumably on spring migration to their Arctic breeding grounds, but flocks of up to four hundred birds can be found in June and these presumably are non-breeding birds staying for the summer on the Solway Firth.

THE DUNLIN *Calidris alpina schinzii*.

The Dunlin breeds on the coastal salt marshes and on the Pennine fells up to 2,900 feet altitude, also on the Mallerstang fells and the upland regions around Spadeadam. In June, 1925, a pair were present with a pair of Golden Plover on one of the Helvellyn fells.

In April the Dunlin begins its courtship-flight which is performed by both sexes, whilst frequently three or even four birds participate in it, and at times it is performed whilst the adults are rearing young. In two's or three's or four's the Dunlins pursue each other in single

file, in a very rapid flight full of sudden twists and sharp turns: varied with long intervals of gliding with their wings held v-shaped above their backs, legs straight out; whilst a rich trilling note is uttered that rises in cadence for several seconds, carrying a long way on the still marsh air, then abruptly ceasing. When only two birds, presumably cock and hen, partake in the courtship-flight, usually only the one bird trills but occasionally both will trill. At times a Dunlin will rise almost perpendicularly in the air, then hovering like a Skylark, will trill the lovely rich notes that last for several seconds. After performing the courtship-flight a Dunlin, on alighting, will often hold one wing aloft, banner-like, to display the silvery-white underparts.

The nest, usually sited in a small grass tuft, and often close to a small pool or creek, is ready for eggs by the last week of April. I have not found a full clutch of eggs earlier than 10th May, but on the other hand, day-old nestlings have been found by 21st May one year, and in eight other years between 23rd May and 29th May. As the text-books give twenty-one to twenty-two days incubation period, then with the nestlings hatched on 21st May the clutch must have been laid by 30th April at the latest. 5th July is the latest date for a four-egg clutch.

Both adults are usually present with the young, especially when newly-hatched, and both sexes will brood them, but occasionally only one adult is present with the young, and it usually creeps along the ground Sandpiper-fashion, with humped back, tail fanspread and trailing, wings outspread, whilst the alarm-note is uttered. One June day a solitary adult was flushed from a brood of six nestlings and it began creeping along the ground with humped back and trailing wings and tail, at times uttering the alarm-note, and shortly six adults arrived upon the scene and began running ahead and calling or flying and gliding around.

On the salt marshes occupied nests of Dunlin and Redshank have been found thirty-five yards apart, occupied nests of Dunlin and Snipe twenty-two yards apart; and of Dunlin and Lapwing twenty yards apart.

Two young birds able to fly were found on 13th June one year, and another year two young fledged except for the rump still in down were found on 26th June. A very high tide on Rockcliffe Marsh on 6th May, 1954, destroyed the eggs of all the waders then attempting breeding on the marsh.

On the coast and about the estuaries flocks of non-breeding black-breasted adults, up to four or five hundred in number, may be found during the summer months. When the breeding season is ended the salt marshes and fells are deserted until the following season and the Dunlins follow the estuaries and low-lying coast, commonly in flocks of hundreds, occasionally two or three of these flocks may unite to form one large flock of several thousand birds, and the aerial evolutions of such a flock on a sunny winter's day, now strung out in one

long column, then hanging like a gigantic swarm of bees in the air, are delightful to watch. The Dunlin associates readily with other small waders, and parties or small flocks are commonly found during the autumn months feeding in company with Ringed Plovers or Sanderlings or Curlew or Sandpipers about the newly-exposed mudflats or where the ebbing tide has left a thin film of water upon a stretch of sand, whilst in company with Sanderlings the Dunlins frequently feed in the tidal shallows, although the Sanderlings usually wade in deeper than the Dunlins. Ringed Plovers and Sanderlings are also its associates during the winter months—Ringed Plovers especially on the pebbly stretches of mudflats—as well as Redshanks and Knots.

Since 1964 a pronounced decrease of breeding birds on two of the salt marshes of the Solway Firth.

THE CURLEW-SANDPIPER *Calidris testacea*.

The Curlew-Sandpiper is an irregular passage-migrant in the late summer and early autumn months, earliest date 28th July, latest date 6th October, with a majority of records in September, usually of juvenile birds, the largest flock one of twenty-four birds feeding with a flock of five hundred Dunlins on a stretch of mudflats adjoining Rockcliffe Marsh. A party of fifteen birds feeding on a stretch of water-covered marsh one September day, were frequently circling swiftly around in the water, presumably to stir up any insect life in the water and bring it to the surface. On two occasions the bird has been found in company with a Grey Plover on the mudflats—once a single bird, the other occasion five birds, with a solitary Grey Plover.

THE LITTLE STINT *Calidris minuta*.

The Little Stint is another irregular passage-migrant in the late summer and early autumn, earliest record 1st August, latest record 14th October, with most records evenly distributed between August and September. Of late years it has been met with more regularly in August, and the sharp, almost metallic, "pritt-pritt" notes as the little wader rises from one of the smaller creeks is quite distinctive. Usually single birds have been met with, with two one August day and three one September day at Port Carlisle. One spring record of six birds in mid-April on mudflats by Rockcliffe Marsh.

THE PURPLE SANDPIPER *Calidris maritima maritima*.

One at Grune Point, Skinburness, on 10th November, 1923: one on the coastline at Bootle on 16th September, 1950: and one at Allonby Bay on 6th August, 1952. These three birds were present in typical sites of stony pebbly reaches or clusters of small boulders, but from 16th November, 1923, until 11th February, 1924, an adult was flushed on several occasions from the mouth of a large creek on Burgh Marsh, and again on 10th December, 1926, an adult, perhaps

the same bird, was flushed from this creek. The bird on all occasions allowed a close approach to within a few yards before flying off, once uttering a shrill single note in flight. It probed with its bill in the mud and waded thigh-deep in the water.

THE SANDERLING *Crocethia alba*.

The Sanderling is a regular passage-migrant in autumn and spring and also a winter resident, to the open sandy coastline. Earliest date 26th July, a party of eight red-breasted adults and again on 1st August five red-breasted adults. Flocks of one hundred to one hundred and fifty birds, chiefly juveniles, are not uncommon in August: in September the largest flock has numbered forty birds, in October fifty, November forty-five, December forty, January fifty, February forty, March thirty-five, April eighty and May seventy birds.

The May flocks contain a proportion of red-breasted birds, and the latest date for the spring passage is 21st May. On 16th May, 1961, in a mixed flock estimated at five hundred birds of Sanderlings and Dunlins and Ringed Plovers on a stretch of mudflat on the Esk side of Rockcliffe Marsh, at least half the flock was estimated to consist of Sanderlings.

The birds feed almost exclusively in the tidal shallows on the sandy coastline, either with the incoming tide or the ebbing tide, often by themselves, or else with Dunlins and, occasionally, Knots or Godwits. They run about on the open sand like clockwork mice, calling the "wick-wick" notes as they take flight.

THE RUFF *Philomachus pugnax*.

The Ruff is a regular passage-migrant to the salt marshes of the Solway Firth from late July — earliest date 28th July — to the last week of September, latest 26th September. The largest flock consisted of thirty juveniles, but flocks of eighteen birds and twice a flock of eleven birds have been met with, as well as smaller parties of five and eight birds, and several records of single adult birds. The flock of eighteen birds was encountered one mid-August day wading belly-deep in a marsh pool, picking insects off the water: there were eleven adults and seven juveniles; there was considerable variations in size between the adults in the flock. The birds encountered have usually been silent, even when flushed, but on two occasions birds have called with clear almost flute-like notes.

THE COMMON SANDPIPER *Actitis hypoleucos*.

The Common Sandpiper arrives, often paired, from 12th April onwards and breeds throughout the area, from the tidal reaches of the river Eden (downy young found on the strip of marsh in front of Castletown mansion) and by the sides of most rivers and lakes and tarns up to 2,350 feet altitude at Red Tarn, Helvellyn, whilst one

summer a pair was flushed in June at 2,700 feet altitude on Crowdundle Beck Pennines, and most of the quieter Lakeland valleys have varying numbers of breeding-pairs along the beck-sides.

A flock of eight birds on Burgh Marsh on 17th April and nineteen birds at Crofton Pond on 21st April are unusually large for the spring migration.

By the end of April the early arrivals begin their courtship-flights above river or lake: both sexes take part, trilling loudly, and performing an exaggerated butterfly-like circular flight above the water, then calling a running series of "ze-zit-zit" notes to alight with uplifted wings on boulder or grassy mound. Or they will glide with v-shaped wings, uttering quivering trembling notes rising in scale, then abruptly falling with the last note. Two or even three birds will glide with uplifted wings in single file and calling the "ze-zit-zit" notes. One pair, one adult, held one wing aloft before flying above the water, trilling and gyrating from side to side with its body, the other adult a slower flight with wing-tips just clearing the surface of the water.

Earliest date for a clutch of four eggs, 12th May, amongst the herbage on a shingle bank on the river Caldew: earliest date for day-old nestlings, 1st June, but in most years broods of newly-hatched nestlings are out during the first week of June. Latest date for fledged young just beginning to fly, 24th July, with 1st August the latest date for adults and young still about their lakeside breeding-site.

When flushed off eggs, the bird usually flies silently away but occasionally the sitting bird will creep along the ground, humped back and trailing fan-spread tail, calling loudly. The silent bird may be the hen, the noisier bird the cock.

A pair nested one year on a shingle bed in the river Caldew, the nest of four eggs sited beneath a hemlock plant. The sitting bird was first flushed on 13th June, and ran along the ground for some distance before taking flight and flying away silently. The next day when flushed the sitting bird shuffled along the ground, humped back, tail fan-spread and trailing, and uttering frenzied cries. The nest was visited on seven more days, always about 7 a.m., and the sitting bird always performed in this noisy manner. At the last visit on 30th June the nestlings had hatched, but owing to the thick and tangled vegetation, could not be found. Both adults were present, calling excitedly, one bird flying around with stiff jerky motions of the wings. I imagine the adult flushed on 13th June was the hen, but at all the other visits apparently the cock was on the eggs.

With this clutch the first egg was beginning to chip at 7 a.m. on 26th June: at 7 a.m. on 27th June all four eggs were chipping; 7 a.m., 28th June and 7 a.m., 29th June, eggs well chipped; 7 a.m., 30th June, four nestlings hatched and left the nest hollow.

When a wood adjoins the lakeside the birds commonly nest in the wood at varying distances of up to one hundred yards from the water's edge. In one such case, when the nestlings hatched, an adult carried the egg shells down to the water's edge.

Both adults help in brooding the young and when thus flushed from young both adults may display the "creeping rat" tactics accompanied with frenzied cries as if in pain, and if by a lakeside may even perform such actions over the water. At times, however, only one bird of the pair will perform thus, the other keeping guard at a distance and calling the alarm-notes. When only one adult is with the young, it usually performs the "creeping rat" tactics.

The young will swim readily under water, both feet straight out behind, and wings moving up and down.

Four pairs of breeding birds to a one mile stretch of river is the maximum density over the years, and there has certainly been a steady decline in breeding pairs throughout the area over the past ten years. In 1948 eight breeding pairs were found along a four mile stretch of Ullswater. In 1967 six pairs were found breeding along a two mile stretch of a secluded Lakeland beck.

Two adults one July day were wading in the shallower parts of the river Caldew, overturning leaves in their search for food.

Passage-migrants begin to appear about the creeks of the salt marshes from the last week of June onwards, until the first week of October. Flocks of up to eighteen birds have been met with in July.

On 7th December, 1935, a raw overcast day, with the Pennine fells snow-clad to their bases, a Common Sandpiper was flushed from the side of the river Eden near Carlisle.

THE WOOD SANDPIPER *Tringa glareola*.

One record, a bird flushed from a small pool at Port Carlisle, Solway Firth, on 10th October, 1954.

THE GREEN SANDPIPER *Tringa ochropus*.

The Green Sandpiper is a regular passage-migrant in the late summer and early autumn to the salt marshes of the Solway Firth; earliest date, 5th July, latest date, 2nd November. It has also occurred several times at Crofton pond, at a disused quarry pool in Shawk quarry and once at Blelham Tarn in early September. Except for one occasion in late August when two were flushed together from the river Eden at Rockcliffe, all records refer to only one bird being flushed, usually from a freshwater pool on the salt marshes, less commonly from a broadish creek. A majority of these single birds rise to a moderate height of fifty to one hundred feet, calling either a double or triple note as they fly away. A minority fly away low down, either silently, or occasionally giving the double or triple note. Exceptionally a bird will give a series of very noisy and squeaky notes as it flies away. The two birds that rose together were flushed at

dusk and uttered a series of high-pitched notes running into one another, very loud and distinct on the quiet night air.

Two spring records: a bird flushed from a roadside pond at Cumdivock on 6th April, 1958, and one flushed from the river Wampool, near Parton, on 25th April, 1967.

THE REDSHANK *Tringa totanus britannica*.

In normal open weather conditions the Redshank begins to return to its breeding haunts in the upland regions and lower fellsides from mid-March onwards, and its ringing call-notes are another welcome sign that spring is on the way. It breeds on the salt marshes and in wet or boggy pastures in the lowlands, and about the edges of moorlands and the fell-slopes up to 1,200 feet altitude, but over the past fifteen to twenty years many former inland breeding-sites have been deserted and fewer pairs breed on the salt marshes.

Although by the last week of February many Redshanks are back in pairs on the salt marshes, the courtship-flight, which both birds of a pair will perform, does not usually begin before mid-March. A steep flight up and down, with downward pointing jerky wings, as the birds perform a series of v-flights over the marsh, and heralded with ringing notes lasting throughout the display. Or three birds may chase each other in swift aerial pursuit, ending with two sparring like gamecocks on the ground, with attempted coition.

Earliest clutch, four eggs, 18th April, but day-old nestlings have been found by 10th May, and in most years, unless there has been one or more high spring tides over the marshes, newly-hatched nestlings can be found during the period 14th May to 20th May. Also day-old nestlings have been found on the Caldbeck—Uldale moors by 14th May in several years. The latest date for a brood of newly-hatched nestlings is 6th July. A fledged youngster caught on 8th June one year flew off strongly after ringing.

Day-old nestlings have lead-coloured legs: and fledged juveniles have pale ochre legs. Little pellets of mud can be found below a turf-spit where a bird has been resting.

Both sexes share the incubation, and twice an adult has been caught on eggs. Both adults are present with the young who, once they have left the nest, in a hollowed out tuft of grass, wander freely about the marsh and soon learn to take refuge in the gutters and creeks where they are often difficult to find. Although four young is the normal brood hatched (and seldom is an infertile egg found in a nest after hatching) it is doubtful if the average brood reared to the flying stage exceeds two young.

Two occupied nests with eggs were thirty-eight yards apart, whilst occupied nests of Lapwing and Redshank with eggs were seven feet apart on the salt marshes.

Flocks of fifty to one hundred and fifty birds are common on the coastline of the Solway Firth from mid-July onwards, feeding on the

mudflats after the ebbing tide, picking up food with their bills or wading belly-deep in the small pools and probing with their bills. Occasionally small fish up to $2\frac{1}{2}$ inches long are caught and after a short tussle swallowed. By October the flocks may number several hundreds, and they often visit the mussel-scars with the Oyster-catchers, feeding and bathing in the pools. By February flocks may number no more than one hundred birds, and even smaller if there has been a spell of frosty weather. They mix freely with other wading species whilst feeding and both Redshanks and Dunlins will "paddle" the mudflat with their feet for several seconds, then probe the area with their bills for any food thus surfaced.

THE SPOTTED REDSHANK *Tringa erythropus*.

An irregular passage-migrant, the Spotted Redshank has not been noted before 16th August, with the latest sighting on 4th November. All records refer to single birds except for a party of seven birds on pebbly mudflats at Port Carlisle, Solway Firth, in August. One spring record, an adult in breeding plumage on the river Waver, Newton Arlosh Marsh, on 9th May, 1936.

THE GREENSHANK *Tringa nebularia*.

The Greenshank is a regular passage-migrant to the salt marshes of the Solway Firth, earliest date 12th July and latest date 20th November for the salt marshes, but on the open coast it has been found at Ravenglass in December. The July visitors have often been single adults, their loud triple call-notes often the first indications of their presence, as they fly up from the mouth of a broad creek. By the end of July parties of up to ten birds have been met with on the salt marshes. In August a maximum of seventeen birds in one day: in September eighteen birds in one day: in October twenty birds: and November three birds.

On the salt marshes Greenshanks are usually found about the mouths of broad creeks or shallow pools on the marsh: sometimes wading belly-deep in the water and probing with their bills or rushing through the water with heads submerged. They invariably give their loud triple call-notes as they rise from creek or pool, and at times several birds can be heard calling across the marsh.

One September day a Greenshank pulled a lugworm out of the mudflat and was at once chased by a Brown-Headed Gull, but eluded its pursuer without having to drop its prey.

I have records of single birds passing over Cumdivock in August and September coming from the Solway Firth and heading south-west, presumably for the Ravenglass and Duddon estuaries.

Spring records include single birds on Burgh and Rockcliffe Marsh in March: a pair on Newton Arlosh Marsh in early May, a single bird on Rockcliffe Marsh in mid-May, and a single bird on Gilpin Marsh and at Bootle in the last two days of May.

THE RINGED PLOVER *Charadrius hiaticula hiaticula*.

In early February the Ringed Plover begins its courtship-flight on the coastal shingle banks where it hopes to breed. As many as six adults may take part, calling the fluting notes with pronounced sideways motions of the wings, also running on the ground with head lowered, wings arched, tail fan-spread, whilst uttering a series of bubbling notes.

As well as the coastal shingle banks it also breeds on the salt marshes and on shingle banks on several rivers such as the Eden and Irthing and Caldew.

Earliest clutch, four eggs, 12th May, but day-old nestlings have been found on Newton Arlosh Marsh by 25th May. Latest date for day-old nestlings 29th July.

Both sexes assist in rearing and brooding the young and both adults will perform the "broken wing" tactics to distract attention from the young, and will also perform "false brooding" for the same purpose.

By mid-August mixed flocks of Ringed Plovers and Dunlins averaging two hundred birds can be present on the mudflats and sandy stretches of the coast as long as mild open weather continues.

In the second half of May there is a passage of Ringed Plovers along the Solway Firth with up to 250 birds counted on Rockcliffe Marsh in the third week of May, and 300 birds on Burgh Marsh in the last week of May.

THE GOLDEN PLOVER *Pluvialis apricaria apricaria*.

The Golden Plover has decreased as a breeding species throughout Lakeland during the past ten to fifteen years, and several former breeding areas are no longer occupied. It used to breed very extensively throughout the Skiddaw fell area, up to 2,900 feet altitude, also the Helvellyn and High Street fells up to 2,750 feet altitude, likewise the fells around Black Combe and Whitfell, and between Ulpha Fell and Devoke Water, also throughout the Mallerstang fells. It is still to be found the length of the Cumberland and Westmorland Pennines, up to 2,900 feet altitude, with fluctuating numbers of breeding-pairs, also the upland regions around Bewcastle and Spadeadam. It used to breed about the moors between Caldbeck and Uldale, and the Troutbeck moors, also Flaska and Matteredale Common. In 1933 a pair reared young on Cardew Mire, a former bog now drained, on the railway line between Dalston and Thursby.

The courtship-flight, in which both sexes may take part, as in most waders, can begin in mid-February and continue intermittently into June. The birds perform an exaggerated slow-motion flight, accentuated by pronounced up and down wing-beats, whilst uttering a series of wailing notes, and at times a bubbling note reminiscent of the Ringed Plover. At the end of the flight the birds will dive earthwards at great speed, stalling within a few feet of the ground, then

skimming along just above ground-level. The wailing notes may be uttered whilst the birds are in flock in autumn and winter: in fact, snatches of the wailing notes can be heard in every month with open weather conditions, and at times the whole flock will perform the slow-motion flight and utter the wailing notes.

The actual nest-sites are often on peaty ground with odd little pools and patches of short heather, or matted grass and moss or patches of bilberry plant. Nest-scapes have been found on the summit of High Pike, altitude 1,850 feet, by mid-April, and day-old nestlings here on 26th May one year: another year two downy nestlings several days old were found on the lower slopes of Wild Bow Fell on 16th May: 19th July is the latest date for young still unable to fly. The majority of the nests with eggs have been found in May and June.

When flushed from eggs the sitting bird usually flies quietly away, tail depressed and fan-spread, wing-tips almost touching the ground. When flushed from young the bird will often flap along the ground, with outspread wings spread-eagled on the ground then flapped up and down. Both adults are usually present with the young, and with one brood of downy young four adults were flapping around and displaying great emotion.

The Dunlin is often the nesting companion of the Golden Plover on the Pennine and Mallerstang fells. On Saddleback one year a pair of Golden Plover were watched at close quarters and the cock at least appeared to be of the northern race, being jet-black underneath and a very distinct and broad white band down the sides of the neck and breast.

By the end of July or early August the breeding birds and fledged young flock together, with up to eighty birds counted on the plateau-summit of Crossfell in the first week of August and, at times, these high-lying breeding areas are visited in the winter months if there is open weather, with a flock of thirty-five birds one mid-December day at 2,200 feet altitude by High Cup Nick, and five birds on the plateau-summit of Crossfell, altitude 2,900 feet, in the first week of February.

Flocks begin to appear on the salt marshes from the end of June onwards, with up to one hundred and fifty birds on Rockcliffe Marsh by 30th June, and in some years flocks of over one thousand birds on the marsh by the beginning of August and similar numbers in September: five hundred in October; seven hundred in November; and one thousand birds in December as the maximum found on the marsh during these months over the past fifty years.

Flocks often frequent the open coastline and are found on the mud-flats and mussel-beds and seaweed-tangled rocks either by themselves or in company with Redshanks and Oyster-catchers throughout the autumn and winter months, in flocks ranging from fifty to six hundred birds, and at dusk with an ebbing tide will often fly down to the tide-

line. In the lowland farming area certain pasture fields can have flocks of up to one thousand Golden Plovers, often associated with several hundred Lapwings and, as long as the weather remains mild and open, both species will stay throughout the winter.

In June, 1949, six pairs of Golden Plovers and four pairs of Dunlins were breeding on one of the Mallerstang fells: in July, 1954, the same fell had four pairs of Golden Plovers and three pairs of Dunlins.

A flock of two hundred and seventeen Golden Plovers on Burgh Marsh in the first week of September contained fourteen black-breasted adults, the rest in juvenile plumage: a flock of one hundred and fifty-two Golden Plovers on a pebble-ridge at Allonby Bay in the first week of October had two black-breasted adults, the rest in juvenile plumage.

The late spring passage of the Golden Plover through the lowland farming area used to be very noticeable, with flocks of up to three or four hundred birds present up to the end of April: thus a flock of three hundred birds in the last week of April in a large pasture field near Welton, and four hundred in a pasture field opposite Askerton Castle, Brampton, in mid-April. Since 1960 the largest flock found inland has not exceeded fifty birds in April.

THE GREY PLOVER *Savatarola savatarola*.

A regular passage-migrant in the autumn, earliest date 2nd August, and with a majority of records in September and October, to the mudflats of the Solway Firth and the scars and mussel-beds of Allonby Bay. The largest flock was fifteen birds in mid-October on the mudflats adjoining Burgh Marsh, also a flock of twelve birds in August on the tide-line at Allonby Bay, and eleven birds in late September on new marsh near Bowness. A party of seven birds in mid-October on mudflats, two parties of six each in September and October on the tide-line at Allonby Bay, a party of four in mid-September at Bowness and three in mid-September on the mudflats of Burgh Marsh, complete the records for three or more birds seen together. The remaining records all refer to single birds or a pair of birds. The Grey Plover has not been met with after February, and I have no record of any spring passage. Most of the birds flushed have risen without calling, but odd birds have uttered a shrill note.

THE DOTTEREL *Endromias morinellus*.

On 28th May, 1928, a pair of Dotterel were flushed from a stony patch of fell-summit at an altitude of 2,900 feet in the Lake District. The birds flew off with fan-spread tails, uttering a slight windy whistle. Despite three further visits that year to this particular fell no further evidence was obtained of possible breeding.

On 31st May, 1934, a Dotterel was flushed from three eggs in a nesting area of coarse grass, moss and withered heather, at an altitude of 2,600 feet in the Lake District. The bird flew off with fan-spread tail and uttering a slight windy whistle. At the next visit the eggs had vanished and the Dotterel was not seen.

On 28th June, 1964, and again on 26th July a single Dotterel was found on the summit of a Pennine fell but no evidence of breeding was obtained.

On 29th June, 1968, a Dotterel with one nestling about ten days old was found on this same Pennine fell. On 14th June, 1969, a clutch of three eggs, of which one was broken, was found in a slight hollow in a grassy mound. No Dotterel was seen or heard. On 10th July, 1970, a two-hour search on this fell-summit revealed no Dotterel, although friends had reported two nests with eggs in June.

THE LAPWING *Vanellus vanellus*.

With the mechanisation of farming, and the tractor displacing the horse, the Lapwing has declined very considerably as a breeding species throughout the lowland farming area, whilst in many upland breeding areas their numbers are reduced. The Lapwing still breeds on the salt marshes, but in greatly reduced numbers, and in certain localities such as wet and rather boggy pasture fields and certain commons and fringes of moorland where tractors are little used.

In early February, with open weather, the birds begin to settle, often in pairs, on their breeding grounds and shortly afterwards the cocks begin to toss and call over the pasture or plough. The display of the cock before the hen begins with the cock picking the grass in front of him until the ground is bare, throwing the grass over his back, then using his feet the top soil is scraped away. He then goes forward with his breast, moving it up and down or else in a circular manner from right to left, until a definite hollow is formed, when his tail is sharply depressed and his feet moved with great rapidity to clear the hollow. After this display before the hen the cock usually performs his tumbling flight and utters his "pees, weep-weep, pees-weep."

Earliest clutch, four eggs on 30th March, with day-old nestlings on 23rd April, and in most years up to 1940 day-old nestlings could be found during the last week of April. Fledged young able to fly, although the rump might still be in down, by 25th May. Latest date for young found but unable to fly is 1st August at Sunbiggin Tarn.

Both adults take part in incubation and brooding of the young: the cock when flushed from young will often hold both wings aloft, banner-like: occasionally an adult will give the "broken wing" display from both eggs and young.

Food fed to nestlings, and still held in their bills when caught, has consisted of craneflies, black flies, white grubs and green and grey caterpillars.

In 1937 fifty-one pairs of Lapwings and in 1938 forty-seven pairs of Lapwings bred, along with Curlews, on an area of one square mile of farmland south of Carlisle. In 1967 and 1968 only three pairs of Lapwings bred in this same area.

On the Lake District fells the Lapwing used to breed up to 2,000 feet altitude, a nest with two eggs on 26th April on High Pike one year, whilst on the Pennine fells several pairs have been found breeding at 2,500 feet altitude on Milburn Forest fell and odd pairs on the plateau-summit of Crossfell, and on 1st June, 1936, a day-old nestling was ringed on the summit at an altitude of 2,930 feet.

Four pairs nested one April in a five acre field of oats, the nests about twenty-five yards apart. Another April four pairs nested on two acres of kale, two nests were fifteen yards apart, then twenty-eight yards to the third nest, and forty yards to the fourth nest. Twelve pairs nested one spring in a twenty-five acre field of oats and four pairs in a twelve acre turnip field.

In a six acre field near Cumrew in May, 1948, half sedgy, half pasture two pairs of Lapwings had two young each, one pair of Curlews had two young, one pair of Snipe had three young and one pair of Redshanks had at least one young.

Occupied nests of Lapwing and Redshank on the salt marshes have been found no more than five yards apart, and on Uldale moor occupied nests of Lapwing and Snipe fourteen yards apart.

In a clutch of three eggs in a cornfield, two eggs were beginning to chip at 11 a.m. on 28th April: at 11 a.m. on 30th April, with a cold north-east wind, following a frosty night with ice $\frac{1}{2}$ in. thick on a field water-trough, these two eggs were well chipped, with the nestlings calling, whilst the third egg had begun to chip. At 11 a.m. on 1st May the three nestlings were hatched in the nest hollow, the adult brooding them.

On moonlight nights in March and April, with a full moon, Lapwings will toss and utter their courtship-song up to midnight.

A clutch of five eggs has been found on three occasions. Although four nestlings is the normal brood to hatch, it is doubtful whether the average brood reared to the flying stage ever exceeded more than two young, even during the period 1920-1950, when the birds were relatively abundant throughout the area. I have a number of records of four fledged young found in pasture fields where only the one pair was breeding, but these records are greatly outnumbered by the broods that consisted only of one young or two young or three young. Of late years the average brood even when just hatched has seldom exceeded three young, oftener just two.

Flocking of the breeding birds and young is general from the third week of June onwards, and on the mudflats and pebbly stretches of foreshore adjoining the salt marshes in August and September flocks of up to fifteen hundred birds were commonly seen, with

numbers increasing to several thousands in October and on to December if the weather remained mild and open. One of the largest flocks seen during the period 1920-1950 was on 24th December, 1934, when an estimated nine thousand Lapwings and one thousand Golden Plover were assembled on the mudflats adjoining Rockcliffe Marsh. Of late years these autumn flocks on the mudflats and pebbly stretches of foreshore have seldom exceeded fifteen hundred birds in the period October to December.

In the lowland farming area winter flocks of up to four hundred birds, either by themselves or associated with flocks of Golden Plovers, still occur and it is amongst these flocks that a varying amount of pre-mating ceremonies take place, a continuous calling of "peet" and "pee-wit" indicating a varying amount of courtship display, including a ground display very similar to that given in the spring, and more rarely attempted coition has been seen. Besides this ground display odd cocks will occasionally perform their trembling-flight whilst uttering part of the spring song. Just before dusk the flock will often carry out aerial evolutions before settling for the night, usually on a ploughed field or else a cleared turnip field or potato field.

The young are expert swimmers and will readily swim the marsh pools and the marsh creeks when the tide is in. A high tide over Rockcliffe Marsh in the last week of April, 1947, and again in mid-May, 1964, destroyed many clutches of eggs, and presumably any small young hatched-out then would be carried into the Solway with the ebbing tide and seized by the Lesser Black-Back Gulls.

THE OYSTER-CATCHER *Hematopus ostralegus occidentalis*.

The Oyster-catcher breeds on the salt marshes and on stretches of shingle on the open coast, likewise on shingle-beds in the rivers Eden and Irthing and Caldew—in the case of the river Eden as far as the Mallerstang valley—whilst of late years more pairs have started to nest in cornfields and turnip and potato fields in the lowland farming area.

The "slow-motion" flight of the courtship display can begin in March and continue into August with a ground display in which two to four birds will take part, in single file, piping loudly with bills pointing downwards. At times two birds will face one another and display their black throats with jerky head movements. Coition can take place as early as December, usually without any display, and afterwards both birds will pipe loudly in single file.

Earliest clutch, four eggs on 8th May, but day-old nestlings have been found by 23rd May, and fledged young on 11th June on a shingle-bed of the river Eden in the Mallerstang valley. Latest date for fledged young just beginning to fly 27th August on the open coast at Bootle. The single young bird, disturbed on a shingle-bank, flew

about fifty yards out to sea, where it settled on the water and began swimming back towards the land.

The normal clutch is three eggs, but a four-egg clutch has been found on five occasions. With a normal brood of three young hatched, the average brood reared to the flying stage is usually between one and two young. The young will swim readily in the marsh pools or creeks, at times diving and swimming underwater. The adults will also readily swim, and will alight on the water beside the young.

The adults at times show great emotion when the young are threatened, both adults flying just above the ground with slow-motion flight, then alighting on the ground and running with humped backs and depressed tails, both wings drooped to show the white rumps, whilst they squat in this manner or else act as if brooding young.

Two occupied nests with eggs were six yards apart on a stretch of salt marsh.

Around two nests on Rockcliffe Marsh from which young had obviously hatched were several score of open mussels.

By the end of August the salt marshes are mainly deserted and the birds congregate on the mussel-scars and seaweed-tangled rocks of the open coast, or about the pebbly patches of mudflats, usually in flocks of hundreds, at times reaching three thousand to four thousand in September and October. On the mudflats they feed by picking-up food like Redshanks, but at times they probe with their bills for the lugworms and sand-worms. On these mudflats they are usually intermingled with other waders, such as Lapwings and Curlews and Godwits and Redshanks. On the mussel-scars they lever off the mussels with a sideways thrust of the bill, and will also overturn pebbles and large stones with their bills.

RECOVERIES OF RINGED CURLEWS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
75011	Nr. Dalston, Cumb. 3.6.24	Stranraer, Wigtown 12.1.25	80 Miles W.
77432	Nr. Caldbeck, Cumb. 5.6.25	Nr. Carlisle, Cumb. 22.6.27	12 Miles N.E.
77914	Welton, Cumb. 18.6.26	Nr. Ballymoney, Antrim, Ireland Winter, 1926-27	—
79018	Skirwith, Cumb. 3.6.26	Nr. Ballinasloe, Galway, Ireland 11.11.26	—
RR222	Warnell Fell, Cumb. 26.6.26	Belmullet, Mayo, Ireland 10.11.26	—

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
RR233	Cumdivock, Cumb. 12.7.26	Swinford, Mayo, Ireland 11.11.28	—
RR1866	Skirwith, Cumb. 20.5.28	Sline Hd. Lighthouse, Galway, Ireland 2.9.28	—
AE449	Langwathby, Cumb. 26.5.29	Ardee, Louth, Ireland 7.1.32	—
AH421	Skirwith, Cumb. 15.6.30	Killarney, Kerry, Ireland 14.10.30	—
314693	Uldale, Cumb. 24.6.39	Dumfries, Scotland 9.5.51	30 Miles N.W.
322278	Haltcliffe, Cumb. 4.7.43	Holywood, Down, Ireland 8.3.47	—
322380	Sebergham, Cumb. 11.7.43	Clonbur, Galway, Ireland —1.45	—
325287	Carlton, Cumb. 28.7.44	Ravenglass, Cumb. 4.9.44	45 Miles S.W.
325300	Cardewlees, Cumb. 22.6.45	Cloghane, Kerry, Ireland 20.12.46	—
335695	Witherslack, West. 6.6.49	Morecambe Bay, Lancs. —1.54	10 Miles S.
340701	Gummers How, West. 9.6.49	Ulverston, Lancs. 13.9.58	8 Miles S.W.
335698	Shap, West. 8.6.49	Loughrea, Galway, Ireland —12.50	—
340720	Nr. Kendal, West. 27.5.50	Where ringed 24.4.54	—
349997	Nr. Kendal, West. 23.6.51	Carrigtwohill, Cork, Ireland 12.11.51	—
368847	Old Hutton, West. 17.6.52	Grange-over-Sands, Lancs. 19.11.53	15 Miles S.W.

Twelve out of twenty recoveries of Curlews ringed as nestlings show passage to Ireland, the earliest recovery being in the first week of September in Co. Galway, and the latest monthly recovery being in the second week of March in Co. Down. The oldest bird recovered was 11 years 11 months old, and the recovery date, 9th May, suggests it was breeding or intending to breed where killed. Two recoveries, a Caldbeck nestling near Carlisle, in its second June, and a Kendal nestling where ringed in its fourth April, also suggest breeding.

RECOVERIES OF RINGED SNIPE.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
TB269	Uldale, Cumb. 6.6.43	Boherbue, Cork, Ireland 30.12.46	—
PS012	Nr. Kendal, West. 15.7.51	Crook, West. 22.8.52	4 Miles N.W.
CC20041	Geltsdale, Cumb. 17.6.67	Where ringed 3.9.69	—

One bird recovered in Ireland when 3 years 6 months old. The other two recoveries suggest the birds may have bred where recovered.

RECOVERIES OF RINGED REDSHANKS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
X9342	Burgh Marsh, Cumb. 28.5.26	Eastriggs, Dumfries —, 7.26	4 Miles N.
ZM61	Burgh Marsh, Cumb. 1.6.35	Cork, Ireland 29.12.35	—
XT392	Burgh Marsh, Cumb. 30.5.42	Brightlingsea, Essex 28.7.42	300 Miles S.E.
X59778	Burgh Marsh, Cumb. 29.5.54	Castletown, I.O.M. 10.4.55	85 Miles S.W.
V31988	Burgh Marsh, Cumb. 2.6.58	Marennes, Charente Maritime, France 25.12.62	—
V3591	Rockcliffe Marsh, Cumb. 18.5.27	Eastriggs, Dumfries 5.4.29	3 Miles N.
V3664	Rockcliffe Marsh, Cumb. 25.5.27	Nr. Cardiff, Glam. 27.3.31	220 Miles S.
T2429	Rockcliffe Marsh, Cumb. 2.6.28	Nr. Harlech, Merioneth. 15.1.30	160 Miles S.S.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
R6330	Rockcliffe Marsh, Cumb. 17.5.30	Polbathic, Cornwall 24.7.30	330 Miles S.S.W.
212160	Rockcliffe Marsh, Cumb. 19.5.37	Powfoot, Dumfries 29.7.37	15 Miles N.W.
WW815	Rockcliffe Marsh, Cumb. 18.5.39	Hythe, Hampshire 19.1.40	300 Miles S.
222725	Rockcliffe Marsh, Cumb. 8.6.39	Morlaix, Finistere, France 19.8.39	—
S41959	Rockcliffe Marsh, Cumb. 26.5.62	La Tremblade, Charente Maritime, France. 5.8.62	—
CA38267	Rockcliffe Marsh, Cumb. 29.6.63	Gilsland, North. 4.6.64	19 Miles E.
CC20002	Rockcliffe Marsh, Cumb. 29.5.66	Noyelles, Baie de Somme, France 26.8.66	—
YS81	Uldale, Cumb. 15.5.37	Saltash, Cornwall 25.1.38	350 Miles S.
XT391	Uldale, Cumb. 26.5.42	Maryport, Cumb. 8.3.43	22 Miles S.W.
SM816	Uldale, Cumb. 28.6.47	Tamerton Foliot, Devon 15.10.47	300 Miles S.
RN017	Mallerstang, West. 5.6.50	Newton Abbot, Devon 20.7.50	280 Miles S.

Three of these recoveries in July from Devon, Cornwall and Essex, show how quickly young Redshanks can move away from where they were bred, and three more recoveries in August from the north coast of France further emphasise this speedy movement. The bulk of the other recoveries indicate movement in a south to south-west direction from where the young were bred. The oldest bird recovered was 4 years 6 months old.

RECOVERIES OF RINGED GOLDEN PLOVERS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
222699	Uldale, Cumb. 24.6.39	Allonby, Cumb. 25.12.39	13 Miles W.
222700	Uldale, Cumb. 24.6.39	Powfoot, Dumfries 14.8.39	20 Miles N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
270435	Skiddaw Fells, Cumb. 11.6.53	Foulney Is., Barrow-in-Furness, Lancs. 9.2.54	45 Miles S.S.W.

Only local movements are indicated by these three recoveries.

RECOVERIES OF RINGED LAPWINGS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
Y6048	Burgh Marsh, Cumb. 13.5.25	Begadan, Medoc, France 25.2.26	—
AS5860	Burgh Marsh, Cumb. 1.6.35	Where ringed 19.6.38	—
231710	Burgh Marsh, Cumb. 7.6.42	Swinford, Mayo, Ireland —3.43	—
254852	Burgh Marsh, Cumb. 23.5.50	Pleyberchrist, Finistere, France 29.1.51	—
242252	Burgh Marsh, Cumb. 20.5.48	Bruff, Limerick, Ireland 21.2.52	—
283271	Burgh Marsh, Cumb. 29.5.54	Marcillac Lanville, Charente, France 11.3.55	—
297155	Burgh Marsh, Cumb. 30.5.57	Gretna, Dumfries 6.4.59	4 Miles N.
X9247	Rockcliffe Marsh, Cumb. 20.5.26	Ahascragh, Galway, Ireland 31.1.27	—
W9326	Rockcliffe Marsh, Cumb. 10.5.27	Ballycotton, Cork, Ireland 6.2.29	—
V3857	Rockcliffe Marsh, Cumb. 18.5.27	Douglas, Cork, Ireland 7.1.29	—
240100	Rockcliffe Marsh, Cumb. 4.6.47	Abbeyshrule, Longford, Ireland 2.1.48	—
270315	Rockcliffe Marsh, Cumb. 25.5.52	Irvillac, Finistere, France 24.1.53	—
297176	Rockcliffe Marsh, Cumb. 17.5.58	Killenaule, Tipperary, Ireland 5.2.59	—

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
297178	Rockcliffe Marsh, Cumb. 17.5.58	Miajadas, Caceres, Spain 5.2.62	—
DS52170	Rockcliffe Marsh, Cumb. 6.6.68	Lough Neagh, Antrim, Ireland 25.1.70	—
Y9991	Dalston, Cumb. 25.6.25	Mallow, Cork, Ireland —2.26	—
T4562	Dalston, Cumb. 7.7.28	Chatton, North. 23.8.35	80 Miles N.E.
AR6032	Dalston, Cumb. 28.5.34	Port Carlisle, Cumb. 23.8.34	15 Miles W.
222674	Dalston, Cumb. 20.5.39	Oldcastle, Meath, Ireland —3.42	—
S5106	Uldale, Cumb. 6.6.29	Monastereven, Kildare, Ireland 22.2.31	—
AN2063	Uldale, Cumb. 29.5.31	Middleton, Cork, Ireland 29.1.32	—
240086	Uldale, Cumb. 24.5.47	Oswestry, Shropshire 28.4.50	125 Miles S.
V3775	Raughton Hd., Cumb. 10.6.27	Aspatria, Cumb. —8.30	15 Miles S.W.
AR6034	Raughton Hd., Cumb. 17.6.34	Where ringed 26.6.36	—
206499	Raughton Hd., Cumb. 5.7.36	Esposende, Minho, Portugal 6.2.41	—
Y8813	Rosley, Cumb. 28.5.25	Maryport, Cumb. 22.6.26	20 Miles S.W.
X5777	Caldbeck, Cumb. 10.5.26	Charleville, Cork, Ireland 22.1.27	—
T1428	Troutbeck, Cumb. 13.5.28	Where ringed 13.8.31	—
S5142	Skelton, Cumb. 22.6.29	Caldbeck, Cumb. 5.4.32	8 Miles N.W.
P8996	Skirwith, Cumb. 21.5.31	Lege, Gironde, France 26.10.31	—
P8983	High Wray, Lancs. 17.5.31	Hawkshead, Lancs. 15.5.33	3 Miles S.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
206468	Hawkshead, Lancs. 4.6.36	Ballybrood, Limerick, Ireland — .11.41	—
218189	Cumdivock, Cumb. 30.6.38	Lake Cazauk, Gironde, France 9.1.55	—
234040	Skelton, Cumb. 4.7.43	Acklington, Northd. — .10.44	60 Miles N.E.
250122	Southwaite, Cumb. 14.5.49	Dumfries, Scotland 22.10.49	34 Miles N.W.
244591	Haltcliffe, Cumb. 16.5.50	Bruff, Limerick, Ireland Autumn, 1954	—
244584	Aisgill, West. 13.5.50	Ingleborough, Yorks. 9.6.51	14 Miles S.
DS52192	Nr. Helton, West. 4.6.70	Bampton, West. 20.4.71	3 Miles S.

Of thirty-eight recoveries of Lapwings ringed as nestlings, fifteen show movement to Ireland, the majority in the months of January and February, with the earliest recovered in November, the latest in March; six show movement to France, one in October, four in January or February and one in March; and one each to Portugal and Spain in February. The remaining fifteen recoveries chiefly indicate local movements including recoveries in Dumfriesshire and Northumberland and one in Shropshire, which could indicate breeding there, being reported in late April when almost three years old. The oldest bird recovered was 16 years 7 months old.

RECOVERIES OF RINGED OYSTER-CATCHERS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
24065	Rockcliffe Marsh, Cumb. 3.7.24	Morecambe Bay, Lancs. 2.12.24	60 Miles S.
25997	Rockcliffe Marsh, Cumb. 13.6.25	Dumfries, Scotland 18.1.26	30 Miles W.N.W.
26015	Rockcliffe Marsh, Cumb. 2.7.25	Morecambe Bay, Lancs. 5.2.30	60 Miles S.
25998	Rockcliffe Marsh, Cumb. 13.6.25	Ruthwell, Dumfries. 1.8.35	16 Miles N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
3031609	Rockcliffe Marsh, Cumb. 29.6.66	Gretna, Dumfries. 25.10.66	3 Miles N.
24068	Kirkbride Marsh, Cumb. 10.7.24	Solway Firth, Dumfries. 3.1.25	10 Miles N.
29094	Kirkbride Marsh, Cumb. 17.7.27	Fleetwood, Lancs. —2.31	65 Miles S.
RR9985	Kirkbride Marsh, Cumb. 7.7.29	Heswall, Cheshire 27.12.29	80 Miles S.
AA2470	Newton Arlosh Marsh, Cumb. 9.7.31	Eastriggs, Dumfries. —10.31	5 Miles N.W.
RW6432	Newton Arlosh Marsh, Cumb. 20.7.35	Morecambe Bay, Lancs. 28.2.37	55 Miles S.
342710	Burgh Marsh, Cumb. 22.6.50	Grange-over-Sands, Lancs. —10.50	60 Miles S.
3073877	Burgh Marsh, Cumb. 4.6.64	South Gare, Teesmouth, Yorks. 4.12.65	78 Miles E.
335688	Killington Reservoir, West. 1.6.49	Heswall, Cheshire 15.4.50	70 Miles S.
359106	Nr. Outhgill, West. 11.6.51	Fleetwood, Lancs. 5.3.55	43 Miles S.W.

Of fourteen recoveries of Oyster-catchers ringed as nestlings, eight show movement in a southerly direction as far as Cheshire: five show northerly movement as far as Dumfries; whilst one bird from Burgh Marsh travelled eastwards to Teesmouth in Yorkshire. The oldest bird recovered was 10 years 2 months old.

THE BLACK TERN *Chlidonias niger niger*.

Immature Black Terns have been seen at Talkin Tarn and Sunbiggin Tarn in the month of August.

THE SANDWICH TERN *Sterna sandvicensis sandvicensis*.

On 24th June, 1926, the nest of a Sandwich Tern with one egg was found amongst the nesting colony of Common Terns on Rockcliffe Marsh, and on 30th June the nestling had hatched and was ringed.

The nesting area amongst the marram grass on the sand dunes at Drigg Point, Ravenglass, was visited in June of each year, from 1930 to 1933, and also in June, 1950, July, 1951, and June, 1956. The following estimates of breeding pairs were made at these visits: 22nd June, 1930—30 pairs; 14th June, 1931—14 pairs; 19th June, 1932—350 pairs; 18th June, 1933—400 pairs; 14th June, 1950—180 pairs; 8th July, 1951—250 pairs; 21st June, 1956—400 pairs.

In 1933 the first birds arrived on 28th March and eggs were laid from 27th April onwards. In 1933 and also in 1950 there was one three-egg clutch. On the visits in June, 1932, and June, 1933, a majority of the young had hatched and were in a "mob" on the tide-line, but a number of small young were found nestling in sand-grooves, whilst a few nests still held eggs. Several nests with eggs of the Common Tern were mingled with those of the Sandwich Tern, and young of both species of Terns were found hiding in the colonies of Brown-Headed Gulls. On the visit on 8th July, 1951, several adults were noted to have white patches on their foreheads, indicating they were already assuming winter plumage. I was informed in June, 1956, that a vixen with a litter of cubs amongst the sand-dunes had destroyed several scores of young Sandwich Terns.

The colony on Walney Island was visited on 25th June, 1949, and also on 19th June, 1952, when 250 pairs were estimated to be nesting on a shingle-bank. The bulk of the young had hatched and were found in a "mob" c.200 strong in 1949 and c.150 strong in 1952 on the tide-line.

Sandwich Terns have been noted at Drigg Point up to the second week of August, otherwise adults and young move northwards after the breeding-season, and between 5th August and 9th September many records have been obtained of them in Allonby Bay, in many cases still travelling northwards. On the afternoon of 9th September, 1945, seventy-one birds passed north along the coast during two hours: there was a good deal of calling from the birds: odd birds were fishing as the tide ebbed; a party of five settled on the sand and called in unison for several minutes.

THE COMMON TERN *Sterna hirundo hirundo*.

Up to 1950 the breeding-colony of Common Tern on Rockcliffe Marsh fluctuated between one hundred and one hundred and seventy pairs in most years, but since 1950 the number has fluctuated between fifty and seventy pairs, and the nests are more widely scattered over a considerable area of the marsh, whereas they were mainly concentrated in earlier years along the Esk side of the marsh, more especially towards the point of the marsh. The steady increase since 1930 of the numbers of Lesser Black-Back Gulls nesting on the marsh may be responsible for this scattering of the Tern colony. A small colony has also existed for many years on Newton Arlosh Marsh and in 1944 six pairs nested on Burgh Marsh. On 28th May,

1935, a nest with three eggs was found on a shingle-bank in the river Caldew at Dalston.

The last week of April sees the first Common Terns return to the salt marshes, and in May the "slow-motion" courtship-flight, often carried out by three birds, takes place. 18th May earliest date for a three-egg clutch with 9th June earliest date for day-old nestlings on Rockcliffe Marsh and 15th August latest date for fledged young beginning to fly. In most years the bulk of the nesting birds have left the marsh by mid-August, with late birds still on the marsh up to 25th August and a flock of ten on Drumburgh Marsh on 4th September.

Food fed to the nestlings has consisted of small flatfish and herring-fry.

On 22nd June, 1930, at Drigg Point, Ravenglass, seventy young were hatched: on 14th June, 1931, only eight young were out: whilst on 19th June, 1932, and 18th June, 1933, none were out and, likewise, on 14th June, 1950, none were hatched.

On 25th June, 1949, the colony on Walney Island was estimated at two hundred pairs: a few nestlings were hatched, no more than three or four days old, but the majority of nests still held eggs. One colony was amongst the main Sandwich Tern colony. Several nests were sited in the centre of a bed of yellow stoncrop.

In August flocks of up to twenty birds have passed over Cumdivock, coming from the direction of the Solway Firth, and heading south-west, presumably towards the Ravenglass and Duddon estuaries.

During the first half of September flocks of up to thirty birds—adults and young—can be found on the shingle-banks in Allonby Bay.

On 11th May, 1957, a party of seven birds passed over Troughhead in the Bewcastle district in the late afternoon making in the direction of the Solway Firth.

THE ARCTIC TERN *Sterna macrura*.

A few pairs of Arctic Terns, seldom more than three or four in a season, have nested in most years amongst the Common Terns on Rockcliffe Marsh. Likewise a few pairs were found nesting at Ravenglass, whilst at Walney Island in June, 1949, an estimate of twenty-five pairs was obtained.

On 26th December, 1945, an Arctic Tern was seen at Port Carlisle, Solway Firth.

THE LITTLE TERN *Sterna albifrons albifrons*.

On 21st July, 1923, an estimated fifty pairs of Little Terns were breeding at Grune Point, Skinburness: on 10th July, 1924, thirty pairs; on 11th July, 1925, fifteen pairs. In these three years nests with eggs and nestlings in various stages of development were found.

At Dubmill Point, Allonby, the nesting colony visited on numerous occasions between May, 1921, and May, 1966, has fluctuated between six pairs and thirty pairs.

At Ravenglass between four and twelve pairs were found breeding and at Walney Island fifteen pairs were recorded.

At Dubmill Point, Allonby, 12th May is the earliest date for a clutch of three eggs and 21st July the earliest date for fledged young, but the colony suffers considerably from human interference with many clutches being robbed or destroyed by people. Clutches have been found up to 21st July and as late as 6th August, partly-fledged young were still being fed by the adults. The ternery is normally deserted by mid-August.

At Ravenglass day-old nestlings were found by 18th June.

RECOVERY OF RINGED SANDWICH TERN.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
NF600	Ravenglass, Cumb. 19.6.32	Dakar, Senegal, W. Africa Winter, 1932-33	—

RECOVERIES OF RINGED COMMON TERNS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
V7976	Rockcliffe Marsh, Cumb. 28.7.27	Seahouses, Northd. 30.7.36	70 Miles N.E.
YH524	Rockcliffe Marsh, Cumb. 5.7.37	Burgh Marsh, Cumb. 19.9.42	1 Mile S
SJ503	Rockcliffe Marsh, Cumb. 30.6.45	Waterfoot, Dumfries —7.47	8 Miles W.

The oldest bird recovered was nine years old and the month of recovery strongly suggests it was breeding on the Farne Islands.

THE LITTLE GULL *Larus minutus*.

One October record of a Little Gull amongst a flock of Common Gulls following a man ploughing by tractor at Cumdivock, and a mid-May record of two birds on the Esk side of Rockcliffe Marsh.

THE BLACK-HEADED GULL *Larus ridibundus ridibundus*.

A small colony of Black-Headed Gulls still persists on Rockcliffe Marsh, although very much reduced in numbers compared with the years prior to 1930 when only a few pairs of Lesser Black-Back Gulls nested. The largest gullery is still at Ravenglass amongst the sand-dunes. Visits were made to the gullery at North Scales, Heads Nook,

in 1950 and 1951, and it was estimated c.500-600 pairs were breeding there. In 1961 fifteen pairs nested at Blelham Tarn, and in 1968 seven pairs were nesting at Wise Ean Tarn.

Fledged young have been found on Rockcliffe Marsh by mid-June, but with the constant robbing of nests it is often July before any young fly. If not unduly harassed most pairs have finished breeding by the end of July with stragglers into August.

A nest of six eggs, all the same type and markings, was found on Rockcliffe Marsh in June, 1926.

After the breeding season the birds disperse along the coastline and estuaries of the Solway Firth.

THE COMMON GULL *Larus canus canus*.

From mid-July onwards, earliest date 11th July, flocks of Common Gulls begin to frequent the pasture fields inland and in the late autumn and winter they are the "birds of the plough" following in a screaming flock the turning of the furrows. It is rarely any young or juvenile birds are seen with these flocks: the bulk of the birds are adults.

A good deal of display often takes place in these flocks in the autumn: much "wailing" from the birds, followed by the birds throwing back their heads to the fullest extent, whilst the mandibles are opened wide. Or the birds will call noisily with head and neck stretched out stiffly. Attempted coition has been noted occasionally.

In April, and in mild weather sometimes as early as February, the flock will often circle around until a fair altitude is reached, then, with much calling, dive earthwards at speed, stall, then circle around to settle on the ground. When settled small parties of three to six birds may form, the birds wailing loudly with heads and necks stiffly inclined: at times two will walk side by side or one bird will shuffle around, its head and body in a straight line and close to the ground, with wings slightly drooped.

In most years the wintering flocks have left by the last week in April but a party of eleven adults was seen on 11th June one year.

A large winter roost was noticed in November, 1957, on Ullswater, the birds coming in to roost from three o'clock in the afternoon until close on four o'clock. Several thousands of birds were involved.

THE HERRING-GULL *Larus argentatus argentatus*.

The Herring-Gull breeds in large numbers on St. Bees Head and on Walney Island and up to 1967 a score of pairs amongst the breeding colony of Lesser Black-Back Gulls on Rockcliffe Marsh. By the first week of March the adults are noisy about the sandstone cliffs of St. Bees Head and odd Gulls are still on the ledges in mid-September: on 7th September, 1928, two young birds were still in a nest on a ledge.

In late December one year a juvenile Herring-Gull was seen to beg food from an adult on the tide-line in Allonby Bay: the adult placed its bill inside the juvenile's and disgorged food for the juvenile.

THE LESSER BLACK-BACKED GULL *Larus fuscus grællsii*.

From 1920 until 1936 the Lesser Black-Back Gull, a summer visitor, nested regularly on Bowness Moss, with thirty pairs breeding in 1936, but in July, 1937, none were found on the moss. By mid-March the birds are beginning to return to their summer breeding-haunts, at times they pass over Cumdivock coming from the south-east and making for the Solway Firth. On 30th March, 1930, three dozen pairs were assembled on Bowness Moss.

One pair hatched out three nestlings in July, 1925, on Rockcliffe Marsh: the following year sixteen pairs nested, and by July, 1933, two hundred and fifty pairs were nesting. In July, 1967, an estimated six hundred pairs were nesting with up to a score of pairs of Herring-Gulls.

Earliest clutch, three eggs, 14th May, on Rockcliffe Marsh, but owing to repeated robbings many pairs are still sitting on eggs up to the last week in July and unfledged young can be found in most years hiding in the smaller creeks and gutters up to mid-August.

Food cast up by nestlings on being handled for ringing has included mackerel, chub, crab, rabbit, water-rat and short-tailed field-mouse, whilst one youngster disgorged an eel one foot long. Castings of mussels and pink bivalves and earthworms have also been found about the nests.

There is a regular passage of birds through the Lake District in August and September using the major lakes for resting and feeding.

Although the normal brood hatched is three young, it is doubtful if, on average, more than two young are reared to flying. Prolonged and heavy rain when the young are still in the small downy stage can cause many deaths, and at times the grazing cattle will kill others, especially when the cattle are bunched in a large squad and chased by the cattle dogs through the breeding area.

THE GREAT BLACK-BACK GULL *Larus marinus*.

One or two pairs of Great Black-Back Gulls usually nested each year amongst the breeding colony of Lesser Black-Back Gulls on Bowness Moss, and during the period 1920-1936 several nests with eggs were found and young ringed. Food—flat-fish, eels and cod—disgorged by the young.

Odd pairs have occasionally nested on Rockcliffe Marsh amongst the colony of Lesser Black-Back Gulls, but invariably the nests have been robbed and hence no young ringed.

On 30th May, 1949, a nest with one egg was found on Foulshaw Moss.

Flocks of up to thirty birds have been noted in October near Bowness-on-Solway, whilst during the period November to January as many as fifty birds assembled in Allonby Bay, and a flock of seventeen in early March about the Eden channel off Burgh Marsh.

THE KITTIWAKE *Rissa tridactyla tridactyla*.

On 21st July, 1935, at least two dozen Kittiwakes were on the ledges of St. Bees Head with one or two small young in the nests, and on 3rd July, 1948, an estimated six hundred pairs, the majority with either one or two young in the nests, were breeding on the headland. Small young have been seen in the nests by 10th June. On 12th September, 1960, many Kittiwakes were on the sea below the cliffs, but no young were seen in the nests.

On 10th July, 1948, twenty juvenile Kittiwakes were grouped on the sands of Allonby Bay.

RECOVERIES OF RINGED BLACK-HEADED GULLS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
352002	Faugh, Cumb. 8.7.50	Silverdale, Lancs. —.11.51	50 Miles S.
352019	Faugh, Cumb. 8.7.50	Setubal, Portugal 3.4.51	—
352021	Faugh, Cumb. 8.7.50	Heads Nook, Cumb. 15.3.53	2 Miles W.
270381	Ravenglass, Cumb. 18.6.52	Dovey Estuary, Wales —.7.52	150 Miles S.
369949	Ravenglass, Cumb. 18.6.52	Woodsgift, Kilkenny, Ireland 30.1.53	—
369952	Ravenglass, Cumb. 18.6.52	Where ringed 1.8.52	—
380335	Rockcliffe Marsh, Cumb. 29.6.54	Carlisle, Cumb. 15.8.64	6 Miles S.E.
3096894	Rockcliffe Marsh, Cumb. 25.7.64	Gretna, Dumfries 17.8.64	5 Miles N.W.
ED50420	Rockcliffe Marsh, Cumb. 22.6.69	Where ringed 14.8.69	—

Of the nine recoveries of Black-Headed Gulls ringed as nestlings, two show passage to Ireland and Portugal, two show movement in a southerly direction within the country, two show local movement and

three were recovered where ringed. The oldest bird recovered was 10 years 2 months old.

RECOVERIES OF RINGED LESSER BLACK-BACK GULLS.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
26236	Bowness Moss, Cumb. 14.7.25	Lisbon, Portugal 29.11.26	—
26238	Bowness Moss, Cumb. 14.7.25	Lisbon, Portugal 19.11.25	—
27449	Bowness Moss, Cumb. 4.7.26	St. Louis, Senegal, W. Africa —3.27	—
AD302	Rockcliffe Marsh, Cumb. 4.7.28	Penrith, Cumb. 10.4.29	20 Miles S.
AG115	Rockcliffe Marsh, Cumb. 25.7.29	Casablanca, Morocco, N. Africa 3.2.30	—
AL146	Rockcliffe Marsh, Cumb. 4.7.30	Marinha Grande, Portugal 19.10.30	—
AA2446	Rockcliffe Marsh, Cumb. 5.7.31	Langport, Somerset 28.6.32	280 Miles S.
AM782	Rockcliffe Marsh, Cumb. 5.7.31	Castilla, Huelva, Spain 5.8.32	—
AA3729	Rockcliffe Marsh, Cumb. 17.7.32	Faro, Algarve, Portugal 14.10.32	—
AA6279	Rockcliffe Marsh, Cumb. 7.7.35	Preston, Lancs. 20.9.35	85 Miles S.
404945	Rockcliffe Marsh, Cumb. 16.7.39	"With the B.E.F." —10.39	—
404951	Rockcliffe Marsh, Cumb. 16.7.39	R. Tagus, Portugal 20.7.40	—
AC2193	Rockcliffe Marsh, Cumb. 28.7.47	Kingmoor, Carlisle 18.6.50	5 Miles S.E.
AF7992	Rockcliffe Marsh, Cumb. 1.8.53	Aberfeldy, Perthshire 14.9.55	115 Miles N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
AH2151	Rockcliffe Marsh, Cumb. 12.8.56	Grinsdale, Carlisle 12.7.59	5 Miles S.
AJ2747	Rockcliffe Marsh, Cumb. 26.7.58	Algiers, Algeria, N. Africa 10.12.58	—
AJ12293	Rockcliffe Marsh, Cumb. 20.7.61	Beer, Devon 12.9.62	290 Miles S.
AJ63778	Rockcliffe Marsh, Cumb. 12.8.62	Allonby, Cumb. 19.8.64	20 Miles S.W.
AJ63771	Rockcliffe Marsh, Cumb. 22.7.62	Chaddesden, Derby 21.3.65	150 Miles S.E.
AJ85980	Rockcliffe Marsh, Cumb. 27.7.63	Essaouira, Morocco, N. Africa 13.4.66	—
AJ85998	Rockcliffe Marsh, Cumb. 3.8.63	Port Carlisle, Cumb. 17.4.67	4 Miles W.
AJ88456	Rockcliffe Marsh, Cumb. 25.7.64	Hanningfield Reservoir, Essex 15.11.64	270 Miles S.E.
AJ94101	Rockcliffe Marsh, Cumb. 26.7.65	Carlisle, Cumb. 11.11.67	6 Miles S.E.
AJ94136	Rockcliffe Marsh, Cumb. 1.8.65	Carlisle, Cumb. 16.7.71	6 Miles S.E.
AJ94929	Rockcliffe Marsh, Cumb. 24.7.66	Cramond, W. Lothian 16.9.66	70 Miles N.
AJ94942	Rockcliffe Marsh, Cumb. 24.7.66	Canonbie, Dumfries 18.6.69	10 Miles N.E.
AJ94947	Rockcliffe Marsh, Cumb. 24.7.66	Nr. Silloth, Cumb. 24.10.71	15 Miles S.W.
GM61623	Rockcliffe Marsh, Cumb. 16.7.67	Gretna, Dumfries 11.4.70	5 Miles N.W.

No. of Ring	Place & Date Ringed	Place & Date Recovered	Distance
GM61645	Rockcliffe Marsh, Cumb. 6.8.67	Los Palacios, Sevilla, Spain 14.2.70	—
GM78859	Rockcliffe Marsh, Cumb. 21.7.68	Vains, Avranches, Manche, France 17.7.69	—

Of thirty recoveries of Lesser Black-Back Gulls ringed as nestlings, thirteen show passage to France, Portugal, Spain and Africa, as far south as Senegal on the west coast. On a monthly basis these thirteen recoveries ranged from July to April, except that none was recovered in September or January. Apart from the two recoveries in France, one from Manche in July and one from "B.E.F." in October, the remaining eleven probably indicate the normal wintering area of this species. The remaining seventeen recoveries were all in this country, four in Scotland, thirteen in England, and suggest that the immature birds summer in this country, often within ten to fifteen miles radius of where they were reared. The oldest bird recovered was 5 years 11 months old.

THE SKUAS *Stercorarius parasitiosus and pomarinus.*

Immature Arctic Skuas have been seen in the month of September in Allonby Bay, and an adult on Rockcliffe Marsh in mid-May. Immature Pomatorhine Skuas have been met with in the Esk channel off Rockcliffe Marsh in September.

THE RAZORBILL *Alca torda britannica.*

The Razorbill breeds on the ledges of St. Bees Head, but not in any great numbers, and is greatly outnumbered by the Guillemot. The ledges are deserted in August and no Razorbills have been seen about the headland in September. After a strong westerly gale in the autumn odd birds are found in the estuaries of the Solway Firth and, occasionally, the creeks of the salt marshes.

On 7th September, 1928, many dead adult Razorbills and Guillemots were found washed up by the tide on the shingle-banks in Allonby Bay, and I do not think there was any oil pollution in those days. On 14th November, 1954, a survey of a three-mile stretch of coastline on Walney Island revealed 244 oiled birds, the great majority Guillemots and Razorbills, with three Gannets and one Manx Shearwater.

THE GUILLEMOT *Uria aalge albionis.*

The Guillemot has been seen on the ledges of St. Bees Head by the first week in March, then throughout the summer until August, but none has been seen in September. It has always greatly outnumbered the Razorbill. A concerted grunting or murmuration

comes from the birds on the crowded ledges where they are grouped like little Penguins, with a constant stream of birds flying to and fro between the ledges and the sea.

THE BLACK GUILLEMOT *Uria grylle grylle*.

On 24th July, 1932, a single Black Guillemot was present on a ledge at St. Bees Head, the white wing-patch very conspicuous: on 21st July, 1935, a pair were on the sea at the base of the cliffs. On 10th June, 1943, a pair flew from a ledge and settled on the sea beside a third bird. On 26th June, 1949, three pairs were present, and on 17th June, 1962, one pair was noted.

LITTLE AUK *Alle alle alle*.

Two found dead at Dubmill Point, Allonby, on 22nd February, 1930.

THE PUFFIN *Fratercula arctica grabæ*.

Up to seventeen adults have been counted on a small rock-stack by the main cliff in July, 1948, and varying numbers in other years, but I have no records of young reared.

THE CORN-CRAKE *Crex crex*.

The Corn-Crake used to nest commonly in hayfields throughout the lowland farming area until c.1950 but has declined very considerably as a breeding species since then and during the past ten years only the odd pair has bred successfully. Clover-hay and hayfields were the chief nesting-sites, also young plantations where the trees had not smothered the grass and, occasionally, the wasteland of small bushes and rough grass about country railway stations.

The birds begin to arrive from the last week of April onwards, and usually frequent the hayfields where the cocks begin to crake, at first during the day, then as the days lengthen and become warmer, also during the night. Once a cock has got a mate his craking is heard less, and when the hen begins to sit he ceases. Some cocks may crake for several weeks and, apparently, never get a mate, although in occupation of a good breeding-site.

More than forty nests with eggs have been seen, and the usual clutch is six to nine eggs, occasionally ten: one clutch each of eleven, twelve and fourteen eggs have been found. The earliest date for a nine-egg clutch, in a two year old larch plantation, is 11th May with the nine young hatching on 30th May, otherwise in most years the hens do not begin sitting before the third or fourth week of May, with the young hatching out from mid-June onwards.

Up to c.1950 hay-making was not general before the last fortnight of June, whilst in cold or backward seasons it could be July, so that often the Corn-crake could have its black chicks hatched out before the mowing-machines entered the field, but only exceptionally did

the hen lead her young out of the hayfield into a neighbouring pasture field: most hens remained with the young in the hayfield until the last swathe was cut, by which time half the brood could be lost.

The mowing-machine was more destructive to the young than to the eggs: I have several records of hayfields being mown, by horses, without the eggs being destroyed. If a nest hollow has been made the eggs can lie safely in it without the knife-bar of the machine catching them and provided, of course, a wheel of the machine does not travel directly over the nest. It is only when the eggs lie on the surface of the ground, in dry weather with the bird unable to make a nest hollow, that the knife-bar destroys them.

In July, 1937, a nest of seven eggs was mown over without being destroyed: the hen continued sitting whilst the hay was turned and cocked and led. When the seven chicks hatched she kept them in the nest hollow for two days, feeding them on winged insects that she caught around the nest. She then led them into a neighbouring pasture field. When the hen was approached during the two-day period she kept them in the nest hollow, she ran away from her chicks for a few feet, then turned and faced the intruder, making a clicking note with her bill, and at times uttering a high-pitched creaking-note.

In July, 1928, two nests, one with seven eggs, the other with four eggs, were found sixty yards apart in a ten-acre hayfield. In July, 1937, another two nests with seven and nine eggs were found one hundred and twenty yards apart in an eight-acre hayfield.

With the mechanisation of farming, and tractors displacing horses for mowing, and also the change-over from making hay to making silage, with the first crop of silage mown from mid-May onwards, very few broods are now reared, although odd Corn-Crakes are heard craking every spring in one or more localities.

In 1963 a bird was craking up to 5th August in various fields at Cumdivock, and in 1965 one was craking as late as 11th September in an orchard at Aikton, near Wigton. In 1966 a pair hatched out nine young in a hayfield at East Curthwaite, and on 30th June, with the help of my cocker-spaniel, I was able to find and ring five young estimated at ten to twelve days old. During the last week of May, 1968, a bird craked all the week from a hayfield at Cumdivock, but when the field was mown in late June no evidence of breeding was obtained. On 19th September, 1968, a juvenile Corn-Crake was flushed from a barley field that was being combined at Longwath, Rosley.

On 21st November, 1959, during a spell of very mild weather, my cocker spaniel flushed a Corn-Crake from a tangled overgrown hedge at Cumdivock.

THE LITTLE CRAKE *Porzana parva*.

One flushed from tangled herbage near the old Viaduct at Bowness-on-Solway on 5th February, 1939, and another from tangled

herbage and dead branches about a pool in Shawkfoot Quarry, Dalston, on 3rd November, 1940.

THE WATER-RAIL *Rallus aquaticus aquaticus*.

During April and May, 1930, a Water-Rail was flushed several times from the swampy area about a secluded tarn in central Lakeland, but no evidence of breeding was obtained. Records of birds seen have been obtained on a number of occasions over the years between the months of October to March, and two birds have been caught and ringed. On 30th October, 1948, an immature bird was caught in a creek on Skinburness Marsh, ringed, and then released. On 16th October, 1960, the late T. E. Jackson and T. Stephenson caught an adult in the ski-hut on the Raise, Helvellyn, altitude 2,000 feet. The bird was brought to me late in the evening and, after ringing, it was released by the roadside pond at Cumdovock.

THE MOORHEN *Gallinula chloropus chloropus*.

The Moorhen or Waterhen breeds on the creeks of the salt marshes, and throughout the lowland farming area wherever there are ponds, and on quiet stretches of rivers, and wherever there is suitable cover around the edges of most tarns and smaller lakes.

By the end of February, if the weather is open, a pair will make visits to the remains of last year's nest on a pond, pecking at the material and flirting their white under-tail coverts. If a new nest is built it can be completed in five days, both birds taking material to the nest and working it into the foundations. During the change-over in incubation, the relieving bird will swim to the nest with a beakful of nest material, this is handed to the sitting bird which works it into the nest, then comes off the eggs and the other bird takes its place.

The usual clutch is six to nine eggs, with eight eggs on 27th March the earliest date, but on 22nd March, 1967, a brood of five day-old nestlings was found on a secluded pool in the Shawk valley. The latest date for a clutch of four eggs is 27th August. On occasions the nest is built in riverside alders or willows up to 15 feet from the ground.

Up to three broods can be reared in the season by the one pair on a pond, and the juveniles of the first brood will help to brood and to feed the small young of the second or third brood. One July the young of the first and second broods roosted together on a night in an old nest on a pond, whilst the adult incubated the eggs of the third brood in a new nest.

The young will dive and swim readily under water, wings usually kept close to the body, feet kicked-out behind like a frog. It usually covers from twenty-five to thirty feet under water before coming to the surface, but at times it can remain submerged under

the water, with only the tip of its beak above the water, for up to four minutes.

When both Mallard and Moorhen nest on the same pond or tarn, the adult Moorhens will attack and drive away any young Mallard that approach their own young too closely.

THE COOT *Fulica atra atra*.

The Coot breeds on most of the lakes and tarns in the area. The nest is often a very substantial built-up structure, frequently lined with oak leaves. Earliest clutch, ten eggs on 2nd May, whilst newly-hatched young have been found on Thurstonfield Lough by 22nd May. At Crofton pond up to five pairs bred there in a season until the pond was drained: the pair of Mute Swans that nested on the island in those days would harry any young of the Moorhen or Coot or Mallard they could seize and kill them by drowning. In June, 1946, seven pairs were breeding on Whins Pond, Penrith. A Coot with six eggs was distant only ten yards from a Moorhen with five eggs on Over Water one May. Although odd pairs rear three or four young, many pairs rear only one or two young. Adults have been seen feeding young up to the end of August.

Large flocks often assemble during the winter months on the lakes and larger tarns. On Bassenthwaite 151 birds counted in January and 224 on Derwentwater in February, and 210 on Ullswater in January and 186 on Talkin Tarn in February. In March, 1947, when Thurstonfield Lough was frozen over sixty-three Coots in a compact flock were feeding in an adjoining pasture field.

Dives for food seldom exceed fifteen seconds and birds invariably bring up weed to the surface to eat. Wigeon on Talkin Tarn have been noticed waiting for the Coots to bring up weed and then take it off them. One January day a party of three Coots and one Goldeneye were diving in company. The Coots averaged 7—9 seconds for their dives and brought up weed to the surface to eat: the Goldeneye averaged 19—21 seconds for its dives and never brought any food to the surface.

During the winter months there is a certain amount of fighting, both above and below water, amongst the birds of a flock.

THE BLACK GROUSE *Lyrurus tetrix britannicus*.

In April, 1936, a total of twenty-five birds— twenty-three cocks and two hens—were found on bracken-clad rushy fell-slopes in the Bewcastle district and in September, 1947, fourteen birds were present in the same district. In March, 1939, several birds were about the outskirts of the plantations around Howgill Castle in the Pennines, whilst over the years odd singles and couples have been found on Renwick Fell. It has also been found on Scout Scar in the Kendal district, and odd birds in the Haweswater district, and

occasional birds occur in the Warnell Fell area. The moors around Askerton Castle and Spadeadam still hold birds, and in June, 1958, a Greyhen was sitting on seven eggs in a clump of rushes in the Askerton Castle area.

Between the years 1926 and 1962 many records of birds seen were obtained in the Greystoke Park district, with a maximum of fifteen birds in early March, and displays by up to nine cocks in April and May. Now that most of the plantations, first planted in the 1930's, are a fair height and dense, the Black Grouse have gone.

THE QUAIL *Coturnix coturnix coturnix*

On 5th July, 1949, the liquid bubbling three-noted call of the Quail was heard from a cornfield at Greyrigg, Wigton. On 9th July, 1950, a Quail was heard calling in the late evening from a field of wheat on Shawk Lodge Farm, Cumdivock, and all the records that follow refer to this farm. On 15th August, 1952, a brood of six young was flushed whilst a field of wheat was being cut. On 29th June, 1953, a Quail was calling during the day from a field of wheat and on 1st August, 1953, either this bird or another was calling at four-thirty in the morning from a field of oats. On 26th July, 1963, two birds were calling in the evening within ten yards of each other from a 15-acre field of barley. On 21st May, 1965, one bird was calling from a hayfield and a second bird from an adjoining cornfield. On 9th October, 1965, a bird was flushed from a stubble-field.

[The Red Grouse, Pheasant and Partridge breed, but as the three species are reared on a large scale solely for shooting, I have taken no interest in them].

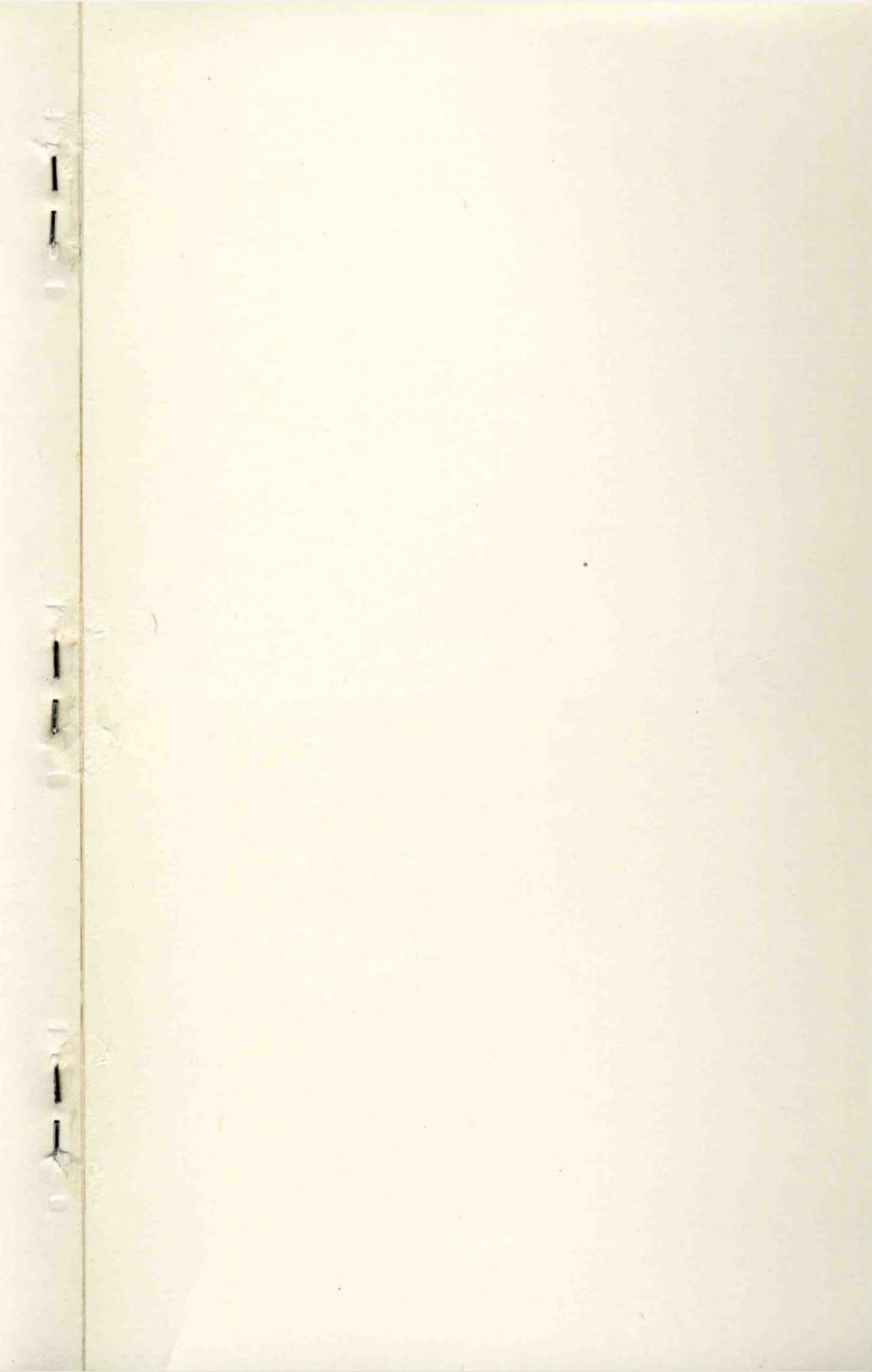
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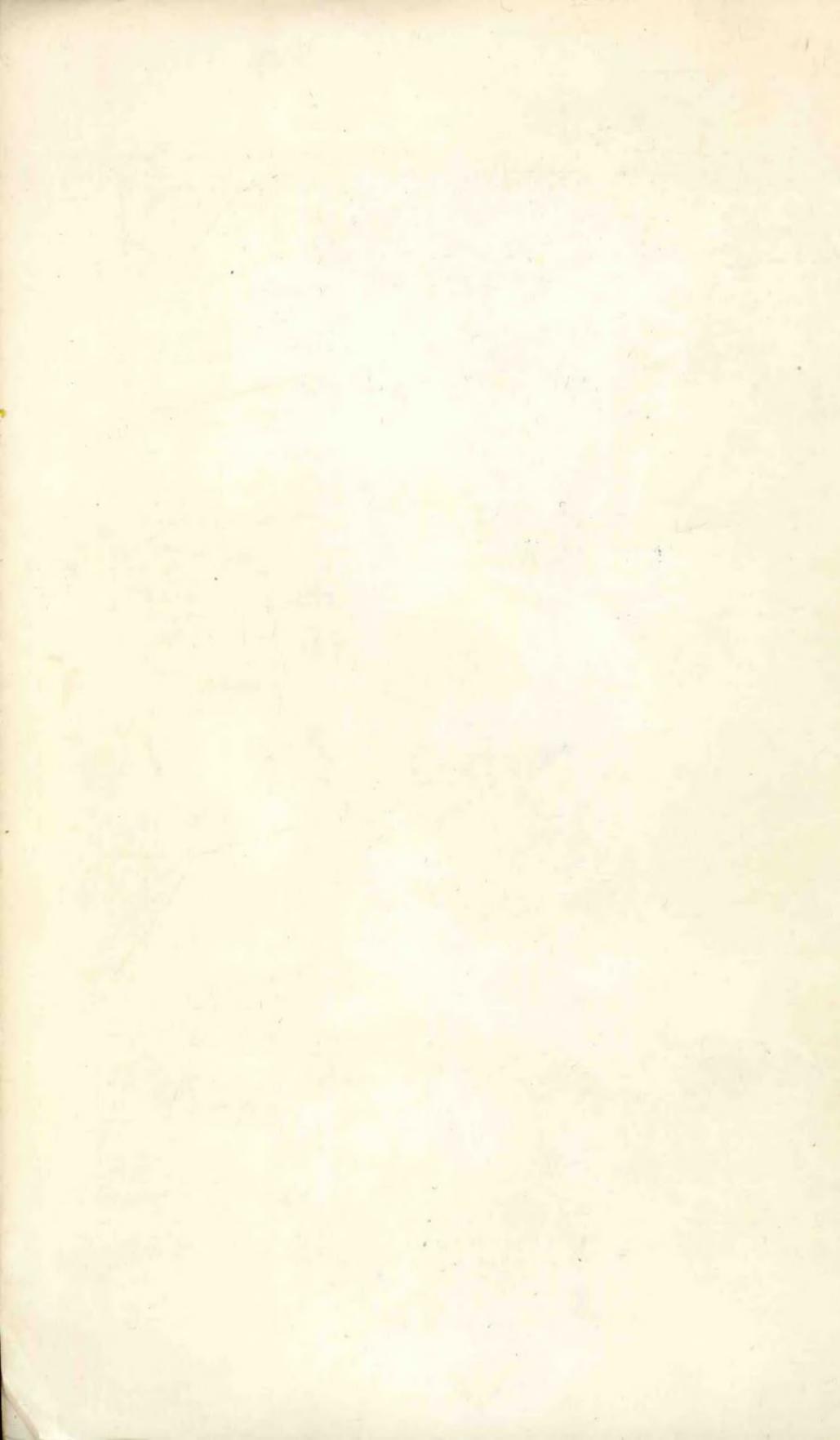
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