ISSN 0036-9144

SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 12 No. 3 AUTUMN 1982

CYGNUS WILDLIFE

Birdwatching holidays at realistic prices . . .

GAMBIA 16 days 26 November - 11 December

The delightful west African Republic of Sene-Gambia is an ideal country to gain an introduction to the colourful bird-life of Africa. In a friendly, sunny environment we will be making the acquaintance of over 200 species during this leisurely paced tour which includes a 4-day excursion by riverboat along the Gambia river. Leader John Ward.

£850

SRI LANKA 22 days 10-31 January 1983

Sri Lanka is a tropical island paradise for natural history with a wealth of birds and mammals disproportionate to its modest size. Over 20 of the bird species are endemic to the island and few places in Asia are better for viewing Leopard and Elephant. We will be looking for both at Wilpattu and Yala National Parks and discovering in depth the magic of the southern highlands. Leader Ron Appleby.

£950

NORTHERN INDIA & THE HIMALAYAN FOOTHILLS
20 days 7-25 February

Following the successful formula of our 1981 and 1982 tours we will again be savouring the spectacle of Bharatpur for almost a week before moving to Corbett and Nainital in the Himalayan foothills where exciting birdwatching is complemented by beautiful scenery. Siberian Crane is just one of 300 species likely on this tour. Leader David Hunt.

£940

OTHER 1983 TOURS :

Northern Thailand	20 days 29 January - 17 February Leader Dave Holman — **£1090**
Malaysia	20 days 20 February - 11 March Leader Graham Madge — **£1200**
Israel	17 days 26 March - 11 April. Leader Dave Holman **£775**
Texas	17 days 31 March - 16 April. Leader Peter Clement **£770**

Also Soviet Central Asia **£825** (May); Camargue (May); South East Turkey (May) and many more exciting destinations.

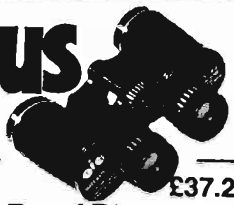
Cygnus Wildlife Worldwide Holidays

For full information and colour brochure contact our resident ornithologist Paul Dukes.

Southwest Travel Ltd., 96 Fore Street, Kingsbridge, Devon TQ7 1PY

Telephone Kingsbridge (0548) 3181/6178 - Telex 45639 (Comput G) P57

focus on our prices



Heron £37.26
8x40 Bwcf Binoculars

The Birdwatchers Glasses. As used by the forestry commission. Ideal for the young and beginners. Lightweight (26 ozs.), extra wide angle, 514 ft. field of view, also suitable for spectacle wearers. We believe them incomparable value at **£37.26** inc. case and lanyard plus £1.95 towards p&p.

Heron £38.80
NEW 10x40
Wide-angle Binoculars

Quality, power and light weight too – a mere 20 ozs! 367 ft. field of view at 1,000 yards. Slim Zeiss-type body, centre focus, black finish, fully-coated lenses, also suitable for spectacle wearers. Excellent value at **£38.80** inc. case, straps and landyard, plus £1.95 p&p

Top quality optical goods at enormous savings

Heron quality. Heron service. Heron choice – we hold in stock what we believe to be the largest range of telescopes and binoculars for birdwatchers in the country. A few examples are shown below:

	Retail Price	Our Price
BINOCULARS		
Swift Audubon 8.5×44 MKII (38oz)	–	£109.66
Swift Grand Prix 8×40 MK.I (24oz)		£64.58
Carl Zeiss 10×40 B Dialyt (24oz)	–	£325.35
Zeiss Jena Notarem 10×40B (24oz)		£148.95
Zeiss Jena 8×30 Jenoptem (17oz)		£38.94
Zeiss Jena 10×50 Jenoptem (35oz)		£68.24
Habicht Diana 10×40 (23oz)	£329 89	£230.92
Leitz 10×40 B (21oz)		£365.70
VISTA 8×30 BUDGET (24oz)		£16.45
(Ideal for children)		
TELESCOPES		
B Nickel Supra 15×60×60 (28oz)	£191.71	£141.27
Hertel & Reuss Televari 25×60×60 (32oz)	£186.88	£145.47

Order direct from this list –

Prices correct as of 21st July, 1982, inclusive of case, lanyard and manufacturer's guarantee, plus £1.95 post and packing charges. Access and Barclaycard accepted. Apply for details and send for your guide to Binocular & Telescope ownership.

Further details and comprehensive price list available in return for this coupon, including Field & Trek Catalogue of camping, rambling and climbing equipment. Or call in person and see our vast stock for yourself.

Heron NEW 8x40
Zcf binoculars **£29.21**

Weight 21 ozs., 341 ft. field of view at 1,000 yards. Fold-down rubber eyecups. Only **£29.21** plus £1.95 p&p.

Schmidt & Bender 15-60 x zoom telescope

with 60mm object lens

This quite magnificent telescope from West Germany is ideal for use on reservoirs and seashore. Robust in construction, rubber covered, excellent in optical quality. We believe this to be the best on the market today. Weight 950g., length 300m closed, 560mm open. Fitted with tripod-brush. Exit pupil 41mm, light-gathering g power 16.1, twilight 30.60, field of view 1,000m 47.12m. Heron price of **£126.50** including leather case and rubber eyecup for spectacle wearers is outstanding value. Add £1.95 p&p.

£126.50

14 DAY APPROVAL SERVICE

Please send me details and price lists on: Binoculars☐ Telescopes(25p) ☐Field & Trek Backpacking Equipment(75p) ☐ Skiing Equipment ☐ The new 'Field and Trek Group Budget Account Card* ☐

*(Typical A.P.R.30.6%)

Name _____

Address _____

_____ SB3

heron

(A member of the Field & Trek Group)

Heron Optical Co. 23-25 Kings Road, Brentwood, Essex, CM14 4ER. Telex: 995566

☎ (0277) 221259, 219418, 210913

Only 5 minutes from Brentwood Station. 30 minutes from London's Liverpool St. Station (Southend Line). Open daily 9 am to 5 pm Monday to Friday, Saturday 9.30 am to 4.30 pm.

1982/83
SPECIAL INTEREST TOURS by PEREGRINE HOLIDAYS

Directors : Raymond Hodgkins, MA (Oxon) MBOU
Patricia Hodgkins, MTAI and Neville Wykes, FAAI

By Scheduled Air and Inclusive.
With Guest Lecturers and a Tour Manager. *Provisional

COTO DONANA (SPAIN) Birds : Rick Goater	3-10 Oct	**£360**
PHILIP OF MACEDON Archaeology : Trevor Rowley B.Litt	16-23 Oct	**£368**
AUTUMN IN ROME Archaeology : David Miles	7-14 Nov	**£305**
AUTUMN IN CRETE Sites, Birds : William Taylor FRIBA at the de luxe Minos Beach Hotel, Aghios Nikolaos	4-18 Nov	**£385**

1983

RWANDA & TANZANIA Gorillas, Birds, Wildlife	11-27 Feb	**£1900***
MALAYSIAN ADVENTURE Birds, Flowers, Butterflies	11-28 Feb	**£1500***
SPRING IN ROME Sites : William Taylor FRIBA	20-27 Mar	**£317***
SPRING IN CRETE Birds, Sites	17-31 Mar	**£395**
SPRING IN MALTA Birds, Flowers, Sites	26 Mar-9 Apr	**£443***
BIRDS & FLOWERS OF CEPHALONIA Mont Hirons	26 Apr-10 May	**£350***
EVVIA AND SAMOS Birds, Flowers	8-22 Apr	**£450***
INDIA (KULU VALLEY) Birds, Flowers, Wildlife	May 18-Jun 3	**£1300***
TUNISIAN ARCHAEOLOGY Oct. Sites : David Miles BA		**£550***
LAKES PRESPA & OCHRID (MACEDONIA) Sept. Birds		**£550***
AUTUMN IN CRETE Nov. Sites, Birds		**£395***

"Straight" Travel : *We are a fully licenced travel agency dealing mainly with University Senior Members. Our experience of Sabbaticals, Lecture Tours and Conferences is entirely at your disposal for accurate planning of long itineraries or economical Conference arrangements.*

Registration : Costs nothing, does not commit you in any way but gives you first sight of the brochure on publication.

PEREGRINE HOLIDAYS at TOWN AND GOWN TRAVEL,
40/41 SOUTH PARADE,
SUMMERTOWN, OXFORD,
OX2 7JP.
Phone Oxford (0865) 511341-2-3

ABTA

AGENTS IATA

Fully Bonded Atol No. 275

SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB
21 Regent Terrace, Edinburgh, EH7 5BT (tel. 031-556 6042)

CONTENTS OF VOLUME 12, NUMBER 3, AUTUMN 1982

Acting Editor V. M. Thom
Business Editor Major A. D. Peirse-Duncombe

SUNBIRD
BIRDTOUR EXPERTS

WE SPECIALISE IN SMALL-GROUP HOLIDAYS FOR UP TO 16 PEOPLE, CATERING FOR BEGINNER AND EXPERT

Tour leaders include :

Bryan Bland, Mike Everett, David Fisher, Peter Grant, Tom Gullick, Mike Hodgson, Frank King, Will Russell, Don Turner, Alan Vitery.

1983 Tours

ISRAEL
TURKEY
GREECE
CAMARGUE & PYRENEES
SPAIN
MAJORCA
MOROCCO
KENYA
SOUTH AFRICA
SIBERIA & MONGOLA
KASHMIR & LADAKH
THAILAND
***NEW GUINEA**
***SURINAME**
AUSTRALIA
THE GAMBIA
***ECUADOR & GALAPAGOS**
***TRINIDAD & TOBAGO**
***S. MEXICO**
***ALASKA**
***ARIZONA & CALIFORNIA**
***TEXAS**

*With our associates WINGS INC. (USA)

For details please contact :

SUNBIRD

at

EXECUTIVE TRAVEL (Holidays) LTD

2 Lower Sloane Street, London SW1W 8BJ

Telephone 01 - 730 6609

A member company of the SERENISSIMA Travel Group Ltd

ABTA IATA ATOL AITO

SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 12 No. 3 **Autumn 1982**

Edited by V. M. Thom, assisted by R. W. Furness and S. R. D. da Prato.

Correction. We apologise for an error in the Isle of May Report *SB* 12(2). Page 48 line 8 should read "Few Guillemots and Razorbills are ringed each year; in contrast Puffins are our most ringed species but comparatively few recoveries are reported (a good sign)."

We have been asked to point out that although D. J. Bates edited most of *SB* 12(2) he was not responsible for the captions.

The abundance and feeding distribution of Clyde Estuary shorebirds

J. B. HALLIDAY, D. J. CURTIS, D. B. A. THOMPSON, E. M. BIGNAL & J. C. SMYTH

Reclamation and industrialisation present ever-increasing threats to shorebird feeding areas on the Clyde. This study identifies the relative importance of various stretches of mudflat and indicates the potential value of this knowledge in minimising the impact of such developments on the Estuary's birds.

The tidal flats of the Clyde Estuary are now considered to be internationally important feeding grounds for ducks and waders. The Clyde was one of twelve British and Irish estuaries holding more than 2,000 Shelduck in 1971-72 and was also ranked 19th in importance for waders in a list comparing British estuaries (Prater 1976). The relatively small area of tidal flats (about 19.3km^2) supports the third highest recorded density of waders (peak count of 1,750 waders per km^2) in Scotland, only exceeded by the Ythan and Eden estuaries (Bryant & McLusky, 1976).

During 1976/77 a systematic survey of the usage of the Clyde's tidal flats by feeding birds was commissioned by the Nature Conservancy Council and reported by Halliday (1978). This paper deals with the winter period only, when numbers of birds were highest, and offers an assessment of the status of birds feeding on the tidal flats, and the relative importance

of feeding areas. The data obtained serve as a baseline for further studies, for example the possible effects of further industrialisation and land reclamation on the estuary.

Methods

A team of five observers, led by J.B.H., undertook the survey over a full year from September 1976 to August 1977 inclusive. The intertidal flats between Woodhall and Erskine on the south shore of the estuary (fig.) and between Milton Island and Craigendoran on the north shore were divided into 31 manageable study areas. Each area was covered from a hide at one observation point, from where all birds present could be seen. Unfortunately, the position, extent and undulating surface of the Pillar Bank prevented its coverage from the shoreline.

Six sample periods were defined: September-mid October 1976, mid October-November 1976, December 1976-February 1977 (highlighted in this paper), March-April 1977, May-June 1977 and July-August 1977. During each of these periods each study area was covered by an observer for two 6-7 hour periods (ebb and flow tides) to provide data for a complete tidal cycle. A sampling grid of 0.2 x 0.2 km squares was used relating to the O.S. grid. During every half-hour the number of feeding birds in each grid square (as well as the amount of tidal coverage) was recorded. Total observations over the full tidal cycle, i.e. the summed half-hourly counts, were divided by two to express feeding activity as 'bird feeding hours', i.e. number of birds x hours spent feeding. These results provided detailed quantitative information on the feeding distributions of nine commonly occurring species considered below. Any disturbance and weather conditions were also noted.

Size of Clyde Estuary bird populations

The quantitative observations on feeding birds during this survey augment evidence from roost counts and ringing data (Prater 1976, Gibson 1978, Furness & Galbraith 1980). Gibson *et al.* (in prep.) give a fuller account of status of Clyde birds over the past eleven years. Of the ducks and waders, Shelduck, Oystercatcher, Lapwing, Dunlin and Redshank were most numerous (table 1 below) and therefore were likely to be most vulnerable to industrial development within the estuary. During winter numbers of Lapwing were highly variable, with a large resident flock (say 2,000-3,000) being supplemented during severe weather (H. Galbraith pers. comm.), when inland grounds were unproductive for feeding. Curlew, though somewhat less numerous, still depended on the estuarine habitat for much of the year. The Black-headed Gull fed in extremely high numbers during late summer (when they used the estuary for moulting) and less numerously between

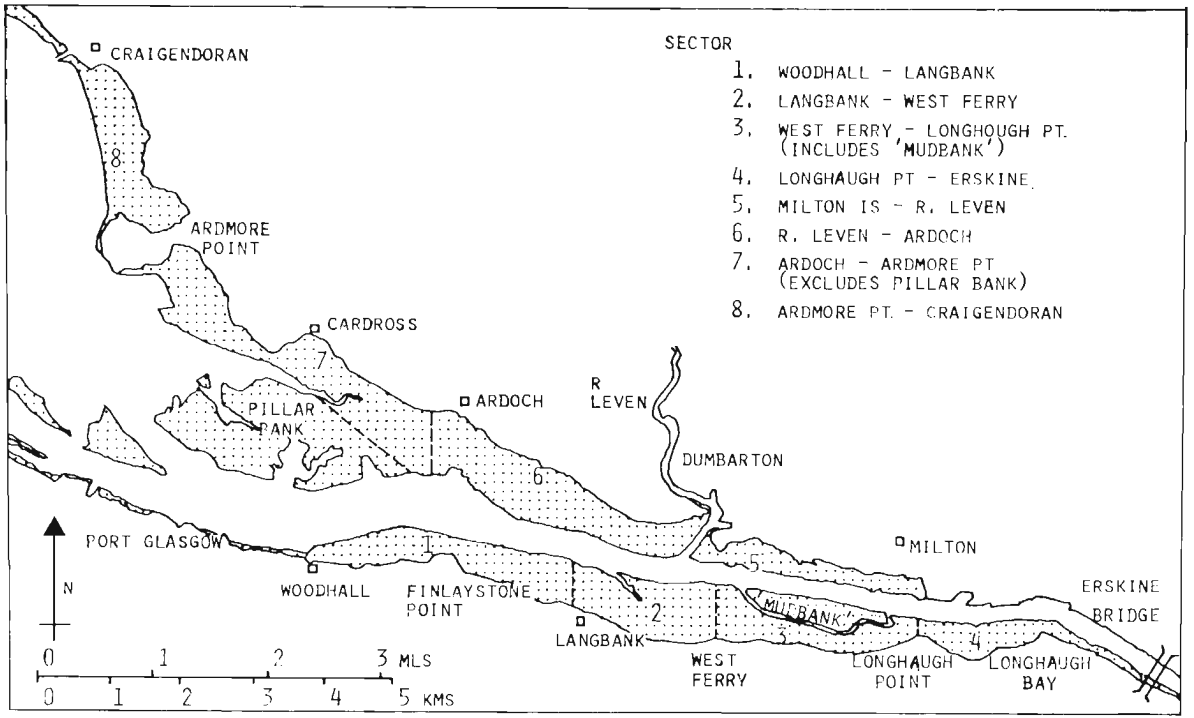


FIG. The tidal flats of the Clyde Estuary partitioned into 8 sectors.

October and March. Mallard and Greenshank, though less numerous and frequent, are also considered here. These nine species were studied in detail; the presence of 47 other species was noted.

International convention (see Saeijs and Baptist 1980 for recent review) has established that any site holding 1% or more of the known west European population and/or 6% of the British population is considered of 'international' importance. Areas supporting at least 1% of the British population are 'nationally' important. Table 1 summarises the status of observed populations on the Clyde Estuary according to these customary criteria. The great abundance of the birds on the tidal flats was the stimulus and justification for our detailed study of their feeding distribution.

Table 1 Status of birds on the Clyde Estuary in a W. European and British context

Species	Peak count (a) during 1976/77 survey	Peak counts (b) on Clyde Estuary	Clyde Estuary peak counts (b) expressed as % of W.European & British wintering totals		Importance
			%W.Europe	%British	
Shelduck[1]	1,200 (Feb)	2,330 (Feb 73)	1.9	4.7	International
Mallard	340 (Nov)	1,400 (Dec 73)	—	—	—
Oystercatcher[1]	2,500 (Nov & Feb)	5,250 (Nov 73)	0.9	2.6	National
Lapwing	6,300 (Nov)	6,648 (Feb 73)	—	?	—
Dunlin[1]	8,700 (Nov)	9,380+ (Feb 76)	0.8	1.7	National
Curlew[1]	746 (Sept)	1,000 (Feb 74)	0.7	1.7	National
Redshank[1]	9,700 (Nov)	10,800 (Oct 74)	8.6	13.5	International
Greenshank[2]	41 (Sept)	41 (Sept 76)	—	?	Scottish
Black-headed Gull[2]	10,000+ (Aug)	32,390 (Sept 72)	—	?	National

Notes Goldeneye and Eider often exceeded 1% of British total. Pintail was just under 1%. These birds do not exploit the tidal flats to the same extent as the above mentioned.

1 See Prater (1976) and Halliday (1978) for numbers representing 1% of total wintering populations in W. Europe and Britain.

2 The estuary is considered important for Greenshank because they comprise over 30% of the Scottish wintering population (Gibson 1978). The estuary is second only to the Wash for numbers of Black-headed Gulls in Britain (Prater 1976).

Factors influencing feeding distribution

Many factors influence the choice of feeding areas on estuarine flats by birds and lead to non-uniform distribution. For example, availability of suitable food, timing and extent of tidal flat exposure or coverage, amount of disturbance, degree of shelter and distance from secure roosts, all have variable effects on different species. In combination they produce a complex pattern of feeding distributions.

Food organisms vary spatially over the estuary and some food organisms are more 'patchy' than others (Smyth *et al.* 1977, Curtis 1978). This is likely to determine the feeding dispersion of birds, especially if they concentrate their feeding on one food species (e.g. see Goss-Custard 1977; Bryant 1979).

For each sample square of the tidal flats, the estimation of bird feeding hours provided a measure of its use through a complete tidal cycle. Division of the total bird feeding hours by the area of the section quantifies the intensity of usage in terms of the density of feeding birds. This is given in table 2 for eight sectors of the tidal flats.

Table 2 Feeding densities in mid winter for 8 sectors of the tidal flats. Density expressed as 'bird feeding hours' per tidal cycle, per km², for sectors marked on Fig.

	South shore				North shore			
	1	2	3	4	5	6	7	8
No. 0.2km x 0.2km squares	61	46	58	36	42	80	103	45
Shelduck	75.0	47.9	76.2	26.2	3.3	9.7	8.0	22.4
Mallard	1.9	45.3	6.3	0.0	13.9	3.9	0.0	0.4
Oystercatcher	23.5	153.1	86.9	47.7	86.2	191.2	29.3	56.0
Lapwing	74.2	188.2	156.0	239.1	71.3	44.5	13.1	18.2
Dunlin	121.8	348.5	236.4	155.2	47.5	215.2	10.4	4.1
Curlew	22.7	16.8	8.7	0.0	1.0	7.1	6.4	15.1
Redshank	90.4	150.8	253.9	312.2	397.0	280.1	28.3	27.2
Greenshank	2.3	0.2	0.0	0.0	0.4	0.2	0.5	0.0
Black-headed Gull	43.2	47.5	163.7	76.5	122.5	66.8	13.4	27.6
All 9 Species	455.0	998.3	988.1	856.9	743.1	818.7	109.4	171.0

Two areas of outstanding importance can be identified: the south shore between Langbank and Longhaugh Bay (inclusive) and the north shore between Milton and Ardoch. The flats

between Milton and Dumbarton and at Erskine were more elevated. They were therefore first to be exposed and last to flood, hence supporting high concentrations of feeding birds, e.g. Redshank, towards high tide. In contrast the 'mudbank', the mussel beds between Woodhall and Finlaystone, the flats just west of the Leven mouth and the Pillar Bank were all low-lying. They were last to be uncovered and could only be exploited around low tide, commonly by Oystercatcher and Curlew. The bay north of Ardmore was slow to flood and exposed during neap high tides. This was favoured by Shelduck and Oystercatcher towards high tide in mid-winter.

Some movement was seen to the Pillar Bank near low tide, particularly from the adjacent north shore between Ardoch and Ardmore. It is unfortunate that the enormous Pillar Bank could not be covered because it has supported up to 3,500 Eider and attracted large numbers of other species at low tide including over 500 Oystercatcher and similar numbers of Dunlin. Its several attractions include very rich mussel and *Hydrobia* populations, relative protection from shore disturbance because of its peninsular placement, and its role as an 'extra-time' feeding area.

Undoubtedly, a major factor determining the importance of these areas is the nature of the food supply (Smyth *et al.* 1974, 1977, Halliday & Smyth 1978 and Thompson 1981). Correlations between bird and invertebrate distributions will be considered in more detail in a separate paper but may be summarised as follows. The distributions of Redshank, Dunlin, Lapwing and Black-headed Gull correlated with those of *Nereis* and *Corophium*. Shelduck did not correlate with any single species during winter, feeding in discrete concentrations along the entire length of the flats and moving up the estuary in spring, feeding on *Corophium* and small worms. Greenshank differed from the others by solitarily feeding in pools on small crabs and gammarids.

The *Nereis/Corophium* area lies in the eastern part of the estuary (sectors 3, 4 and 5), approximately 60% of it on the south shore and 40% on the north. This could account for higher numbers of feeding waders on the south flats compared with the north, but not entirely for the difference in feeding density, evident in table 2. The picture is complex, but the quantification of area usage is important for objective assessment of feeding distributions.

Implications for conservation

Industrialisation and land reclamation have significantly reduced winter feeding grounds in this country for estuarine birds such as migrant waders, seaduck and other shorebirds.

The Clyde presents an attractive prospect for further reclamation and consequently is threatened with industrial development (Bignal 1978). These developments would reduce the extent of available feeding grounds including those with the richest food supplies and thus depress the carrying capacity of the Clyde Estuary for wintering birds. The forced movement of Clyde birds to neighbouring areas, e.g. Forth, could overburden such areas which already contain large populations. The maximum amount of time available for feeding may be reduced, as observed on the Tees by Evans (1977), causing increased competition between species and particularly causing hardship to species which feed for the greatest length of time available, e.g. Redshank and Dunlin.

The data currently available make it possible to appraise the importance of these feeding grounds at any scale from a twenty-fifth of a square kilometre upwards. Clearly this could improve the selection of areas for reclamation if one wished to minimise its impact on bird flocks.

These throngs of birds provide a valuable natural asset within a heavily populated and industrialised region; for this reason, and in the contexts described, they should be appreciated and protected.

Acknowledgments

We would particularly like to thank Messrs J. Chester, B. Thurston, C. Walker, G. White, and R. Wilson for undertaking much of the field work and helping with data collation. We thank Dr R. W. Furness and Messrs H. Galbraith and I. Gibson for constructive comments. The Job Creation Programme and the Nature Conservancy Council provided financial support for which we are very grateful. The staff of the Computer Centre at Paisley College have advised and co-operated throughout the study. Finally we thank Mrs Eleanor Webster for typing the manuscript.

Summary

The tidal flats of the Clyde Estuary were surveyed between September 1976 and August 1977 to quantify the abundance and distribution of feeding birds. The international and national importance of the main bird populations is given. Two main areas were identified as being of outstanding value as winter feeding grounds : firstly the south shore from Langbank to Longhaugh Bay inclusive and secondly the north shore between Milton and just west of the Leven mouth. Factors affecting usage of these grounds, including food supply and tidal movements, are discussed and some implications for the conservation of the tidal flats are noted.

References

BIGNAL (E. M.) 1978. General conservation issues relating to the Clyde Estuary. *Nature Conservation Interests in the Clyde Estuary* : 30-34. Symposium Report, Paisley College, Nature Conservancy Council, RSPB (Held in SOC library).

BRYANT (D. M.) 1979. Effects of prey density and site character on estuary usage by overwintering waders (Charadrii). *Estuar. Coast. Mar. Sci.* 9 : 369-384.

BRYANT (D. M.) & MCLUSKY (D. J.) 1976. *Invertebrate and bird fauna of the Forth Estuary mudflats.* Report to Nature Conservancy Council.

CURTIS (D. J.) 1978. Distribution of invertebrates on the tidal flats. *Nature conservation interests in the Clyde Estuary* : 15-24. Symposium Report, Paisley College, Nature Conservancy Council, RSPB.

EVANS (P. R.) 1977. Reclamation of intertidal land : some effects on *T. tadorna* and wader populations in the Tees Estuary, England. *Bulletin of International Waterfowl Research Bureau.* 43/44 : 66-67.

FURNESS (R. W.) and GALBRAITH (H.) 1980. Numbers, passage and local movements of redshanks *Tringa totanus* on the Clyde estuary as shown by dye-marking. *Wader Study Group Bulletin* 29 : 19-21.

GIBSON, I. 1978. Numbers of birds on the Clyde Estuary. *Nature Conservation interests in the Clyde Estuary* : 1-5. Symposium Report, Paisley College, Nature Conservancy Council, RSPB.

GOSS-CUSTARD (J. D.) 1977. Responses of Redshank, *Tringa totanus* to the absolute and relative densities of two prey species. *J. Anim. Ecol.* 46 : 867-874.

HALLIDAY (J. B.) 1978. *The feeding distribution of birds on the Clyde Estuary tidal flats.* Unpublished report to Nature Conservancy Council, Paisley College. 50pp. (Held in SOC library).

HALLIDAY (J. B.) & SMYTH (J. C.) 1978. Feeding distribution of birds on the Clyde Estuary tidal flats. *Nature conservation interests in the Clyde Estuary* : 6-14. Symposium Report, Paisley College, Nature Conservancy Council, RSPB.

PRATER (A. J.) 1976. *Annual Report of the Birds of Estuaries Enquiry* 1974/75. BTO, RSPB, WT Publication.

SAEIJS (H. L. F.) & BAPTIST (H. J. M.) 1980. Coastal Engineering and European wintering wetland birds. *Biological Conservation* : 17 : 63-83.

SMYTH (J. C.), CURTIS (D. J.), GIBSON (J.) & WILKINSON (M.) 1974. Intertidal organisms of an industrialized estuary. *Mar. Pollut. Bull.* 5 : 188-191.

SMYTH (J. C.), CURTIS (D. J.), HALLIDAY (J. B.) & STOBIE (R. E. F.) 1977. Birds and invertebrates of the Clyde Estuary tidal flats. *Western Naturalist* 6 : 73-101.

THOMPSON (D. B. A.) 1981 (in press). Feeding behaviour of winter shelduck *Tadorna tadorna* (L) on the Clyde Estuary. *Wildfowl.*

J. B. Halliday, Dr D. J. Curtis, D. B. A. Thompson and Professor J. C. Smyth, Department of Biology, Paisley College, Paisley, and Dr E. M. Bignal, Nature Conservancy Council, South West (Scotland) Region, Loch Lomond Castle, Balloch, Dunbartonshire.

Observations and food of Hen Harriers at a winter roost in Orkney

N. PICOZZI and M. F. CUTHBERT

In winter 'ringtails' markedly outnumber adult males at communal roosts in Orkney. The authors suggest that the proportionately greater emigration of males reflects their preference for small passerine prey rather than the more readily available mammals preferred by the females.

This paper reports on counts of Hen Harriers at the largest of 12 known communal roosts on Mainland (Orkney) from 1975-81, and on an analysis of pellets collected there. The aims of the study were to record the use of the roost by wintering harriers, to discuss possible reasons for them roosting communally, and to determine their winter prey in Orkney.

Previous studies by Watson & Dickson (1972) and Watson (1977) at roosts in southwest Scotland included some immigrant harriers in the counts, e.g. they saw marked birds from Glen Dye (Kincardineshire), 250 km away, and from Orkney, 430 km away (Watson 1977). Orkney has the most northerly breeding population of harriers in Britain, and birds wintering there were presumably residents because most of those seen were birds which had been colour marked in the breeding season. Possible immigration from the small population in Scandinavia (Bijleveld 1974) can be discounted because the one or two sightings of harriers each year at the Fair Isle Bird Observatory (96 km northeast of Mainland) did not coincide with migrants known to be of Scandinavian origin; these were probably birds which had dispersed from Orkney (R. Dennis pers. comm.). We have therefore been able to compare summer and winter observations to find whether more males than females left Orkney in winter. A greater emigration of males from Orkney in winter might be expected because although there appears to be no shortage of the mammalian prey preferred by females, the small birds preferred by the more agile males would be more readily available elsewhere at that time of year (see Schipper *et al.* 1975 and Marquiss 1980 concerning winter prey of male and female Hen Harriers).

Methods

About 80% of the harriers in Orkney nest on West Mainland,

and adults and nestlings have been wing tagged there since 1975. By July 1980, 66% of the breeding males, 89% of the breeding females and their 77 young were individually colour marked. The ratio of brown birds (adult females and subadults of both sexes) to grey birds (adult males) in the population at the end of each breeding season (on figure below) was calculated from the total number of nesting females plus all fledged young (brown birds), and the total number of adult males estimated from the known proportion in a large sample of the (polygynous) breeding population (Picozzi, in prep.). An exceptional number of non-breeding adults was identified in 1979 (15 females, two males) and these were included in the calculation for that year.

Counting was done from a little hill 300 m from the centre of the roost. Watches began about an hour before sunset and ended 15 minutes after the last bird was seen. Any counts considered to be incomplete due to bad weather were discarded. An attempt was made to differentiate first year males from their smaller size; this was possible with early arrivals, but late arrivals in failing light could not be distinguished reliably. Consequently, we give data only for grey and brown birds.

Pellets were oven dried slowly, weighed and analyzed dry, using the keys of Day (1965) and Yalden (1977). The proportion of the pellet occupied by each item was estimated by eye. No attempt was made to distinguish between the fur of mice (Muridae) and Orkney Voles *Microtus arvalis orcadensis*, as almost all the skulls and teeth found in the pellets were those of voles. The remains of Starlings occurred frequently and were distinguished from those of other passerines.

Location and features of the roost

The study roost was in a 1.5 ha bed of Reeds *Phragmites* up to 1.6m high. The nearest roosts to it were one in wet ground dominated by Meadowsweet *Filipendula ulmaria* 3 km to the south and another in Reeds 4 km to the east. All three roosts were surrounded by or next to the farmland and rough grazings seen to be hunted by the harriers in winter. Most harriers roosted near the centre of the reed beds on small patches of flattened vegetation or on tussocks of *Deschampsia caespitosa*. Pellets soon decomposed in the wet conditions, but up to ten were found at each site on the first visit to collect them.

Counts

Harriers used the roost from late September to mid April.

Counts to the end of March are given on the figure. Tagged birds were seen on all counts; on the peak count in January 1981, fifteen (83%) of the eighteen birds seen well were tagged, which was similar to the proportion in the population in July 1980. There was some inter-island movement as individuals from Rousay and Eday (15 km and 25 km to the east) were identified at the roost in 1979 and 1980.

The main features of the counts shown in the figure are:

(1) Both grey and brown birds used the roost, but the number of grey birds was generally not more than half that expected from the proportion estimated to be in the population in July. Two or fewer males were seen on 90% of 84 visits when birds were present at the roost, three on 8% and four only once.

(2) Numbers fluctuated between counts. Although some individuals were known to use the roost regularly, others probably did not. Radio-tagged females used more than one roost (NP unpub.), and observations of birds flying over the roost at dusk but not stopping were probably birds visiting one roost but using another. It is also possible that some individuals may have used a communal roost irregularly.

No consistent pattern between years was apparent although there was a slight drop in the number of brown birds using the roost in mid-winter in four of the six years, and a rise in their numbers in late February/March in five years. These may only have been local fluctuations and it is not known if they reflected the situation in Orkney as a whole. However the late winter peaks could have been due to birds which had wintered elsewhere and which temporarily roosted communally when they returned to Orkney.

(3) The winter maximum at the study roost was similar each year (16, 14, 14, 21, 12, 19 in 1975-81). This suggests that either the roost, or the area hunted by birds using it, may have a capacity of about twenty birds.

(4) Observations of tagged birds showed that the roost was occupied by adults and yearlings, but we have not given the proportion of each because too small a sample of tags could be identified with certainty in the poor light. Low counts in 1979/80 probably resulted from (a) a shortage of yearlings following the poor breeding season in 1979 when only thirteen young were reared on west Mainland (Picozzi in prep.) and (b) more adults than usual leaving Orkney in that hard winter.

Analysis of pellets

We found 489 items in 356 pellets collected at the roost in

late March/early April in 1977-80. Results in the table are presented as proportion of total items (cf. Marquiss 1980), and as proportion by weight (this gives quantitative data but tends to overemphasise fur bearing prey which are swallowed whole). The proportion of pellets containing Rabbit *Oryctolagus cuniculus* remains was low and fairly constant (11-21%), but the proportion containing small rodents (mainly vole) was more variable and ranged from 35-60%. Starlings were taken more often than any other passerine, and the proportion of passerines varied inversely to that of small rodents. The amount of vole remains in the pellets each year further indicated their importance as winter prey.

Table. Analysis of pellets collected in March/April from a communal roost of Hen Harriers in Orkney

Year	1977	1978	1979	1980
Number of pellets	44	115	116	81
Number of items	71	149	165	104
% Small mammals	35	60	52	35
% Brown Rat	—	7	2	3
% Rabbit	11	15	15	21
% Hedgehog	—	—	—	1
% Starling	33	11	20	23
% All passerines	54	18	31	40
Weight of pellets (g)	66.8	183.7	183.2	102.5
% Small mammals	53	77	68	46
% Brown Rat	—	8	3	4
% Rabbit	11	7	11	19
% Hedgehog	—	—	—	1
% Starling	24	7	11	18
% All passerines	36	9	18	30

Discussion

Sex ratio at the roost

Since the mortality and dispersal of young (brown) birds would normally be greater than that of adults (Newton 1979), the ratio of brown to grey birds calculated for the population in July (fig.) probably overestimates that to be expected in winter in Orkney. The disproportionate ratio of brown:grey birds at the roost (10+:1 recorded every year) therefore strongly indicates a difference in the behaviour of adult males. It is unlikely that the study roost was atypical as counts at other roosts in Orkney produced similar results. Although it is possible that adult males are less likely to join communal roosts this has not been demonstrated and elsewhere in Britain adult males sometimes predominate at communal roosts (Watson 1977). The most likely explanation is that more adult

males than females wintered outside Orkney, presumably because suitable prey items are more readily available elsewhere then. Even so, they may still survive less well than females (cf. Newton 1979). Males, being smaller, have relatively higher energy requirements, and some (particularly inexperienced yearlings) could have difficulty obtaining enough food in unfamiliar country. Similarly, males may also be less able to withstand temporary food shortages in hard weather (cf. Newton 1979). There is a greater loss of male than of female harriers from the Orkney population (Picozzi, in prep.), and a difference in overwinter survival could explain most of this.

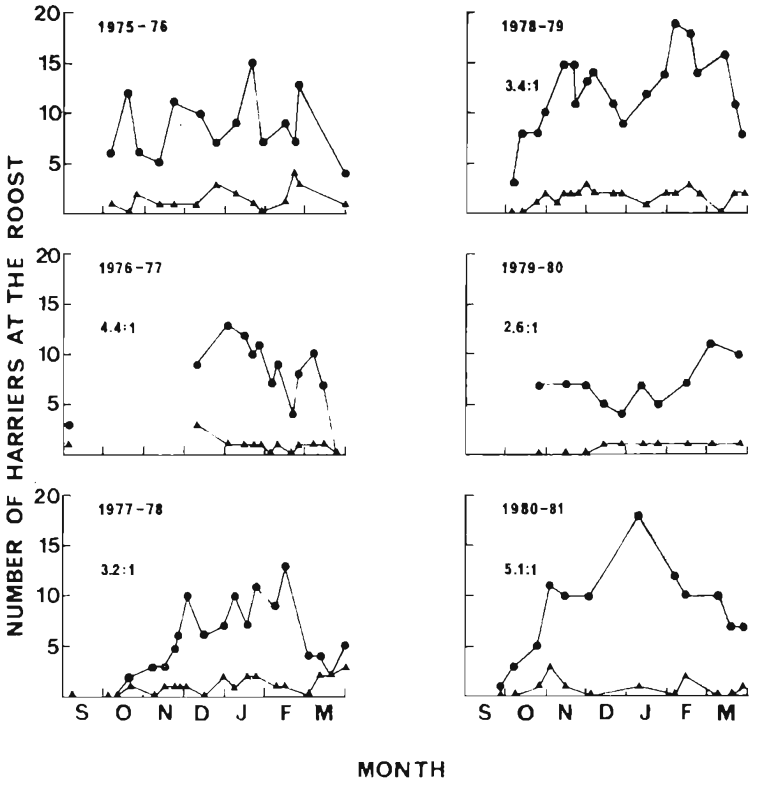


Figure. Number of Hen Harriers using a winter roost in Orkney from 1975-81. (triangles = males; circles = females. Ratios are those of brown:grey birds in July, see text).

We have considered adult males in the calculations because they were easily recognized, but the behaviour of yearling males probably differed from that of yearling females in winter. Results from recoveries of harriers ringed in Orkney are inconclusive, but those from Glen Dye (Kincardineshire) did show that young males moved further than young females from their natal area (Picozzi 1978).

Function of the roost

Communal roosts probably serve several functions simultaneously. Ward & Zahavi (1973) suggested that they could act as information centres for birds new to an area to learn from the residents where to hunt most profitably. Evidence from Orkney for this suggestion would not be expected as most birds using the study roost were local. Birds were not seen to follow each other from the roost in the morning, but it is possible that those with empty crops the previous evening may have left in the direction from which birds with full crops then had arrived (Watson 1977).

Gurr (1968) suggested that pair formation was an important function of the communal roost for the Australasian Harrier. This may be so for the Hen Harriers at roosts attended by several males, but so few males attended the study roost that pair formation, if it occurred, was unlikely to have been more than incidental at this roost and others like it.

Watson (1977) thought that the primary function of the roost was social. We too saw many forms of social behaviour at the roost, but it can be argued that the observed behaviour was a consequence of birds of both sexes and/or different ages being in one place, rather than a reason for them being there.

Lack's (1968) suggestion that communal roosts are a defence against predation may be the main explanation for the harrier's behaviour. Harriers, because they roost on the ground, are particularly vulnerable to mammalian predators. In our experience, Hen Harriers may be approached to within 10 m at night, but the other harriers in the roost then responded to the alarm calls of the bird which was disturbed (see also Watson & Dickson 1972). Gurr (1968) and Weiss (1923) found that the Australasian Harrier and the Montagu's Harrier respectively allowed close approach and flushed singly from the roost. Gurr therefore dismissed the possibility that the Australasian Harrier roosted communally for defence against predators. However, other birds in the roost may have been warned, but did not leave because to do so in the dark and then to find another place to roost was a greater risk than remaining concealed until the predator was close.

Finally, the sites used for roosts in Orkney were all in long vegetation in wet areas which offered excellent shelter close to the hunting areas. It is therefore not surprising that several harriers used the same sites, resulting in their development as communal roosts. There are many apparently suitable and undisturbed sites for roosts in Orkney. This probably accounts for the existence of several communal roosts, most of which hold not more than five birds.

Winter prey

Marquiss (1980) found remains of large prey items more often at roosts which were attended mainly by brown birds, and more remains of passerines at roosts with several grey birds. The proportion of large items (Rabbits) at the Orkney roost was therefore perhaps less than might have been expected, especially as Rabbits were common near the roost. However, this was offset by the high occurrence of the large local vole (up to 63g, Southern 1964) which may have been easier to catch than adult Rabbits in winter. Some Rabbits, and almost certainly a Hedgehog, were probably taken as carrion.

Voles appeared to be a favoured winter prey and the 35% of items found in pellets in March 1977 was five times that brought to nests in summer 1977 (Picozzi 1980), probably because they were much less available in summer in the long vegetation than other prey such as young Rabbits and birds. Orkney Vole numbers are believed to fluctuate less from year to year than other voles (Southern 1964) but the pellet analyses can be interpreted as suggesting that they do fluctuate, and that passerines are preyed upon more in low vole years.

Acknowledgments

We are grateful to Dr D. Jenkins, Dr M. Marquiss and A. D. Watson for their comments on this paper in draft and to the late E. Balfour who was the first to locate the roost and told us of it. NP is also indebted to the Royal Society for the Protection of Birds for permission to colour mark harriers on their reserves in Orkney, so making our study the more worth while.

Summary

1. Most harriers which attended the largest communal roost on Mainland (Orkney) were known to be local birds from their wing tags.

2. There were fewer grey birds (adult males) at the winter roost than expected from the estimated proportion in the population in July. The most likely explanation was that more adult males than adult females wintered outside Orkney.

3. Possible reasons for communal roosting by Hen Harriers are discussed and the most likely is considered to be defence against predation. The known roosts in Orkney also offered excellent shelter close to the hunting areas.

4. Pellet analyses showed that Orkney Voles were an important prey in winter. The proportion of voles in the pellets from 1977 to 1980 varied inversely to the proportion of the passerines.

References

BIJLEVELD (M.) 1974. *Birds of Prey in Europe*. London.

DAY (M. G.) 1965. Identification of hair and feather remains in the gut and faeces of stoats and weasels. *J. Zool.* 147 : 201-217.

GURR (L.) 1968. Communal roosting behaviour of the Australasian Harrier *Circus approximans* in New Zealand. *Ibis* 110 : 332-7.

LACK (D.) 1968. *Ecological Adaptations for Breeding in Birds*. London.

MARQUISS (M.) 1980. Habitat and diet of male and female Hen Harriers in Scotland in winter. *Brit. Birds* 73 : 555-560.

NEWTON (I.) 1979. *Population Ecology of Raptors*. Poyser, Berkhamsted.

PICOZZI (N.) 1978. Dispersion, breeding and prey of the Hen Harrier *Circus cyaneus* in Glen Dye, Kincardineshire. *Ibis* 120 : 498-509.

PICOZZI (N.) 1980. Food, growth, survival and sex ratio of nestling Hen Harriers *Circus c. cyaneus* in Orkney. *Ornis Scand.* 11 : 1-11.

SCHIPPER (W. J. A.), BUURMA (L. S.) & BOSSENBROCK (P. H.) 1975. Comparative study of hunting behaviour of wintering Hen Harriers *Circus cyaneus* and Marsh Harriers *Circus aeruginosus*. *Ardea* 63 : 1-29.

SOUTHERN (H. N.) (ed) 1964. *The Handbook of British Mammals*. Oxford.

WARD (P.) & ZAHAVI (A.) 1973. The importance of certain assemblages of birds as "information-centres" for food-finding. *Ibis* 115 : 517-534.

WATSON (D.) 1977. *The Hen Harrier*. Poyser, Berkhamsted.

WATSON (A. D.) & DICKSON (R. C.) 1972. Communal roosting of Hen Harriers in south-west Scotland. *Scottish Birds* 7 : 24-49.

WEISS (H.) 1923. *Life of the Harrier in Denmark*. London.

YALDEN (D. W.) 1977. *The Identification of Remains in Owl Pellets*. Mammal Society, Reading.

N. Picozzi, Institute of Terrestrial Ecology,
Hill of Brathens, Banchory, Kincardineshire.
Dr M. F. Cuthbert, Vishabreck, Evie, Orkney.

Hen Harrier

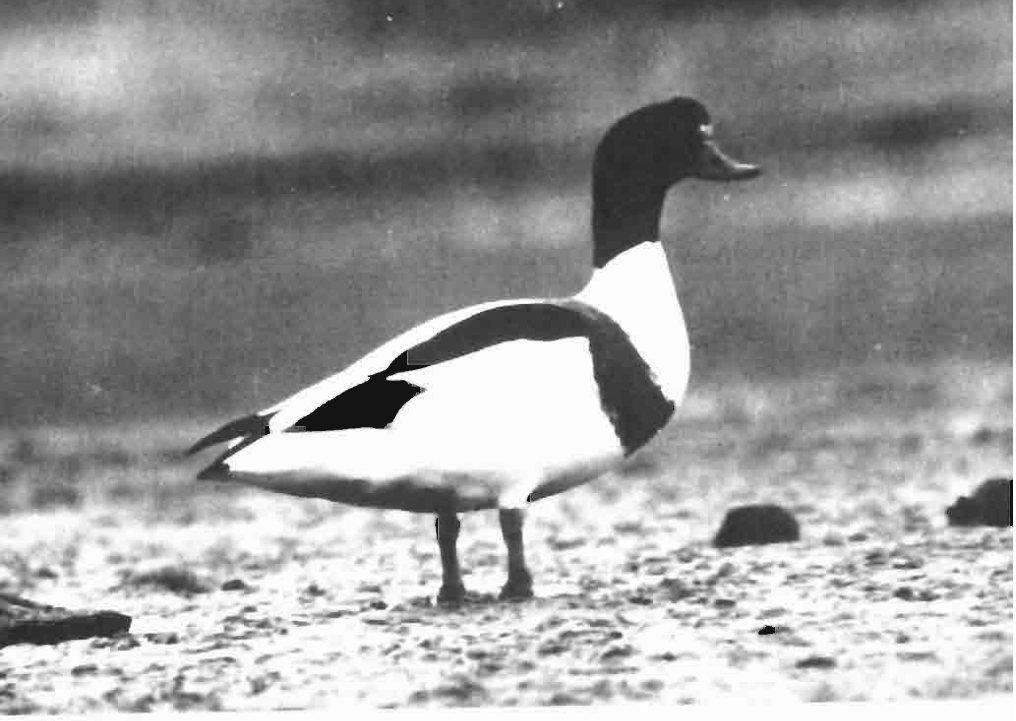


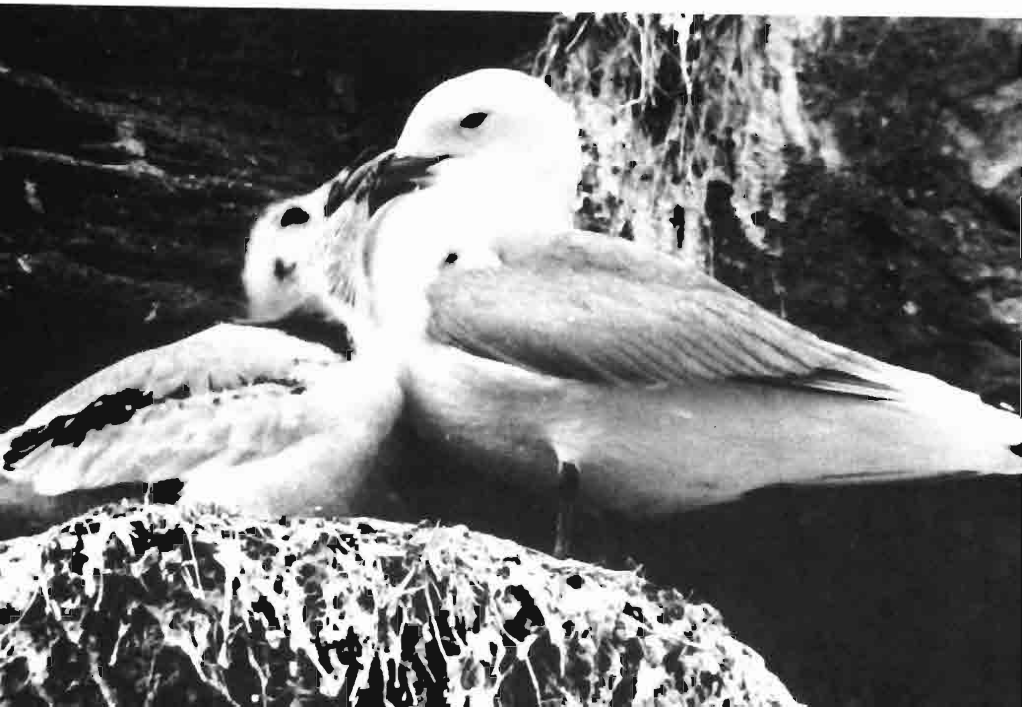
PLATE 8. The invertebrate-rich mudflats of the Clyde estuary (p.65) support internationally important numbers of Shelduck.

I. J. Patterson

More than 8,000 Dunlin are among the waders wintering there.

S. R. D. & E. S. da Prato

PLATES 9 & 10. Contrasting aspects of birdwatching at St Abb's Head (p.81).
a) Many thousand of Guillemots, Razorbills and Kittiwakes breed on the spectacular seacliffs.



b) The shelter and cover around the Mire Loch attract small migrants, a few of which, like this Sedge Warbler, stay to nest.

S. R. D. & E. S. da Prato

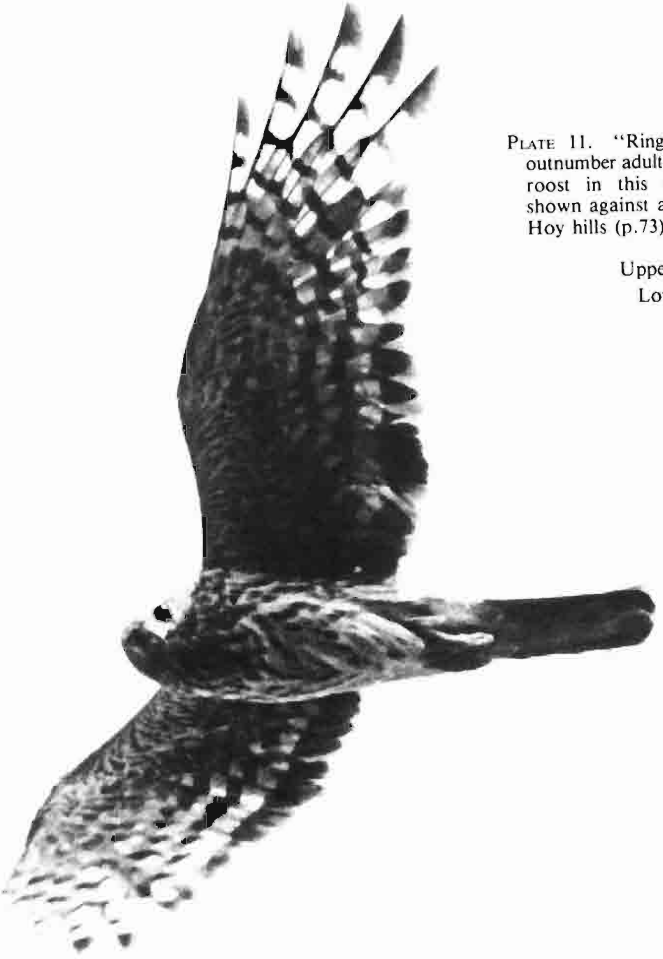


PLATE 11. "Ringtail" Hen Harriers outnumber adult males at the winter roost in this Orkney reed-bed, shown against a back-drop of the Hoy hills (p.73).

Upper - *D. A. Smith*
Lower - *N. Picozzi*

Birdwatching at St Abb's Head

S. R. D. da PRATO

St Abb's Head is a superb spot to watch birds. The cliff scenery, especially in rough weather, looks as wild as any of our remoter islands yet the Head is on the mainland and easily reached by road. Well known for seabirds, its position, coupled with an area of good cover immediately inland from the cliffs, makes it one of the best migrant traps on the Scottish mainland. Depending on the weather and the season the birder can watch breeding seabirds, offshore movements and migrant passerines, while there are wild flowers and insects for those naturalists not wholly obsessed by birds.

There are two routes to the Head, either by walking the clifftop path from St Abbs village or taking the road to the lighthouse. The experienced migrant hunter will probably arrive by car, drive to the lighthouse and hurry down to inspect the cover by the Mire Loch. However, the first time visitor will get a better introduction to St Abb's Head if he walks along the cliffs, which become more precipitous and crowded with seabirds as one progresses.

Seabirds are ashore throughout the spring and early summer though numbers of all except the Fulmars and resident Herring Gulls drop off after June. The indented coast offers excellent views of the cliff nesting species: over 10,000 each of Kittiwake and Guillemot with smaller numbers of Razorbills and Shags. Puffins are scarce and confined to rock crevices or steep grassy slopes which Foxes cannot reach. Gannets have never been recorded breeding but an endless procession passes offshore to and from the Bass Rock throughout the nesting season, and often at other times as well.

Whatever the weather the seabird cliffs are spectacular. When the wind blows, especially in spring when birds are displaying, mating and nest building, it is their flight that catches the eye. On warm summer days the noise and smell impress the senses and further interest is provided by the young birds and the display of clifftop wild flowers. Even when the cliffs are shrouded in sea haar, a common associate of warm spring weather, good views of seabirds are possible. The path along the cliffs is perfectly safe although the cliff edge is not. Only the closest ledges are visible under these conditions but the effect of the mist swirling among the stacks, with flying birds appearing and disappearing through the fog and the background noise of birds and sea, is dramatic.

By late July the cliffs appear largely deserted. The auks are all out in the North Sea, the adult Guillemots and Razorbills flightless due to moult, shepherding their young towards the Scandinavian coast. Kittiwakes can still be seen and the failure of many juveniles to adjust to free flying independence is demonstrated by the corpses washed up below the cliffs, each with its distinctive black wing bar.

Scottish summers usually have their share of rain and wind. Depending on the direction of the bad weather, seawatching can now replace cliffwatching. Seabird movements are likely whenever the wind blows from between north and southeast and pushes birds passing through the North Sea towards the shore. Obviously the species seen will depend on what is in the North Sea at the time, which is why late summer tends to produce the most interesting movements. Besides large numbers of Gannets, Kittiwakes and Fulmars there is a good chance of seeing skuas and shearwaters. The rougher the weather the better, though keeping dry can be difficult unless one watches from the lighthouse car park. This is a good spot, but rather too high, since birds beating into the gale fly low, and the watcher prepared to brave the elements can get closer to the action by choosing a spot nearer sea level. Shearwaters are much less likely after September but skuas, notably Pomarine, are still possible. As autumn progresses, the seawatcher will record parties of ducks, geese and divers arriving to winter in Britain, as well as the returning auks; Guillemots and Razorbills are often seen on or near the cliffs from October onwards. Spring also sees seabird movements but, apart from an occasional Manx, shearwaters are much rarer than in August or September and skuas, other than a few Arctic and Bonxie, are also less likely.

Although any strong wind with an easterly component is likely to produce seabird movements, falls of small migrants require more specialized conditions. Basically the difference is that seabirds mean to be at sea but small passerines are in great danger once over the water and normally cross sea areas in good, calm conditions when they can complete their journey safely and unseen by observers on the ground. The most likely weather pattern to produce a fall of migrants at sites like St Abbs is when an Atlantic depression, pushing in from the southwest of Britain, is delayed by high pressure over Scandinavia or continental Europe. The resulting southeasterly air flow drifts migrants which had set off in good conditions and, if they encounter bad weather over the North Sea, then they alight on the first land they can find.

The beginner should remember that even with the wind in the southeast large numbers of migrants are not guaranteed.

If the weather is reasonably bright then drifted birds can reorientate, while if conditions are really bad, with fog and rain *between* the observer and the birds, then they may never reach land. However, some birds should be seen under these conditions. The really spectacular falls occur when birds run into a front and are deflected, often landing in numbers on a relatively small area. Clearly the observer must learn to interpret the weather maps now so readily available on television. Indeed this forecasting can add to the fun of the outing as it soon becomes clear whether the birder anticipated correctly or not.

Although literally millions of small birds migrate through Europe every spring and autumn they are normally only 'visible' to a handful of privileged ornithologists with access to radar. For the rest of us falls at sites such as St Abbs are our only opportunity to experience something of these tremendous movements at first hand. Whether or not rarities turn up is relatively unimportant. However they are fun to see and can be a useful pointer to the origins of the more numerous and familiar birds.

There are several island and coastal sites round Britain renowned as spots to see migrants. The distinctive feature of St Abb's Head is the presence of a sheltered area of freshwater and vegetation immediately behind the cliffs. The Mire Loch is artificial, formed by the damming of the valley which marks a line of geological faulting. It is too small to hold many wildfowl and too steep sided for waders but its banks have a variety of trees and scrub and there is a small reedbed.

In a southeasterly gale the contrast between the cliff tops and the lochside is dramatic. The cliffs and grassland on their tops are buffeted by the wind and small birds are conspicuous by their absence. Descending towards the Mire Loch the first thing that strikes the observer is the calm and quiet as he moves into shelter. If he has read the weather charts correctly the next thing he will notice is the migrants. After a big fall it is the sound of the birds and their intermittent, flickering movements in and out of cover and over the loch that attract attention. Conditions are usually overcast if not actually raining and, especially in August and September, the amount of foliage means that specific identification can be a slow business. The secret is to watch quietly and the birds will reveal themselves. The best time is immediately after rain ceases as birds that have been sheltering begin to feed. If the sun emerges very good views can be had but they are likely to be brief as most migrants soon continue on their journeys.

There appear to be interesting differences between St Abb's

Head and islands such as the Isle of May. This is probably due to the island's more isolated position which draws in birds in bad conditions. St Abbs compares favourably for warblers and flycatchers but records markedly fewer shrikes, buntings and thrushes. This emphasises the value of the cover at St Abbs which is far better than on the Isle of May and attracts small insectivorous species whereas other birds quickly move on and disperse inland through Berwickshire.

Anyone anxious to see particular migrant species should consult *Scottish* and *Border Bird Reports* since some species tend to occur in fairly specific periods. Autumn produces larger numbers and more rarities than spring simply because there are so many juveniles about and these are much more likely to wander off course than experienced adults. However spring sees some birds, notably male Bluethroats and Pied Flycatchers, at their best. Although not rare the sight of Wheatears among clifftop wild flowers on a sunny May morning is very fine. Remember also to check the rocky gullies and even the lighthouse buildings for Black Redstart.

Willow Warbler and Pied Flycatcher are the two commonest migrants in August, when there is also the chance of Icterine Warbler. Redstarts, Goldcrests and the *Sylvia* warblers become common later in the autumn while Blackcap, Goldcrest and Robin often reach three figures in October. Chiffchaffs also feature in late autumn which is the most likely time for one of the Siberian *Phylloscopus* warblers; so far Yellow-browed, Greenish and Dusky have all been recorded. Since no mistnetting has been carried out the status of some warblers, especially the *Acrocephalus* species, is not properly understood.

Every October thousands of thrushes cross the North Sea from Scandinavia to Scotland. Unlike many smaller migrants these are not drifted off their normal course although they can suffer in bad weather. When this happens spectacular falls can occur with birds literally pouring out of the overcast sky. In normal conditions most thrushes overfly St Abb's Head but the Hawthorns round Mire Loch always attract some. Blackbirds are usually the most numerous species but the others all occur, including Ring Ouzel which should be looked for on the grassy slopes as well as among the berries. October and November may also produce Water Rail and Woodcock in the cover round Mire Loch.

St Abb's Head was purchased in 1980 by the National Trust for Scotland who administer it as a wildlife reserve jointly with the Scottish Wildlife Trust. The Ranger/Naturalist can be contacted at Ranger's Cottage, Northfield, St Abbs (Tele-

phone Coldingham 443). Access on foot is free and unrestricted but there is parking (for 12 vehicles) only at the Lighthouse car-park. In the summer months there is a charge of £1 per vehicle; this charge does not apply to disabled or elderly persons or members of the NTS or SWT. Visitors should avoid straying onto adjoining private farm land.

S. R. D. da Prato, 38 Carlaverock Grove,
Tranent, East Lothian.

Short Notes

Response of Storm Petrels to calls of other species

Tape luring has recently proved to be successful as a method of studying Storm Petrels, particularly away from known colonies. However, attempts at luring other Procellariiformes on the Firths of Clyde and Forth have, to date, proved futile using this method. On two occasions when endless loop lures of other petrels were played, Storm Petrels were attracted from the sea and mistnetted.

On Ailsa Craig (Ayrshire) on 1st July 1980 a Storm Petrel was netted while the call of Wilson's Petrel was being played (optimistically) for a short spell. Storm Petrels may breed, or attempt to breed, on Ailsa in small numbers and could have been active over land whether or not a lure was playing. Many Storm Petrels were caught that night using the conventional BTO Storm Petrel tape lure. On 29th August 1981 at Portencross, on the north Ayrshire coast, four Storm Petrels were caught during a two hour period. As numbers tend to dwindle at this site in late August only two were caught during one and a half hours of luring but a further half hour of Leach's Petrel call playing also netted two Storm Petrels, 25 minutes apart. No Leach's Petrels were caught or even seen. The Portencross site is totally uninfluenced by proximity o a known breeding colony.

The calls of the three petrels are very distinct and the attraction of Storm Petrels to the calls of Wilson's and Leach's Petrels is puzzling. On both occasions only one 10m long mist net was used in conjunction with the amplified calls. Prior to being caught by conventional luring, it has been possible on several occasions to hear the Storm Petrel emit a high pitched *kreek* call as it passed over and around the lure. This contact note is not part of the lure call, which is the *churr* of breeding birds. Clark & Wilkins (*SB* 11: 52-53) accidentally caught a wandering Storm Petrel on the Forth with a malfunctioning recorder producing a call resembling a rusty hinge. How close this was to the genuine call is unknown but a faulty connec-

tion on the luring equipment at the Portencross site has similarly caught a Storm Petrel before the tape was properly adjusted.

It is perhaps possible that the Storm Petrel associates the calls of other petrels with feeding or breeding sites and is thus attracted. Alternatively, the tape recorder may emit frequencies to which the Storm Petrel's hearing may be attuned and which, for some reason, it finds irresistible. If one can anthropomorphize, it may be curiosity that attracts the birds in such cases and not the specific call. It is worth noting that the calls of Manx and Sooty Shearwaters have, as yet, failed to attract Storm Petrels, as well as the intended species.

Further experiments will be conducted to establish just what does lure Storm Petrels so easily to the shore.

I am grateful to A. Beck, I. P. Gibson and D. McEwen for their help, patience and enthusiasm during the summer nights.

B. ZONFRILLO

A new colony of Leach's Petrels

In August 1980 a Leach's Petrel was found occupying a burrow on the RSPB reserve of Gruney, Ramna Stacks (Shetland) (*Seabird Report* 6: 93). In 1981 a party from the Leicester Polytechnic expedition revisited the island for two consecutive nights 9-11th July in an attempt to confirm breeding. At dusk mistnets (total c.100m) were erected with tape recorders playing endless cassettes of the Leach's Petrel chatter call. On the first night thin cloud partly covered the light northern sky and by midnight Leach's Petrels were flitting around rock outcrops at the south end of the island and occasionally calling in flight. Seven were caught and ringed, and vocal responses were evoked from five burrows which were marked for closer examination in the morning.

The burrows were in peaty turf at the base of rocky outcrops, the entrances usually covered by grass and the tunnels going in parallel to the ground surface, similar to the one described on Foula (*SB* 8: 321-3). The nesting chambers of three of the burrows were beyond reach, but the other two hit bedrock and each contained an adult Leach's Petrel incubating a single egg. Both birds were removed for ringing: one was found to have been ringed at a mistnet during the night. They were placed back in the burrow where they continued incubating. On the second night the cloud had dispersed, resulting in a much lighter night and fewer petrels appearing. However, the mistnets had been more effectively sited at tangents to the rock outcrops and a further six were caught—

none of them retraps from the previous night. An additional two occupied burrows were located, too deep to examine.

It is highly unlikely that all occupied burrows were found; those that were found on the second night had certainly been passed over before, suggesting that an occupant of a burrow may not necessarily always respond to a tape recording. The absence of retraps in the second night's catch, whilst providing no basis for a recapture analysis, certainly does not suggest that the 13 birds ringed represent anything other than a small proportion of the birds visiting the island. In view of the small size (c.7.0 ha) of the island and the distribution of likely nesting sites, an estimate of 20-50 pairs seems reasonable.

The only other known site for breeding Leach's Petrels in Shetland is on Foula where a single burrow with egg was found in 1974 (*SB* 8: 321-3) and a few more burrows have been found in subsequent years (A. R. Mainwood pers. comm.). Only four other colonies are known in the British Isles, all in Scotland. Leach's Petrels appear to favour precipitous turf-covered islands exposed directly to the Atlantic: there are surprisingly few that meet these specifications in Shetland. Gloup Holm would seem worthy of investigation.

Financial support for this expedition was gratefully received from BP, BTO, NCC, RSPB, the Seabird Group, SOTEAG, and WWF.

J. A. FOWLER, C. J. BUTLER

Elusive Chiffchaffs

In spring 1981 we undertook a Common Birds Census of the newly established Scottish Wildlife Trust woodland reserve in Roslin Glen (Midlothian). It is a mature mixed deciduous woodland comprised primarily of oak, ash, elm and beech. In 31 visits between 28th March and 30th June both of us regularly walked the road which crosses the reserve, plotting bird song on both sides. At no time was Chiffchaff suspected. No visit was made in the early morning, however. On 1st June AWB was shown a Chiffchaff's nest (nest A) containing 4 eggs (found by two English visitors by 'cold-searching'). On 11th June we were both shown a second nest (nest B) containing 6 eggs some 90m from nest A, which now also had 6 eggs. Both nests were less than 10m from the road.

Meiklejohn (1952, *Scot. Nat.* 64: 114-6) suggested that in Scotland Chiffchaffs require a thick cover of *rhododendron* with some tall adjacent trees to provide song posts. Young planted conifers with taller trees give a similar habitat and

are often used in the Lothians. The habitat frequented in Roslin Glen is open mature oakwood with a ground cover of ferns and with thick honeysuckle *Lonicera* around many of the trees providing the only shrubbery. This part of the Glen is very sheltered and provides conditions reminiscent of the South of England.

Neither of us heard any song but it seems likely that with two adjacent territorial males there would be an initial period of intense song as the territories were established. On 11th June, however, it was noticeable that after the sitting bird was flushed from nest A there were two very excited adults scolding nearby whereas at nest B only one bird was ever seen during three visits. It seems possible, therefore, that only three birds were involved in the two nests and that the male was bigamous. It should also be noted, however, that nest B was built within 30m of a Sparrowhawk nest (which was successful) and it may be that a second male had fallen victim to one of the hawks.

Dr L. L. J. Vick (pers. comm.) and da Prato (*SB* 11: 108-112) have found that Lesser Whitethroats in the Lothians may sing only for a very short period when they arrive in spring and, indeed, may nest in a well-watched area with no song being heard at all. This may well have applied at Roslin Glen and it seems probable that a warbler which is paired and has no necessity to defend its territory against neighbours will have no need to advertise by song. This possibility has previously been suggested for Chiffchaffs in Easter Ross (Lees, 1952, *Scot. Nat.* 64: 171). One wonders how many are overlooked.

A. W. BROWN, R. W. J. SMITH

S. R. D. da Prato comments: The authors are quite correct in saying that male warblers tend to sing less once mated, especially when the species occurs at low densities. However this is subject to variation between species and between individuals. I do not think Chiffchaffs are quite as elusive as Lesser Whitethroats, and stress that early morning is a better time than evening to census most species of warbler. The suggestion of bigamy is interesting since it has been found in Willow Warblers and Whitethroats in southeast Scotland (*BB* 1982 in press). It is almost certainly underrecorded and, I suspect, sometimes misinterpreted as double brooding when the second female lays later than the first. Anyone prepared to invest some time in colour ringing and then watching small passerines could usefully extend our knowledge in this area.

Merlin apparently preying on Common Frog

On 10th June 1981 I visited the nest of a Merlin in Kincardineshire. Prey remains found in the nesting area were collected and among them were those of a Common Frog. The remains were found on top of a large (c.1.5m high, 1m long, 1m wide) "plucking" boulder c.80m from the nest. This would appear to be very unusual for a Merlin as no Amphibians have been recorded in various food studies in the past (see Cramp *et al.* 1980, *The Birds of the Western Palearctic Vol II*, Watson 1979 *Bird Study* 26: 253-8, Hodson 1978, *Canadian Field-Naturalist* 92: 76-77). The area surrounding and below the boulder was wet and marshy and Frogs are common locally in this habitat. I would like to thank Alistair Duncan for confirming the identification of the remains.

GRAHAM W. REBECCA

Persistent predators

In early summer 1981, on a grouse moor at Kerloch in Kincardineshire, I saw two instances where kills were made due to persistence by predators. On 21 May I heard a hen Red Grouse *Lagopus lagopus scoticus* giving predator warning calls and nearby saw a Crow *Corvus corone* 'hovering' about 5m above a stretch of 2-year-old heather. The crow suddenly swooped at something on the ground but was deflected by the hen grouse which flew at the Crow knocking it to one side. The Crow resumed its 'hovering' position and repeated the attack about 2 minutes later. Meanwhile the cock Red Grouse either stood on a nearby 'look-out' giving predator warning calls, or made low flights passing close to the crow but without making contact. This continued for about 10 minutes, with the attacks from the hen grouse becoming weaker each time, until eventually the Crow picked up the object—a tiny grouse chick—in its claws and carried it to a nest ½km away. The Crow returned 10 minutes later and continued to wear down the hen grouse until a second chick was caught. A total of five chicks were taken one by one in 75 minutes. When I inspected the area I found no chicks or parents but found droppings from 1-3-day-old chicks.

The second instance occurred the following day and involved a brood of 4-day-old Golden Plovers *Pluvialis apricaria* which I watched feeding on a stretch of 1-year-old heather and grass. The parents suddenly began flying about calling noisily and the chicks immediately scattered and hid. The cause was a male Sparrowhawk *Accipiter nisus* which had appeared without warning and landed where the brood had

been feeding. He hopped about in zig-zag fashion, frequently stopping and tilting his head to look at the ground, whilst continually being mobbed by the parents. After 10 minutes he found one of the chicks, killed and then ate it. It was then that I intervened; having ringed the chicks in the nest and already seen the brood reduced to two chicks, I could not sit and watch the last surviving chick being hunted down.

Red Grouse and Golden Plover chicks crouch and rely on their cryptic plumage to avoid detection by avian predators but the Crow had found a brood in the open with the chicks at a vulnerable age and by repeated attacks had overcome the resistance of the parents. Sparrowhawks usually catch their prey by surprising it on the ground or in flight, and although they may follow on foot if the prey goes to ground it is unusual to find one methodically quartering the ground in search of prey. The defence of the broods was so ineffectual against the persistence of these predators it suggests the described events rarely occur.

RAYMOND PARR

Exceptional proximity of two pairs of nesting Merlins

Traditionally, one pair of Merlins has nested annually on Fetlar, Shetland, but there were two pairs in 1978-79, three pairs in 1980 and two pairs again in 1981. Suitable moorland is largely confined to the southwestern part of the island, and it is in that area that the Merlins select their nesting territories. During 1978-80 there was always at least one km between nests, but in 1981 this was not so. The two nests were a mere 160m apart on a very steep heather-clad hillside, both at an altitude of 40m.

The southern nest had a completed clutch of four eggs on 28th May, all of which had hatched by 27th June, and all four young fledged successfully. The northern nest had a completed clutch of two eggs on 1st June, one of which was newly-hatched but dead on 27th June, the second egg not hatching despite further incubation.

When seen well, both the males and both the females were individually recognisable. From my limited observations it seemed that the southern pair always left or approached their nest area from the south and the northern pair from the north, and on no occasion did I observe any interaction between the two pairs.

The previous closest nesting by two pairs of Merlins is 0.5 km (Cramp & Simmons, 1980, The Birds of the Western Palearctic).

J. N. DYMOND

Reviews

Estuary Birds of Britain and Ireland by A. J. Prater; Poyser, Calton, 1981; 440 pages; 16 plain photo plates; many drawings, diagrams & maps; 24 x 16 cm; £14.

Estuary Birds describes the results of the Birds of Estuaries Enquiry (BOEE) organized by the BTO, RSPB and Wildfowl Trust, which ran from August 1969 to May 1975. To many birdwatchers the book will provide a useful introduction and guide to the biology and distribution of our shore waders and wildfowl. To those who took part it is a long awaited report on the outcome of many, often windswept, days spent counting birds on our estuaries.

The book begins with two chapters by Raymond O'Connor on 'The nature of an estuary' and 'Patterns of shorebird feeding'. Tony Prater has authored the bulk of the book, which continues the introductory section with a western European view of shorebird migration and distribution and a wide ranging summary of the threats to estuaries in Britain. Then comes the core of the book with seven regional accounts and a chapter on the Republic of Ireland by C. Hutchinson. This is followed by accounts of the principal estuarine species. An appendix lists the 'Highest average monthly counts of main species for each estuary' and finally the criteria for international and national importance for species covered by the survey.

On first impression this is a good looking book. The layout is clear and the monotone illustrations by John Busby have an original feel for shorebirds and their habitats. I found his pairs and larger assemblages of species particularly appealing. The text diagrams are, however, sometimes crudely drawn and incompletely annotated. (Fig. 3:3 showing ranges of wildfowl in western Europe is one of the worst but the squint symbols on many distribution maps also irritated me.) The photographs range from the highly apposite (aerial views of habitats) to the superfluous (the Hilbre Knot, again!). For the most part the introductory chapters are sound and give a good introduction to the way estuaries work, how birds exploit them and how man (and natural factors) may affect them.

Reading about bird counts is often heavy going and I suspect most readers will merely dip in to the remaining chapters. We have the additional problem (perhaps inevitable) of overworked conservation terminology ('major', 'significant', 'international', etc) recurring line after line and this becomes tedious. The regional chapters deal with each estuary in turn (Scotland is given 27 pages). The main shorebird populations are listed in tables, and maps are given for the larger estuaries and other areas showing wader roost sites and wildfowl concentrations. This works well, although survey contributors are likely to feel their results have been oversimplified. The species accounts range from 4-5 pages on each of the commoner waders, a bit less on the ducks and geese down to short paragraphs on gulls and terns.

It is in examining these two main sections in detail that some worries about the book emerge. Taking just two species on an estuary I know, I checked the text and tables. For Redshank on the Forth a figure of 2,600 is given both in the appendix and in the survey of Scottish estuaries. This is said to comprise 2.4% of the western European population, and yet using the criterion in appendix 2 (1%=1,250) this should be 2.1%. Worse still, the species account gives 3,759 instead of 2,600 for the same Forth population of Redshank and is said to represent 3% of the western

European population. The analysis for Shelduck on the Forth has evidently gone astray in a rather different way. The population figures undoubtedly include those seasons when the estuary was covered incompletely and hence give a misleadingly low overall population.

This is no place for a detailed discussion of the many and various ways of handling count data; nevertheless what ever is done needs to be explained precisely, applied uniformly and presented clearly (this goes for the wader index calculations too). Further, the evident inaccuracy of these figures suggests a weakness if this book is to be used for its purported conservation purpose. The annual summaries, prepared by the organizers at the BTO and sent to all contributors, were, and will probably remain, the most useful for making comparisons of populations between estuaries. I say this partly because there has been no attempt to achieve an overall ranking of estuaries in this book, either in terms of total number of birds or their densities. Clearly there are some interesting trends (southern England, for example, has more than twice the wader density of eastern Scotland in January) and one hopes that this unique store of data will be examined in more detail. There are far too many minor errors to specify individually, but generally the tables and figures come off worst. The subject index is a patchy effort, with species entries referring to the main species accounts alone.

Wader enthusiasts will, I expect, find the documentation of their efforts less than ideal but will be strongly tempted to buy. If they do, they will certainly get the most comprehensive summary of shorebird distribution yet published for Britain. One final point. Why is it that space can be found for prolific (and sometimes unnecessary) maps and the like and yet not for a page or two of acknowledgments for *all* those individuals who took part in the survey ? It is surely the least that can be done for all the time (and petrol money !) they have devoted to this exciting, indeed monumental, project.

D. M. BRYANT

The Cuckoo by Ian Wyllie; Batsford, London, 1981; 176 pages; 15 colour, 35 plain photos; 10 diagrams & maps; 24 x 16 cm; £8.95.

The author points out that since the pioneering work of Edgar Chance in the 1920s the Cuckoo in Britain has not been studied extensively though there is an abundance of anecdotal material. Wyllie's own involvement started when he assisted in making a TV film of Reed Warbler Cuckoos. Two seasons filming were followed by six of fieldwork. It was hoped to answer a variety of questions on Cuckoo behaviour and ecology by colour marking the local population but due to catching difficulties and low return rates many questions remain unanswered. Presenting his results in book form allows the author both to speculate and to incorporate material from other studies, many from abroad. He is careful to separate observed fact from theory and has clearly benefited from consultation with his colleagues at ITE Monks Wood and other specialists.

The book has three components : the author's own fieldwork; a summary of the literature, not just on the European Cuckoo but the rest of the family and other brood parasites; and a discussion of the origins and function of Cuckoo behaviour. Chapter 6 on the social system, where the author reports on observations of wing tagged and radio-carrying individuals, is the most valuable although weakened by small sample sizes. However, the book as a whole gives the nonspecialist reader a good summary of what is known about Cuckoos and possible reasons for their behaviour. It is also extremely well illustrated. The photographs include sequences showing females visiting nests, removing eggs and leaving their own, and the progress of young Cuckoos from egg to fled-

ging. Considering the number of plates the book is not overpriced by current standards and is recommended.

S. R. D. DA PRATO

Instinctive Navigation of Birds by E. C. Gerrard. The Scottish Research Group, Pabay, Broadford, Skye, 1981; 185 pages; 105 diagrams & maps; 21 x 15 cm; £4.50 (available only from publisher; post free).

A controversial book (intentionally so) published by the newly formed Scottish Research Group. According to the accompanying blurb, this hopes to assist 'original thinkers lacking formal qualifications' to have their work recognized when rejected by established journals.

The author sets out to produce a new hypothesis on avian navigation, and does so by examining previous research—the results of which are often quoted as being established facts. Most of these he denounces and calls Dr A. C. Perdeck's widely known work on Starling navigation some 20 years ago a gigantic hoax. The author claims—perhaps rightly—that this and hypotheses formulated by Kramer and the Sauers on celestial navigation emerged from badly organized investigations. A further claim that scientists have conspired to stifle criticism and alternative explanations of their work is rather disquieting, to say the least. He favours a much simpler hypothesis which states that migrants navigate phototactically, a method used by many insects and other organisms. Their heading is affected by such inherently attractive things as heavenly bodies, cloud patterns and landmarks. He considers there is little basis for any more complex explanation.

His hypothesis fits quite well with some of the known facts about migration, but a few of the meteorological concepts mentioned in the book are rather dubious. Statements that migrants are influenced by prevailing winds are vague. Where the steadiness factor of these is low (in mid and high latitude depression tracks) much of the migration takes place on the relatively few occasions of suitable (but not prevailing) winds. Furthermore, a bird attracted by a cloud formation does not 'almost certainly' end up by flying down-wind!

I did not find the book very readable. There are some intriguing ideas which might appeal to ornithologists with an interest in navigation, but the general reader might find it rather heavy going.

NORMAN ELKINS

Notices

The Winter Atlas in Scotland 1981-82 The response to the Winter Atlas in Scotland, and the rest of Britain and Ireland, has been very encouraging, and the proportion of squares covered during the first winter was higher than initially expected. This is not to say that the work is over. More fieldwork is required, particularly in the more remote parts, and in such areas every bird you see is a useful record. You can contribute a lot of information in a relatively short time, and I hope that some people will be able to spend a few days during next winter helping the local observers in these more difficult parts.

The 1981-82 winter was, to say the least, unusual. This certainly produced interesting results and some species appeared to move around a fair amount. Some observers in Scotland have mentioned a dearth of birds (and blamed the cold weather for it!), but I have quite a lot of VISIT cards with more than 50 species recorded and some with over 70. At the other extreme, though, I also have some with only one (usually Red Grouse, Ptarmigan or Golden Eagle!), and a few with none at all. One observer went for nearly eight hours without seeing a single bird! (We do want all such cards as long as the VISIT was of more than one hour).

Thank you very much indeed, all who took part last winter. I hope that those who did not will do so in the next two seasons. Full details will be available in September from local organisers (list in *Scottish Birds* vol. 11, p 281), or direct from me at the B.T.O. You can find out a lot about your local area even if you cannot travel to a more remote part.

PETER LACK

Wing-tagged Jackdaws Jackdaws have been wing-tagged as part of a behavioural study in S.E. Scotland. The study population is centred near West Linton in the Borders Region (55°47'N, 3°27'W) and reports of sightings of these birds would be valuable between now and 1984. For a map on which to record sightings, please contact Paul Green, Zoology Department, The University, West Mains Road, Edinburgh EH9 3JT, tel. 031 667 1081 ext. 3211.

British Birds The reduced subscription is again being offered to SOC members. From 1 August 1982 the normal subscription is £20 but by completing the enclosed form you need only pay £15 for the year's subscription. The form should be sent to Mrs E. Sharrock, Circulation Manager, British Birds, Fountains, Park Lane, Blunham, Bedfordshire MK44 3NJ.

North Sea Bird Club : Report for 1979 *and* 1980. £1 from S. M. D. Alexander, Chevron Petroleum (UK) Ltd, Ninian House, Crawpeel Rd, Altens, Aberdeen, AB1 4LG.

The Scottish Ornithologists' Club

ANNUAL CONFERENCE and ANNUAL GENERAL MEETING

Whatever our particular interest, we all want to find birds. One important factor in determining where we can find them is the availability of suitable food. That, basically, is the theme of this year's conference. Our lecturers have an especial knowledge of this topic and they have some surprising and fascinating things to say. Not only this, but they are all excellent and entertaining speakers.

The 35th annual conference and 46th annual general meeting of the club will be held in the Marine Hotel, North Berwick, East Lothian, during the weekend 5-7 November 1982. The conference programme and booking form, and the agenda for the AGM, are enclosed with this number of the journal. Members are reminded that bookings for the conference and at the Marine Hotel can only be accepted on the booking form; the hotel management have been instructed not to accept any booking except through the club secretary.

ENDOWMENT FUND

The SOC Endowment Fund was established for the advancement of ornithology. In recent years it has received generous donations and legacies which have been of considerable help to an increasing number of members who apply for a grant. The Fund is administered by the council of the club which is empowered to make grants from the accumulated income; in 1982 over £1750 was awarded to 14 applicants.

Applications for a grant **must** be made on a form available from the club secretary and submitted to him by 31 December. **Applications received after that date will not be considered for the financial year to 30 June following.** Intending applicants are advised to note carefully this

closing date. Applications, with recommendations by the research committee to which they are submitted, are considered by council at its meeting in March.

BRANCH SECRETARIES

Please note the appointment of two new branch secretaries:

Aberdeen D. J. Bain, 24 Seafield Gardens, Aberdeen AB1 7YB (0224 324 334)

Stirling D. Thorogood, 4 Archers Avenue, Stirling FK7 7RJ (0786 815 797)

WINTER EXCURSIONS

AYR BRANCH

Saturday 23 October 1982 GLENBUCK, MUIRKIRK. Leader, Don Smith. Meet Wellington Square, Ayr 1 pm or Glenbuck Loch 2 pm.

Sunday 28 November LOCH KEN. Leaders, Ray Hawley and Jean Burton. Meet Wellington Square, Ayr 9.30 am or New Galloway golf course 11 am (lunch).

Saturday 29 January 1983 PRESTWICK to AYR. Leader, Alun Williams. Meet Wellington Square, Ayr 1 pm or Prestwick Bathing Lake 1.20 pm.

Sunday 27 February LOCH RYAN. Leader, Bruce Forrester. Meet Wellington Square, Ayr 9.30 am (lunch).

Saturday 26 March DIPPLE. Leader, Eleanor Hissett. Meet Wellington Square, Ayr 1 p.m.

DUNDEE BRANCH

All excursions depart Crichton Street, Dundee at 10 am by private car (bring lunch and tea).

Sunday 17 October 1982 EDEN ESTUARY and CAMERON LOCH. Leader, Mrs J. Grant.

Sunday 21 November LINTRATHEN and BACKWATER. Leader, B. Pounder.

Sunday 12 December MONIKIE and BALMOSSIE. Leader, R. Corbett.

Sunday 9 January 1983 KINSHALDIE. Leader, D. B. Thomson.

Sunday 6 February Tay Estuary Count. Leader, B. M. Lynch.

Sunday 6 March SCONE DEN and MEIKLEOUR. Leader, E. D. Cameron.

Sunday 17 April DUNNING. Leader, D. Doig.

GEORGE WATERSTON MEMORIAL FUND

In the last journal members were advised that the club had given hides to the RSPB and SWT from donations received by this fund. It was hoped to give more details here but these are not yet available. They will be given as soon as possible.

The total in the fund, before paying for the hides, is now over £4500. This has been reached by many donations, both large and small, but Council would like to pay particular thanks to Mr Chris Mylne for showing a series of films connected with George Waterston at several branches last winter, which raised just over £1000 for the fund. Council also records its gratitude to all those who were responsible for organising the film shows, without whom Chris Mylne's fund raising efforts would have been impossible.

The sums raised were Aberdeen £213; Dundee £230; Edinburgh £160; Glasgow £136 and a further £184 given most generously by the Glasgow Art Galleries and Museums Association with which their two evenings were shared; New Galloway £47; St Andrews £150 and Wigtown £34,

making a total of £1154. Expenses, including those incurred locally, came to £154 (£153.65) giving a net total of £1000.35. This represents a truly magnificent effort by Chris Mylne and all those who made the local arrangements.

RAFFLE TICKETS

Income from the sale of raffle tickets in recent years has been excellent, and in the past five the average was £575, with a net £677 last year. Some members and branches do find the selling of tickets irksome, and so Council agreed that this year a book should be sent with the autumn journal for the convenience of members. Tickets will still be available at the September and October branch meetings, and members who wish to buy more than one book can either buy them there or send the extra cash to the club secretary who will return the necessary counterfoils.

Please remember that payment and ticket stubs must be sent to the club secretary as soon as possible—certainly no later than 30 October—or brought to the conference. An acknowledgment for payment sent by post will only be made if an sae is enclosed. Do please support the raffle generously.

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION

The SOC is one of the eleven constituent societies of the British Section of the ICBP on which it is represented by two members. Copies of the ICBP Newsletter and other publications are held in the Waterston Library in Edinburgh.

SOC members who wish to support the work of the ICBP may do so by paying an annual subscription of £18 to become Associate Members and receive the Newsletter and Annual Report. By paying £50 annually they can become Supporting Members and receive in addition, on request, one free copy of ICBP Technical Publications per year and are invited to attend international meetings as observers. Benefactors who pay £250 p.a. receive automatically a free copy of every ICBP publication and are invited to international meetings.

Application forms are available from the Club Secretary in Edinburgh.

Branch News

Stirling The excursion to Argyll organised by the Stirling Branch was based as usual at Clachandubh, near Ford, from 5 to 7 March. Eleven members and friends trickled in during the Friday afternoon and evening, though the fourth arrival announced himself as the local plumber; as the first tenants of the cottage since the big freeze we had the privilege of encountering the inevitable burst pipe. Meanwhile, at the other end of the room Alistair and Mairi Simpson were engaged in Herculean and ultimately successful labours coaxing fire from damp logs, a Sunday colour supplement and a milk carton.

After years of boasting of the fine weather laid on for these weekends we have to admit that the Saturday was wet and cold. However, a Ring-necked Duck ten minutes from the cottage soon raised the spirits, and north Kintyre and the coastal waters provided some excellent car-borne birding. Following the fierce winter it was good to find such vulnerable species as Stonechats surviving in coastal scrub. By late afternoon the sun returned, tempting out a cock Hen Harrier and several Short-eared Owls. In the evening the Kilmartin Hotel provided a warm refuge and a finely laden table.

Sunday restored our faith in west coast weather, and varied excursions raised the bird species count to very respectable proportions before members dispersed following a picnic lunch alongside Loch Craignish.

Notices to Contributors

Papers, longer articles and short notes

1. The high cost of production and distribution means that it is of the utmost importance that contributions are concise, interesting and readable to justify their publication. Official reports originally prepared for other bodies usually need to be completely redrafted. Authors of papers are advised to submit a draft to an expert referee before offering it to the editor. Material is considered on the understanding that it is not being offered elsewhere.

2. Two copies should be sent, typed on one side only with double spacing and wide margins. Authors are urged to consult recent issues of *Scottish Birds* for style of presentation, in particular of headings, tables and references. Headings should not be in capitals nor underlined. Tables and figures must be designed to fit the page. Tables should be used sparingly and be self explanatory, and, like figure captions, typed on a separate sheet.

3. Short notes, if not typed, must be clearly written and well spaced.

4. English names of species (but not group names) of birds, other animals and plants, except domestic forms, have initial capitals for each word, except after a hyphen. English names and sequence of birds follow Voous (1973-7) 'List of recent Holarctic bird species' (*Ibis* 115: 612-638; 119: 223-250, 376-406). Scientific names are generally unnecessary for species in this list but they are required (underlined, with no brackets) for subspecies, species not in the list, and for other animals and plants, except domestic forms, where these receive significant mention.

5. Proofs are sent to all contributors and these should be returned without delay. Authors of papers and longer articles are entitled to 25 free copies of the journal but these must be requested when returning proofs. Extra copies can be supplied at cost.

6. Illustrations of any kind are welcomed, whether alone or to illustrate an article. Drawings and figures should be up to twice the size they will finally appear, in Indian ink, neatly lettered, on good quality paper separate from the text. Photographs, either glossy prints or colour transparencies, should be sharp and clear with good contrast.

Scottish Bird Report

1. Records should be sent to the appropriate local recorders, a list of whom is published regularly, but in cases of difficulty they can be forwarded by the editor.

2. These records should be on one side of the sheet only, well spaced and in species order, following the Voous sequence (see 4. above). The only exception is that Aberdeenshire and north Kincardineshire records should be in place and date order. Observers should consult previous reports for the sort of information required. To avoid duplication of records by the recorders, names of other observers present should be given where appropriate.

3. Notes for the year should be sent promptly, generally in early January, but some recorders prefer more frequent records and regular contributors are asked to consult local recorders about this. Reports of occasional visits to areas outwith the observer's regular territory, such as holiday lists, should usually be sent to recorders as soon as possible. Records of rarities, including species only locally rare, should be sent to recorders without delay.

4. The editor will be glad to receive, preferably via the local recorders, records of special interest for publication in Current Notes. Please send them at the end of March, June, September and December for publication in the issues following.

5. To save recorders' (often considerable) time and expense, correspondents should enclose a stamped addressed envelope or indicate that no acknowledgment is required.

LOCAL RECORDERS

Shetland (except Fair Isle) R. J. Tulloch, Lussetter House, Mid Yell, Shetland.

Fair Isle N. J. Riddiford, Bird Observatory, Fair Isle, Shetland.

Orkney C. J Booth, "Ronas", 34 High Street, Kirkwall, Orkney.

Outer Hebrides, St Kilda W. A. J. Cunningham, Aros, 10 Barony Square, Stornoway, Isle of Lewis, PA87 2TQ.

Caithness Mrs P. M. Collett, Sandyquoy, East Gills, Scrabster, Caithness, KW14 7UH.

Sutherland Dr I. D. Pennie, 5 Badcall, Scourie, Sutherland, IV27 4TH.

Ross-shire (except Black Isle), **Inverness-shire** (mainland over 18 miles from Inverness) R. H. Dennis, Landberg, North Kessock, Inverness, IV1 1XD.

Inverness-shire (within 18 miles of Inverness) and **Black Isle, Ross-shire** M. I. Harvey, Clachbhan, Loaneckheim, Kiltarlity, Inverness-shire.

Nairnshire, Morayshire, Banffshire N. Elkins, 10 Oakbank Place, Elgin, Morayshire, IV30 2LZ.

South Kincardineshire, Angus N. K. Atkinson, 5 Tolmount Crescent, Montrose, Angus.

Aberdeen, North Kincardineshire Dr M. V. Bell, Institute of Marine Biochemistry, St Fittick's Road, Aberdeen.

Perthshire E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perthshire, PH2 6RZ.

Isle of May B. Zonfrillo, 28 Brodie Road, Balornock East, Glasgow, G21 3SB.

Fife (except Forth Islands), **Kinross-shire** I. G. Cumming, 11 Canongate, St Andrews, Fife.

Clackmannanshire, East Stirlingshire Dr C. J. Henty, 3 The Broich, Alva, Clackmannanshire.

West Lothian, Forth Islands (except May), **Midlothian** A. W. & L. Brown, 7 Trelawney Terrace, Penicuik, Midlothian, EH26 0NB.

East Lothian K. S. Macgregor, 16 Merchiston Avenue, Edinburgh, EH10 4NY.

Berwickshire, Peeblesshire, Roxburghshire, Selkirkshire R. D. Murray, 143 Eskhill, Penicuik, Midlothian.

Argyllshire, Inner Hebrides M. J. P. Gregory, Duiletter, Kilmory Road, Lochgilphead, Argyllshire, PA31 8NL.

Dunbartonshire, West Stirlingshire, Renfrewshire I. P. Gibson, Arcadia, The Glen, Howood, Renfrewshire.

Lanarkshire Dr E. S. Alexander, 3 Lilac Hill, Hamilton, Lanarkshire.

Ayrshire, Arran, Bute R. H. Hogg, Kirklea, 11 Kirkmichael Road, Crosshill, Maybole, Ayrshire, KA19 7JR.

Dumfriesshire Dr E. Fellowes, West Isle, Islesteps, Dumfries, DG2 8ES.

Kirkcudbrightshire, Wigtownshire A. D. Watson, Barone, 54 Main Street, Dalry, Castle Douglas, Kirkcudbrightshire, DG8 3UW.

WILDFOWL COUNTS IN SCOTLAND

For more than 20 years the task of organising the winter Wildfowl Counts in Scotland was undertaken by a succession of dedicated SOC members; first by Miss Rintoul and Miss Baxter, then by Miss Betty Garden and finally by Miss Valerie Thom. When Miss Thom resigned in 1971, no overall Scottish Organiser could be found to continue the work centrally, and so a number of Regional Organisers were appointed who deal direct with the Wildfowl Trust in Slimbridge. The Club agreed to be responsible for appointing Regional Organisers when necessary in future, and a copy of the counts for all parts of Scotland is maintained in the Club's Reference Library in Edinburgh.

A list of the Regional Organisers is given below, and anyone who is interested in helping with the counts is asked to write to their nearest Organiser. If there is none please contact Slimbridge.

Shetland D. P. P. Eva, 6 Westerloch Brae, Lerwick.

Orkney P. Reynolds, Berrybank, Evie, Orkney.

Wester Ross and Skye A. Currie, Glaiseilean, Broadford, Isle of Skye, 1V49 9AQ.

Outer Hebrides N. Buxton, 42 Aird, Tong, Isle of Lewis, Western Isles.

Caithness S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness, KW12 6UN.

Inverness-shire, Easter Ross, Sutherland (East) C. G. Headlam, Dallachie, Fearn, Ross-shire IV20 1TN.

Banffshire, Morayshire, Nairnshire J. Edelsten, 14 South High Street, Portsoy, Banffshire, AB4 2NT.

Aberdeenshire, Kincardineshire A. Duncan, 12 Cairncry Avenue, Aberdeen, AB2 5DS.

Angus B. Pounder, 64 Forfar Road, Dundee, Angus.

Perthshire (East) E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perth, UH2 6RZ.

Argyllshire and Inner Hebrides (South) S. Newton, Kindrochid, Gruinart, Bridgend, Isle of Islay, Argyll, PA44 7PP.

Fife, Kinross-shire Mrs J. A. R. Grant, Brackmont, Crail, Fife.

Central Region D. Thorogood, 4 Archers Avenue, Stirling.

Bute J. B. Simpson, Estate Office, Rothesay, Bute.

Lothians Miss J. Wilcox, 18 Howdenhall Gardens, Edinburgh, EH16 6UN.

Ayrshire A. G. Stewart, 31 St Andrews Avenue, Prestwick, Ayrshire, KA9 2DY.

Borders A. Bramhall, 28 Blakehope Court, Tweedbank, Galashiels, Selkirkshire, TD1 3RB.

Dumfriesshire, Kirkcudbright, Wigtownshire P. Shimmings, 1 Jeanville, Lochmaben, Dumfriesshire, DG11 1PA.

THE SCOTTISH ORNITHOLOGISTS' CLUB

THE Scottish Ornithologists' Club was formed in 1936 and membership is open to all interested in Scottish Ornithology. Meetings are held during the winter months in Aberdeen, Ayr, the Borders, Dumfries, Dundee, Edinburgh, Glasgow, Inverness, New Galloway, St Andrews, Stirling, Thurso and the Wigtown District at which lectures by prominent ornithologists are given and films exhibited. Expeditions are organised in the summer to places of ornithological interest.

The aims of the Club are to (a) encourage the study of Scottish ornithology and to promote an interest in wild birds; (b) co-ordinate the activities of Scottish ornithologists; (c) encourage ornithological work in Scotland; (d) encourage conservation of Scottish birds and protection of threatened and rare species; (e) hold meetings for discussion and to arrange ornithological field meetings, and (f) appoint local recorders and publish material relating to Scottish ornithology, including *Scottish Birds*, the club journal.

There are no entry fees for Membership. The Annual subscription is £7.50, or £3 in the case of Members under twenty one years of age or Students under 25 who satisfy the Council of their status as such at the time their subscription falls due. The Life subscription is £150. Family Membership is available to married couples and their nominated children under 18 at an Annual subscription of £11, or a Life subscription of £225. *Scottish Birds* is issued free to Members but Family Members will receive one copy between them. Subscriptions are payable on 1st October annually. Reduced rates for pensioners.

Scottish Birds, which is published quarterly, includes papers, articles and short notes on all aspects of ornithology in Scotland. The club also publishes the annual Scottish Bird Report.

Application for Membership form, copy of the Club Constitution, and other literature are obtainable from the Club Secretary, Major A. D. Peirse-Duncombe, Scottish Centre for Ornithology and Bird Protection, 21 Regent Terace, Edinburgh, EH7 5 BT (tel. 031-556 6042).

RSPB SCOTTISH NEWS

Films

Acclaimed by many as *'the Best Ever'* at their Scottish Premieres, the latest programme of RSPB films will be touring Scotland in the coming months.

Why not make a note of your local show now!

This year's films are "Short-eared Owl", "The Masterbuilders" (a fascinating look at the art of nest building) and "The Vital River" (an insight into the wildlife and management of our waterways).

Detailed below are the shows before the New Year whilst visits to other venues (including Perth, Bute, East Kilbride and Ayr) will be made in the first months of next year.

15th September	Helensburgh	Victoria Halls
2nd November	Eastwood	Eastwood Theatre
4th November	St Andrews	Buchanan Theatre
9th November	Dumfries	High School
10th November	Milngavie	Town Hall
16th November	Dundee	Bonar Hall
19th November	Kirkcaldy	Philp Hall
23rd November	Cramond	Dunfermline College of Physical Education
25th November	Aboyne	Deeside Community Centre
26th November	Aberdeen	City Art Gallery
2nd December	Ardrossan	Civic Centre
3rd December	Dunfermline	Carnegie Hall

(All shows start at 7.30 p.m.)

One Day Conference

2nd October - MacRobert Pavilion, Royal Highland Showground, Ingliston, nr. Edinburgh.

—Places still available for this 'fun' event which this year is being generously supported by BP Petroleum.

— Featuring talks by DAVID ELCOME ("The Language of Birds"), ERIC MEEK ("Orkney's Birds"), STEWART TAYLOR and DAVID MINNS ("Pinewoods of Caledonia"), and DAVID MOWER ("Avocet – Symbol of Success").

— Also Bird Quiz; raffle, art exhibition; displays; tombola; RSPB 'shop'; group stalls.

Tickets only £7.50 (includes coffee/lunch/afternoon tea) from RSPB Scottish Office, 17 Regent Terrace, Edinburgh, EH7 5BN.