

The Bedfordshire Naturalist 43



Journal
for the year 1988

BEDFORDSHIRE NATURAL HISTORY SOCIETY 1989

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THE BEDFORDSHIRE NATURALIST

No. 43 (1988)

Edited by C.R. Boon

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Front Cover: *Kidney Vetch* (*Anthyllis vulneraria*) — Joan Childs

The Society would like to thank Bedfordshire County Council for a grant towards the publication of this Journal.

REPORT OF THE COUNCIL

The Council is pleased to report another successful year in the history of the Society. However, one disappointing but not unexpected feature has been the drop in membership following the increase in subscription rates, this despite the 39 new members recruited during the year. The Council firmly believes that at the new subscription rates the Society offers excellent value, and hopes to see the membership increase to at least its former level in the future.

During 1988, 18 indoor meetings were held together with 23 field meetings within Bedfordshire, seven field meetings outside the county including Rutland Water, the North Downs in Kent and Carlton Marshes near Oulton Broad in Suffolk (all new locations for the Society), a weekend in the Yorkshire Dales, the annual all-night meeting at Maulden Woods, and the one day course at Shuttleworth. A new feature of the programme of indoor meetings has been the inclusion of talks by speakers of national repute, for which meetings a charge at the door has been made. Attendance at some of these meetings has been disappointing, and Council hopes that members will support these ventures more fully next year.

The Council's committees have met regularly and their members have continued to dedicate themselves to their respective tasks. A meeting of Recorders was held in November at the instigation of the Scientific Committee, to consider a draft document *Guidelines for Recorders* prepared by the Scientific Committee. Recorders were also able to discuss at length the Bedfordshire Biological Records Centres being established at Bedford and Luton Museums.

Another important development in the Council's business during 1988 was the drafting and approval of a policy for the Society on publications. The Society has already been responsible for a number of successful publications, particularly *Bedfordshire Wildlife* published in 1987, and the *Bedfordshire Bird Atlas* published in 1979, and the policy document will provide a framework for future publications, including a new bird atlas on which field work started in 1988. Because of its importance to the Society, this statement of policy is reproduced here.

The Council would like to thank the many members who work hard on behalf of the Society, and record its particular thanks to three long-serving members of Council, Vic Arnold, Alan Outen and Harvey Winter, all of whom have decided not to stand for re-election.

MIKE WILLIAMS
Hon. Secretary

	1985	1986	1987	1988
Ordinary Members	351	375	378	362
Associate Members	63	62	55	43
Student Members	14	14	15	7
Corporate Members	10	7	9	9
Life Members	5	5	4	4
Honorary Life Members	4	2	2	2
	447	465	463	427

Table: Membership of the Society over the last four years

SOCIETY POLICY ON PUBLICATIONS

It is the policy of the BNHS to encourage and support publications of all kinds which deal with any aspect of the natural history of Bedfordshire. Such publications should have a sound scientific basis, and contribute to and/or document the knowledge of an appropriate discipline (or disciplines) within the county. The Society will take all steps within its powers, having due regard to the resources available and subject to the approval of Council, to support and finance the publication of approved works, either by itself or in conjunction with a suitable publisher as may be decided.

To further this aim, Council will establish a rolling publications programme, to be reviewed not less than once a year, of all proposals for publication which meet the approval of Council. All proposed publications shall be initially submitted to the Scientific Committee for consideration and approval, before being submitted to Council, and should have the full support of the appropriate recorder where the recorder is neither the author nor the editor.

Council will consider all proposals for the publications programme, having due regard to the merits, resource requirements and potential sales of each such proposal, and will determine whether such a proposal should be accepted, and the form and method of publication.

Once any approved project reaches a publishable state, Council will normally delegate responsibility for managing that project to the Scientific Committee, but may choose to deal with any project directly if it so decides. In either case, Council shall approve a budget for each project, and all expenditure, and other matters, shall be subject to the approval of Council.

PROCEEDINGS

Indoor Meetings

- 578th Ordinary Meeting** 7th January, Bedford. "Waders at home and abroad" by Mr P. Smith.
Chair: Mr B. Nightingale.
- 579th Ordinary Meeting** 12th January, Dunstable. "Hothouse animals" by Dr A.J. Rundle. Chair:
Mr D. Guntrip.
- 580th Ordinary Meeting** 27th January, Leagrave. Members' evening. Chair: Mr H. Winter.
- 581st Ordinary Meeting** 3rd February, Bedford. "The butterflies and moths of Bedfordshire" by
Mr A.J. Martin and Mr V.W. Arnold. Chair: Dr D. Allen.
- 582nd Ordinary Meeting** 9th February, Dunstable. "The deer of East Anglia" by Mr S. Cham.
Chair: Mr D. Anderson.
- 583rd Ordinary Meeting** 17th February, Ampthill. Twitchers' evening. Chair: Mr P. Trodd.
- 584th Ordinary Meeting** 24th February, Leagrave. "In search of wildlife pictures" by
Mr R. Revels. Chair: Mrs M. Sheridan.
- 585th Ordinary Meeting** 3rd March, Bedford. "The building stones used in Bedfordshire
churches" by Mr G. Notcutt. Chair: Miss R.A. Brind.
- 586th Ordinary Meeting** 8th March, Dunstable. "The birds of Israel, mainly raptors" by
Mr B. Travis. Chair: Mr P. Trodd.
- 587th Ordinary Meeting** 16th March, Ampthill. "The weeds of cornfields" by Mr C.R. Boon.
Chair: Mr D.G. Rands.
- Annual General Meeting** 24th March, Flitwick.
- 588th Ordinary Meeting** 18th October, Dunstable. Members' evening. Chair: Mr H. Winter
- 589th Ordinary Meeting** 26th October, Ampthill. "Inside the door of the R.S.P.B." by
Mrs A. Scott. Chair: Mr J.P. Knowles.
- 590th Ordinary Meeting** 3rd November, Bedford. "Studying bats in Britain" by
Mr P. Richardson. Chair: Mr A. Aldhous.

- 591st Ordinary Meeting** 15th November, Dunstable. "Dormice" by Dr P. Morris. Chair: Mr D. Anderson
- 592nd Ordinary Meeting** 23rd November, Leagrave. "Lichens and volcanoes" by Mrs F.B.M. Davies and Mr G. Notcutt. Chair: Mrs E.B. Rands
- 593rd Ordinary Meeting** 29th November, Flitwick. Christmas quiz. Questions devised by the Master of Ceremonies Mr A.J. Martin.
- 594th Ordinary Meeting** 8th December, Bedford Museum. "Current affairs in Bedfordshire." Various speakers organised by Miss R.A. Brind.
- 595th Ordinary Meeting** 20th December, Dunstable. "A pot pourri of birds" by Mr P. Wilkinson. Chair: Mr B. Nightingale.

Field Meetings

- Rutland Water, Leicestershire** 24th January. Car trip to our largest local inland water to watch birds. Leader: Mr D. Kramer.
- Greensand Ridge Walk, Milbrook** 14th February. Approx. 5 mile circular walk. Leader: Mr J.P. Knowles.
- Stewartby Lake** 6th March. Mainly to study birds. Leader: Mr B.J. Nightingale.
- Bramingham Wood, Luton** 10th April. A close look at a coppiced woodland under the management of the Woodland Trust. Leader: Mr P. Symonds.
- Blows Downs** 17th April. To watch spring migrants. Leader: Mr P. Trodd.
- Streatley and surrounding area** 23rd April. To look at the building stones of local churches and the lichens present. Leaders: Mrs F.B.M. Davies and Mr G. Notcutt.
- Barton Hills** 1st May. 5th annual Pasqueflower count. Leader: Mr D.G. Rands
- Ashridge Forest, Hertfordshire** 6th/7th May. Badger watching. Leader: Mr S. Halton.
- Maulden Wood** 8th May. For the dawn chorus. Leader: Mr P. Trodd.
- Frithsden Beeches and Northchurch Common, Hertfordshire** 11th May. General natural history. Leader: Mr P. Moles.
- Maulden Wood** 22nd May. A demonstration of bird ringing. By kind permission of the Forestry Commission. Leaders: Mr P.J. Wilkinson and team.
- Greensand Ridge Walk, Eversholt to Linslade** 29th May. A 10 mile walk. Leader: Mr J.P. Knowles.
- North Norfolk coast** 5th June. Birdwatching. Leader: Mr D. Green.
- College Lake NR, nr Pitstone, Buckinghamshire** 7th June. Visit with the warden. Leader: Mr G. Atkins.
- Yorkshire** 10th — 12th June. Weekend trip. Leader: Mr V.W. Arnold.
- Maulden Wood** 13th/19th June. Annual all-night meeting and barbeque. Organiser: Mrs E.B. Rands.
- Pegsdon Hills** 22nd June. Evening walk to study general natural history and the evening sky. Leader: Mr M.C. Williams.
- Bison Hill** 26th June. General natural history of an area following extensive scrub clearance. Emphasis on butterflies and their food plants. Leader: Mr A.J. Martin.
- Waterloo Thorns, nr Tempsford** 1st July. Moth trapping demonstration. Leader: Mr V.W. Arnold.
- Carlton Marshes NR, Suffolk** 3rd July. Car trip to the open day on this Suffolk Trust reserve. Leader: Mr D.G. Rands.
- Sharpenhoe Clappers** 10th July. Study of the botanical interest of this National Trust property. Leader: Mr C.R. Boon.
- Salcey Forest, Northamptonshire** 17th July. Car trip to study the general natural history, especially butterflies. Leader: Mr. A. Patmore (Forestry Commission Ranger).
- Kent** 24th July. Car trips to see the chalk downland, woodland and River Medway. Leader: Mr E. Philp (Nat. Hist. Keeper at Maidstone Museum).



Gravel workings, Willington. A site surveyed during the Botanical Society of the British Isles Monitoring Scheme, May 1988

(Photo: Chris Boon)

Felmersham Gravel Pits 7th August. General natural history. Leader: Mrs H.M. Muir-Howie.

River Lea, Luton 14th August. A walk from Leagrave Marsh to Wardown Park. Leader:

Mr H. Winter.

River Ivel Navigation 21st August. General natural history of disused waterway between Clifton and Shefford. Leader: Mr M.R. Chandler.

Bromham 25th August. Investigation of County Council NR at Lower Farm Road, a developing site. Leader: Mr R. Watts.

Shuttleworth Agricultural College 4th September. One day course on a variety of natural history subjects. By kind permission of the Principal. Organiser: Mrs E.B. Rands.

Maulden Wood 11th September. Small mammal trapping. Leader: Mr D.G. Rands.

Ampthill Park 18th September. An introduction to fungi to learn basic identification.

Leader: Mr T. Rhodes.

Stockgrove Country Park 25th September. Looking for plant galls. Leader: Mrs E.B. Rands.

Maulden Wood 2nd October. Autumn fruits and berries. Leader: Dr A.J. Rundle.

King's Wood, Heath and Reach 9th October. Annual fungus foray. Joint meeting with the Mycological Society. Leader: Dr D.A. Reid.

REPORT OF THE TREASURER

The Current Account at year end showed a profit of £1,943. However, the journal for 1987 costs had not been incurred by the audit date. This would have reduced the figure by £1,502.98 to £440.02. This profit was mainly attributed to the increase in subscriptions bringing in a revenue of £499 over the previous year, a reduction in spending, £449 less than 1987 and a grant of £300 from Bedfordshire County Council. The Society's assets now stand at £26,088, an increase of £4,203 for the year. Movement of funds during the year were £1,000 into the Building Society due to Leicester City Council discontinuing their investment bonds, and a transfer of £500 from the Current Account to the High Interest Account.

R.A. JOHNSON
Hon. Treasurer

THE LIVERWORTS OF BEDFORDSHIRE

by Alan R. Outen

Bedfordshire is not considered to be a county with a particularly rich bryophyte flora and the restricted number of liverwort species recorded and their low frequency would appear to confirm this. Species diversity is limited and a number of factors contribute to this, in particular low rainfall, lack of coastline or mountains, few bogs and a high level of land utilisation for agricultural and urban purposes.

Abbot (1798) lists a number of species, some of which do not appear to have been seen since. A few of these early records must now be regarded as doubtful especially as no herbarium material exists. Saunders (1904) also recorded liverworts and fortunately these published records are supported by specimens in the Herbarium at Luton Museum.

Dony (1953) includes an account of the mosses by T. Laffin (1953), the liverworts being dealt with by P. Taylor (1953). 33 liverwort species were listed as accepted records for the county of which 31 were considered still extant. Since the publication of this last full account of the county's liverwort flora many new records have been made and several nomenclatural changes have occurred.

My own interest in the bryophytes of the county dates from 1971 and I became county recorder in 1972. Since that time extensive recording has been on a habitat basis and tetrad distribution maps have also been prepared for species still present. Tetrad records quoted in this account are all post-1970 sightings.

Of the 288 species of liverworts currently on the British list (Corley and Hill, 1981) 53 are accepted as valid Bedfordshire records and, of these, 44 have been seen since 1970. Of the remainder some may undoubtedly be extinct, but it must be borne in mind that these are very small plants which are easily overlooked among other vegetation. It is perfectly feasible therefore that other species may yet be refound and in addition it remains highly likely that further species could be added to the list. Thus distribution can in no way be considered to be complete, however, the current numbers of species in each 10 Km square are shown in Fig. 1.

It is, however, a cause for some concern that of the 44 species for which recent records exist only 12 are known to occur in more than 10 tetrads, whilst of the 72% of species recorded from 10 tetrads or fewer, 13 species (nearly 30% of recently recorded species) are known from only single sites. The drainage of wetland sites, increasing urbanisation and pollution have contributed to the reduced frequencies of some of these plants compared to those observed by earlier workers. Also, changing agricultural practices which have affected the higher plant flora may also account for the apparent decline of some of the liverwort species occurring in arable fields.

Two easily recognisable species, shown in Fig. 2, *Lunularia cruciata* (with half-moon shaped gemmae cups) and *Marchantia polymorpha* (with goblet shaped cups) are probably more common in urban areas than records suggest, especially in older gardens. The distribution maps (Fig. 3b, c) and illustrations of these two species are included in the hope that this may stimulate further records of these species from other observers.

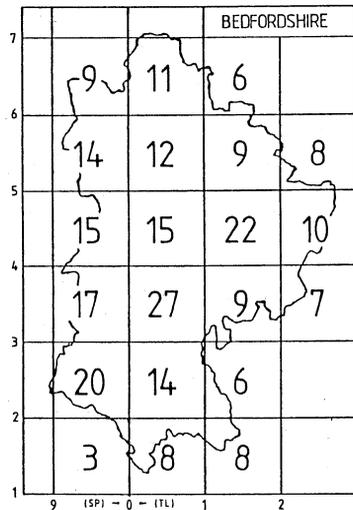


Figure 1. Numbers of liverwort species per 10km square, to 31.12.88.

Address: 15 Manor Close, Clifton, Shefford, Beds SG17 5EJ

The best sites for liverworts within the county are all on the greensand and are as follows:

Site	Number of species recorded (recent records only)
Flitwick Moor (TL03)	20
King's Wood, Heath and Reach (SP92 93)	14
Stockgrove Park (SP92)	12
Sandy Warren (TL14)	9
New Wavendon Heath (SP93)	9

The list below follows the systematic order of Corley and Hill (1981). This survey covers the area of Bedfordshire within both the administrative county and the Watsonian vice-county (v.c.30). Bryologists have traditionally adhered to vice-county recording and the distributions quoted for adjoining counties refer in fact to the vice-counties of Herts. (v.c.20), Bucks. (v.c.24); Cambs. (v.c.29), Hunts. (v.c.31) and Northants. (v.c.32). Where an area of the current administrative county falls within another vice-county this is shown, for example, as v.c.24[Beds]. Standard Grid Square notations are used to aid more rapid tracing of sites quoted. The abbreviations used are: PT — Peter Taylor, ARO — Alan Outen, (h) — specimen in author's herbarium, * — voucher specimen in Luton Museum herbarium.

SYSTEMATIC LIST

Anthocerotaceae

Anthoceros agrestis Paton (*A. punctatus* auct)

Fallow fields.

First and only record PT1949 Woodside (TL01)*

(Recorded for Bucks. and Northants.)

Tetrad Records: 0

Sphaerocarpaceae

Sphaerocarpos michelii Bellardi

Arable fields.

First and only record M. Yeo and ARO in leek field nr. Broom (TL14) 1983. This species was first shown to me by M. Yeo but the material was immature. Subsequent cultivation of the material by me resulted in production of ripe spores necessary for accurate determination of species of this genus) (h).

(Recorded for Bucks. and Northants. among only 20 vice-counties from which this species is known in Britain.)

Tetrad Records: 1

Marchantiaceae

Reboulia hemisphaerica (L) Raddi

Tree base. (Normal habitat is on soil in sheltered hedgebanks). First (and only record R. Finch and H. Whitehouse 1972 Galley Hill, Potton (TL24).

(Recorded for Herts.)

Tetrad Records: 1

Conocephalum conicum (L) Lindb.

Locally frequent on damp soil, brick or stone beside streams and rivers. PT records it as "not uncommon on weirs in the Ouse, rare elsewhere". I find it to be more common on the R. Ivel and its tributaries.

First record: Abbot 1799

Recorded for SP94, 95, TL03, 04, 11, 13, 14, 15, 16, 23 (Fig 3a).

(Recorded for all neighbouring counties)

Tetrad Records: 18

Lumularia cruciata (L) Dum. ex Lindb.

Locally frequent on damp soil, paths and wall-bases in gardens or near streams. Always with gemmae present but not seen c.fr.



Figure 2: Upper — *Lunularia cruciata*, lower — *Marchantia polymorpha*

(Photos: A.R. Outen)

First record: E.C. Wallace 1949

Recorded for all grid squares except SP94, 96, TL12, 25 (Fig 3b).

(Recorded for all neighbouring counties)

Tetrad Records: 70

Marchantia polymorpha L.

Locally frequent especially on burnt ground on acidic soils and by streams. Also as a weed of cultivation particularly in and around garden centres, nurseries and greenhouses. Gemmae are almost always present whilst archegoniophores and antheridiophores are not uncommon.

First record: Abbot 1798

Recorded for SP92, 93, 95, 96, TL02, 03, 05, 06, 13, 15, 16, 23, 25 (Fig 3c).

(Recorded for all neighbouring counties)

Tetrad Records: 37

Ricciaceae

Riccia cavernosa Hoffm.

Rare and ephemeral but can be abundant when it occurs. Muddy pond margins.

First record: PT 1949 Lower Drakelow Pond, Woburn. (SP93)*

(As *R. crystallina*, the distinction between these two species was not recognised in Britain until 1967. *Riccia crystallina* is now known to be rare in Britain. The herbarium material has been checked by J.A. Paton who has confirmed my re-identification as *R. cavernosa*.)

The only other Beds. records are Stockgrove (SP92) R. Meikle 1950 and Odell Gravel Pits (SP95) M. Yeo 1983

(Recorded for all neighbouring counties except Hunts)

Tetrad Records: 1

R. fluitans L.

Floating in ponds or growing on mud at margins. Rare but can be locally abundant when it occurs.

First record: Luton Hoo. J. Saunders 1904*

PT considered it possibly extinct but it was recorded at Flitwick Moor (TL 03) by J. Lock 1967. It has subsequently been seen there by me on a number of occasions (h) but seems to fluctuate markedly in abundance, sometimes seeming to disappear completely, only to return in profusion (as in 1983). I also found the terrestrial form at Felmersham Gravel Pits (SP95) 1981 (h). To my knowledge it has not re-occurred.

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 2

R. glauca L.

Arable fields. Seemingly rare but could easily be overlooked.

First record: PT between Woodside and Caddington (TL01) 1949*

Subsequent finds are: Stubble field nr. Chiltern Green (TL11) with *R. sorocarpa*, 1974

J. Gardiner; stubble field, Someries castle (TL12) 1974 J. Gardiner; ditchbank Rowney Warren (TL14) 1983 ARO (h).

(Recorded for all neighbouring counties)

Tetrad Records: 3

R. sorocarpa Bisch.

Arable fields. Rare or possibly overlooked.

First record: PT between Woodside and Caddington 1949 (TL01)*.

There are 4 other records quoted by PT but the only recent finds are: Stubble field Whitehill Farm (TL12) 1973 ARO; stubble field nr. Chiltern Green (TL11) 1974 J.C. Gardiner; fallow field, Appley Corner (TL14) 1973 ARO (h).

(Recorded for all neighbouring counties)

Tetrad Records: 3

Metzgeriaceae

Metzgeria fruticulosa (Dicks.) Evans

Epiphyte. Rare.

First and only record: On elder trunks, Hudnall Woods (TL01), v.c.20[Beds], 1984 ARO and J. Milton (h).

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 1

M. furcata (L) Dum.

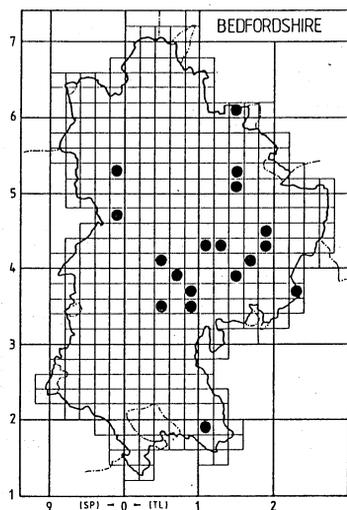
Epiphyte. Occasional.

First record: Abbot 1795.

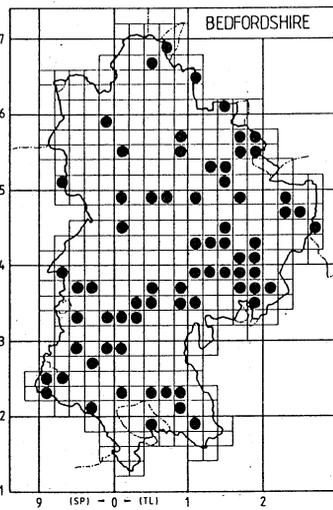
Recorded in all grid squares except TL12, 13, 23.

(Recorded for all neighbouring counties)

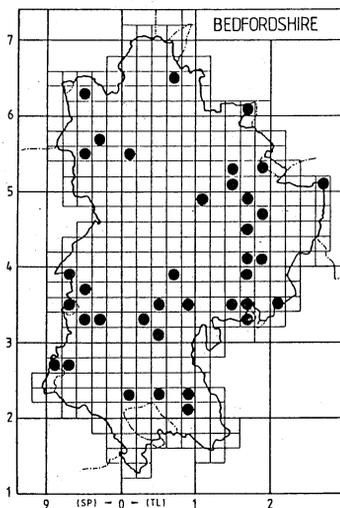
Tetrad Records: 35



3a



3b



3c

Figure 3. Tetrad distribution maps of selected Bedfordshire liverworts

- a. *Conocephalum conicum*
- b. *Lunularia cruciata*
- c. *Marchantia polymorpha*

Aneuraceae

Aneura pinguis (L) Dum.

Marshes and ditches. Rare.

Considered common by Abbot. PT specifies no further records except for Barton Springs (TL02) 1885 J.S.*. It was found very near here on chalky soil at Old Chalk Pit nr. Hill Farm House by J. Gardiner 1972. Other recent records are: Peaty soil of ditchside, Flitwick Moor (TL03) 1966 J. Birks, 1973, 1975, ARO; marshy ground by lake, Stockgrove Park (SP92) 1972 ARO (h); ditch by A6 nr. Wilstead (TL04) 1985 ARO; riverbank, Bromham (TL05) 1973 ARO; marshy ground nr. R. Ivel, Shefford (TL13) 1983 ARO (h).

(Recorded for all neighbouring counties)

Tetrad Records: 6

Cryptothallus mirabilis Malmb.

Underneath *Sphagnum* tussocks. Rare.

This curious creamy-white saprophytic liverwort was first recorded in Britain in 1948 and is now known from nearly 40 vice-counties. Regrettably it is necessary to pull apart *Sphagnum* tussocks to detect it.

First record: Flitwick Moor (TL03) 1967 J. Dransfield.

I have found it at Flitwick Moor on a number of occasions since first shown it here by H. Whitehouse in 1971 (h). Capsules have been seen on one occasion. It appears to favour dryer *Sphagnum* hummocks in otherwise wet areas.

(Recorded for Bucks.)

Tetrad Records: 1

Riccardia multifida (L) S. Gray (*Aneura multifida*)

Woods.

First record: Abbot 1798.

Considered common by Abbot it has not been seen since. Probably extinct or perhaps a mis-identification.

(Recorded for Herts., Bucks. and Cambs.)

Tetrad Records: 0

R. chamedryfolia (With.) Grolle (*R. sinuata* (Hook) (Trev.)

Marshes, Ditches etc. Rare.

First record: Flitwick Moor (TL03) 1966 J. Birks (also found here by me 1973). Subsequent records are: Roadside bank, Bromham (SP95) 1972 T. Laffin; Chalk pit, Houghton Regis (TL02) 1983 ARO and M. Yeo; wet chalky soil by pond, chalk pits, Upper Sundon (TL02) 1972 ARO (h); ditchside, Maulden Wood (TL03) 1972 ARO; ditchside, by A6 nr. Wilstead (TL04) 1985 ARO; wet chalky soil, Thurleigh cutting (TL05) 1985 ARO and M. Yeo; ditchside, Chicksands Wood (TL14) 1973 ARO (h).

(Recorded for all neighbouring counties)

Tetrad Records: 8

Pelliaceae

Pellia epiphylla (L) Corda

Streamsides, ditches, moist woodland rides and other wet places on acidic soils.

Not uncommon in suitable locations, particularly on the greensand. Often found fruiting.

First record: Abbot 1798.

Recorded for SP92, 93, 94, 95, TL03, 04, 05, 06, 13, 14.

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 26

P. endiviifolia (Dicks) Dum. (*P. fabbroniana* Raddi)

Ditches, streamsides and other wet places on basic soils.

Locally frequent in suitable habitats on clay or chalky soils. Not seen fruiting.

First record: J. Saunders, Markham Hills 1882*.

Recorded for all grid squares except SP91, TL01, 11, 12, 16.

(Recorded for all neighbouring counties)

Tetrad Records: 50

Fossombroniaceae

Fossombronia pusilla (L) Nees.

Woodland rides especially in ruts on clay soils. Rare.

First record: Abbot 1798.

This species has apparently always been rare in the county though it could easily be overlooked. There are records by PT for Kidney Wood, Luton Hoo (TL01) 1948* and for King's Wood, Heath and Reach (SP92) 1948* where it has also been found by me in muddy ruts in the main ride 1973 (h) and 1988 (h) at a different spot on the same ride.

(Recorded for all neighbouring counties)

Tetrad Records: 1

F. wondraczekii (Corda) Dum. ex Lindb.

Damp soil of fallow fields, woodland rides etc. Rare.

First record: PT King's Wood, Heath and Reach (SP92) 1948*. PT also recorded it from stubble field between Woodside and Caddington (TL01) 1948* and Deadmansey Wood (TL01). To date I have failed to find this species in the county.

(Recorded for Herts., Bucks. and Northants.)

Tetrad Records: 0

Lophoziaceae

Barbilophozia attenuata (Mart.) Loeske

Acidic woodland soil or rotting wood. Rare.

First record: M. Yeo on rotting stump, Stockgrove Park (SP92) 1983. Refound here 1984 M. Yeo and ARO (h).

(Recorded for Bucks.)

Tetrad Records: 1

Lophozia ventricosa (Dicks.) Dum.

Sandy banks in woodland. Rare.

First record: E. C. Wallace, on sandy bank, King's Wood, Heath and Reach (SP92) 1949*. It was also found there by PT*.

Only recent records are from a sandy bank Stockgrove Park (SP92) M. Yeo 1983, and from the same station M. Yeo and ARO 1984 (h).

(Recorded for Herts. and Northants.)

Tetrad Records: 1

L. excisa (Dicks.) Dum.

Sandy banks. Rare.

First and only record: J. Birks, Sandy Warren (TL14) 1971.

(Recorded for Herts., Cambs. and Northants.)

Tetrad Records: 1

L. bicrenata (Schmid. ex Hoffm.) Dum.

Dry sandy soils. Rare.

First record: J. Saunders Woodside (TL01) 1904*.

PT found it from sandy bank in wood above ponds, Wavendon Heath v.c.24 [Beds] (SP93) 1948*. It was also reported from Coopers Hill, Ampthill (TL03) 1966 by T. Laffin.

(Recorded for Herts., Bucks. and Northants.)

Tetrad Records: 0

Leiocolea turbinata (Raddi) Buch

Damp exposed chalk. Fairly common in suitable habitats.

First record: Uncertain.

It is still to be seen at all the sites listed by PT. Recorded for SP91, 92, TL02, 03, 12 (Fig. 4a).

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 14

Leiocolea badensis (Gott.) Jorg.

Damp exposed chalk. Rare, although could easily be overlooked. First and only record: M. Yeo from Old Chalk Pit, Upper Sundon (TL02) (a small quantity mixed with *L. turbinata*) 1987.

(Recorded for Herts., Bucks. and Cambs.)

Tetrad Records: 1

Gymnocolea inflata (Huds.) Dum.

Wet Peaty ground. Rare.

First record: M. Hill from Flitwick Moor (TL03) 1966. It has subsequently been found here by me (h).

(Recorded for Herts., Bucks. and Northants.)

Tetrad Records: 1

Tritomaria exsectiformis (Breidl.) Loeske

Damp Woods. Rare.

First and only record: E. C. Wallace, on a sandy bank, King's Wood, Heath and Reach (SP92 or 93) 1949*.

(Recorded for Bucks.)

Tetrad Records: 0

Jungermanniaceae

Nardia scalaris S. Gray

Damp sandy banks. Rare.

First record: D. A. Reid, nr. Heath and Reach 1952.

There are also specimens collected by PT from Wavendon Heath (SP93) v.c.24[Beds] 1949*. It has since been found only on a wet acidic bank, Hay Wood, Woburn (SP93) 1983 ARO and M. Yeo (h).

(Recorded for Herts., Bucks. and Northants.)

Tetrad records: 1

Plagiochila porelloides (Torrey ex Nees) Lindb. (*P. asplenioides* auct.)

Woods. Rather rare.

First record: Possibly PT, under Beeches, Old Road, Barton (TL02) 1948*. (Early records do not differentiate between this and the next species. This is the earliest authentic specimen I have been able to trace.)

Other records are King's Wood, Heath and Reach (SP93) 1988 ARO (h); Holcot Wood (SP94) 1985 ARO (h); Maulden Wood (TL03) 1974, 1986 ARO; and King's Wood, Houghton Conquest (TL04) 1984 ARO (h).

(Recorded for Herts., Bucks., Hunts. and Northants.)

Tetrad Records: 4

P. asplenioides (L) Dum. (*P. asplenioides* var. *major* Nees)

Woods. Relatively frequent.

First record: Abbot 1795

Specimens of J. Saunders from Streatley Woods representing this species still exist* and it is likely that the majority of records quoted by PT for *P. asplenioides* auct. are indeed this species.

Recorded for SP92, 93, 94, 95, 96, TL01, 02, 03, 04, 06, 14, 24, 25.

(Recorded for all neighbouring counties)

Tetrad Records: 22

Lophocolea bidentata (L) Dum.

On soil in grassland or in woods. Fairly frequent.

First record: Abbot 1798

In Dony (1953) PT did not differentiate between *L. bidentata* and *L. cuspidata*. (Many Bryologists would apparently like a return to this situation but I adhere to the findings of Steel (1979) that they should be regarded as distinct.) However the Luton Museum specimens are separated and there are collections of J. Saunders and PT included.

Most of my own records appear to be from acidic soils. This species is dioecious and sporophytes are generally rare. I have never found them in Bedfordshire and I usually find it sterile.

Recorded for all grid squares except SP91, TL12, 16.

(Recorded for all neighbouring counties)

Tetrad records: 79

L. cuspidata (Nees) Limpr.

Common on rotting stumps or fallen branches and on living tree bases. Also occurs fairly frequently on soil.

First record: J. Saunders 1883, Luton Hoo*.

Recorded for all grid squares except SP91.

(Recorded for all neighbouring counties)

Tetrad Records: 187

L. heterophylla (Schrad) Dum.

Rotting stumps and living tree bases. Uncommon on soil.

First record: J. Saunders 1882 Markham Hills*.

Common in suitable habitats especially in woods.

- Recorded for all grid squares.
(Recorded for all neighbouring counties) Tetrad Records: 198
- Chiloscyphus polyanthos* (L.) Dum.
Damp woods. Rare.
First and only record: E.C. Wallace 1949 King's Wood, Heath and Reach*.
(This species and the next can be difficult to separate.)
(Recorded for all neighbouring counties except Cambs.) Tetrad Records: 0
- C. pallescens* (Ehrh. ex Hoffm) Dum.
Boggy Woodland. Rare.
First record: F. Ambrose 1965 King's Wood, Heath and Reach. Subsequently refound there by me (SP93) 1984, 1988 (h). Also recorded from Marston Thrift (SP94) 1986 M. Yeo; Cockayne Hatley Wood (TL25) 1984 H.L.K. Whitehouse.
(Recorded for all neighbouring counties) Tetrad Records: 3
- Diplophyllum albicans* (L.) Dum.
Damp acidic woodland. Rare.
First record: J. Saunders 1884 King's Wood, Heath and Reach*.
PT recorded it from Wavendon Heath (SP93) 1949*.
It was found at Flitwick Moor (TL03) 1966 Coombe, and has subsequently been seen here by me. It also occurs at Stockgrove Park (SP92) ARO 1973 (h) and subsequent visits.
(Recorded for Herts., Bucks. and Northants.) Tetrad Records: 2
- Scapania nemorosa* (L.) Dum.
Damp Woods. Rare.
First record: N. Y. Sandwith 1949 King's Wood, Heath and Reach*.
Only found since at Stockgrove Park (SP92) 1983 M. Yeo and 1984 M. Yeo and ARO (h).
(Recorded for Herts., Bucks. and Northants.) Tetrad Records: 1
- Scapania irrigua* (Nees) Nees
Damp Woods. Rare.
First and only record: E.C. Wallace 1949 King's Wood, Heath and Reach.
(Recorded for Herts. and Bucks.) Tetrad Records: 0
- [*Scapania aspera* H. Bern. is reported from Barton Hills (TL02) by F.B.M. Davies 1972 but no authentic specimen can be found to support this record]
- Cephaloziella rubella* (Nees) Warnst.
Heathy ground. Rare.
First record: T. Laffin 1963 Sandy Heath.
Recorded also at Flitwick Moor (TL03) J. Birks 1966 and seen there by me 1972, 1974, 1980; and at Rowney Warren (TL14) ARO 1972 (h).
(Recorded for Herts., Bucks. and Cambs.) Tetrad Records: 2
- C. divaricata* (Sm) Schiffn. (*C. starkei* (Funck) Schiffn.)
Acidic soils. Rare.
First record: King's Wood, Heath and Reach 1949 E.C. Wallace (though surprisingly this record is not mentioned by PT). Since recorded at Sandy Warren (TL14) H.L. Whitehouse 1971; Deadmansey Wood (TL01) ARO 1972; Rowney Warren (TL14) ARO 1972; Church End, Haynes (TL04) ARO 1973(h); Coopers Hill, Ampthill (TL03) ARO 1984, 1987(h); railway cutting, Wymington (SP96) M. Yeo 1986.
(Recorded for all neighbouring counties) Tetrad Records: 7
- (Species of the above genus are extremely difficult to determine and all my collections have been checked by J.A. Paton. A published record of mine for *C. stellulifera* determined by the above was subsequently amended to *C. divaricata*.)
- Cephalozia bicuspidata* (L.) Dum. ssp. *bicuspidata*
Damp Woods. Rare.
First record: Abbot 1798.
Considered common by Abbot there is only one specimen of J. Saunders, from Flitwick

Moor 1884*; PT quotes only a record by E. C. Wallace from King's Wood, Heath and Reach 1949. I have refound it there (SP92) 1973 and it is also recorded for the following sites: Woburn Park (SP93) L. Adams 1966*; Flitwick Moor (TL03) H.L. Whitehouse 1971 and on repeated visits since by me (h); New Wavendon Heath v.c.24[Beds] (SP93) L. Adams 1966*, ARO 1971; Stockgrove Park (SP92) M. Yeo 1983; Lowe's Wood (SP93) ARO 1984; Kempston Wood (94) ARO 1985.

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 6

Cephalozia bicuspidata (L.) Dum. ssp. *lammersiana*

This subspecies seems to prefer wetter situations.

First record: Flitwick Moor (TL03) J. Birks 1971. It remains quite common there (h) and has also been found at Coopers Hill Marsh, Ampthill (TL03) ARO 1984; and Ampthill Park (TL03) ARO 1984.

(ssp. not recorded for any neighbouring county)

Tetrad Records: 3

C. connivens (Dicks.) Lindb.

Bogs. Rare.

First record: J. Birks *et al* Flitwick Moor (TL03) 1966.

It has also been found here by me 1972 (h), 1973, 1980; and has also been found at King's Wood, Houghton Conquest (TL04) ARO 1984 (h).

(Recorded for all neighbouring counties except Hunts.)

Tetrad Records: 2

Lepidozia reptans (L.) Dum.

Acidic woodland. Uncommon.

First record: J. Saunders, Aspley Woods 1882* (six packets, various dates).

There is a single record of PT *et al* from King's Wood, Heath and Reach 1949* from where it was also collected by Saunders 1884*. It is still present at both these sites.

Recorded for SP92, 93, TL03, 14, 24, (Fig. 4b).

(Recorded for all neighbouring counties)

Tetrad Records: 10

Calypogeia muellerana (Schiffn) K. Muell.

Acidic Woodland. Rare.

First record: F. Ambrose, Flitwick Moor 1968.

There is an earlier record for New Wavendon Heath v.c.24 [Beds] (SP93) L. Adams 1966*, where I have also seen it 1972 (h). It has also been seen by me at Flitwick Moor 1975, 1980; and is further recorded at Sandy Warren (TL14) H.L. Whitehouse 1971; Aspley Wood (SP93) ARO 1972; Stockgrove Park (SP92) M. Yeo 1983; King's Wood, Heath and Reach (SP92) ARO and C. Aldridge 1987, (SP93) ARO 1988; Ampthill Park Wood (TL03) ARO 1984.

(Recorded for Herts., Bucks. and Cambs.)

Tetrad Records: 8

C. fissa (L.) Raddi

Acidic Woodland. Rare.

First record: Abbot 1798.

There are records by PT from King's Wood, Heath and Reach 1949* (seen here by me (SP92) 1973 (h) 1981); and New Wavendon Heath v.c.24[Beds] (SP93) 1949, also seen here by me 1971 (h).

Further records are Flitwick Moor (TL03) H.L. Whitehouse 1971, ARO 1972 (h); Penny-fathers Hills (TL03) ARO. 1983; Maulden Wood (TL03) ARO 1986; Warden Warren (TL14) ARO 1974; Warden Little Wood (TL14) ARO 1985; Marston Thrift (SP94) M. Yeo 1986.

(Recorded for all neighbouring counties)

Tetrad Records: 8

C. arguta Mont. & Nees

Woodland Ditchside. Rare.

First and only record: ARO King's Wood, Heath and Reach (SP92) 1988 (h).

(Recorded for Herts., Bucks. and Northants.)

Tetrad Records: 1

Ptilidium ciliare (L.) Hampe

Heathy places. Rare.

First record: H.L. Whitehouse, Sandy Warren (TL14) 1957.

It was refound at the same locality by H.L. Whitehouse 1976, and again H.L. Whitehouse and

ARO 1981 (h). The only other record for the county is Flitwick Moor (TL03) Fiddian 1962.
 (Recorded for Bucks.) Tetrads Records: 2

P. pulcherrimum (G. Web) Vainio

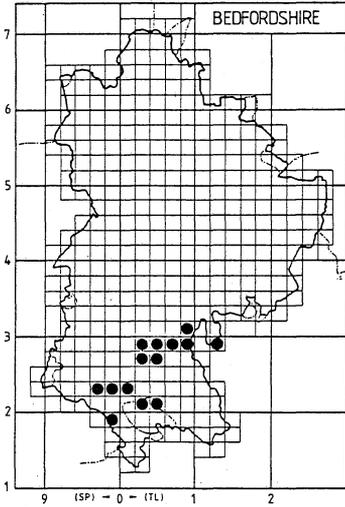
Epiphyte in woods. Rare.

First record: J. Birks, Sandy Warren (TL14) 1972.

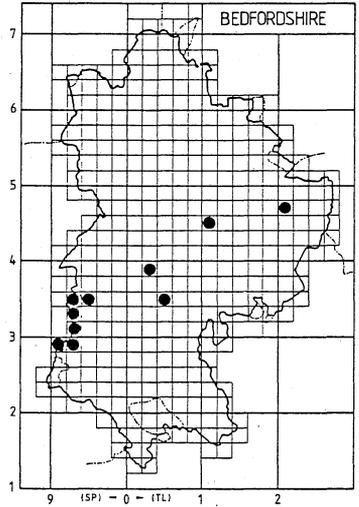
Refound at the same locality by H.L. Whitehouse 1976. Also recorded from Marston Thrift (SP94) M. Yeo 1986; King's Wood, Heath and Reach (SP93) C.D. Preston and ARO 1988.

(h).
 (Recorded for all neighbouring counties)

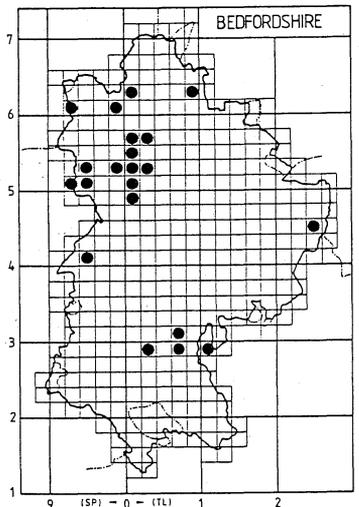
Tetrads Records: 3



4a



4b



4c

Figure 4. Tetrad distribution maps of selected Bedfordshire liverworts

- a. *Leiocolea turbinata*
- b. *Lepidozia reptans*
- c. *Porella playphylla*

Radula complanata (L.) Dum.

Tree roots. Rare.

First record: Abbot 1798 who considered it common.

J. Saunders recorded it from near Hockliffe 1882* and Dallow Lane, Luton 1882*. It was also found at King's Wood, Heath and Reach E. C. Wallace 1949. More recent records are: Copse on B660 near Keysoe Row (TL06) ARO 1973 (h); near Wyboston (TL15) M. Yeo 1984; Kempston Wood (SP94) ARO 1985 (h); Hardwick End (TL06) ARO 1986 (h).

Records for all neighbouring counties)

Tetrad Records: 4

Porella platyphylla (L.) Pfeiff

Damp walls especially of limestone and more rarely on tree roots. Local.

First record: Abbot 1798 who considered it common.

Specimens of both Saunders and PT exist and it is still to be seen at a number of the sites quoted by PT. On suitable limestone walls it can be quite common.

Recorded for SP94, 95, 96, TL02, 03, 04, 05, 06, 12, 24 (Fig. 4c).

(Recorded for all neighbouring counties)

Tetrad Records: 21

Fruilania dilatata (L.) Dum.

Epiphyte or on stonework. Rare.

First record: Abbot 1798 who considered it common.

There are records of J. Saunders from Toddington 1881*; Limbury 1882*; Biscot, Luton 1882* and Dunstable Road, Luton 1882*. It was considered not uncommon around Bedford in 1911 (Marquand List), whilst PT found it only at Tingrith 1949* and at Wavendon Heath v.c.24[Beds] 1949*. It was also reported by T. Laffin from Battle Brook 1950. All these records were from trees. The sad decline of this species in the county is probably due largely to pollution. Recently it has been found at Chalton Cross (TL02) ARO 1984 (h); SW of Turvey (SP95) M. Yeo and ARO 1985; and on a tombstone in Thurleigh churchyard (TL05) ARO 1985*.

(Recorded for all neighbouring counties)

Tetrad Records: 3

Lejeunea cavifolia (Ehrh.) Lindb.

Damp Woods. Rare.

First and only record: E. C. Wallace, King's Wood, Heath and Reach 1949.

(Recorded for Bucks., Cambs. and Northants.)

Tetrad Records: 0

ACKNOWLEDGEMENTS

I am grateful for the help I have received from referees of the British Bryological Society in identification of material and for the records I have received from other Bryologists, in particular Dr H.L.K. Whitehouse and M. Yeo.

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METEROLOGY

Report of the Recorder

In summary, 1988 might be regarded as a year in which the weather gave evidence of few extremes, and in that respect was much more maritime and even less continental than usual. Put another way, the weather throughout 1988 was much more influenced by south westerly winds and the gulf stream than usual. This was evident from the predominantly mild winter months to the relatively cool summer months with little in the way of really hot or sunny weather. To many people, the summer of 1988 was again a great disappointment.

January was mild more from an absence of any really cold weather than from any really mild days. The temperature exceeded 50 Fahrenheit (5°C) on two days, but frost occurred on just six nights. It was a wet month, more than twice the normal in many places, and early in the month very windy with trees blown down on the 2nd and 6th in places. At Silsoe it was the wettest January since full records began in 1950.

The mild weather of January continued through most of February, but after the first week it was quite dry and sunny, indeed the sunniest February for 40 years. The month ended with sleet and snow showers on several days. This was also the pattern for the first week of March, but thereafter temperatures were mostly above normal and like January it was again wet.

April experienced more air frosts than any winter month of 1988, with spells of easterlies in the first and last weeks. Otherwise April's weather was quite typical with sunshine and showers, but an unexpected snowfall with several inches over higher ground on the 9th.

May was quite a warm month, but with several days of heavy thundery showers. Mid-month was particularly sunny with temperatures up to 72°F (22°C). Over Britain as a whole May 15th was reputedly the sunniest day of the year with over 12 hours of sunshine on average (13.6 hours at Silsoe). My weather records for June also show a good many sunny days, except for the 9th which was decidedly wet and cloudy for 24 hours. Interestingly, the wind was largely from a northerly or north-easterly direction throughout the second half of the month, but this did not seem to influence temperatures adversely at all.

July perhaps epitomised the summer for many people being cool and wet. In fact, taking England and Wales as a whole, it was the wettest July for 50 years. However, records from Silsoe show that in Bedfordshire 1980 was both cooler and wetter. The 3rd and the 17th were particularly wet days with approximately 20mm of rain on both occasions. Temperatures exceeded 70°F (21°C) on just three days, a very poor record for one of the main summer months.

August was close to average in most respects, and was the warmest month of the year. The temperature reached 84°F (29°C) on the 7th, and nearly as hot the day before (6th). However, the last day of the month was very wet indeed, providing between 30% and 50% (depending on location) of the total rainfall for the month, and a good example of how a single day's rainfall can influence a monthly total, particularly in the summer months.

The general impression of September is that it was a dry month (21 days without rain), but in fact the wet days still managed to produce a total well up on the average. It was also cool after the first week, and the first ground frost of the autumn occurred on the last day of the month. October provided some fairly average weather, but the last two nights were particularly cold (as cold as the worst nights in January and February).

November 1988 will be remembered as the frostiest month of the year, with as many as 24 nights affected, and the coldest night of the year occurred on the 5th of the month (22°F, -6°C). At Silsoe, the average minimum temperature was the fourth lowest on record. November was also notably dry and sunny. There was also an unusually early snowfall on the 20th, but thoughts of a cold snowy winter were not to be fulfilled. December, in contrast, was mild and dull with frost on just one night and no snow at all. It was also another dry month with no measurable rain on 20 days in all.

To conclude this summary of the year's weather, it may be worth noting that despite the relatively poor summer, and the undoubted effect that this will have had on the wildlife of Bedfordshire, 1988 was a warm year thanks to the consistently mild weather in both the first and second winter halves of the year.

I am also pleased to report some weather observations from Miss J. Childs who observed a moon pillar at Heath and Reach on 29th July, and a further optical effect at Bedford on 19th September described as cloud splitting the sunlight into rainbow colours. This could be a mock sun, which usually appears as a bright patch often bounded by a spectrum as described, or it may well be part of a solar halo or of an arc tangential to the halo. Optical phenomena are quite complex and not fully understood, but occur more often than might be realised. Any further observations of halos, corona, mock suns, sun pillars etc. (or similar phenomena relating to the moon) will be most welcome.

I am particularly indebted to Mr A. Hunter of AFRC Institute of Engineering Research, Silsoe for detailed meteorological records made at that site (see Table 1), and additional comments, used in preparing this report. I am also grateful to the Anglian Water Authority for providing copies of their rainfall records for Bedfordshire sites.

	Mean Max C	Mean Min C	Highest Temp C	Lowest Temp C	Rainfall mm	Sunshine hours	Air Frost days	Ground Frost days	Snow Falling days	Snow Lying days
January	7.9	2.8	13.2	-1.1	96.4	53.3	5	12	2	2
February	7.8	1.7	14.1	-2.0	25.0	107.2	6	19	5	2
March	9.7	3.4	13.1	-2.9	57.2	88.4	5	7	1	0
April	12.4	3.9	19.5	-2.5	46.2	115.5	7	11	1	1
May	16.4	7.2	22.0	1.3	44.0	165.9	0	4	0	0
June	18.0	9.9	23.7	4.2	38.9	147.9	0	0	0	0
July	19.0	11.7	21.8	8.1	93.9	154.4	0	0	0	0
August	20.7	11.0	28.1	6.1	36.5	192.8	0	0	0	0
September	17.9	9.6	25.7	1.1	60.8	151.5	0	3	0	0
October	14.5	7.2	19.2	-2.9	45.6	110.1	3	9	0	0
November	8.8	0.8	15.0	-5.3	30.6	81.0	16	24	1	2
December	9.6	4.6	13.9	-0.4	24.8	45.9	1	14	0	0
Year	16.6	6.2	28.1	-5.3	599.9	1413.9	43	103	10	7

Table 1. Summary of the weather of 1988 for IER, Silsoe

MIKE WILLIAMS

GEOLOGY AND PALAEOLOGY

Report of the Recorder

The absence of reports from other members has resulted in the Report for 1988 being rather in the nature of a personal one yet, despite this, it proved to be an unexpectedly important year due to the discovery of an unrecorded ammonoid *Protanisoceras* sp. from the Lower Albian Shenley Limestone of Munday's Hill Quarry, Leighton Buzzard. An account of this, together with an assessment of the Shenley Limestone ammonites, appears separately.

As in previous years, frequent visits were made by the Recorder to the Lower Greensand quarries at Leighton Buzzard. Subsequent to the discovery of *Protanisoceras* in February, more time was spent at Munday's Hill in the hope that another specimen could be procured before the particular outcrop of limestone became obscured by clay slip. As half expected, the result was negative despite many months of searching, but the possibility that another specimen may be obtained will make many more visits necessary. It is a feature of the limestone that shells of similar shape and size are occasionally found grouped together, possibly as the result of ocean currents, so that the occurrence of another specimen in the immediate vicinity is not absolutely impossible. However, although negative to date as regards ammonites, the exposure did yield a number of excellent brachiopods, all belonging to species previously recorded, including one specimen of the very rare *Gemmarcula menardi* (Lamarck), var. *pterygotos* (Lamplugh & Walker).

The adjoining Nine Acre Pit, which yielded several specimens of the rare crab *Pithonoton scarabaeum* from an isolated limestone lenticle in 1987, revealed no limestone exposures although, by

the end of the year, work had commenced at the Shenley Hill end of the quarry in order to expose more of the "Silver Sands". The removal of the overlying Gault Clay during this process may be expected to expose the limestone, and regular inspections will be made while this work is being carried out.

The quarries on the Heath and Reach (West) side of Shenley Hill were visited at intervals throughout the year, with the sole exception of the largest (Bucklands) for which permission to visit was refused. This was most disappointing, as a visit had been agreed when site conditions improved but, following an apparent ownership change to ARC, this consent was cancelled. It is to be hoped that the problem can be overcome as otherwise my study of the Lower Albian Shenley Limestone will be seriously affected. Two nearby quarries, Stone Lane quarry and Bryants Lane quarry, yielded no limestone this year, although the iron-pan and clays that can include lenticles were exposed at the eastern ends of the excavations, and small pieces with characteristic Shenley Limestone fossils were recorded from this bed in 1987. However, with the increase in excavating by the quarry operators it is certain that the limestone will be encountered in the near future. Although no Shenley Limestone was visible, two ammonites were obtained from the overlying Boulder Clay above the Gault at Bryants Lane quarry. While of no particular scientific importance, the perfect condition of the fossils warranted preservation. They were later determined as *Amoeboceras (Prionodoceras) aff. glasense* (Biget & Brasil) and *Amoeboceras (Prionodoceras) prionodes* (S.S. Buckman), both derived from Jurassic Amphill Clay.

A quarry visited for the first time later in the year was the Steetley quarry at Woburn Sands. This quarry is the deepest in the Lower Greensand, being excavated to a depth of approximately 40 metres in order to reach the stratum of Fullers Earth, a bed of very valuable material approximately 3 metres in thickness. The purpose of this visit was to confirm whether or not the phosphatic nodules or "Coprolites" occurred at this location, and followed a request by the County Planning Department for advice with regard to an old "Coprolite" quarry at Potton. Details of this will be published in next year's report, but it was necessary at an early stage to determine if the phosphate nodule bed occurred elsewhere in the county and, if so, to know if it was accessible. As a matter of record, the nodule bed does not occur at the Steetley quarry, the stratigraphical position being much deeper in the lower half of the Lower Greensand. An interesting discovery was made in the quarry, however. Approximately 3 metres above the Fullers Earth horizon a lens of bright green glauconite was observed. This mineral is normally spread thinly throughout the sands, occurring as grains or streaks that give the "Greensands" their characteristic colour. The lens, however, measured roughly 30 cm in diameter and consisted almost entirely of glauconite grains. It is extremely uncommon to find such lenses, and samples were collected for the Bedford Museum, Northampton Museum and the British Museum (Natural History).

The Potton quarry, adjoining the old railway north of Potton Station, now overgrown and used as a Nature Reserve by nearby schools, was visited by Miss Brind and myself in order to view the site subsequent to the County Council's request. The Recorder's previous visit, some twenty-five years previously, had been made in the company of a palaeontologist from Cambridge and endeavours were made at that time to excavate and locate the "Coprolite" bed, without success. The visit this year showed little change, but it is possible that a more determined effort at excavating into the side of the quarry will reveal the nodule bed. This is scheduled for 1989.

ACKNOWLEDGEMENTS

I thank Dr H.G. Owen, F.G.S. of the Dept. of Palaeontology, British Museum (Natural History) for identifying the Boulder Clay ammonites from Bryants Lane Quarry, Heath and Reach; Dr David Norman, Nature Conservancy Council, Peterborough and Dr E.R. Shephard Thorn, British Geological Survey, Keyworth, for information relating to the "Coprolite" quarry at Potton; and the following for allowing me access to their various quarries:— Messrs Joseph Arnold and Sons Ltd., Billington Road, Leighton Buzzard; Mr F.R. Walpole and Mr R.J. Saunders of L.B. Silica Sand Ltd., Grovebury Road, Leighton Buzzard; George Garside (Sand) Ltd, 39 Hockliffe Street, Leighton Buzzard; Mr J. Hill, Quarry Manager, Steetley Minerals Ltd., Woburn Sands, and their staff who are always most helpful.

P.J. SMART

PROTANISOCERAS SP. AND THE INDIGENOUS AMMONITE FAUNA OF THE SHENLEY LIMESTONE

by P.J. Smart

The lithology, stratigraphy and palaeontology of the Lower Albian Shenley Limestone of the Shenley Hill area, Leighton Buzzard, (*Leymeriella* (*Leymeriella*) *tardefurcata* Zone, *Leymeriella* (*Neoleymeriella*) *regularis* Subzone) have been described in several papers subsequent to the discovery of the limestone in 1902 (Lamplugh G.W. and Walker J.F. 1903). Fossils, particularly brachiopods, have long been noted for their remarkable state of preservation yet, despite the highly fossiliferous nature of many of the limestone lenticles, representative species of the Cephalopoda (Ammonoidea and Dibranchia) have proved to be exceedingly rare. Lamplugh and Walker record the occurrence of an unidentifiable portion of an ammonite in their 1903 paper, along with two fragmentary small belemnites that compared closely with "*Belemnites*" *minimus* (Miller) of the Red Chalk and Gault, these three specimens being the only indigenous cephalopod fossils obtained from very extensive exposures of the limestone that included, in addition to the in-situ lenticles, several years' accumulation on the spoil tips.

This situation with regard to the apparent non-existence of ammonites in the limestone did not change for nearly twenty years, the absence of such fossils almost certainly influencing the reasoning behind the extraordinary "overtum" hypothesis of 1920, in which it was postulated that a mass of Upper Cretaceous strata had been rolled and inverted by glacial action (Kitchin F.L. and Pringle J. 1920). However, in 1922 the ammonite *Leymeriella regularis* (Bruguière) was referred to as being in the Walker (Cambridge) Collection (Lamplugh G.W. 1922) and *Leymeriella tardefurcata* (d'Orbigny) was confirmed as indigenous to the limestone by Toombs (1935), a block of Shenley Limestone containing an almost complete specimen being in his possession. The ammonite *Aconeceras* cf. *neonisoides* had also been collected by Lamplugh prior to Spath's Gault Monograph of 1922/3 but the specimen was apparently overlooked (Casey R. 1961a). With regard to the Author's own work at Shenley, occasional representatives of the Dibranchia were obtained from the limestone over a long period, the small belemnite "*Belemnites*" aff. *attenuatus* being recorded (Smart P.J. 1957) and *Neohibolites minimus* (Miller) four years later (Smart P.J. 1961). The first ammonite, a body-chamber fragment embedded in limestone matrix, was obtained in 1962 and subsequently donated to the Geological Museum after being determined as *Leymeriella* cf. *tardefurcata* (R.V. Melville 1963—personal communication). This was followed in 1967 by *Epileymeriella* sp. and in 1976 by a juvenile *Leymeriella* (*Neoleymeriella*) *regularis* (Bruguière) (R. Casey, F.R.S. 1976—personal communication) which was similarly donated to the Geological Museum Collection in South Kensington.

The discovery of the ammonites *Leymeriella* (*Leymeriella*) *tardefurcata* (d'Orbigny) and *Leymeriella* (*Neoleymeriella*) *regularis* (Bruguière) confirmed the Shenley Limestone as Lower Albian *tardefurcata* Zone, the *Leymeriellidae* being a group of Lower Greensand ammonites confined to the *tardefurcata* Zone (Casey R. 1957; 1978c), the *regularis* Subzone (the top part of the *tardefurcata* Zone) representing the tail-end of the group's development.

From 1965 onwards various field workers, including some University parties, were paying more frequent visits to the Shenley area although the excellent exposures of previous years no longer existed. Despite the shortage of visible limestone, however, occasional *tardefurcata* Zone ammonites, usually fragmentary, were finding their way into scientific collections. Casey describes, in addition to the two Zone fossils *Leymeriella tardefurcata* and *Leymeriella regularis* (Casey R. 1978a) the ammonite *Aconeceras neonisoides* (Casey) (Casey R. 1961b) and *Leymeriella* (*Neoleymeriella*) *consueta* (Casey) (Casey R. 1978b) while the Author's private collection of Shenley Limestone material contained *Epileymeriella* sp. and *Eogaudryceras* sp. These specimens were obtained at very long intervals from limestone exposures usually in the vicinity of the "Mundays Hill Knoll" but, despite the gradual accumulation of ammonites and belemnites, no specimen of the genus *Protanisoceras* was recorded, this genus being unknown below the *Douvilleiceras mammillatum* Zone, the upper of the two Lower Albian Zones of the Lower Cretaceous.

Palaeontologists, particularly those working on the Cretaceous System, will therefore be interested in the recent discovery by the Author of a small heteromorphic ammonoid in a lenticle of extremely hard, dense Shenley Limestone from Munday's Hill Quarry. To conform with a request by the quarry owners, the O.S. grid reference of the exact location is being withheld. This specimen, unremoved from its matrix in order to confirm it as indigenous to the limestone, was subsequently determined as *Protanisoceras* sp., the first record of a member of this genus from the Lower Albian *tardefurcata* Zone.

The following stratigraphical table indicates the sequence of the Zones and Subzones of the Lower Albian.

	Zones	Subzones	
LOWER ALBIAN	<i>Douvilleiceras mammillatum</i>	Protohoplites puzosianus	
		Otohoplites raulinianus	
		Cleoniceras floridum	
		Sonneratia kitchini	
	<i>Leymeriella tardefurcata</i>	Leymeriella regularis	Shenley Limestone
		Hypacanthoplites milletoioides	
Farnhamia farnhamensis			
UPPER APTIAN			

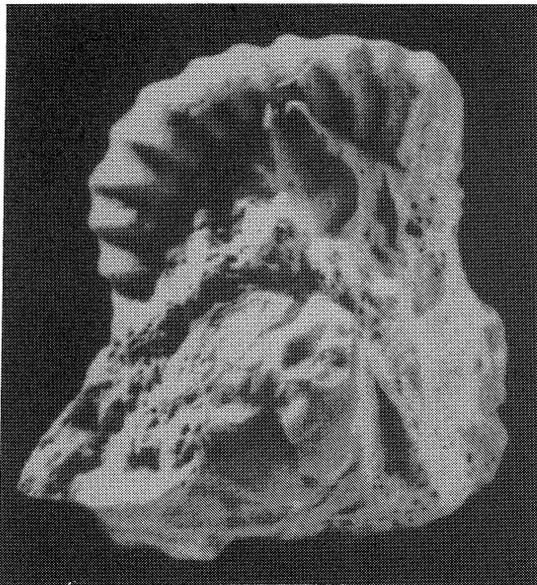
Table. Zonal classification of the Lower Albian (Casey R. 1961e)

Casey (1961c) describes several species of *Protanisoceras* from the Lower Albian *mammillatum* Zone, the Zone above the *tardefurcata* Zone in the stratigraphical sequence, and states "*Protanisoceras* first appears in the Lower Greensand in the *floridum* Subzone of the *mammillatum* Zone" (Casey R. 1961d). The discovery of *Protanisoceras* in the *tardefurcata* Zone, the lower of the two Lower Albian Zones, is therefore of considerable scientific importance, the vertical range of the genus being extended downwards two Subzones into the *regularis* Subzone.

The specimen (B.M. C91481) is now in the collection of the British Museum (Natural History), a plaster cast being supplied to the Author as a replacement for record purposes.

ACKNOWLEDGEMENTS

I would like to thank Dr H.G. Owen, F.G.S. of the Dept. of Palaeontology, British Museum (Natural History) for his helpful comments and for identifying the specimen of *Protanisoceras*, and George Garside (Sand) Ltd., 39 Hockliffe Street, Leighton Buzzard, for allowing me access to Munday's Hill Quarry.



An unrecorded Shenley Limestone heteromorphic ammonoid, Protanisoceras sp. (scale x 3.5)

Photograph: British Museum (Natural History)

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MAMMALS

Report of the Recorder

1987 had finished with mild weather, and that was the way 1988 started. Hedgehogs were still active in January, dormant in February, but active again in March. Bats were also seen flying in February, but not again until April. At the end of the year the weather was again mild with Hedgehogs being reported up to the 30th December, although most of the late observation dates were at the end of October to early November. The late animals were the exception, rather than the norm, and were probably youngsters feeding up. Bats were also observed right up to the end of the year, actually on the 31st December, although again most of the late dates were earlier, this time at the end of September until early October. Overall results show the numbers of mammals recorded to be average or slightly down on previous years. The number of species seen was only 29, compared to 33 in 1987. No records at all were obtained for Fat Dormouse, this being the first year for some time that this always vulnerable species was absent. However, of the other scarce to vulnerable species: Water Vole, Water Shrew, Red Deer and Yellow-necked Mouse were all recorded in increased numbers compared to previous years, although still at very low numbers. The one species which did stand out, with several members commenting on the increase in sightings, was the Chinese Water Deer. This was recorded in five tetrads, compared to only two tetrads in 1987, and three in 1986. New 10km records, which are passed on to the National Mapping Scheme, numbered 11, being made up of the vulnerable species mentioned above, plus some bat and Mink records. Information from a variety of sources showed Badger numbers to be down, with 1988 being a poor year for cub births, at less than half of the 1987 level. Small mammals also showed a downward trend, except for the three shrew species, which increased their numbers. The mild winter of 1987/88 allowed more insect food to survive for these species probably accounting for their population increase.

The 38 species recorded in Bedfordshire since 1970 are listed below. The three numbers after each species name are the number of tetrads in which that species was recorded in 1970-85, the year 1987 and the year 1988. For the first time the report includes notes of 'not confirmed' observations. The bat species can only be identified by in-hand records which puts all other records in the 'not confirmed' group. All 'not confirmed' records are identified as such in the report.

- Wallaby** *Macropus rufogriseus* 1-0-0. No records from the wild, but a report of three animals inside Woburn Park (SP93S) in September. The Park confirm there is a population of about 20 animals, having increased from two males and four females introduced from Whipsnade Zoo in 1979. A previous population of Wallabies was killed during the severe winter of 1963. The present population is reported as doing well.
- Hedgehog** *Erinaceus europaeus* 239-37-25. Post hibernation emergence reported on 8th March, 23rd March and 27th March, but also as late as mid-April. However, by May, five were seen in one night at Luton (TL02S) including a mating pair (PS).
- Mole** *Talpa europaea* 299-22-25. The mild year was favourable for moles. A few reports of dead animals. Mole hills widespread and common.
- Common Shrew** *Sorex araneus* 167-15-8. Although recorded in fewer locations than in 1987, the trapping results showed good numbers present. At Priory Park, Bedford (TL04U) five reported on the island in the lake. The island was created when the lake was made in 1979, and the Shrews are presumed to have survived from that time. The island is 7,000m², equal to 1.73 acres (GD).
- Pygmy Shrew** *Sorex minutus* 68-2-2. Three trapped at Maulden Wood in September (TL03U): giving higher than previous years catch ratio (DR).
- Water Shrew** *Neomys fodiens* 31-2-2. One found dead at Flitwick Moor (TL03M) in October (GB), and one killed by cat in garden at Woburn (SD93L) some way from nearest water (BN).
- Barbastelle Bat** *Barbastella barbastellus* 1-0-0. No records now for 12 years.
- Daubenton's Bat** *Myotis daubentoni* 6-12-1. A breeding roost at Stockgrove Park (SP92E) was watched from 21st June to 1st August. Numbers flying from the site were about 45 adults. Last date when bats were present was 25th July (AA JC). Unconfirmed records obtained for

57 other sites, where bats were seen in small numbers. On only six occasions were groups of 10 and once 20 bats seen. At Priory Park (TL04U) sightings were of never more than four, but did continue right through to 31st December (GD).

Leisler's Bat *Nyctalus leisleri* 0-0-0. An unconfirmed report of this species at Hazells Hall, Sandy (TL15V?) during 1987. Report was for definite identification from dead bat, but not supported by written record (Adam Adamu).

Common Long-eared Bat *Plecotus auritus* 18-14-12. Breeding roost at Heath and Reach (SP92I) of up 20 adults with 20 young (DA). Four other roosts visited with average of 12 adults in each. Six unconfirmed sites visited one containing 23 individuals.

Natterer's Bat *Myotis nattereri* 4-7-1. One lactating female caught at roost in Westoning (TL03G) on 2nd August (AA JC). This is later than breeding date for Daubenton's detailed above. 15 other unconfirmed records for roosts and feeding sites obtained.

Noctule Bat *Nyctalus noctula* 4-10-0. No confirmed records, but sight-only reports from 25 sites, with normally one bat flying, but occasionally two. At Priory Park, Bedford (TL04U), seven seen flying over lake in May (GD). At other dates numbers varied from two to six, for dates from mid-April to the end of August.

Pipistrelle Bat *Pipistrellus pipistrellus* 41-60-18. Roost counts of 77, 110 and 118 were the highest numbers, but unconfirmed species roosts of 191 and 369 were also made. A breeding roost in Haynes (TL14A) was present at its traditional site from 18th April to 29th September, although absent for a short while in June. Maximum numbers exiting from the roost were counted at 121 on 19th July when young would be flying, but before their dispersal (JA). At Priory Park, Bedford (TL04U) flying bats, identified by sight as Pipistrelle, were seen from 21st March to 9th November. Numbers feeding along the lake varied considerably from day to day. Highest numbers were 60 on 19th March, 80 on 20th March and 40 on 21st March. On 6th May there were 80 counted, on 25th May only 10, and on 27th May the highest for the year at 100. Still at Priory Park, one Pipistrelle was found using a bat box on 17th May (see Photograph), but was not present three days later (GD). This is the second year bat boxes have been used at Priory Park, and it is the only known site in Bedfordshire, where they are used. A collection of Tawny Owl pellets from Turvey, yielded the skeletons of four Pipistrelle Bats (AA JC). It is most unusual for owls to catch bats, but this individual had obviously developed a system. It would be interesting to know if they were taken in the air or at a roost site, or perhaps just on leaving a roost site.

Whiskered Bat *Myotis mystacinus* 0-0-0. A verbal report that two more definite records of this bat have been obtained in Bedfordshire during 1987 or 1988. No other information available (Adam Adamu).

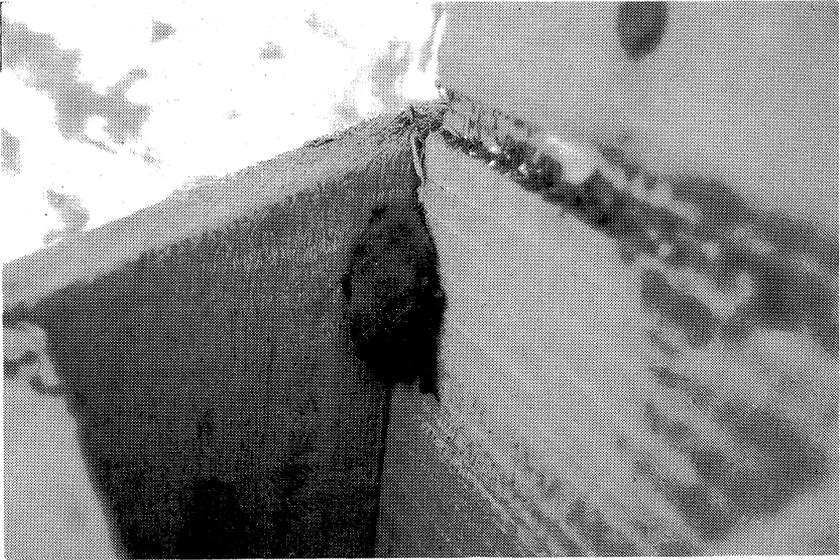
Rabbit *Oryctolagus cuniculus* 342-50-49. Records from all areas, but 20 together at Stanbridgeford (SP92R) in June which were both adults and young, were the most reported together (DA). Young rabbits reported from Studham (TL01I) as early as February (MR). Myxomatosis in late winter at Whipsnade (TL01D) killed dozens of animals (CT) and other animals with the disease were reported at East Hyde (TL11I) and Haynes (TL14A). Two animals seen at Fancott (TL02E) were pure albinos (PT).

Brown Hare *Lepus capensis* 243-43-35. Most records of groups of ones and twos. Most seen together were nine in April at Chicksands (TL14A), and ten at Deacon Hill (TL12E) in February. However, a shoot at Silsoe College (TL03X) in February produced a bag of 180 animals (CB). Leverets were seen on the 2nd July at Chicksands (TL14A). An unofficial Hare course took place at Cardington (TL04X) in December, with over 110 people in attendance. The number of Hares killed was not reported.

Dormouse *Muscardinus avellanarius* 3-0-0. No records obtained.

Fat Dormouse *Glis glis* 4-1-0. For several years the only county record of this species has been obtained from Whipsnade Zoo. Despite searching no sign of the animal's presence could be found.

Bank Vole *Clethrionomys glareolus* 109-8-5. A few sightings from Whipsnade Zoo (TL01D). Also



Pipistrelle Bat in bat box, Priory Park, Bedford
17 May 1988

Photo: G. Dennis

caught at the Maulden Wood (TL03U) trapping meeting, but only three animals caught in 111 trap nights, to give a catch rate only half that of 1987.

Short-tailed Vole *Microtus agrestis* 158-6-7. Again seen at Whipsnade Zoo, with a nest of eight young found (CT). Two killed by cat in Woburn (SP93L), and two caught at Maulden Wood trapping meeting (DR) for the first time in three years.

Water Vole *Arvicola terrestris* 85-2-6. Single animals seen from a few locations with six animals seen along short length of River Lea at Luton (TL02W) in May. Nowhere common or plentiful. No reports from anywhere along River Ouse or River Ivel.

Harvest Mouse *Micromys minutus* 280-4-2. One trapped in Biggleswade (TL24B) in January is most unusual (RR). Three trapped at Maulden Wood was surprising, being more catches than the two species above and of Wood Mouse. No Harvest Mice have been caught at Maulden for three years, so the populations seems to have had a good breeding year.

House Mouse *Mus musculus* 79-5-1. The only record for the county came from Whipsnade Zoo (TL01D) where it was recorded as very common (CT).

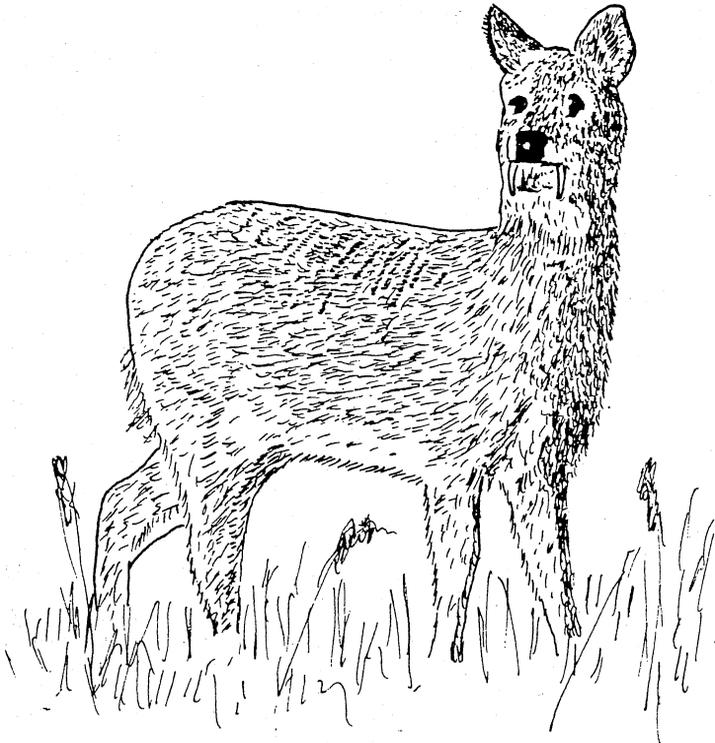
Yellow-necked Mouse *Apodemus flavicollis* 3-2-2. Two new site records makes 1988 a good year for this vulnerable species. The two new sites are many miles from the previously known sites, and suggests that this species is under-recorded and very hard to confirm as present. In February one mouse was trapped in Maulden Wood (TL03U) to confirm suggestions of its presence (DR). Priory Park (TL04U) produced the other record in April, when one male was caught in the loft of the Wardens house (GD). This building is only a few years old, so it has to be a recent colonization.

Wood Mouse *Apodemus sylvaticus* 172-7-13. Poor result from Maulden trap, with only two animals caught, suggests low population levels. Breeding confirmed in March at Luton (TL02R), when a youngster was caught by a cat (BC). Present in a garden in Woburn (SP93L) where they fed from a bird peanut holder (BN). Also present in the loft at Priory Park, which produced the Yellow-necked Mouse record. However the Wood Mice were caught in September, so it is not known if the two species exist together in the loft.

Brown Rat *Rattus norvegicus* 208-21-18. Two reports suggest a large population, similar to 1987. Five killed from around a domestic animal pen at Bromham (TL05A), although they were very cautious (HMH). At Dunstable sewage works (TL02C) a large, 9-inch long Rat, was killed and eaten with some difficulty by a Heron (PT).

Grey Squirrel *Sciurus carolinensis* 198-29-33. Usual number of reports of black coloured animals from Woburn (SP93R), Milton Bryan (SP93Q), Arlesey (TL23C) where it is estimated 50% of the population is black, and Southill Park (TL14G) where there are reported to be six black Squirrels (BN). However it was reported that there were no black animals seen at Whipsnade, an area that supported several in 1987 (CT). At South Mills (TL14P) a Squirrel was seen half a mile from the nearest tree (BN), while at Stockgove Park (SP92E) 30 animals were seen in a two hour period (PT).

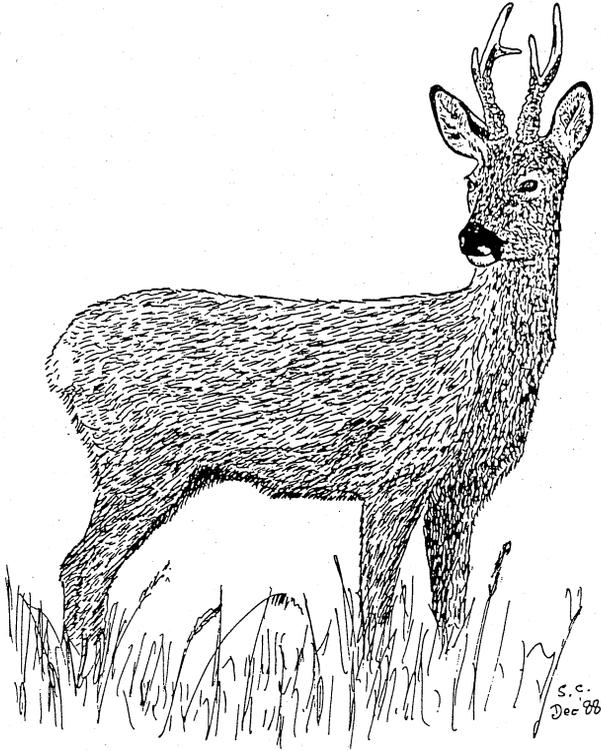
Fox *Vulpes vulpes* 197-35-35. General reports of many Foxes about and also high numbers of cubs seen. Seen several times in Houghton Regis Quarry (TL02B) with bird prey of Red-legged Partridge and Moorhen or Coot (PT). Two seen hunting in open field in full daylight at midday at Steppingley (TL03B). Farmer reported 17 killed in area, with animals very bold and coming right up to the farmhouse (JK).



Chinese Water Deer

(Steve Cham)

- Badger** *Meles meles* 99-29-39. Overall results showed the number of setts in use slightly up on previous years, but the number of Badgers slightly down. Cubs numbers were very much down at an all time low. There was no obvious reason for this as the weather appeared to be satisfactory for Badgers during both summer and winter. Results produced figures of a county population of Badgers of only 372. Badgers killed on the roads were known to be 11, which compares to a figure of 80 for Hertfordshire which has a larger Badger population. Also four Badgers were killed by an electric fence at Studham.
- Ferret** *Mustela furo* 13-1-0. No reports of this species in 1988.
- Mink** *Mustela vison* 20-3-4. Records away from the River Ouse, to the south, at Salford (SP94F), Old Warden (TL14G) and Shefford (TL13P). These are animals away from regular territories, and more likely to be killed on roads or shot. Priory Park produced regular sightings all through the year, two being the maximum seen together. One Mink seen catching an adult Mallard Duck (GD).
- Otter** *Lutra lutra* 1-0-0. Two unconfirmed reports for this species in 1988. One animal seen in the west of the county in June, while in the east of the county in July an adult with two cubs was seen. This latter report was stated as not Mink.
- Stoat** *Mustela erminea* 149-15-17. Always seen alone, except at Colmworth (TL15J) when three seen playing/fighting for 10 minutes (RB). This was in July and refers presumably to youngsters. A Stoat was killed by a cat at Bromham (TL05A), a most unusual action (HMH).
- Weasel** *Mustela nivalis* 145-13-17. Although the same number of tetrad records as Stoat, several members commented that the Weasel was seen more often. At Whipsnade Zoo one Stoat was seen to three Weasels (CT), while at Priory Park, four Stoats were seen to 19 Weasels (GD). On three occasions, two Weasels were seen together.
- Chinese Water Deer** *Hydropotes inermis* 24-2-5. Ten animals seen during the year, compared to the usual two or three. Three together at Eversholt (SP93R) in December (BS), and two together at Hockliffe (SP92Z) twice, first in August (DA) and again in September (BC). The latter sighting reported the animals emerged from a field edge strip of sweetcorn, showing the benefit of this conservation policy. At Woburn (SP93W) in January a deer was seen licking the salt off the road (BN).
- Fallow Deer** *Dama dama* 16-6-1. The only record was for a single female crossing the road at Woburn (SP93W). Although this is a known Fallow Deer area, the record was for a new site, some way from the previous one (JA). Bramingham Wood (TL02S) near Luton was visited by a large deer in May, and the size of the slots together with track dimensions suggests this visitor was a Fallow Deer (PS). There is a known population across the county border at Lilley in Hertfordshire. The species also reported as present at Pegsdon, but no other details supplied.
- Muntjac Deer** *Muntiacus reevesi* 136-37-23. Up to the usual level of sightings, but does not reflect the marked increase in population recorded by Chinese Water Deer. Animals seen in gardens at Wootton (TL04C) in January, February and October (DAL), and at Old Warden (TL14G) in November (RS). Road deaths reported from a number of locations. Highest number seen in the same area was from Maulden (TL03U) where six were seen in May (DAL). At Haynes (TL14A) the Muntjac was recorded as the most common mammal species, even surpassing Rabbit (JA). A pair were seen mating in December at Bramingham Wood (TL02S) and a pair with young were seen at the same site in April (PS).
- Red Deer** *Cervus elaphus* 6-1-2. One female seen in Woburn area (SP93X) in October but in a different area from previous sightings (JA). Another female seen at Everton (TL25A) on two occasions in June was for a completely new area (AC).
- Roe Deer** *Capreolus capreolus* 0-0-0. A report of this species from Pegsdon (TL13F). No other information supplied. This species has not been recorded in Bedfordshire, although a few animals do occur in Cambridgeshire and Hertfordshire. Care should be taken on any future record thought to be of this species.
- Sika Deer** *Cervus nippon* 3-1-0. No report of this species for the year. The usual area around Woburn produced no sightings, but a large number of suitable size slots were seen across a ploughed field in December, suggesting the herd is still in the area.



Roe Deer

(Steve Cham)

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The records for the year were contributed by the following 51 people, only four of whom were non-members. My sincere thanks go to these people and the owners of the illustrations used with the report. The Contributors were:—

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DAVID ANDERSON

REPTILES AND AMPHIBIANS

Report of the Recorder

Amphibians

The mild weather at the beginning of the year led to an early spawning of both Common Frogs and Common Toads.

I visited the Elstow Storage Depot on April 2nd and found it well populated with amphibians as did M. Powell when he visited the site a month later. There are Common Frogs, Common Toads, Smooth Newts (*Triturus vulgaris*) and Great Crested Newts (*T. cristatus*) in the concrete and brick reservoirs with differing populations in each. All four species breed at the site.

Common Frog *Rana temporaria* Some people had frog spawn in their garden ponds by early to mid-March (records from Luton and Cople), although at other sites they spawned much later, for example those seen in the east of the county on 17th April by A. Chapman. Early spawnings often suffer from frost damage but most survived in 1988 as the weather remained mild during the critical time when the spawn floats on the surface.

Common Toad *Bufo bufo* The toad migrations occurred about a month earlier than in 1987. At Cople Pits the "Toads across Roads" lift took place between March 14th and 22nd at the Priory Country Park, Bedford the migration peaked on March 19th.

Great Crested Newt *Triturus cristatus* New sites for the Great Crested Newt continue to be found and the population seems to be maintaining a reasonable level in most places. A couple of breeding sites appear to be losing their newts but at others they appear to be making a comeback. The pits at the end of Lower Farm Road in Bromham were well stocked with Great Crested Newts in 1988 whereas in 1986 and 87 the pits were dry during the breeding season or soon after and I feared the site had been lost as a breeding place.

Reptiles

Adder *Vipera berus* Damp weather, which suits amphibians does not suit the reptiles so, not surprisingly, there were no reports of Adders.

Grass Snake *Natrix natrix* The more aquatic Grass Snake was seen on a few occasions. A Chapman learned of a population in the vicinity of Woodbury Hall on the Greensand Ridge (TL 2152). A compost heap in the gardens was found to contain remnants of eggs and an unhatched young. They are also known in White Wood nearby. Grass Snakes were seen on three occasions at Harrold/Odell Country Park. Twice by J. Childs and T. Aldhous.

Common Lizard *Lacerta vivipera* Common Lizards were seen in Chicksands Wood by D. Parsons and occasionally at other known sites.

ACKNOWLEDGEMENTS

I would like to thank all those mentioned in this report and to everyone else who submitted records for 1988. I hope 1989 will prove more satisfying to these interested in observing reptiles.

HELEN M. MUIR-HOWIE

SLUGS AND SNAILS

Report of the Recorder

A new vice-county record was obtained at Toddington Manor Open Day on 7 August. A small slug found under stones by a lake was bred up to maturity. It was confirmed as *Arion flagellus* Collinge 1893 by Miss S.M. Davies, the national expert on this species.

Pitfall traps, which had been set by the Beetle Recorders to catch ground beetles, were examined and records of all the molluscs were extracted. The results are shown in the table.

The small Pea-mussel, *Pisidium moitessierianum* Paladilhe 1866 was found to be living in the River

Site number	1	2	3	4	5	6	7	8
Species								
<i>Carychium tridentatum</i>				•		•		
<i>Cochlicopa lubrica</i>	•			•	•	•		
<i>Cochlicopa lubricella</i>	•				•	•	•	
<i>Columella aspera</i>		•	•					
<i>Columella edentula</i>						•	•	•
<i>Vertigo pygmaea</i>						•		
<i>Papilla muscorum</i>				✕	✕			
<i>Lauria cylindracea</i>	•							
<i>Vallonia costata</i>				•		•		
<i>Vallonia excentrica</i>				•				
<i>Acanthinula aculeata</i>	•						•	•
<i>Eta obscura</i>				•				
<i>Punctum pygmaeum</i>	•	•	•		•	•	•	•
<i>Discus rotundatus</i>	•			•				
<i>Arion ater</i> agg.	•	•	•	•		•		
<i>Arion subfuscus</i>		•	•			•	•	
<i>Arion distinctus</i>			•		•	•		
<i>Arion intermedius</i>			•	•				
<i>Vitrina pellucida</i>	•			•	•	•		
<i>Vitrea contracta</i>	•							
<i>Nesovitrea hammonis</i>			•		•		•	
<i>Aegopinella pura</i>				•	•			
<i>Aegopinella nitidula</i>	•			•	•	•	•	•
<i>Oxychilus cellarius</i>	•			•				
<i>Oxychilus allarius</i>			•					
<i>Oxychilus helveticus</i>	•	•		•	•	•		•
<i>Limax cinereoniger</i>		•						
<i>Deroceras reticulatum</i>	•	•	•		•	•		•
<i>Eucomulus fulvus</i>		•	•					
<i>Cochlidina laminata</i>				•	✕		•	
<i>Clausilia bidentata</i>	•			•				
<i>Candidula intersecta</i>						•		
<i>Monacha cantiana</i>	•			•	•	•		
<i>Trichia striolata</i>	•			•	•	•		
<i>Trichia plebei</i>		•		•	•	•		
<i>Trichia hispida</i>				•	•	•		•
<i>Arianta arbustorum</i>				•				
<i>Cepaea nemoralis</i>		•		•				
<i>Cepaea hortensis</i>					•			
<i>Helix aspersa</i>				•				
Number of Species	17	11	10	23	17	18	9	8

Table. Molluscs recorded at pitfall trap sites
(✕ — long dead (from surrounding soil))

Ivel. It was previously known to be in the River Great Ouse.

The slug, *Testacella haliotidea* Draparnaud 1801 was found on grassy banks in Old Warden village and a specimen from Rosamund Road, Bedford confirmed previous records.

My thanks to everyone who helped by sending specimens, by allowing me to search their gardens or by confirming identifications.

PITFALL TRAP LOCALITIES

Site 1: SP 948354 - Aspley Guise - 27 June to 11 July; Site 2: SP 925295 - King's Wood, Heath Reach - 4 June to 16 July; Site 3: SP 931338 - Wavendon Heath Ponds - 29 May to 16 July; Site 4: SP 979220 - Totternhoe Knolls - 4 June to 19 July; Site 5: TL 005199 - Dunstable Downs - 5 May to 23 July; Site 6: TL 040220 - Blows Downs - 25 May to 16 July; Site 7: TL 198478 - Sandy Warren - 22 May to 7 July; Site 8: TL 252502 - Potton Wood - 4 May to 10 August.

BIRDS

Report of the Recorder

REVIEW OF 1988

Glaucous Gulls from 1987 continued to be seen at Brogborough Lake during January along with a first winter Mediterranean Gull and a much rarer Iceland Gull. The first Shag for several years proved elusive at Stewartby Lake, but far more confiding was another at Stotfold Mill Pond towards the end of February. With the very wet, yet mild, weather the River Ouse burst its banks at Radwell creating ideal feeding conditions for dabbling duck, geese and waders. Smew and an influx of Pintail were noted, along with Scaup in the clay pits, but everywhere Shoveler numbers were low. Curlews occurred at Cranfield, Golden Plovers were widespread and Lapwings seemed to be everywhere in large numbers. Raptors proved elusive with Hen Harrier at Lowes Wood and a Merlin at the clay pits followed by Buzzards at two sites. However at Millbrook Test Track several Short-eared Owls performed to allcomers throughout the period, unlike two Long-eared Owls in the Ivel Valley which proved more difficult. Due to the mild weather no rare grebes were found and winter thrushes were few and far between. A Stonechat wintered at Bedford and the bunting roost at Houghton Regis ChP reached good numbers.

The first 'true' summer passage migrant of the year occurred, typically on Blows Downs on 21 March, with the arrival of a lone Wheatear, which was quickly followed by a 'fall' of 20 the next day and slightly lesser numbers throughout April. A Ring Ouzel at Blows Downs on 22 March was the earliest county record since 1975 with a Willow Warbler the same day being the earliest since 1961. The now expected good Ring Ouzel passage peaked in mid-April as Redstart, Whinchat, Cuckoo, Turtle Dove and the scrub warblers began to arrive. Black Redstarts were scarce this year but Pied Flycatchers appeared at Kidney Wood, Bramingham Wood, Harrold CP and Blows Downs. The first hirundines 'home' were Sand Martin at Stewartby Lake on 20 March with the main passage a month later. Good numbers of wagtails and pipits were recorded at the county's wetlands and Firecrests put in an appearance at Whipsnade Zoo and along the Lower Greensand Ridge. Passage Oystercatchers showed well at the clay pits (how long before they breed?) and South Mills NR reaped the benefits of sympathetic management with good numbers of common waders plus Ruff and Spotted Redshank. Meanwhile in the south of the county Houghton Regis ChP attracted Bar-tailed Godwit, Garganey and the last Jack Snipe of the winter on 23 April. A Glaucous Gull was at Brogborough Lake on 19 March, preceded by Kittiwakes on 5th and a large Arctic Tern movement at Stewartby Lake on 25 April. At the clay pits Common Scoter were noted briefly on their cross country migration, as was a Red-breasted Merganser and a Cormorant of the continental race. The highlight of the period, for the few who were lucky enough to see them, was at least four Ospreys and two Red Kites. A Hen Harrier was at The Lodge on 15 April while a migrant Hobby was noted at Chimney Corner CIP on 30th. Perhaps the most exciting bird of the spring was a Hoopoe at Shillington for a week in April.

The May/June period saw the county's only *British Birds* rarities of the year, both at South Mills NR, with an Ibis in May and a well-watched Night Heron in June. Also recorded at the latter site in June were Knot and Wood Sandpiper. The wader of the year however, was a splendid Stone Curlew at Houghton Regis ChP on 14 May which saw a steady procession of county birders paying homage throughout the day. Also noted at this location was yet another Wood Sandpiper and a nearby Bar-tailed Godwit at Dunstable SW. Not to be outshone the clay pits struck back with a superb Red-throated Diver in full breeding plumage for two days in May, while Turnstone, Sanderling and Grey Plover were all recorded nearby. A Marsh Harrier was seen at Maulden Woods and Wilstead, with yet another Osprey, this time at Southill Lake in June. Breeding Bird Atlas workers found several pairs of Hobby, at least three Quails and a Corncrake at Eaton Bray. Nightingale and Wood Warblers were thinly spread and only one Nightjar was briefly heard 'churring' at a traditional site. Two pairs of Long-eared Owls were successful, at least three pairs of Grey Wagtails bred and Redstarts were at two localities. Tree Sparrows showed a slight return to form, as a result of the surveying of farmland tetrads, where Sedge Warblers and Yellow Wagtail were both found nesting in the middle of bean fields.

The returning wader passage was varied and protracted throughout July, August and into September and featured remarkable numbers of Dunlin amongst the commoner species. The clay pits recorded Black-tailed Godwit, Wood Sandpiper, Ruff and the first multiple arrival of Curlew Sandpipers and Little Stints for several years. In the Ivel valley at South Mills NR Sanderling, Spotted Redshank, Whimbrel and Oystercatchers were all of note. In July a Honey Buzzard was at The Lodge and an adult Mediterranean Gull stayed all to briefly at Rookery CIP. Two Garganey and a Scaup were at Radwell GP in mid-August but the prize of the month was the county's second ever White Stork near Biggleswade on 29th.

Rarity lovers were not to be disappointed during September and October with the clay pits receiving daily coverage. Marsh Harrier and yet another Stone Curlew moved through and a steady passage of terns and Little Gulls was recorded. An Arctic Skua along the chalk downs was unexpected, unlike the good numbers of southward bound Hobbits, and a Nightjar was a road casualty at Thurleigh on 23 September. A Leach's Petrel picked up alive on a Bedfordshire airfield was quickly returned to the west coast by courtesy of the RAF and successfully released. An equally disoriented Shag was seen strolling about in the car park at The Lodge at 1st September followed by further sightings at Stewartby Lake. Blows Downs recorded several autumn Ring Ouzels among the departing passerines as Redstarts, Whinchats and a Stonechat were all noted across the county. An influx of Jays became apparent in October as a small party of Bearded Tits appeared at Priory CP and Crossbills occurred at Whipsnade Zoo.

The final two months of the year will long be remembered for the arrival of Waxwings into eastern Britain in unprecedented numbers. Of the small groups scattered across the county perhaps the best watched were several at Maulden Wood lay-by. A Firecrest was a good find at Tiddenfoot SP on 28 November and most localities had good numbers of Goldcrests throughout the month. A Great Grey Shrike briefly visited the county from Radwell, Herts and both Merlin and Hen Harrier were noted in the Stewartby area. Following a cold northerly airflow, the 20 November saw an influx of seabirds at Brogborough Lake which included Velvet and Common Scoter but most exciting of all an immature Pomarine Skua that showed well for at least a week. Slavonian and Red-necked Grebe were located at Stewartby Lake and Priory CP respectively and four Water Rails could be seen at Harrold CP. Finally, the regular goose haunt at Radwell paid dividends when five Pink-feet and a Bewick's Swan were discovered in among the thousand or so Canadas and Greylags.

In summary, 1988 was a record year for the number of species recorded in Bedfordshire with a tally of 191 beating the previous best in 1986 by three. Although there were not any additions to the county list there were several rarities which stayed long enough, and were confiding enough, to delight many observers.

I would like to thank Rob Dazley for transposing all the Bird Bulletin data into a usable format for the Bird Report and to Sue Johnson for typing my sometimes illegible text. My appreciation also goes to the County Rarities Committee of: A.J. Livett, B. Nightingale, M.J. Palmer, Dr J.T.R. Sharrock and D.S. Woodhead, and for photographs by R. Dazley and G. Goodhall. Artwork by A. Chick and P. Marshall once again enlivens the text and I would like to thank them for their talents in capturing the mood of the avian year.

Finally my thanks go to the following contributors:

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SYSTEMATIC LIST FOR 1988

Nomenclature follows the 'British Birds' list of Birds of the Western Palearctic (1984).

The following abbreviations have been used in the text: BBRC — British Birds Rarities Committee; BTO — British Trust For Ornithology; CBC — Common Birds Census; ChP — Chalk Pit; CIP — Clay Pit; CP — Country Park; GP — Gravel Pit; SP — Sand Pit; SW — Sewage Works. Place names follow those stated by B. Nightingale (*Bedf. Nat.* 39 73-74) except for Barkers Lane (TL 076 493) which is now generally known as Priory CP.

Non-passerines

Red-throated Diver *Gavia stellata* An adult in full breeding plumage at Stewartby Lake on 9-10 May was the 13th county record since 1946 (MG *et al.*).

Little Grebe *Tachybaptus ruficollis* Under-recorded as a breeding species from only five localities but recorded across the county's wetlands. A post-breeding count of 17 at Cuckoo Bridge GP on 17 September was of note as was 12 at South Mills NR on 1 March.

Great Crested Grebe *Podiceps cristatus* Breeding records were received from: Roxton Lake, two pairs; Houghton Regis ChP, two pairs, no success; Southill Lake, two pairs; Stewartby Lake, one pair; Brogborough Lake, one pair; Luton Hoo, four pairs; Felmersham NR, one pair; South Mills NR, one pair; Grovebury Farm SP, five pairs; and Tiddenfoot SP, one pair. As with the previous species under-recorded as a breeding bird. The main winter concentration was at Stewartby Lake where 102 were counted on 18 January and 53 on 27 November.

Red-necked Grebe *P. grisegena* A single at Priory CP on 17 November was the sole record (GDD).

Slavonian Grebe *P. auritus* One at Stewartby Lake on 6 December was the only record (PA).

Leach's Petrel *Oceanodroma leucorhoa* One found at RAF Thurleigh on 12 September was released at Llandbedr, North Wales on 13th (PJ). This was the first county record since 1983 and only the fifth since 1946.



Red-throated Diver at Stewartby Lake, 10 May 1988

(Photo: Paul Trodd)



Shag at Stotfold Mill Pond, 4 March 1988

(Photo: R. Dazley)

Cormorant *Phalacrocorax carbo* The increase continues with sightings in all months. The main population is centred on the Stewartby/Brogborough complex in the Bedford clay pits with birds seen fishing and loafing at Stewartby during the day time and roosting at an island at Brogborough Lake. The peak first winter period count was 31 in mid-March and 33 in the second winter period on 22 October. Birds were also recorded at the other smaller clay pits, mainly from January-April and September-December. Elsewhere smaller numbers were regularly noted along the Ivel and Ouse valley gravel pits and along the Ouzel valley sand pits. Birds of the continental race, *P. c. sinensis* were noted at Stewartby Lake from 5-19 March and at Blunham Lake on 31 January. Away from the wetlands 19 over Blows Downs and Houghton Regis on 1 April were of note.

Shag *P. aristotelis* One at Stewartby Lake from 9-31 January, with probably a different bird from 6-23 March (DJO PA *et al*). An immature on the River Ouse at Bedford roosted on the town bridge on 29 February-8 March (DHB). Back at Stewartby another was recorded on 19-23 May and at Stotfold Mill Pond a most confiding individual was present on 28 February-4 March (AFRD *et al*). An immature in the car park at The Lodge on 1 September was released later, at Grafham Water, Cambridgeshire (IKD). One at Stewartby Lake on 30 October (PT) was joined by a second from 9th-12th (DJO).

Night Heron *Nycticorax nycticorax* A sub-adult that had probably been present at Girtford GP from 17 June was positively identified on 20th (EN PO *et al*). and last seen on 24th. During its stay it was also noted across the River Ivel at South Mills NR on 24th. This is only the second county record since 1946 and has been accepted by the BBRC.

Grey Heron *Ardea cinerea* The Southill Lake heronry had c15 occupied nests on 21 May and at Luton Hoo three or four nests were counted. At Bromham heronry there were five occupied nests which were studied in detail by P. Almond from March-June. The following data is a summary of relevant events extracted from his notes:

Bromham Hall Heronry 1988

19 March: Four large nests already occupied, one smaller nest.

26 March: Adults still sitting on four nests; the fifth nest larger.

	1st Nest	2nd Nest	3rd Nest	4th Nest	5th Nest
17 April	2 ad. standing by nest	1 ad. + 2 well-grown young	1 ad. standing on nest	1 ad. sitting on nest	2 juvs in nest with feathers
23 April	1 ad. + 3 juvs.	1 ad. + 3 juvs.	1 ad. sitting on nest. 1 ad. standing	A corvid looked into the nest Empty!	1 ad. standing + 2 well feathered young.
3 May	2 young in nest-much squabbling	3 young	3 small young	No Herons	2 juvs. being fed
14 May	2 juvs	3 juvs	3 juvs	No Herons	2 juvs
30 May	2 juvs in branches testing wings. 2 ad. nearby	3 juvs in branches near test	1 juv. visible	No Herons	Young fledged
3 June	Juvs. flown	Juv. flown	2 Juv. near nest	No Herons	Juv. flown

On 21 May an attempt to chop down one of the trees was thwarted by the owner. Of the four successful nests a maximum of 11 young were counted although probably only 9 fledged.

White Stork *Ciconia ciconia* One near the A1 at Biggleswade on 29 August was only the second county record ever (GDP GG *et al*).

(**Ibis** sp.) One flew north along the Ivel valley at South Mills NR on 13 May (P and TO TR) and has been accepted by BBRC. This is the first record of Ibis in the county and although it was probably a Glossy the likelihood of it being the Hertfordshire Puna Ibis could not be ruled out, due to the briefness of the sighting.

Mute Swan *Cygnus olor* As a breeding species under-recorded with records from only five localities. At Henlow on the River Ivel a pair successfully raised a brood of 15 cygnets (photograph p.39), although it was later discovered, by trapping and taking a blood sample, that this record sized brood was the result of two Pens laying in one nest. This remarkable occurrence will be the subject of a paper in a forthcoming national ornithological journal. Winter counts at Radwell GP were as follows: January 28, February 29, March 28, April 41, September 42, November 24, December 29. Harrod GP recorded a maximum of 53 in November and 63 in December. Counts between Town Bridge and Newnham Bridge in Bedford were: January 38, April and May 27, July and August 32, October 26, December 25. Elsewhere 25 were at Chimney Corner CIP in February and 21 at Stewartby Lake on 5 July.

Bewick's Swan *C. columbianus* A quiet year for this species with one at Woburn Lake on 4 November and another at Radwell GP from 22 November-31 December being the only records.

Pink-footed Goose *Anser brachyrhynchus* An adult at Grovebury Farm SP on 21 February (PS). A party of two adults and three juveniles at Radwell GP from 3-27 December (DSW *et al*) and two at Blunham Lake on 25-28 December (GDP).

- White-fronted Goose** *A. albifrons* Six over Stewartby Lake on 9 January (AJL) followed by three intermittently at Harrold CP from 7-16 February (DSW). At Radwell GP a party of 10 were present on 14-17 December with three on 25th-27th (RHC DSW *et al*).
- Greylag Goose** *A. anser* Breeding was recorded as follows: Roxton Lake, 45 downy young on 5 June; Chawston GP, nine young reared; Girtford GP, 40 young on 21 June. No breeding details were received from Radwell, Harrold or the clay pits, although nesting undoubtedly occurred. The main wintering flock was at Radwell GP with the following maximas: January 269, February 198, March 91, April 104, November 360, December 510.
- Canada Goose** *Branta canadensis* Breeding was widespread over the county's wetlands with the majority of records from the Bedford clay pits. Winter flocks were particularly numerous with Radwell GP attracting the largest counts as follows: January 307, November 558, December 624. Elsewhere 325 at Luton Hoo on 4 September; 105 at Brogborough Lake on 2 January; 300 at Harrold CP on 30 October; 150 at Stewartby Lake on 27 October and 170 at Drakelow Ponds, Woburn on 17 December.
- Egyptian Goose** *Alopochen aegyptiaca* One at Bromham on 28 February.
- Shelduck** *Tadorna tadorna* From the first two sightings at Cowslip Meadow, Luton on 3 January this species was present almost continuously throughout the county in small numbers until 13 October at Houghton Regis ChP. An increase in passage birds was noted in March and April involving many small groups at all the main well-watched wetland sites. Top counts were five each at Grovebury Farm SP on 10 January and Brogborough Lake on 7 February. Breeding was suspected at Chimney Corner CIP and confirmed at Brogborough No.2 CIP when a pair was seen with five well-grown juveniles on 24 July.
- Mandarin** *Aix galericulata* Breeding occurred at the Woburn Park complex where up to 10 pairs were present in April. The highest count was on the Basin Pond with 32 on 12 November and smaller numbers were noted at Eversholt Lake. At Luton Hoo a pair raised 10 young, with a maximum count of 15 in October and in the Battlesden Lake area a pair noted on 27 May feeding in a field flew, when flushed, and perched in a large hedgerow tree. Flitwick Moor recorded its first breeding when a duck was seen with nine young on 17 June. Elsewhere Priory Park held one or two in January and again from July onwards and two were at Wrest Park on 7 September.
- Wigeon** *Anas penelope* The main wintering flock at Radwell GP averaged about 500 birds in January and February with a maximum count of 801 on 31 January and the last bird on 10 April. Two had returned by 21 August building up to a peak of 445 on 26 November with an albino noted on 30 October. Good numbers were also recorded at Harrold CP but were probably from the highly mobile Radwell flock. Away from the main concentration Priory CP had a high of 47 in January, but elsewhere numbers were much lower in both winter periods from a scattering of wetland localities. At South Mills NR a drake was present for most of the summer.
- Gadwall** *A. strepera* One pair raised six ducklings at Dunstable SW and young were noted at Luton Hoo in July. Main winter counts were: 51 Blunham Lake on 14 January; 91 at Luton Hoo on 18 December SW on 1 January; 45 at Harrold CP on 17 December and 35 at Radwell GP on 30 October. Scattered records were received from 10 other localities, mainly during the winter periods.
- Teal** *A. crecca* At least one pair bred at South Mills NR when a duck was seen with 10 ducklings on 27 May, with another pair present during the breeding season. A pair was noted displaying at Luton Hoo in June. Radwell GP attracted the top counts with: 89 on 1 January; 42 on 21 February and 40 in November and December. Priory CP held a maximum of 55 on 9 January with 30-40 for the remainder of the winter periods and Luton Hoo recorded 47 on 18 December. Elsewhere counts of under 50 were reported from Rookery CIP, Chimney Corner CIP, Harrold CP, Woburn Park, South Mills NR and Dunstable SW.
- Mallard** *A. platyrhynchos* Breeding was widespread across the county and not only from wetland sites. At Bramingham Wood a pair raised young, but at Priory CP increased human activity was considered to be the likely cause of a much reduced success rate. At the latter locality a duck was seen being attacked by a Mink which drowned it, then dragged it 40 metres back to



Mute Swan and 15 cygnets, River Ivel, Henlow during May 1988

(Photo: Paul Trodd)

the shore. The highest winter count was at Harrold CP in December when over 500 were present and the following localities recorded a number of 100 or more: Priory CP, Grovebury Farm SP, South Mills NR, Luton Hoo, Woburn Lake and Southill Lake.

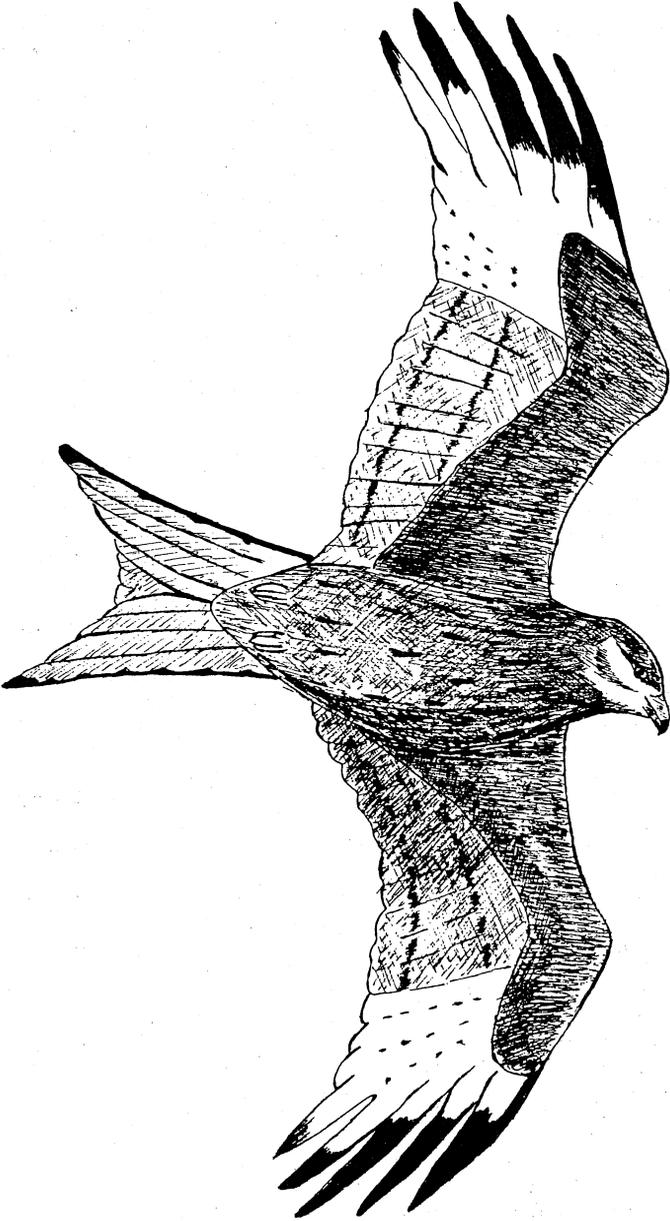
Pintail *A. acuta* Radwell GP attracted small numbers between 31 January-7 February with a peak of 16 on 6 February. One was at Woburn Lake on 4 January followed by singles at Blunham Lake and Rookery CIP on 31st with six at the latter site on 6 February and one on 21st. Harrold CP recorded three on 7 February, one was at Blunham Lake on 3rd followed by 10 at Priory CP on 8th. In the autumn one was at Luton Hoo on 28 October and two were at Stewartby Lake on 26 December.

Garganey *A. querquedula* At a potential breeding locality a pair was seen intermittently between 15 April-13 June when three drakes in eclipse plumage were noted. On 15 April a pair was at Priory CP (DK) followed by a drake at Houghton Regis ChP on 22nd (NRF) and one on the River Ouse near Oakley on 14 May. At Radwell GP, two on 21 August were followed by a late migrant on 18 September (DSW).

Shoveler *A. clypeata* Breeding was confirmed at Luton Hoo, duck with two small juveniles on 18 August and Willington, duck with young on 2 June. Elsewhere presence in the breeding season was noted at Dunstable SW, South Mills NR and Priory CP. Wintering birds were generally low this year with only Dunstable SW recording anything like former numbers when 55 were noted on 18 September. Priory CP had the only other double figure count with 12 on 17 January and records were received from a further eight localities.

Red-crested Pochard *Netta rufina* A female at Wyboston Lake on 11-23 April (AT).

- Pochard** *Aythya ferina* Numbers were generally lower than in recent years with first winter counts as follows: Brogborough, c200 January and February; Priory CP c150 February; Luton Hoo and Woburn Lake, c40 January and February; Dunstable SW, 53 on 1 January and 108 at Radwell GP on 6 February. A late bird was at Dunstable SW on 23 May with the first to return at Rookery CIP on 15 July. At Whipsnade Zoo on a foggy morning, 1 January, a male on Round Close Pond was a site first.
- Tufted Duck** *A. fuligula* Breeding was widespread across the county's wetlands. Brogborough Lake attracted the main wintering flock with a peak of 418 on 14 February and 420 on 11 December. Elsewhere flocks between 50-100 were recorded at Priory CP, Luton Hoo, Lidlington CIP, Harrold CP, South Mills NR and Radwell GP.
- Scaup** *A. marilla* Two-three remained at Brogborough Lake from 1 January-1 March (RAN *et al.*). At Radwell GP a female was present from 18 August-25 September (DSW) followed by one at Priory CP on 24-31 December (CH *et al.*).
- Common Scoter** *Melanitta nigra* A pair at Stewartby Lake on 11 April moved to Brogborough Lake on 12th (DJO MJP). In the autumn 11 at Brogborough Lake on 20 November declined to four by the afternoon with a female staying until 11 December (RAN MJP *et al.*).
- Velvet Scoter** *M. fusca* Two drakes and a duck at Stewartby Lake on the morning of 20 November were briefly seen at Brogborough Lake later that day (RAN).
- Goldeneye** *Bucephala clangula* The main concentration was at Brogborough Lake during January to March when numbers averaged between 15-25 with a maximum of 37 on 9 January. A similar average was maintained in November and December. Harrold CP held up to 10 during January-February and again from November as did Blunham Lake. Millbrook recorded 18 on 10 December and nearby Stewartby Lake attracted only single figure counts in both winter periods. Small numbers were noted at Priory CP, Great Barford, South Mills NR, Houghton Regis ChP and at Dunstable SW which had the last wintering bird on 22 April. A female was noted at Priory CP on 3 June and the first returning winter birds were at the latter site on 1 October.
- Smew** *Mergus albellus* Three drakes and a 'redhead' at Harrold CP on 31 January (DSW MJP). Three 'redheads' at Brogborough Lake on 8 December (RBA).
- Red-breasted Merganser** *M. serrator* A duck at Chimney Corner CIP on 14 April was the only spring record (JJT DT MJP *et al.*). One at Brogborough Lake on 21 November (RAN).
- Goosander** *M. merganser* Woburn Park attracted the largest numbers during the first winter period with a maximum of 26 on the Basin Pond on 10 January. Nearby Brogborough Lake recorded smaller numbers, with a top count of nine on 7 February, as did Harrold CP, Radwell GP, Blunham Lake, Eversholt Lake and Priory CP. Two at Radwell GP on 27 March were the last with 10 at Harrold CP on 30 October the first to return. Smaller numbers were recorded during the second winter period at the aforementioned localities with 10 overhead at Stewartby Lake the top count.
- Ruddy Duck** *Oxyura jamaicensis* At Luton Hoo one-six observed from mid-March to mid-August with confirmed breeding on 20 June when a pair were seen with one duckling. Pairs were also noted in the breeding season at Battlesden Lake and Radwell GP but did not breed, the latter site recording up to five from 28 August-23 October. Elsewhere in the spring singles were seen at Wrest Park and Dunstable SW and during the second winter period one or two were noted intermittently in the clay pits at Stewartby, Brogborough and Chimney Corner from 21 October-28 December.
- Honey Buzzard** *Pernis apivorus* A single over The Lodge, Sandy on 12 July was the first record since 1982 (CJB).
- Red Kite** *Milvus milvus* One flying SSE over Bromham on 19 March was possibly the same bird seen later in the day in Hertfordshire (PA). Another at South Mills NR on 18 April (PO) was rumoured to have been in the area for about a week. Both these birds were part of a large influx of Red Kite into south-east England during this period.
- Marsh Harrier** *Circus aeruginosus* One at Maulden Woods on 14 May was also seen later that day at Wilstead (DJO). One south-east over Lady Wood near Colesden on 15 May (IKD). An

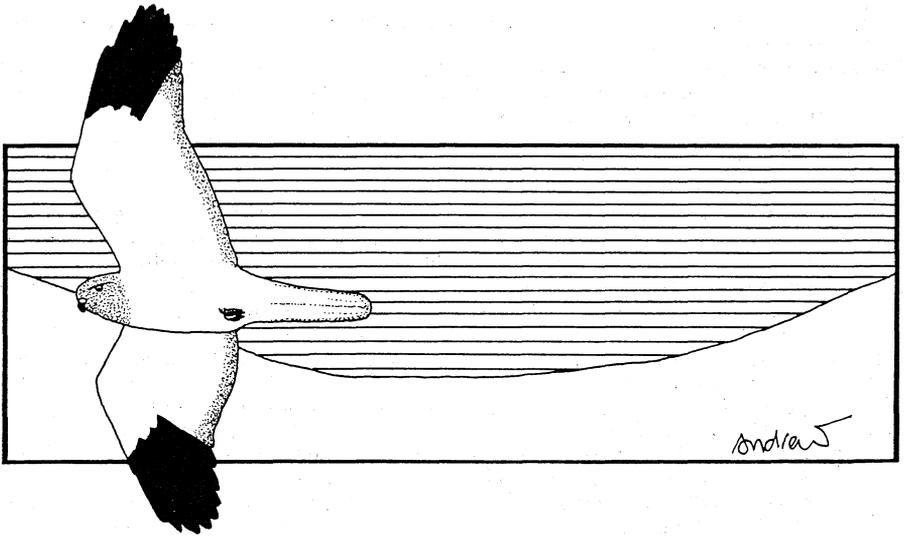


Red Kite, April 1988

(P. Marshall)

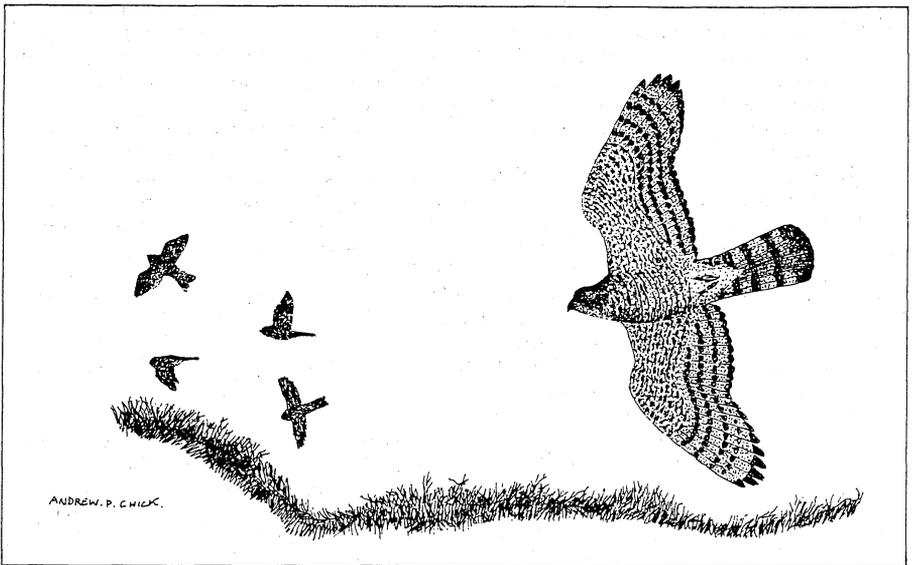
immature in the Rookery CIP area on 7-8 September was also seen hunting over nearby farmland (LC *et al.*).

- Hen Harrier** *C. cyaneus* A female/immature at Charle Wood on 9 January (AJL *et al.*). A single female at Sandy on 16 April (RAH). An adult male at Stewartby Lake on 5 November was also seen on 6th and 13th (DJO *et al.*).
- (**Accipiter** sp.) Brief or distant views of a large accipiter at a locality on the Lower Greensand Ridge during March/April may have related to a Goshawk.
- Sparrowhawk** *Accipiter nisus* Records were received yet again from many localities across the county with many observers commenting on regular sitings at their local patches. TL02 was perhaps typical of breeding records from a 10 km square where at least four pairs were confirmed breeding with many sightings elsewhere in the square suggesting a much higher population. The majority of breeding records were recorded along the Lower Greensand Ridge and the southern chalk downlands and also around the clay pits and along the river valleys. Urban sightings continue to be a feature of this species' widespread distribution.
- Buzzard** *Buteo buteo* Up to two were noted in the Old Warden area during January-February with a single in November. One near Eversholt on 7 February followed by singles at Blunham on 9 April and Whipsnade on 13th. A single near Kensworth on 23 May. One was watched at Odell Great Wood for 30 minutes on 9 October with a single intermittently in the Sandy area from August-November. One at Warden Hills on 10 November.
- Osprey** *Pandion haliaetus* A good year for this impressive raptor with singles at: South Mills NR 6 and 17 April (EN PO); Stewartby Lake on 11 April (MG); Priory Park on 22 April (DK) and Southill Lake on 20 June (RP).
- Kestrel** *Falco tinnunculus* Under recorded as a breeding species, but commonly seen across the county including the urban areas around Luton and Bedford. A pair at Sharnbrook preyed upon Feral Pigeons, the rings of which were discovered in pellet remains.
- Merlin** *F. columbarius* A single at Chimney Corner CIP on 1 January (BRS). A male at Houghton Regis ChP and Dunstable SW on 13 November (NRF PT) followed by a female/immature near Wootton Green on 20, 23 and 26 November (MJP DJO *et al.*). A male at South Mills NR on 18 December (PO).
- Hobby** *F. subbuteo* Breeding was proven at three localities as follows: Site 1, a pair fledged two-three young from a nest in a pine tree; Site 2, a pair fledged at least one juvenile from a nest in an Oak tree; Site 3, three young fledged and seen on the wing with two adults, the nest was in the outer arm of a pylon. There was probable breeding from one other site, where an adult was seen carrying prey towards a likely nest site and possible breeding from a further five localities where birds were regularly seen in suitable breeding habitat. The first migrant to arrive was at Chimney Corner CIP on 30 April with the main passage during early May at a number of sites. The late summer period was particularly fruitful for sightings as the year's crop of juveniles took to the wing. All the main wetlands regularly recorded birds in August and September and one hunted the Swallow roost at Radwell GP from 5-11 September. The final sighting was at Chaul End, Luton on 1 October.
- Peregrine** *F. peregrinus* A first winter male, probably shot, near Barton in early December was the first record since 1976 (*per* PJW).
- Red-legged Partridge** *Alectoris rufa* A widespread breeder. The largest coveys were at South Mills NR with 40 on 12 October and near Warden Abbey when 25 were noted on 30th. At SKF factory in Luton two were seen perched on the canteen roof for c30 seconds before taking off and flying towards Luton.
- Grey Partridge** *Perdix perdix* The majority of records were from the south of the county and along the Ivel river valley. Small numbers were also noted around the clay pits and the largest covey was of 10 at Grovebury Farm SP on 24 December. It continues to be scarcer than the previous species.
- Quail** *Coturnix coturnix* One at Blows Downs was heard from 26 April until at least 3 May. Singles were also heard at Eaton Bray on 17 June and at Tempsford on 24th.



Hen Harrier at Stewartby Lake, November 1988

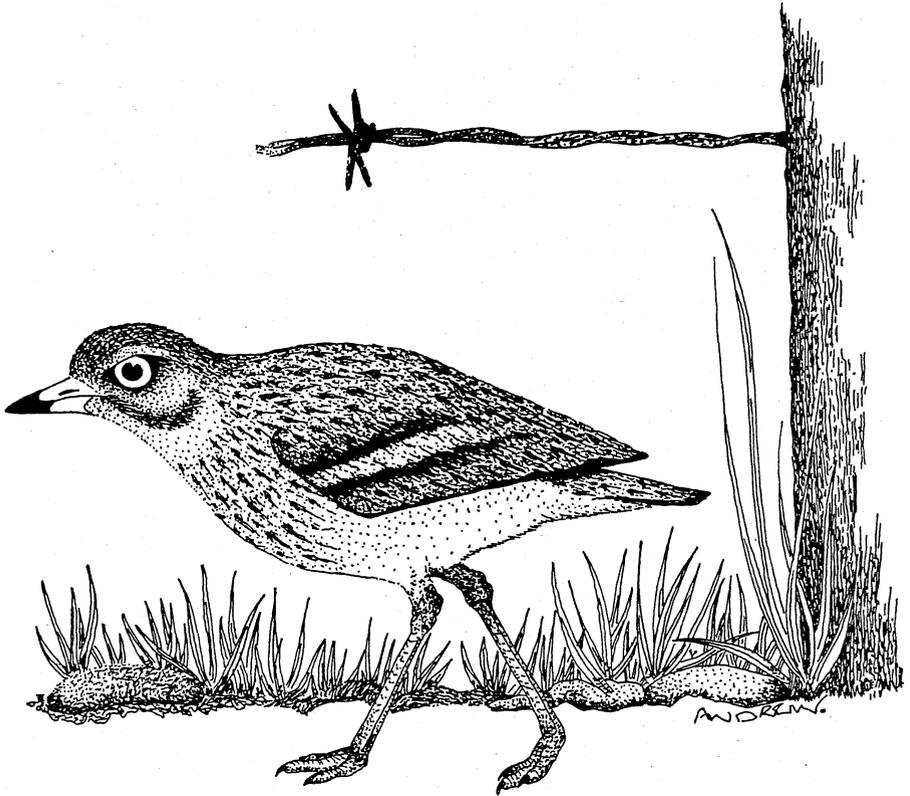
(A.P. Chick)



Sparrowhawk

(A.P. Chick)

- Pheasant** *Phasianus colchicus* A common breeding species, particularly around the country estates of Woburn and Southill.
- Lady Amherst's Pheasant** *Chrysolophus amherstiae* The main site continues to be Maulden Wood where at least six males were heard during the spring. Sightings of ones or twos were also received from Breakheart Hill, Charle Wood and Woburn Park. The more isolated population at Luton Hoo continues its decline; but numbers across the county as a whole are very difficult to assess due to a combination of this species' shyness, and difficulties observers have in gaining entry to private kept land.
- Water Rail** *Rallus aquaticus* Noted at Flitwick Moor all year with up to four pairs during the breeding season. At Harrold GP at least 10 were present in January and breeding was confirmed in the summer with further sightings from September-December. Wintering birds were recorded at Houghton Regis ChP, Brogborough Lake, Stewartby Lake, Leagrave Marsh, Priory CP, Old Linslade, Churchways SP, and also South Mills NR where a single was noted until 4 May.
- Spotted Crake** *Porzana porzana* One at South Mills NR on 23-25 August (PO EN) was the first since 1978 and only the fifth since 1946.
- Corncrake** *Crex crex* One seen and heard at Eaton Bray on 23 June had apparently been present for approximately 14 days (RD).
- Moorhen** *Gallinula chloropus* The only large count was from South Mills NR with 26 on 3 September.
- Coot** *Fulica atra* The main winter concentrations were at the clay pits with peaks of 979 at Brogborough Lake on 18 December, 194 at Chimney Corner CIP on 17 October and at Harrold CP along the Ouse valley with 450 on 12 November. Bramingham Wood, Luton, recorded its first when one stayed briefly on the pond in April.
- Oystercatcher** *Haematopus ostralegus* Another good year for this species with the first sighting at Stewartby Lake on 28 March followed by a pair from 30 April-24 May that were also seen in Rookery CIP and Chimney Corner CIP throughout May until 28 June. Up to six birds were probably in the clay pits during the spring. Elsewhere there was one at Woburn Park on 13 April, two at Radwell GP on 14 May and one at South Mills NR on 5 May. In the autumn South Mills NR held seven on 30 July followed by up to two in the Stewartby area from 13-25 August with a single at Harrold CP on 24 September. In December one flew over Bromham on 4th and finally one was at Radwell GP on 31st.
- Stone Curlew** *Burhinus oedipnemus* One at Houghton Regis ChP on the morning of 14 May moved to a nearby bean field where it stayed to delight many observers until dusk (NRF *et al*). One at Rookery CIP on 10th September (DJO). These are the first county records since 1980.
- Little Ringed Plover** *Charadrius dubius* The first migrants were two at South Mills NR on 18 March followed by three at Willington GP on 26th. Passage was then widespread during April across the county's wetlands. Breeding pairs were noted as follows: Ivel Valley four pairs; Willington GP two pairs; evidence of breeding was also noted at Brogborough No2, Chimney Corner CIP and Rookery CIP. Autumn passage was particularly strong at Bedford SW with a peak of 8 on 10 July and 15 on 11th. Elsewhere small numbers were recorded through the clay pits and along the Ivel, Ouzel and Ouse river valleys with the last sighting at South Mills NR on 14 September.
- Ringed Plover** *C. hiaticula* Passage began early this year with two at Stewartby Lake on 10 February followed by five on 18th and six at Chimney Corner CIP on 21st. Good numbers occurred throughout the clay pits during the spring with breeding pairs at Rookery, Chimney Corner and Brogborough No.2. South Mills NR had birds from 16 February with approximately five pairs breeding, and nesting was also noted at Willington GP, Harrold CP and Radwell GP. Priory CP also had February records on 18th and 21st and a light April passage. As with the last species the autumn passage was protracted and widespread with the final migrant at Chimney Corner CIP on 28th September. An unusual winter record was one at Stewartby Lake on 27 November.



Stone Curlew at Houghton Regis ChP, May 1988

(A.P. Chick)

Golden Plover *Pluvialis dominica* A large flock in the Radwell area during the first winter period peaked at c3000 in early January with up to 1000 present for most of the month and into February. In the Ivel valley the flocks were more mobile and birds could be seen between Tempsford and Henlow; 7-800 at Biggleswade on 10 January was the best count. A flock of c100 haunted Cardington Airfield during the first winter period and 700 were at Wyboston on 30 January. Chawston attracted c450 in mid-February with c500 at Cople on 9 March and c500 at Chimney Corner on 21 February. Lesser numbers were received from a further eight sites along the Ouse Valley plus Cranfield Airfield, Grovebury SP, Elstow, Kempston, Battlesden, Eggington, Tilsworth, Eaton Bray and Houghton Regis. The final spring date was 50 at Wilden on 15 April. First to return were two at Rookery CIP on 21 August with the main arrival at the traditional sites from November. At Cuckoo Bridge GP several were noted wading belly deep in water on 24 September.

Grey Plover *P. squatarola* Singles at Rookery CIP on 11 and 16 May (LC DT). One at Cuckoo Bridge GP on 15-16 September (MJP DHB).

Lapwing *Vanellus vanellus* Up to 2000 were at Radwell in January with c2000 at Wyboston on 30th and a massive c5000 in Rookery CIP on 31st. The latter flock, or another the same size was noted at Chimney Corner CIP on 21 February. With the onset of fieldwork for the Breeding Bird Atlas many pairs were discovered in farmland tetrads with particularly high concentrations nesting in Rookery CIP. The first eggs hatched at South Mills NR on 24 April where 12 pulli were ringed. Post breeding movements were noted from late July at the clay pits and along the river valleys with a strong influx on 6 August involving many thousands of birds.

Second winter period counts of note were as follows: c1000 Grovebury Farm SP in December; c1500 at Cardington on 31 December and c500 at Radwell all month.

Knot *Calidris canutus* One at South Mills NR in summer plumage on 10-11 June was the first since 1985 (EN PO DT).

Sanderling *C. alba* One at Rookery CIP in breeding plumage on 9 and 10 May (DT) followed by another from 16th-18th also at Rookery CIP (DJODT LC) and an adult at Chimney Corner CIP on 25 May (DT). At South Mills NR an adult was noted on 23 July (PO).

Little Stint *C. minuta* A single at Chimney Corner CIP on 1 September was probably the same bird that moved to Bedford SW on 2nd, staying until 6th. One at Rookery CIP on 3 September was joined by another on 4th and were then seen intermittently until 17th, and a single was at Chimney Corner CIP on 25-28 September. (DT LC MJP DJO *et al*). All birds were in juvenile plumage.

Curlew Sandpiper *C. ferruginea* Five at Chimney Corner CIP on 24 August declined to one later in the day (SW MJP). On 3 September three-four were at Bedford SW with possible movement between there and Chimney Corner CIP until 16th when a record eight birds were counted, the highest number ever recorded in the county. Two more were at Rookery CIP on 15 September. (DT LC DJO MJP *et al*). An exceptional passage year for this high arctic wader which was also noted in surrounding counties.

Dunlin *C. alpina* As with the other calidrids 1988 was an unprecedented year for this species with a near continuous presence in the clay pits from April to September. One at South Mills NR on 13 February was followed by three at Radwell GP on 19th. Singles appeared at the usual wetland sites through March and into April with an increase in numbers during May. The majority of sightings came from South Mills NR and the clay pits with top counts of 10 at Rookery on 8 May and 12 at Radwell GP, also on 8th. Late birds, still in summer plumage, were at South Mills NR on 13 and 18 June and the return passage across the county when many small groups were noted. Double figure counts were as follows: Chimney Corner CIP 10 on 26 July, 14 on 27th, 16 on 28th, 10 on 31st, and 10 on 28 August; Rookery CIP 16 on 27 July, 19 on 13 August and 10 on 16th and 18th. The final passage birds were six at Chimney Corner CIP on 28 September and there was one winter record from Radwell GP on 17 December.

Ruff *Philomachus pugnax* First were two at Chimney Corner CIP on 6 March followed by singles at South Mills NR on 16th and from 23rd-26th. One was at Priory CP on 5 April with two at South Mills NR 14th and a flock of 16 on 22nd. In the autumn two at Brogborough No.2 on 9 August were first followed by one at Chimney Corner CIP on 27th and on 4 September, one at Rookery CIP on 4th and 11th, one at Stewartby Lake on 15th, a single at Cuckoo Bridge GP on 15 and 16 September, and finally two over Priory CP on 15 November.

Jack Snipe *Lymnocyptes minimus* A maximum of four were at Houghton Regis ChP from 1 January-29 April with the first returning bird on 16 October and two by December. South Mills NR held a maximum of three from January to 12 April and none in the second winter period, while at Grovebury Farm SP a single on 4 December was joined by a second bird on 24th.

Snipe *Gallinago gallinago* 'Drumming' was noted at: Wyboston, six; South Mills, four; Rookery CIP, four; Stewartby Lake, one; Millbrook Test Track, one; Houghton Regis ChP, one and at Old Warden where a pair raised young. The larger clay pits attracted good numbers outside the breeding season with c40 at Coronation 31 January, c30 at Rookery on 11 February and 40-50 at Radwell in December. Records were received from a wide variety of wetlands across the county involving smaller numbers during the winter months.

Woodcock *Scolopax rusticola* In the breeding season 'roding' was noted at the following: Wilstead Wood, Aspley Heath, Old Warden, Maulden Woods, The Lodge, Steppingley Wood, Palmers Wood, West Wood, Home Wood, Wavendon Heath, Amphill, Warden Great and Little Woods, Barton Hills and Everton. Several November sightings, particularly in the south of the county, suggested a slight influx.

Black-tailed Godwit *Limosa limosa* An adult in moult at Stewartby Lake/Rookery CIP on 24 August stayed until 2 September (DJODT) with a juvenile at Chimney Corner CIP on 18

September (DT). At South Mills NR an immature from 17-21 September (EN PO).

Bar-tailed Godwit *L. lapponica* One at Houghton Regis ChP on 22-25 April (NRF DT *et al*) followed by another at Chimney Corner CIP on 30th (RAN) and one at Dunstable SW on 1 May (PT). In the autumn two at South Mills NR on 9 October (PO).

Whimbrel *Numenius phaeopus* Singles over Priory CP and South Mills NR on 1 May followed by singles over Stewartby Lake on 10th, Tempsford Airfield on 13th, Bedford Green on 14th and seven over Chimney Corner CIP on 17th. On return passage singles were noted overhead at CIP on 15 July, Houghton Regis ChP on 24th, Everton on 26th, Brogborough No.2 on 27th and four at Kempston on 26th.

Curlew *N. arquata* Two at Cranfield on 21 January were first, followed by singles at South Mills NR on 10 March and at Dunstable SW and Sewell on 27th. In April one was at Radwell on 3rd with three on 4th, singles at South Mills NR on 15th and 19th, Stewartby Lake on 22nd and finally at Brogborough on 22nd. One over Priory CP on 16 June was early on return passage, but more normal were singles over The Lodge on 6 July and South Mills NR on 19 July with two over Tilsworth Golf Course on 8th. The only September sighting was at Brogborough on 5th followed by singles at South Mills NR on 9 October, Stewartby Lake on 30th and lastly at Houghton Regis ChP on 20 November.

Spotted Redshank *Tringa erythropus* One over Priory CP on 3 April with one at South Mills NR on 8th-9th and an adult on 21 July. Singles at Willington GP and Rookery CIP on 7 and 8 August respectively.

Redshank *T. totanus* Breeding occurred at South Mills NR with up to four pairs, first young fledged on 15 May, adults left by 26 June; Rookery CIP, two or three pairs; Stewartby Lake, one pair; Radwell and Harrold GP, one or two pairs; Chimney Corner CIP, two or three pairs and at Houghton Regis ChP only one pair bred raising at least one juvenile, despite constant disturbance. This species was widespread as a passage migrant being recorded from 12 January — 17 October with a strong March/April movement involving many birds. Double figure counts at South Mills NR were as follows: 17 on 14 March peaking to a maximum of 32 on 22nd, 26 on 30th and 32 on 8 April. Elsewhere during the spring, numbers were generally under 10 birds per site with a much reduced autumn figure.

Greenshank *T. nebularia* The only spring records, all of singles, came from Willington GP on 16 April, Dunstable SW on 1 May, Radwell GP on 8th and Priory CP on 18th, 20th and 21st. Autumn passage was widespread from 7 July at South Mills NR to 1 October at Radwell GP and involved about 30 birds at 13 wetland sites (mainly exhausted gravel pits) plus Whipsnade Zoo on 4 September. At South Mills NR an adult trapped and ringed on 3 September was found seven weeks later shot in southern Portugal.

Green Sandpiper *T. ochropus* A maximum of three wintered from 1987 at Dunstable SW with several at Willington GP and Bedford SW from mid-February. A March/April passage was recorded at the aforementioned sites plus Priory CP, South Mill NR, Houghton Regis ChP, Fox Corner SP with a high of five at Willington GP on 26 March. First to return was a single at Dunstable SW on 1 June followed by a widespread and protracted July/August movement at all the main wetland sites including the Ouzel Valley. Willington GP had the top count with seven on 31 August and small numbers again stayed to winter at Dunstable and Bedford SW and adjacent still waters.

Wood Sandpiper *T. glareola* One in breeding plumage stayed at South Mills NR from 5-7 May, followed by one on 9th and 21 June (EN PO MJP *et al*). At Houghton Regis ChP an adult was present on 21 May (NRF DT *et al*). In the autumn one at South Mills NR from 2-8 August (EN PO *et al*) and finally another at Chimney Corner CIP on 29th (MJP).

Common Sandpiper *Actitis hypoleucos* One at Radwell GP on 28 February was exceptionally early with the next sighting of three at Brogborough Lake on 13 April. There then commenced a steady passage across the county's wetlands with some observers commenting on low numbers, e.g. at Dunstable SW there were only two spring records, one on 26 May being the last spring sighting. Numbers picked up considerably on the return passage from 3 July at Grovebury Farm SP into August where Bedford SW had the top count of 11 on 13th. The

final records came from, typically, two well-watched sites, Priory CP and Stewartby Lake on 13 October.

Turnstone *Arenaria interpres* In the spring two were at Radwell GP on 2 May followed by one at Rookery CIP on 10th-11th and a different bird on 12th. An adult at South Mills NR on 24 July was the only autumn record.

Pomarine Skua *Stercorarius pomarinus* One in immature/first winter plumage was noted at Brogborough Lake and Tip from 20-28 November (PO TR MJP *et al.*). This was only the second county record since 1946.

Arctic Skua *S. parasiticus* One near Bison Hill, Dunstable on 4 September (AJL).

Mediterranean Gull *Larus melanocephalus* A first winter at Brogborough Tip on 23 January (MJP CT) followed by an adult in full breeding plumage at Rookery CIP on 15 July (DT DJO *et al.*).

Little Gull *L. minutus* Brogborough Lake had the first on 12 April with another on 22nd and five adults at Priory CP also on 22nd. A second wave passed through in the first half of May as follows: Stewartby Lake, one on 1st, 4th and 9th with three on 10th, and two on 11th, Brogborough Lake, one on 3rd and 4th, Rookery CIP, one on 11th, Priory CP, two adults on 12th, two immatures on 13th. In the autumn all records came from Stewartby Lake as follows: one on 13 August and 2 September, and on 4th, 6th 7th with finally two on 25th.

Black-headed Gull *L. ridibundus* The breeding colony at Millbrook CIP held c50 pairs with a similar number at Coronation CIP. No detailed winter counts were received but many thousands roosted at Brogborough and Stewartby Lakes during the winter months. Colour dyed birds from Cambridgeshire were noted at Bedford and Elstow.

Common Gull *L. canus* Noted at the clay pit tips and lakes during the winter periods in good numbers.

Lesser Black-backed Gull *L. fuscus* Spring passage was noted in mid-May at Woburn Park, Flitwick and Old Warden with 116 at Tilsworth on 26th. Returning passage birds were noted in the clay pits from August with up to 1000 at Brogborough on 9th.

Herring Gull *L. argentatus* Good numbers at the clay pit roosts during the winter months with a first winter at Brogborough Lake on 10 December which had white outer primaries.

Iceland Gull *L. glaucooides* A second winter bird at Brogborough Lake on 24th January (MJP DT) was probably the same one that had been at Pitsford, Northamptonshire on 17th.

Glaucous Gull *L. hyperboreus* A first winter at Brogborough Lake and Tip 2-9 January from 1987. A second winter at Brogborough Lake on 19 March (DJO) followed by a first winter on 29-30 December (DHB).

Great Black-backed Gull *L. marinus* No detailed counts but present in small numbers around the clay pits during both winter periods.

Kittiwake *Rissa tridactyla* Seven at Brogborough Lake on 5 March with a single moving between there and Stewartby Lake from 21-29 March (RAN MJP PA *et al.*).

Common Tern *Sterna hirundo* Successful breeding was noted at the following: Chimney Corner CIP, three pairs; Rookery CIP, two pairs; Radwell GP, two pairs; Harrold CP, one pair and at Grovebury Farm SP where one pair benefited from an artificial island to raise two juveniles. The first migrant bird was at Priory CP on 12 April followed by a strong passage across the county, during the latter half of the month particularly at Stewartby Lake, Harrold CP, Radwell GP, Priory CP and South Mills NR. A party of 14 'white terns' over Barton on 8 May were of note. Good numbers were regularly seen in August-September as birds moved south again, the highest count being 19 at Stewartby lake on 21 August with the last sighting there on 17 September.

Arctic Tern *S. paradisaea* The 25 April saw a remarkable movement with up to 64 at Stewartby lake and at least 19 at Priory CP. A single was at Stewartby on 26 April followed by eight on 30th and a total of 16 at Priory CP the same day. The latter site recorded four on 1 May and 29 on 9th with 10 at Stewartby on 1st and a single at Brogborough Lake on 15th. In the autumn Stewartby Lake as follows: c20 on 1 September and a well-watched first winter bird from 1-14 October which was joined by a second on 1st and from 7th-14th.

Little Tern *S. albifrons* One at Stewartby Lake on 17 August (LC).

- Black Tern** *Chlidonias niger* First were three at Priory CP on 22 April followed by 12 on 7th May, 10 on 8th, one on 9-12th, six on 16th and one on 11 June. Brogborough Lake had one from 23-27 April and at South Mills NR one on 25th. At Stewartby Lake, two on 6 May, 17 on 7th-8th, one on 10th-12th. Radwell GP, three on 9 May, Harrold CP, three on 17 June and at Houghton Regis ChP five on 7 May. In the autumn a single at Rookery CIP on 27 July was followed by one at South Mills NR on 16 August and at Stewartby Lake as follows: 12 on 5 September, two on 6th, four on 7th, three on 8th and finally one on 9th.
- Feral Pigeon** *Columba livia* The only large counts reported were c220 at Elstow CIP on 2 January and c150 in Luton town centre on 20th.
- Stock Dove** *C. oenas* No large counts received, although 'good numbers' on the fields around Warden Hills during the winter months.
- Woodpigeon** *C. palumbus* Large counts were: 1,700 at East Hyde on 14 January and 1,500 north of Harlington on 7 March. An albino was reported at Honeydon on 31 May.
- Collared Dove** *Streptopelia decaocto* Twenty roosting at Priory CP in December was the only roost reported. One leucistic individual at Dunstable during December.
- Turtle Dove** *S. turtur* One at South Mills NR on 19 April was the first with the main passage during May. This species continues to be locally distributed as a breeding bird. The final sighting was at Whipsnade Zoo on 20 September.
- Ring-necked Parakeet** *Psittacula krameri* One over Warden Hills on 21 April followed by one or two in the Southill area from October-December.
- Cuckoo** *Cuculus canorus* The first arrival at Chalgrave on 14 April was followed by a strong passage until the month's end. Breeding numbers were stable at the Old Warden CBC plot and the final sighting was a juvenile at Dunstable SW on 13 September.
- Barn Owl** *Tyto alba* Breeding was confirmed at the traditional Willington Dovecote site plus in SP93, TL11, TL14 and TL24. Reports were received from a further 10 sites and birds were found dead, as road casualties, at Bromham in late September and at Millbrook Test Track in June.
- Little Owl** *Athene noctua* Widely reported throughout the year from many sites across the county. An indication of the population came during fieldwork for the Atlas when many pairs were located. Up to five pairs were in the Thorn/Bidwell area of North Dunstable with the same number in the Kempston area. One found dead near Wilstead on 1 June is now at Bedford Museum.
- Tawny Owl** *Strix aluco* Breeding Bird Atlas data suggest that this owl is particularly abundant in the more wooded areas of the county. Luton Hoo recorded up to five pairs.
- Long-eared Owl** *Asio otus* Breeding was confirmed in TL14 and at a site in the south of the county. Elsewhere outside the breeding season two were in the Girtford area from January-March with single bird sightings in June and September. Singles were noted at Barton in June, Wilden and Sandy in April with up to two at Everton on 29-30 November.
- Short-eared Owl** *A. flammeus* Up to four were noted at Millbrook Test Track until at least 5 March. At South Mills NR one on 12 March, 8-9 April and 29 October.
- Nightjar** *Caprimulgus europaeus* A male singing at Old Wavendon Heath on 31 May and 1 June was the only breeding season record, despite extensive searching along the Lower Greensand Ridge. One dead near Thurleigh on 23 September was a traffic casualty.
- Swift** *Apus apus* The first was at South Mills NR on 23 April with the main passage in early May. Priory CP had c120 on 14 May and the final migrant was on 8 September at Whipsnade Zoo.
- Kingfisher** *Alcedo atthis* A succession of mild winters has resulted in good numbers at most wetland sites. It was reported from 40 localities with the most regular sightings at Stewartby Lake, Priory CP, South Mills NR and along the River Ivel, Flitwick Moor and Leagrave Marsh.
- Hoopoe** *Upupa epops* One at Rose Farm, Shillington on 14-16 April (RW) was the first record since 1982.
- Green Woodpecker** *Picus viridis* Most sightings from the Greensand woodlands and around the clay pits. At the Old Warden CBC plot three pairs bred and Bramingham Wood recorded its first bird for about four years in November.

Great Spotted Woodpecker *Dendrocopus major* Widely seen across the county's woods and parklands.

Lesser Spotted Woodpecker *D. minor* Breeding was recorded at Blunham, Deepdale and at Old Warden where four males were noted on 16 April. Breeding season records also came from Stockgrove CP, Breakheart Hill, Priory CP, Putnoe Wood, Everton, Warren Wood, Harrold CP, Woburn Park and Milton Bryan. Elsewhere noted at Maulden Wood, Woburn, Luton Hoo, Shillington, Cityfields GP, Henlow, Girtford GP, Kempston, Willington, Stewartby, Bedford, Milton Wood and Whipsnade Zoo.

Passerines

Skylark *Alauda arvensis* The only large count was of c100 at Wooton Green in November.

Sand Martin *Riparia riparia* The first were at Everton and Brogborough Lake on 20 March with the main passage from mid-April to mid-May. Breeding occurred as follows: Myers Farm SP, Potton, c100 nest holes; Grovebury Farm SP, 90 pairs; Aspley Heath SP, 35 pairs; Leighton Buzzard Golf Club, 30 pairs and Bedford Embankment, eight pairs. On return passage c30 were at South Mills NR on 22 August with the first sightings at Houghton Regis ChP on 25 September.

Swallow *Hirundo rustica* Blows Downs recorded the first on 1 April with a good passage there and elsewhere in the county on 16-17. A roost of c1000 had assembled at Radwell GP in September and the final sighting was at Priory CP on 18 October.

House Martin *Delichon urbica* The first at Priory CP on 1 April was early, followed by the main wave from mid-month. A good passage was recorded in late September across the county with the last sighting at Linslade on 5 November.

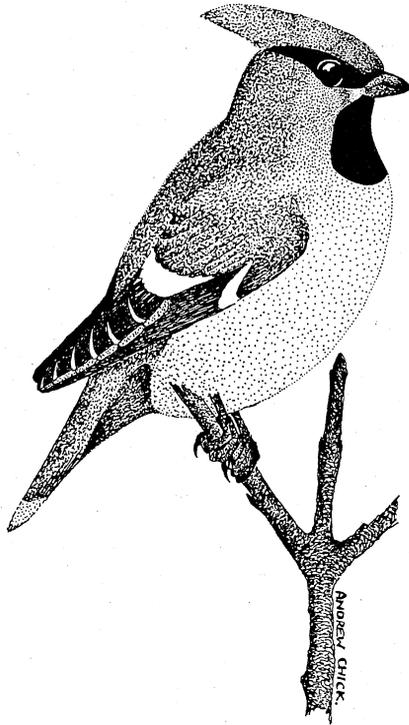
Tree Pipit *Anthus trivialis* The Lodge, Sandy reported the first on 11 April, followed by a light passage until the month's end. Singing males were noted at 12 localities along the Lower Greensand Ridge with a particularly high concentration in the Aspley Heath complex where approximately 20 pairs were counted. In the south of the county singing was noted at Houghton Regis ChP, Whipsnade Golf Course and on Blows Downs. In the autumn noted only at Harrold CP on 16 August and Radwell GP on 24 September.

Meadow Pipit *A. pratensis* Breeding records from Blows Downs, Deacon Hill, Dunstable Downs, Houghton Regis ChP, Warden Hills and Rookery CIP. Spring passage at Blows Downs peaked at c230 on 22 March with lesser numbers noted at South Mills NR and Priory CP. In the autumn up to 100 were recorded at Radwell GP and South Mills NR in mid-September with 50-60 at Grovebury Farm SP on 2 October. Small wintering flocks were at Dunstable SW and South Mills NR.

Yellow Wagtail *Motacilla flava* First recorded at Radwell GP on 2 April and then a widespread passage a week later across the county. Priory CP had between 20-40 in April with a high of 56 on 15th. Harrold CP, maximum of 40 on 23 April, Dunstable SW, 50 on 22 April, with double figure counts from Stewartby Lake, South Mills NR and Radwell GP. Breeding records were confirmed from farmland tetrads in TL02 and SP92 where several pairs were noted nesting in bean fields well away from wetland. Autumn passage was noted at: Chimney Corner CIP, 37 on 1 August; Stewartby Lake, up to 40 on 20 August and 50 on 4 September; Chalton SW, c50 on 4 September; with the final migrant at Houghton Regis ChP on 16 October. Two at Dunstable SW on 2 May with one on 3rd, one at Priory CP on 22 April and one at South Mills NR on 27 August.

Grey Wagtail *M. cinerea* Breeding records came from Linslade Mill, Luton Hoo, Harrold and a new site, Chalgrave Manor. Winter records were received from a further 20 localities with a light passage at the end of August/early September. Five roosting together at Stewartby Lake on 3 October were of note as were four at Priory CP in January.

Pied Wagtail *M. alba*. Numbers flying to roost over Priory CP peaked at 272 on 6 February. Elsewhere 200 pre-roosted at SKF factory, Sundon Park, Luton with 50 at Goldington on 6 April. Passage was noted during late March/early April at several localities and the following



Waxwing, November 1988

(A.P. Chick)

White Wagtails, *M.a. alba* were recorded: Blows Downs, one on 21 March; Harrold CP, one on 6 April; South Mills NR, singles on 6 and 16 April and at Priory CP on 24 April and 1 May.

Waxwing *Bombycilla garrulus* A second winter period influx was recorded across eastern England and in the county as follows: The Lodge, Sandy, two on 1-2 November (PF); near Eaton Socon, three on 8th (*per* PT); The Lodge, three on 16th (IKD); Glebe Road, Sandy, one on 2 December (DHB BN); Marsh Farm, Luton, two or three on 8th (BN); Stewartby, one on 15th (PA) and at Maulden Wood, up to five between 12-17 December (MJP *et al*).

Wren *Troglodytes troglodytes* Recent mild winters were reflected in numbers at the Old Warden CBC plot increasing from 12 pairs in 1986 to 44 pairs in 1988.

Duncock *Prunella modularis* Numbers were stable at the Old Warden CBC plot.

Robin *Erithacus rubecula* A slight increase in the CBC plot at Old Warden.

Nightingale *Luscinia megarhynchos* The first migrant was at Waterloo Thorns, Everton on 22 April with eight or nine singing during May and one in the village on 7th. Elsewhere singing was reported from Home Wood, Battlesden Lake, Aspley Heath, Stafford Bridge, Oakley, Old Warden CBC, Maulden Wood and Potton Wood.

Black Redstart *Phoenicurus ochruros* One-two at the old test track, Caddington on 13 April followed by a female on Blows Downs on 16th and a male on 2 May, with a female at Houghton Regis ChP on 7th. A male at Cockayne Hatley on 23 October roosted on the roof of a house.

- Redstart** *P. phoenicurus* A good passage was recorded on Blows Downs during the spring with the first two on 11 April followed by singles on 13th and 15th, five on 17th, one on 19th-21st, 25th, 27th and 5 May; Whipsnade Zoo, singles on 20, 22 and 28 April; Everton, one on 17 April; Caddington, one on 17th; Priory CP one on 21st; Aspley Guise, one on 24th; Cople, one on 28th; Flitwick, two on 29th. Breeding season records came from Aspley Heath and Heath and Reach. In the autumn one at Houghton Regis ChP on 28 August, followed by singles at South Mills NR on 29-31st; Whipsnade Zoo on 7-8 September; Sundon Park, Luton on 8th-9th; Carlton on 24th; Chalton on 25th, and finally at South Mills NR on 2 October.
- Whinchat** *Saxicola rubetra* The main spring passage was at Blows Downs from 16 April followed by small numbers on seven days until 6 May with a peak of four on 21-23 April. Elsewhere during this period noted from Dunstable SW, Warden Hills, Whipsnade Zoo, Priory CP, Harrold CP, Brogborough Lake, Stewartby Lake, South Mills NR. Return passage was noted between 13 August-23 September at the above localities, plus Totternhoe, with the top count of six at Dunstable SW on 16 August. A late migrant was at Priory CP on 15 October.
- Stonechat** *S. torquata* One at Castle Mills, Bedford on 31 January with a different bird on 28 February. Elsewhere as follows: Cranfield Airfield, one on 8 March; Houghton Regis ChP, one on 22-24 April; SKF, Sundon Park, Luton, one on 30 September and Stewartby Lake, one 11-17 December.
- Wheatear** *Oenanthe oenanthe* A widespread spring passage across the county from the first at Blows Downs on 21 March where continuous monitoring recorded a near daily passage until 6 May. The main peaks were 20 on 22 March, 11 on 24-25th and 29th. The majority of records came from the chalk downs with a scattering of records from the well-watched wetland sites. Returning migrants were noted from mid-August until the final sighting at Carlton on 25 September. Individuals of the Greenland race *O. o. leucorrhoe* were noted at Blows Downs on 16-17 April and Dunstable SW on 16 September.
- Ring Ouzel** *Turdus torquatus* Another remarkable spring passage on Blows Downs which opened with the earliest ever county record when a male was seen on 22 March. In total at Blows 15 bird days were recorded until 29 April with a maximum of seven individuals on 15-16 April. Elsewhere noted as follows: Pegsdon Hills, one on 12 April; Bison Hill, four on 14th and one on 20th; Warden Hills, one on 14th; Priory CP, one on 15th; Barton Hills, one on 17th; Wrest Park, one on 24th and Houghton Regis ChP one on 24th and 26th. In the autumn a mid-October movement was noted at Whipsnade Zoo, a single on 15-17th and at Blows Downs, one or two on 16th and three on 19th.
- Blackbird** *T. merula* Breeding pairs at the Old Warden CBC plot increased to 52, the highest since 1965. Influxes of 30 at Priory CP and Harrold during January.
- Fieldfare** *T. pilaris* Reasonably numerous during both winter periods. At Priory CP 680 moved WSW in one hour (one party containing one Snipe and another two Snipe) on 13 January with 200 noted at Great Barford on 10th. In February c100 passed west over Woburn on 20th followed by c150 at South Mills on 24th and 70 at Radwell on 6 March. Elsewhere flocks of up to 50 were noted at seven further localities before the final sighting at Blows Downs on 20 April. A single, minus tail, was at Wyboston on 4 June. Battlesden recorded the first returning birds on 10 September followed by a widespread October-November influx when 300-400 were at Tebworth on 23 October and c700 at Priory CP on 13th November. The 3-4 December prompted one observer to remark "As numerous in Bedfordshire this weekend as I can ever recall, with very large flocks near M1, junction 13, Brogborough, Stewartby and the A421 SW of Kempston".
- Song Thrush** *T. philomelos* Many observers commented on its scarcity while undertaking fieldwork for the Breeding Bird Atlas.
- Redwing** *T. iliacus* Good numbers in the first winter period with up to 400 at Whipsnade Zoo; c50 at Sundon Hill on 2 January and 100 near Westoning on 2 March before the final migrant at Blows Downs on 16 April. The first returning bird at Chimney Corner CIP on 4 September was early, followed by heavy nocturnal movements over Dunstable from 23-30 October.



Sedge Warbler

(P. Marshall)

The only large flock reported in the second winter period was c200 at Harrold CP on 4 December.

Mistle Thrush *T. viscivorus* Post breeding flocks of note were as follows: Everton, c30 on 20 August; Whipsnade Zoo, 42 feeding on Rowan berries on 23rd; Luton Hoo, c50 on 23rd and Wrest Park, 25 on 13 September.

Grasshopper Warbler *Locustella naevia* The first at Old Warden on 16 April was followed by the main arrival over the following three weeks. 'Reeling' was heard at 20 sites mainly along the chalk downlands and the Lower Greensand Ridge but also at several wetlands. Up to five were at Northill in early May.

Sedge Warbler *Acrocephalus schoenobaenus* Priory CP had the first on 12 April followed by the main arrival across the county over the following week. At Priory CP passage peaked on 24 April when 54 singing males were counted with 30 holding territory during the breeding season. Atlas workers discovered breeding pairs in farmland ditches and open crops, particularly where field beans were grown. The final migrant was at Dunstable SW on 18 September.

Reed Warbler *A. scirpaceus* Priory CP recorded the first and last on 19 April and 30 September respectively. Breeding records were received from only five localities with Houghton Regis ChP noting the highest number of pairs at 13.

- Lesser Whitethroat** *Sylvia curruca* First and last dates were at Blows Downs on 19 April and at Harrold CP on 25th September, with a light spring passage noted at the former locality.
- Whitethroat** *S. communis* The first at Blows Downs on 19 April was followed by a good passage over the following week. CBC data from Old Warden recorded further increases from only three pairs in 1983 to 11 pairs in 1988. The final sighting was at Legrave Marsh on 29 September.
- Garden Warbler** *S. borin* Harrold CP recorded migrants on the extreme dates of 17 April and 17 September. At South Mills NR a female retrapped on 7 May was ringed on 18 May 1984 as an adult, proving that it was over five years old.
- Blackcap** *S. atricapilla* Wintering individuals were noted between January and March at Dunstable, Luton, Clophill, Everton and Bedford. The main arrival of passage migrants was in mid-April and at Old Warden CBC plot breeding numbers remained stable at 10 pairs. From November to December noted at Barton.
- Wood Warbler** *Phylloscopus sibilatrix* On the Lower Greensand Ridge at Aspley Heath a male on 30 April was joined by a female during May when copulating was noted. At The Lodge, two different individuals were holding territory from 5 May-6 June and 10-13 May with another singing male elsewhere in the Sandy area during the last week of May. A migrant at Whipsnade Zoo on 5 May was the only passage bird.
- Chiffchaff** *P. collybita* The first at Whipsnade Zoo on 22 March was followed by a widespread passage until mid-April across the county. At Old Warden CBC plot the increase continues with 10 pairs recorded. Return passage was noted into October at several sites followed by wintering birds at Priory CP during November-December with a maximum of four on 14 December. Elsewhere singles at Brogborough Lake on 6 December, Stewartby Lake on 17th-18th and Kidney Wood, Luton on 4th.
- Willow Warbler** *P. trochilus* A single at Blows Downs on 22 March was the earliest record for 27 years followed by the main passage from 1 April. At Priory CP a peak of 28 singing males was noted on 14 April. During the autumn a fall was recorded at Harrold CP on 18 August, where 30 were caught and ringed including one which had been ringed at Gibraltar Point, Lincolnshire on 9th. The last record was at Dunstable on 16 October.
- Goldcrest** *Regulus regulus* Large numbers noted at many sites during October, particularly at The Lodge, Sandy, when several observers noted garden records.
- Firecrest** *R. ignicapillus* A pair at the Millbrook complex from 2-8 April probably remained until the month's end (DJO MJP *et al*). A male singing at Whipsnade Zoo on 28 April (CT) followed by one at The Lodge, Sandy on 27 May (IKD). A male at Tiddenfoot SP on 26 November (GD) was the first autumn record ever.
- Spotted Flycatcher** *Muscicapa striata* One at Caddington on 7 May was first with the main arrival towards the end of the month. Harrold CP had the last migrant on 25 September.
- Pied Flycatcher** *Ficedula hypoleuca* One at Kidney Wood, Luton on 16 April and one on 28th (JJT). A female at Harrold CP on 17 April (DSW MJP) followed by one on Blows Downs on 20th (RD), a male at Barton Hills on 24th (NEA) and two males in Bramingham Wood on 2 May (JT PRS).
- Bearded Tit** *Panurus biarmicus* Six at Priory CP on 14 October with two-six until 28th (GJD).
- Long-tailed Tit** *Aegithalos caudatus* A party of 40 at Tiddenfoot SP on 26 November was the largest reported flock.
- Marsh Tit** *Parus palustris* Breeding numbers at the Old Warden CBC plot remained stable. A flock of 10 at Kidney Wood, Luton on 13 April was of note.
- Willow Tit** *P. montanus* Reported from 17 localities mainly along the Lower Greensand Ridge and the chalk downlands.
- Coal Tit** *P. ater* CBC data from Old Warden showed a stable breeding population.
- Blue Tit** *P. caeruleus* Status at Old Warden CBC plot stable.
- Great Tit** *P. major* The Old Warden CBC population appeared to be similar to 1987 with 27 pairs. At Bramingham Wood a pair reared young from a nest in the trunk of an Elder barely 3½" in diameter.

- Nuthatch** *Sitta europaea* Numbers stable at old Warden CBC plot and other parkland localities.
- Treecreeper** *Certhia familiaris* Breeding population stable at Old Warden CBC plot.
- Great Grey Shrike** *Lanius excubitor* One which wintered in the Ivel valley at Radwell, Hertfordshire was briefly seen in the county near Stotfold on 20 November (D.T).
- Jay** *Garrulus glandarius* An influx was noted from 15 October in many areas with six at Brogborough Lake on 16th. Well-watched Stewartby Lake and Dunstable SW both recorded singles during this period.
- Magpie** *Pica pica* Up to 100 were at the Dunstable Downs roost during both winter periods and 25 at Millbrook Test Track on 20 February were of note. At Old Warden CBC plot numbers were the highest since recording began in 1973, with six pairs.
- Jackdaw** *Corvus monedula* Recorded at its usual parkland haunts plus the clay pit refuse tips. About 200 were at Steppingley Reservoir on 21 December and an albino was at Howbury Hall, Bedford on 19 March.
- Rook** *C. frugilegus* A massive flock of c2500 assembled on fields near Kempston on 8 January. Of 125 nests at Tempsford Hall all were in Oak and Horsechestnut except for three in Holm Oak, two in Beech and one in Silver Birch.
- Carriion Crow** *C. corone* Good numbers at the clay pit refuse tips plus 30 at roost at Sandy Lodge on 26 February.
- Starling** *Sturnus vulgaris* Several observers commented on this species' reduced numbers throughout the year. A roost of several thousand at Bushmead, Luton in November-December.
- House Sparrow** *Passer domesticus* An albino was noted at Tempsford on 20 April.
- Tree Sparrow** *P. montanus* With the onset of fieldwork for the Breeding Bird Atlas small colonies were located in several 10 Km squares. In TL15 it was recorded in four tetrads, in TL02 in three tetrads, all in farmland hedgerow trees, but nowhere was it numerous. Out of the breeding season records came from Totternhoe, Houghton Regis ChP, South Mills NR, Grovebury Farm SP, Exeter Wood, Milton Bryan, Whipsnade Zoo and Warden Hills. The top count was 30 at Exeter Wood on 12 February.
- Chaffinch** *Fringilla coelebs* The largest reported flocks were c150 at Old Linslade on 17 January and 140 at Bedford SW on 27 February.
- Brambling** *F. montifringilla* During the first winter period small numbers were recorded at the following: Whipsnade Zoo, singles in January and March; Leagrave Marsh, up to 20 until mid-March; Warden Park, Luton, 10 on 24 March; Old Linslade, maximum of six on 5 March, Priory CP, The Lodge, Sandy; South Mills NR; Lowes Wood and Blows Downs. Spring records included up to six at Wardown Park, Luton with a male singing on 14 April. In the autumn one at Whipsnade Zoo on 13 October was the first to return followed by 10 at Harrold CP on 16th-22nd; five at Luton Hoo on 23rd; one at Mowsbury Golf Course on 7 November; five at Priory CP on 12th and two at Grovebury Farm SP on 10 December. Small numbers were noted at Everton from 23 October.
- Greenfinch** *Carduelis chloris* Largest flocks were 110 at Millbrook CIP on 6 December and 35 at Grovebury Farm SP on 27th.
- Goldfinch** *C. carduelis* A flock of 20 plus at South Mills NR in August was the largest recorded.
- Siskin** *C. spinus* Flitwick Moor attracted the main wintering flock with up to 100 during January. Elsewhere during January to March, Eversholt Lake attracted up to 30 with lesser numbers reported at Woburn Park, The Lodge, Sandy, Millbrook, Maulden Wood, Kempston, Whipsnade Zoo and Aspley Heath. In April 12 were at Breakheart Hill on 4th. Whipsnade Zoo had c50 on 16-22 September followed by small numbers at Harrold CP and Priory CP until the end of the year. Forty were at Woburn Park on 18 October with lesser numbers at Maulden Wood, Stewartby Lake, Tiddenfoot SP, Clophill, Potton and The Lodge, Sandy.
- Linnet** *C. cannabina* From a peak of 26 pairs in 1975 it did not breed at the Old Warden CBC plot in 1988. Flocks of note were 80 at Priory CP on 13 September, c300 near Marston Mortaine on 20 November and 120 at Houghton Regis ChP on 27th.
- Redpoll** *C. flammea* Widespread during the winter months but only in small numbers. Breeding birds were particularly noticeable along the Ivel Valley at Girtford GPs.

- Crossbill** *Loxia curvirostra* At The Lodge, Sandy small numbers noted from 17 June — 24 August with a maximum of 14 on 18 July. At Whipsnade Zoo two on 13 August and one on 2 September with one at Bromham on 3rd. Aspley Heath had 12 on 18 June four on 19th and two at nearby Aspley Guise on 29 September.
- Bullfinch** *Pyrrhula pyrrhula* Small winter flocks noted along the chalk downland scrub. Breeding numbers stable.
- Hawfinch** *Coccothraustes coccothraustes* Recorded during the breeding season at Warren Wood, Kidney Wood, Luton and Old Warden. Also noted at Maulden Wood, Stockwood Park, Whipsnade Zoo and Studham.
- Yellowhammer** *Emberiza citrinella* The highest counts were 120 at Harlington on 7 March and up to 50 at Tempsford in January and Whipsnade Zoo in November.
- Reed Bunting** *E. schoeniclus* As a result of regular ringing at a roost in Houghton Regis ChP during the winter months the following counts were recorded: 6 and 20 February, 800-1,000; 16 October, 500; 13 November, 650; 11 December, 600; 27 December, 500. A feeding station at Priory CP attracted up to 106 on 7 February.
- Corn Bunting** *Miliaria calandra* Widespread breeding records from farmland areas with good concentrations where intensive fieldwork for the Atlas occurred, eg. eight pairs at Tempsford Airfield and five pairs in the Bidwell area. The bunting roost at Houghton Regis ChP held 49 on 17 January, 68 on 14 February, 112 on 1 October and up to 150 from November – December.

MISCELLANEOUS RECORDS

- Whooper Swan** *Cygnus cygnus* Two pinioned birds throughout the year at Blunham Lake with one or two at South Mills NR, affectionately nicknamed 'Cleo' and 'Pat'.
- Black Swan** *C. olor* One at Harrold CP on 21 February.
- Bar-headed Goose** *Anas indicus* One at the Bedford clay pit complex all year with another at Radwell GP in January-March and again in December. One at Woburn Park with Canada Geese on 17 December was probably the clay pit bird.
- Swan Goose** *A. cygoides* One at East Hyde on 2 February and again on 15 August.
- Snow Goose** *A. caerulescens* Five at Grovebury Farm SP on 7 February with one on 21st and one on 3 and 10 April. A Blue Morph at Radwell GP from 27 November until the year's end.
- Barnacle Goose** *Branta leucopsis* Noted in the Stewartby/Brogborough clay pit complex all year when mainly three-four noted with a peak of 11 in September. Part of this population also visited Woburn Lake where a hybrid Barnacle X Canada Goose was noted on 4 January. Along the Ouse valley small numbers noted periodically at Harrold CP, Felmersham, Radwell GP, Priory CP and Roxton Lake.
- White-faced Whistling Duck** *Dendrocygna viduata* Two on the Ouse at Bedford on 30 June.
- Ruddy Shelduck** *Tadorna ferruginea* A duck at Brogborough Lake on 15 April followed by one at Woburn Park on 12 June, another at Dunstable SW from 18 July-18 August, two at Grovebury Farm SP on 25 September and one at Brogborough Lake on 16 October.
- Cape Shelduck** *T. cana* One at Brogborough Lake on 2 January followed by singles at Luton Hoo on 11 August and Harrold CP on 8 October.
- Wood Duck** *Aix sponsa* Up to four at Swiss Gardens, Old Warden from 25 April with single bird sightings at Priory CP in November-December.
- Saker Falcon** *Falco cherrug* An escaped bird in the Bedford area from October-November.
- Chukar** *Alectoris chukar* Reported from Hatch, Old Warden, Cardington, Brogborough, Willington, Tempsford, Honeydon, Colmworth, South Mills NR and Whipsnade Zoo.
- Golden Pheasant** *Chrysolophus pictus* One at Heath and Reach on 7 August.
- Cockatiel** *Nymphicus hollandicus* One at Bedford on 22 June.
- Chestnut Weaver** *Ploceus rubiginosus* A single at Haynes during October.

ADDITIONS TO 1987 REPORT

Black-winged Stilt *Himantopus himantopus* One at Chimney Corner CIP on 20 April has now been accepted by BBRC.

SELECTED FIRST AND LAST DATES

Summer Migrants

Species

Hobby
Little Ringed Plover
Greenshank
Common Sandpiper
Little Gull
Arctic Tern
Common Tern
Black Tern
Turtle Dove
Cuckoo
Swift
Sand Martin
Swallow
House Martin
Tree Pipit
Yellow Wagtail
Nightingale
Redstart
Whinchat
Wheatear
Ring Ouzel
Grasshopper Warbler
Sedge Warbler
Reed Warbler
Lesser Whitethroat
Whitethroat
Garden Warbler
Willow Warbler
Wood Warbler
Spotted Flycatcher
Pied Flycatcher

Arrival

Chimney Corner CIP 30 April
South Mills NR 18 March
Willington GP 16 April
Radwell GP 28 February
Brogborough Lake 12 April
Stewartby Lake 25 April
Priory CP 12 April
Priory CP 22 April
South Mills NR 19 April
Chalgrave 14 April
South Mills NR 23 April
Everton 20 March
Blows Downs 1 April
Priory CP 1 April
The Lodge 11 April
Radwell GP 2 April
Waterloo Thorns 22 April
Blows Downs 11 April
Blows Downs 16 April
Blows Downs 21 March
Blows Downs 22 March
Old Warden 16 April
Priory CP 12 April
Priory CP 19 April
Blows Downs 19 April
Blows Downs 19 April
Harrold CP 17 April
Blows Downs 22 March
Aspley Heath 30 April
Caddington 7 May
Luton 16 April

Departure

Luton 1 October
South Mills NR 14 September
Radwell GP 1 October
Stewartby Lake 13 October
Stewartby Lake 25 September
Stewartby Lake 14 October
Stewartby Lake 17 September
Stewartby Lake 9 September
Whipsnade Zoo 20 September
Dunstable SW 13 September
Whipsnade Zoo 8 September
Houghton Regis ChP 25 September
Priory CP 18 October
Linslade 5 November
Radwell GP 24 September
Houghton Regis ChP 16 October
—
South Mills NR 2 October
Priory CP 15 October
Carlton 25 September
Blows Downs 19 October
—
Dunstable SW 18 September
Priory CP 30 September
Harrold CP 25 September
Leagrave Marsh 29 September
Harrold CP 17 September
Dunstable 16 October
—
Harrold CP 25 September
—

Winter Migrants

Species

Bewick's Swan
Goldeneye
Goosander
Golden Plover
Jack Snipe
Fieldfare
Redwing
Brambling

Departure

—
Dunstable SW 22 April
Radwell GP 27 March
Wilden 15 April
Houghton Regis ChP 29 April
Blows Downs 20 April
Blows Downs 16 April
Luton 14 April

Arrival

Woburn Lake 4 November
Priory CP 2 October
Harrold CP 30 October
Rookery CIP 21 August
Houghton Regis ChP 16 October
Battlesden 10 September
Chimney Corner CIP 4 September
Whipsnade Zoo 13 October

PAUL TRODD

WHITE STORK IN BEDFORDSHIRE by Gary Player ⁽¹⁾ and Graham Goodall ⁽²⁾

At 0930 hours on 29 August 1988 I (GP) was driving south along the A1 towards Biggleswade near Lower Caldecote when I noticed a large flock of gulls in flight over adjacent farmland with what I first thought to be a Grey Heron. I then realised the bird was too large to be a Heron and I pulled the car onto the grass verge as the 'Heron' flew across the A1 with the group of gulls. As it circled over the field close by I easily identified it as a White Stork *Ciconia ciconia* by its large orangey-red bill, all white plumage with extensive black on the hind wing and large trailing legs. The bird then disappeared for about 15 minutes but was soon relocated in the original field which was being ploughed at the time. At one stage the Stork circled to a great height, then gradually lost height and continued to feed behind the tractor with the gulls. I contacted Graham Goodall who quickly arrived to confirm my find. We then contacted the tractor driver who allowed Graham to ride in the back enabling him to approach close enough to take several photographs. We continued to watch the bird until 1130 when again it took to the air spiralling much higher this time in the warm thermals. It was soon caught in the brisk westerly wind and drifted eastwards until lost from view. Despite being put on the Birdline, via a passing birder's car phone, only 20 people saw this bird which was only the second Bedfordshire record.

Addresses: (1) 3 Mills Walk, Sandy, Beds SG19 1LA

(2) 26 Courtlands Drive, Biggleswade, Beds SG18 8PQ



White Stork near Biggleswade, 29 August 1988

(Photo: Graham Goodall)

POMARINE SKUAS — SHORT NOTE

by Paul Oldfield

Although Pomarine Skuas do not breed in Europe they are regularly seen around our coasts, both on their spring migration and in the autumn/winter. The spring migration northwards is undertaken fairly swiftly with records spanning early April to June with the bulk of the records in the first half of May. Most Pomarine Skuas reach their Arctic breeding grounds in the USSR by early June. In the autumn the migration southwards is undertaken at a much more leisurely pace with immatures and failed breeding adults leaving their breeding grounds as early as July, with the first birds usually reaching the south coast of Britain by late July/early August.

Although the bulk of the migrating Pomarine Skuas probably move down the west coast of Scotland and Ireland a small contingent of birds drift down the Irish Sea and the North Sea/English Channel with numbers usually peaking in September and October, depending to a large extent on the weather conditions in the North Sea and the Atlantic Ocean.

Surprisingly, migration overland appears to be a common strategy with the population of the central USSR breeding grounds appearing to migrate south to the Arabian Sea and the Indian Ocean. This is possibly also true of the Canadian Arctic breeders, which winter in the Gulf of Mexico. Unfortunately, migration patterns are slightly confused by non-breeding birds which tend to wander in the northern oceans rather than returning to the breeding grounds. These probably account for all out of season records in the summer months.

Possibly most of the birds seen around the coasts of Britain winter off the west coast of Africa and perhaps off South Africa and are probably present from November onwards, but some birds are known to linger in more northern latitudes, with records from Scotland during the period 1968-83 as follows: November 114, December 22, January 13, February 7 and March 1.

Taking these facts into account it is therefore not really surprising that Pomarine Skuas occur inland, although sparingly in the UK. On the 20th November 1988 Tim Robson and I were fortunate enough to find such a bird, an immature at Brogborough Lake. It stayed until the 28th November and was seen by many observers. It is interesting to note that the only other record for Pomarine Skua in living memory in the county was at Stewartby Lake on the 14th-18th November 1985, also an immature bird. Both records coincided with movements of the same species, notably on the east coast. Many theories and explanations why Pomarine Skuas travel inland were heard and given, some stating the obvious conclusion that the wind/weather conditions pushed the bird inland. Admittedly weather conditions must have had much to do with it by pushing the bird either down the Irish Sea or North Sea/English Channel and then sending it inland.

But why did it stay for such a long period? Answer, a plentiful supply of food, notably Black-headed Gulls. Much is known about the feeding habits of all species of Skuas on their breeding grounds. In Alaska and the USSR breeding Pomarine Skuas feed almost exclusively on Lemmings. Indeed if it is not a good year for this species and there are insufficient Lemmings many Pomarine Skuas will fail to breed. Non-breeding Pomarines predate small sea birds and waders which surprisingly are the most common birds taken as well as scavenging and piracy, otherwise known as kleptoparasitism. Very little is known about the feeding habits of passage/migrating birds and it was therefore very interesting to watch this Pomarine Skua attack and kill a Black-headed Gull and later attack a Common Gull.

When Tim and I first found the Pomarine Skua it was swimming alone on the water about 200 yards out at the western end of Brogborough Lake. After about five minutes it flew purposefully towards a loafing flock of c40 Black-headed Gulls which were on the water about 100 yards from the bank. The Pomarine Skua flew approximately five feet above the surface of the water and was able to get within 30 yards of the gulls. At this point the gulls panicked, flying in all directions and the Skua appeared to speed up. Not all the gulls flew up, there were perhaps four to five birds still on the water, these only flying when the Skua was more or less on top of them. The Skua then grabbed one

by the right wing and dropped to the water with the gull. The Black-headed Gull fought back, pecking at the attacker, but the Skua persisted and, while still having hold of the gull's right wing, manoeuvred so that it was standing on its back. This half submerged the gull and the Skua continued pecking the wing around the carpal, sometimes pulling feathers out. The gull still fought back, stabbing upwards and trying to flap its wings, but the right wing was obviously badly injured. After a few minutes the Skua turned its attention to the gull's head, stabbing viciously at the region of the eye. The Gull, already bleeding from the wing, was now also bleeding from the eye and was obviously getting weaker by the second. The Skua then grabbed hold of the head around the region of the nape and forced it under water and held it there for short periods. The Skua repeated this action, perhaps ten times. After a few minutes the Skua left the gull, which was now a floating corpse, and moved about four feet away. After a quick preen the Skua returned and proceeded to feed by ripping open the prey. Because of the wind direction both drifted towards the edge of the lake, where the gull drifted into some reeds. It was interesting to note that as soon as the gull had reached the reeds the Skua left it, returning to the centre of the Lake and was not seen to return. About 15 minutes later the Pomarine Skua was seen to attack a Common Gull, but it was only a half-hearted attack and it soon gave up.

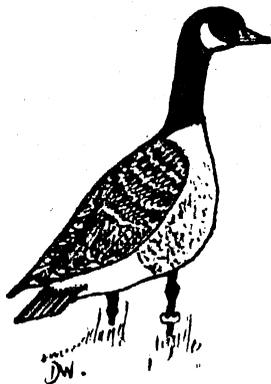
In conclusion I could see no reason why the Pomarine Skua attacked and killed the Black-headed Gull other than it was the nearest prey available. The process of killing the bird took about eight minutes. It appeared to me that the killing was systematically achieved by first immobilising the gull by injuring a wing, so that it was unable to escape, then severely, and probably fatally, injuring it around the head, thus weakening it sufficiently in order to facilitate the drowning.

GOOSE RINGING AT HARROLD COUNTRY PARK 1983-88

by D.S. Woodhead

Goose numbers have increased steadily in the county over the years and a regular breeding and wintering flocks have built up in the north of the county, centred around Harrold and Radwell. In order to find out more about the movements of these birds an effort to catch and ring the moulting flock began in 1983.

The method used to catch the geese was by rounding the birds up with a team of canoeists when the birds are in moult, and thus flightless, in late June/early July. The birds are pushed gently by the canoeists towards a catching pen, built on the day from chestnut paling, where they move out of the water and are funnelled into the catching area of the pen. From here the birds are taken to a ringing site where they are aged, ringed and then released.



Canada Goose

(D.S. Woodhead)

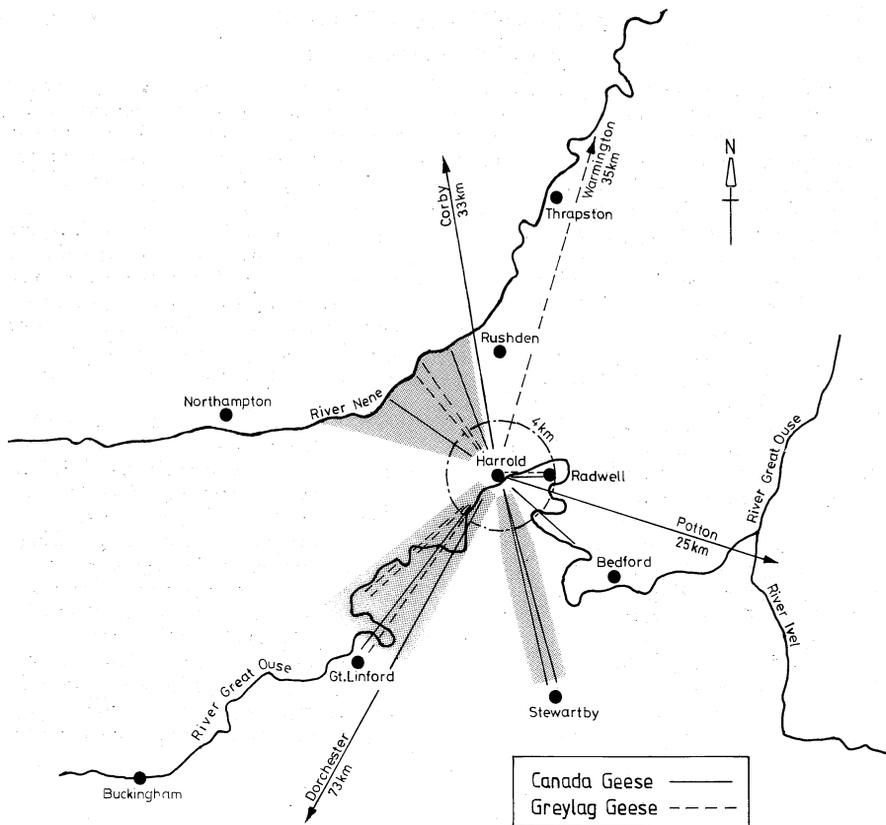
There are three general directions in which the geese tend to move. Firstly the highest number of recoveries are from sites along the Ouse Valley particularly Great Linford where there is also an extensive ringing programme. Secondly, there are the birds which move over into the Nene Valley. There have been a number of recoveries of both species distributed along this valley where there is also a large goose population. The last direction is to the brick pits centred around Stewartby. It is fairly obvious that the geese disperse along the river valleys of the Ouse and Nene, and it is probable that they follow the Ouse in order to get to Stewartby. There are a few exceptions to the general pattern, our furthest Greylag recovered 35 km away at Warmington, Peterborough, and three Canadas, one recovered near Corby (33 km), one at Potton (25 km) and, by far the furthest, one at Dorchester in Oxfordshire (73 km). The latter again could well have followed the Ouse.

Goose numbers increase quite considerably between October and February in north Bedfordshire and it would be interesting to know where they come from. A number of colour-ringed individuals turned up at Radwell this year (1988). As yet I do not know where they have come from but Great Linford is a possibility.

It is intended to continue ringing at Harrold for the foreseeable future so it will be interesting to review the results over the next six years.

The table shows the total number of birds of the two species (Greylag and Canada) ringed in each year with the numbers of adults, young and retraps. A total of 645 geese so far been ringed, 394 Canada and 251 Greylag. Greylag numbers ringed are always lower; this does not necessarily indicate that there are less Greylag at the time of catching, it is because as a species they are more difficult to catch because they dive readily and can swim under water some distance. The number of young birds ringed has shown a steady increase along with the population increase, although our catching methods are far better than when we first began.

The map shows the directions of movements of the birds. There have been 60 recoveries in all, 39 Canada and 21 Greylags. 29 of the Canada and 10 of the Greylag have been recovered locally (within 4 km). The remaining recoveries tend to fall into certain patterns as can be seen from the map.



Map. Recoveries of geese ringed at Harrold Country Park

Species	Date	Adult	1st Summer	Retrap	Total New	Total Caught
Canada	8.7.83	26	14	—	40	40
	7.7.84	14	33	13	47	60
	29.6.85	19	40	12	59	71
	28.6.86	13	64	26	77	103
	27.6.87	10	67	14	77	91
	25.6.88	11	83	31	94	125
Greylag	8.7.83	56	—	—	56	56
	7.7.84	37	1	2	38	40
	29.6.85	12	4	1	16	17
	28.6.86	18	17	4	35	39
	27.6.87	35	21	10	56	66
	25.6.88	12	38	6	50	56

Table. Totals of geese ringed during 1983-88

BIRD RINGING REPORT

Report of the Co-ordinator

1988 proved to be a much more successful year in terms of total birds ringed due entirely to an increase in effort by both myself and Errol Newman. To ring any quantity of birds there is a need for much effort and dedication usually at very unsociable hours of the day i.e. dawn and dusk, the best catching times. A total of 2614 birds were ringed of 65 species, an increase in total of two thirds on both the previous two years. There was a good variety of species caught as can be seen from the list. The Leach's Petrel which was picked up at Thurleigh Airport and released on the coast, an interesting mix of waders from South Mills, good numbers of *Sylvia* warblers, all in the fifties, and an unprecedented nine Nightingales — thanks to Errol. Some common species were well represented this year, indicating a successful year, Treecreeper, Goldcrest, Chiffchaff, of which there was a high autumn passage at Harrold Country Park and Whitethroat, all in good numbers. The highest totals were of Swallow and Reed Bunting, both showing the rewards for roost ringing where large numbers can be caught in a very short space of time. Yet again the goose round-up at Harrold Country Park proved more successful, the canoeists are getting the catching method down to a fine art, a report of the last six years is included in the Journal.

From the numbers of birds ringed I would have expected more recoveries, but these will probably come over the next couple of years. Top of the list this year is the Greenshank ringed at South Mills NR on 3rd September 1988 and found dead (shot, unfortunately) in Alto Alentajo, Portugal. This is the most southerly BTO ringed bird recorded in Europe (there have been two in Africa). The bird was in suspended moult when ringed; some species begin moulting before they migrate, temporarily suspend when a number of feathers have been shed, then complete their moult on reaching their winter haunt. Also of great interest was the Redshank ringed in Poland in August 1986 and found dead at Blunham in January 1987. The bird was probably wintering in the area, although the species is very scarce in the county during winter. Other recoveries of note were the Pochard ringed in France and controlled at Blunham, the Little Owl ringed as a pullus at Cardington and found dead in Essex, a good movement for a species which does not normally move great distances. The Long-tailed Tit from Oxfordshire to Houghton Regis, again another species which does not normally move far in its lifetime. The Swallow recoveries resulting from the Radwell roost came from predictable areas, most of the recoveries being from northern England or Scotland. Note the

RINGING TOTALS FOR 1988

Leach's Petrel	1	Swallow	461	Spotted Flycatcher	3
Mute Swan	4	House Martin	1	Long Tailed Tit	49
Greylag Goose	50	Meadow Pipit	3	Marsh Tit	2
Canada Goose	94	Yellow Wagtail	2	Coal Tit	3
Teal	1	Pied Wagtail	3	Blue Tit	157
Mallard	2	Wren	48	Great Tit	63
Sparrowhawk	3	Dunnock	52	Treecreeper	15
Kestrel	1	Robin	50	Jay	2
Moorhen	2	Nightingale	9	Magpie	1
Ringed Plover	6	Redstart	2	Starling	7
Lapwing	17	Blackbird	108	Chaffinch	28
Snipe	1	Fieldfare	2	Greenfinch	26
Redshank	5	Song Thrush	35	Goldfinch	8
Greenshank	1	Redwing	13	Linnet	14
Common Tern	1	Sedge Warbler	71	Redpoll	11
Woodpigeon	3	Reed Warbler	116	Bullfinch	60
Cuckoo	1	Lesser Whitethroat	57	Yellowhammer	28
Tawny Owl	1	Whitethroat	58	Reed Bunting	363
Kingfisher	9	Garden Warbler	57	Corn Bunting	42
Green Woodpecker	3	Blackcap	51		
Great Spotted Woodpecker	1	Chiffchaff	247		
Lesser Spotted Woodpecker	2	Willow Warbler	247		
Sand Martin	7	Goldcrest	15		
				TOTAL	2614

quick movement of F171853. The final recovery of interest was the Willow Warbler controlled at Harrold Country Park, which was part of a small 'fall' of warblers at the site on that day; the bird was ringed at Gibraltar Point nine days earlier and indicates that birds migrating inland are attracted to areas of water, who knows it may be a Pallas's next year!

My thanks go to Errol Newman and Peter Wilkinson for their prompt submission of records and the effort they put in over the year. Let us hope that 1989 proves to be equally as successful as this year (means more early mornings).

SELECTED LIST OF RECOVERIES

Entries are arranged in Voous order. After species and ring number, ringing details are given in the first line and recovery data on the second. Abbreviations used are given below list.

species	ring number	age code	sex	ringing and recovery dates	ringing and recovery locations	recovery manner	distance (km) and direction
Pochard	DA154355	1	♂	25.7.86	St Paul de Varax, France	V	779
				18.4.87	Blunham		NNW
Ringed Plover	NV23702	1	♀	22.5.85	St Albans, Herts	V(4)	46
				10.7.87	South Mills NR		N
Redshank	GN04069	3		19.8.86	Reda Mouth, Poland	X	1278
				19.1.87	Blunham	X	WSW
Greenshank	DR28095	4		3.9.88	South Mills NR	+	1644
				23.10.88	Alto Alentajo, Portugal		SSW
Little Owl	EH97942	1		22.6.83	Cardington	X	63
				10.7.87	Tawney Common, Toot Hill, Essex		SE
Swallow	C819406	3		10.9.88	Radwell GP	V	102
				20.9.88	Pitsea Marshes, Basildon, Essex		SE
	F171853	3		5.9.88	nr. Wingate, Durham	V	285
				9.9.88	Radwell GP		S
	E657657	3		26.8.88	Penistone, South Yorkshire	V	165
				8.9.88	Radwell GP		5
Lesser Whitethroat	C542617	4	♂	30.5.87	Wicken Fen, Cambs	V	42
				8.5.88	Everton		WSW
Willow Warbler	SN2660	4		9.8.88	Gibraltar Point, Lincs	V	118
				18.8.88	Harrold GP		SSW
Long-tailed Tit	6P8740	4		13.7.87	South Stoke, Oxon	V	57
				21.2.88	Houghton Regis		NE
Redshank	E303841	5	♀	31.1.88	Gamlingay, Cambs	X	19
				5.3.88	Bedford		W
Greenfinch	VB25522	5	♂	7.2.87	Forest of Dean, Gloucs	V	164
				16.9.87	South Mills NR		ENE
	VA39143	5	♂	13.3.86	Gamlingay, Cambs	V	30
				23.12.87	Eversholt	V	WSW
Reed Bunting	?	4	♂	20.9.87	South Mills, NR	V	35
				17.6.88	Wheatthampstead, Herts		5

Euring age code:

- 1 Pullus: nestling or chick
- 2 Fully grown, but year of hatching unknown
- 3 Hatched during calendar year of ringing (J—juvenile plumage)
- 4 Hatched before calendar year, but exact year unknown
- 5 Hatched during previous calendar year
- 6 Hatched before previous calendar year but exact year unknown

Sex:

- ♂ male
♀ female

Recovery manner:

- B—known to be breeding at recovery location
V—controlled (trapped and released)
+—shot or killed
X—found dead or dying

D.S. WOODHEAD

DRAGONFLIES (Odonata)

Report of the Recorder

Following a relatively dry, warm spring the weather deteriorated at the end of June to produce a cool and wet summer. This had considerable influence on dragonfly numbers during the year. Species like the Broad-bodied Chaser (*Libellula depressa*) and the Large Red Damselfly (*Pyrhosoma nymphula*) have a synchronised emergence in early summer (the so-called 'spring species') and these were prevalent during May and June. Their flight period however was prematurely shortened by the cool and wet July. Species without a synchronised emergence (the so-called 'summer species') fared somewhat better and the warmer weather of late summer produced good numbers of darter and hawker dragonflies.

Dragonfly larvae were much in evidence at several sites. During visits to Sundon Springs quarry, final instar larvae of both Common Darter (*Sympetrum striolatum*) and Southern Hawker (*Aeshna cyanea*) were seen catching larvae of Smooth Newts (*Triturus vulgaris*) (Figure 1). One newt was seen to escape with most of its tail missing. Newts are not recorded as forming part of dragonfly diet and these unusual observations may be partly due to the large numbers of both dragonfly and newt larvae present at this site.

SYSTEMATIC LIST

Tetrad records with a * indicate a new 10 km record.

Zygotera (Damselflies)

Beautiful Demoiselle *Calopteryx splendens* Recorded along the River Ouse at a number of sites. It was present in fairly high numbers at Cardington Mill. Slow to medium flowing rivers and streams are the favoured habitat of this species so it was unusual for D. Parsons to record it from two small ponds at Haynes. These individuals may well have flown across from a nearby stream.

New tetrad records TL04W, 05B

Emerald Damselfly *Lestes sponsa* Recorded in high numbers at Brogborough No. 2 and Sundon Springs during August and in smaller numbers at several other sites.

New tetrad records TL04W, 05A*, 06G*

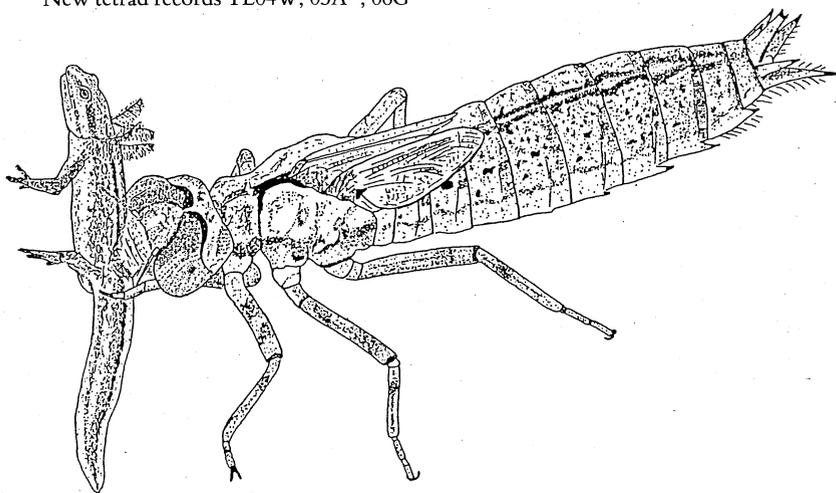


Figure 1. *Aeshna cyanea* larva eating larva of Smooth Newt, Sundon Springs

(Stephen Cham)

White-legged Damselfly *Platycnemis pennipes* No records received, but still present along the Ouse.

Large Red Damselfly *Pyrrhosoma nymphula* Small numbers recorded at several sites.
New tetrad records TL03P, 04K W

Blue-tailed Damselfly *Ischnura elegans* This species is able to tolerate cooler conditions than most and was present in very high numbers (500+) at a number of sites in the county. The general form *f. rufescens* known to be sexually immature was seen 'in cop' at Brogborough No. 2.
New tetrad records SP92C, TL04HW, 06G

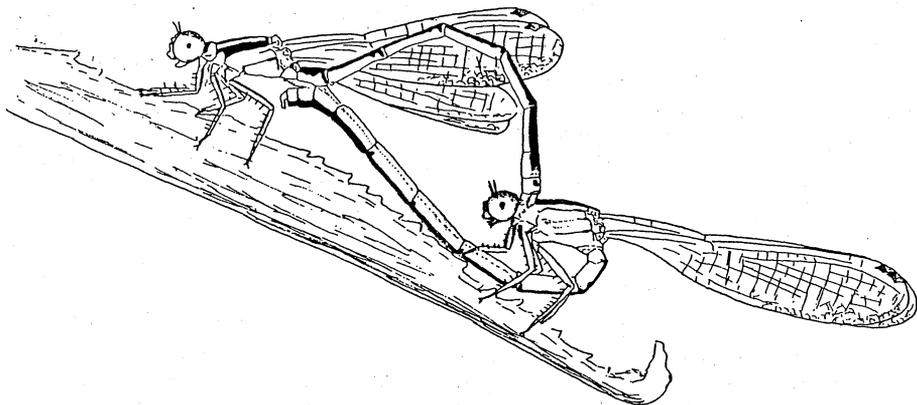


Figure 2. *Ischnura pumilio* 'in cop'. Sundon Springs, June 1988

(Stephen Cham)

Scarce Blue-tailed Damselfly *Ischnura pumilio* This species is in a rather tenuous position in the county. Both of its known sites, Sundon Springs quarry and Houghton Regis chalk pit are under the threat of development. Regular counts were made throughout the year at Sundon where the first sightings of adults were made at the end of May. The peak of the flight period was around 14th June when about sixty adults were counted (Figure 2). They were all gone by early July. The heterochrome female *f. aurantiaca* was present in small numbers. This is a particularly beautiful form with extensive bright orange colouration.

Common Blue Damselfly *Enallagma cyathigerum* Widespread at many sites throughout the county.

New tetrad records SP94V, TL04HW

Azure Damselfly *Coenagrion puella* Widespread during the year.

New tetrad record TL04W

Red-eyed Damselfly *Erythromma najas* Recorded at Sundon Springs quarry and fishing lake and along the River Ouse at Great Barford.

Anisoptera (Dragonflies)

Brown Hawker *Aeshna grandis* Widespread throughout the county.

New tetrad records TL04HW

Southern Hawker *Aeshna cyanea* Widespread and common.

New tetrad records TL02Z, 04HW, 05A

Scarce or Migrant Hawker *Aeshna mixta* Widespread during August and September.

New tetrad records TL04BW

Emperor *Anax imperator* At Sundon Springs, adults were on the wing during June in small numbers. Pond dipping, however, revealed high numbers of developing larvae. This clearly demonstrated the limitations of using adult numbers as a means of estimating population size.

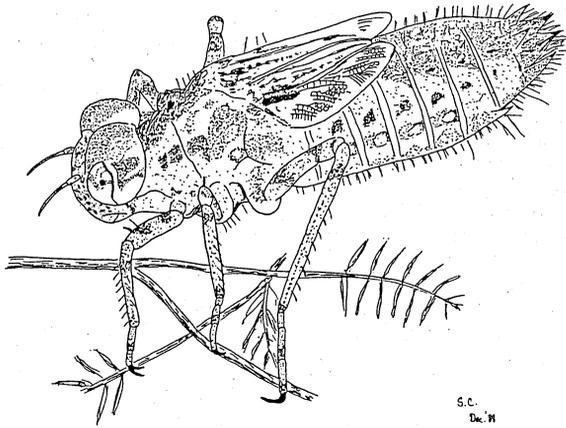


Figure 3. Larva of *Sympetrum striolatum*. Present in very high numbers at Sundon Springs
(Stephen Cham)

Broad-bodied Chaser *Libellula depressa* Fair numbers during May and June. At Sundon Springs quarry up to twenty teneral were seen 'sunning' themselves in a small area of scrub on 14th June.

New tetrad records TL04W, 06G*

Four-spotted Chaser *Libellula quadrimaculata* Fair numbers reported at several sites but seemingly lower than in previous years.

New tetrad record TL04W

Black-tailed Skimmer *Orthetrum cancellatum* Few recorded at Sundon Springs quarry and Marston Thrift ditch 'sunning' themselves on bare ground, a regular habit of this species.

New tetrad record TL04H

Common Darter *Sympetrum striolatum* Common and widespread during late summer. High numbers of larvae (Figure 3) and adults at Sundon Springs quarry.

New tetrad records TL04W, 06G, 14N

Ruddy Darter *Sympetrum sanguineum* Common at Cople pits during September.

ACKNOWLEDGEMENTS

I would like to thank the following for their contributions V. Arnold, R. Brind, D. Parsons, M. Powell, B. Squires and K. Weedon. I would like to extend special thanks to Dr Nancy Dawson for her encouragement and for transferring the society records to me.

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STEPHEN CHAM

BUTTERFLIES (Lepidoptera) Report of the Recorder

It seems that the butterfly report starts each year with a weather report, but as insects are so dependent on the prevailing conditions for their very existence, it is inevitable that the climate must be mentioned. A mild wet winter followed by a dry early spring, wet cool summer and long cool autumn are not the conditions that suit many insect species but at least one butterfly seems to have thrived on it.

The Speckled Wood had an excellent year. This species overwinters as either pupae or larvae, depending when the eggs were laid, and is the only British species to do so. Those individuals that spend this time as small larvae emerge from hibernation to feed during mild winter nights while those that overwinter as pupae suffer from predation and mould infestation during a mild winter. A harsh winter favours the pupa but on balance the species survives better in the larval form. Mid-spring saw both broods on the wing, and by the second brood in late summer they seemed to be everywhere. Tony Smith reports large numbers spilling out from Odell Great Wood and many other people mention the large numbers seen.

In May the mild weather and southerly winds were accompanied by another welcome sight. Red dust from north Africa was seen on cars and house windows throughout southern England. This was the cue to watch out for the Painted Lady migration that usually accompanies this dust. Patience was rewarded by many sightings by many people but the season's first was recorded by Michael Pocock, who saw his first one on 21st May at Houghton Regis Chalk Pit. Later in the year they were seen throughout the county as butterflies emerging from those early pairings made in the spring, and the latest sighting was made by Betty Clutton on 31st October.

There were other pieces of good news which punctuated what was otherwise a moderate year. Both Dave Parsons and John Adams reported White-letter Hairstreak from Chicksands Wood. This area has long been an important stronghold for the species but they report colonies in new parts of the wood, a very encouraging sign as I do not think there is much Common Elm remaining in the county so the species seems to be doing well on Wych Elm, its second choice. John also reports Chalk-hill Blue from Barton Springs which was confirmed by Barry Squires who reported a number of insects there the same week. This is not unexpected but there are no modern records for this species in that area and so the confirmation is doubly pleasing. It is hoped that the whole area, which includes the Barton Cutting and the disused chalk pits, will attract more attention from naturalists as it changes back into natural habitat once more from its recent industrial past.

There was not so much good news about the other blue species, hardly any Common Blues were seen and there were no reported Holly Blue sightings at all, with Brown Argus just getting one mention from an old site. The browns did much better except for the Wall Brown but that situation has occurred before. There is some reason, unknown to me, why Wall Brown numbers fluctuate so greatly from year to year. The great surprise, new in my experience, was that the Small Tortoiseshell had such a bad year while the Peacock had a good year. They share a common food plant, nettles, and the breeding seasons are approximately the same, with the Small Tortoiseshell having two broods to the Peacock's one. All this should favour the survival of the Small Tortoiseshell, but this was not the case during 1988.

More good news came in from the north of the county again when David Manning rediscovered the White Admiral in Odell Great Wood. It has been seen in adjacent woods during recent years so it was only a matter of time before this wood gave up its secret; it is an ideal site for this beautiful insect.

There is no more news of the Purple Emperor situation this season but, while the Black Hairstreak still exists in its recently discovered mid-county site, it has not been seen elsewhere, and so is very vulnerable. On the credit side is the fact that this site is now quite well protected against destruction or redevelopment but conservation work is essential.

Site management is important everywhere and nowhere more so than on the Chalk downlands. Recent scrub clearing at Bison Hill shows what can be done, with the area now starting to return to the species-rich Chalk downland that is now so rare elsewhere in Bedfordshire.

Insect reintroduction is still being made by a few responsible entomologists but I must plead for anyone breeding butterflies for release into the county to keep records of what is done and keep the

Society fully informed of their work. The Purple Emperor sightings could be the result of such introduction but I hope not.

ACKNOWLEDGEMENTS

Once more it is my pleasure to acknowledge the assistance of the following people who have contributed to the records:
 J. Adams, T. Aldhous, C. Aldridge, D. Anderson, V. Arnold, J. Barnwell, R. Bishford, Mr and Mrs Bowskill, R. Brind, C. Burton, J. Childs, B. Clutton, Mr and Mrs Hooper, L. Jarrett, D. Manning, B. Nightingale, A. Outen, Mr and Mrs Parsons, J. Payne, S. Pittman, M. Pocock, T. Smith, B. Squires, P. Trodd, H. Winter.

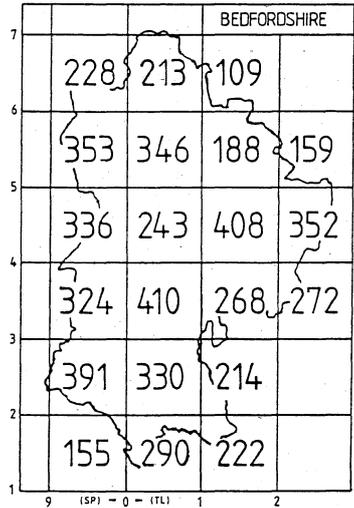
ALAN J. MARTIN

**MACRO-MOTHS (Lepidoptera)
 Report of the Recorder**

Looking back at my last few reports, I find that despite the inclement weather that we have all experienced, field work was able to continue over most of the year. The weather that we had in 1988 seemed finally to demoralize all of the recorders who normally do so much to help make this report possible. Many people who run garden moth traps reported that the numbers of moths seen in their traps were much lower than in previous years, other people found the whole year so frustrating that they did not both to trap at all.

Moth trapping, however, did take place and results have allowed me to produce a further map showing the number of species recorded in each 10 km square. Only one new site was worked this year — Hardwick Spinney, Stagsden by R. Passley and W.J. Champkin. This site had been worked in the early 1970's, so it was interesting to see what was recorded after a long gap in field work. D.V. Manning and R. Passley continued to visit West Wood, Knotting where they recorded a number of species new to the 10 km square.

During the year the Bedfordshire bat group was formed, and I am indebted to them for a large number of moth records that were generated from bat roosts throughout the county. In a letter from Joan Childs and Tony Aldhous they state that most of the roosts were of either Long-eared or Natterer's bats. They recorded the remains of nine species of moth (normally only wings) from 34 sites and in this particular survey the main prey species were (2105) Dotted Rustic from 27 sites and (2107) Large Yellow Underwing from 22 sites. Prior to this information I had considered the Dotted Rustic as an uncommon Bedfordshire moth, although, in *Colour Identification Guide to Moths of the British Isles* by B. Skinner (Viking, 1984), he quotes on page 89 "this species is currently going through a most prolific phase, appearing in many new localities in the southern half of England". Bats have not been slow in taking advantage of this phenomenon!



Number of species recorded in each 10 km square — as at 31.12.88

SPECIES LIST

The following list contains new species and comments on species of particular interest where required. Species marked * are new county records. All numbers and English names as per *A Recorder's Log Book or Label List of British Butterflies and Moths* by J.D. Bradley and D.S. Fletcher (Curwen, London 1979).

- 15 **Orange Swift** A local species in the county. Comes readily to light, flying from July to August. Probably under-recorded.
- 1674 **Little Emerald** Recorded from Mr and Mrs E.G. Bowskill's garden light trap in Stotfold. Records of this local species have been scarce for the last few years.
- 1726 **Large Twin-spot Carpet** Recorded at Hardwick Spinney, Stagsden by R. Passley and W.J. Champkin. Sightings of this moth have been scarce over the past two years.
- 1728 **Garden Carpet** A common species found throughout the county.
- 1758 **The Spinach** A local species that feeds on red and black currant. Recorded by J.B. Barnwell from Aspley Guise and R. Passley and D.V. Manning from West Wood, Knotting.
- 1767 **Pine Carpet** Recorded by J.B. Barnwell from Aspley Guise. This is a scarce, local insect in Bedfordshire.
- 1808 **Sandy Carpet** Locally common throughout the county. Recorded at Aspley Guise by J.B. Barnwell and at Hardwick Spinney, Stagsden by R. Passley and W.J. Champkin.
- 1835 **White-spotted Pug** A common moth, found throughout the county.
- 1838 **Tawny Speckled Pug** A common moth, normally recorded in good numbers every year, however, in 1988 only recorded from a Rothamsted trap at Cockayne Hatley.
- 1876 **Small Yellow Wave** A local moth, normally found in areas where its food plant, Maple, occurs.
- 1910 **Lilac Beauty** This very attractive moth was only recorded once in 1988, from J.B. Barnwell's light trap in Aspley Guise.
- 1919 **Purple Thorn** This species is normally recorded from wooded areas, however, H. Winter took a specimen at light from his garden moth trap in Luton.
- 1920 **Scalloped Hazel** A common moth found throughout the county.
- 1921 **Scalloped Oak** A common moth found throughout the county.
- 1937 **Willow Beauty** A common, widely distributed moth, recorded only from two sites during 1988.
- 1976 **Privet Hawk-moth** This moth is recorded in most years from various parts of the county, normally as larvae or as single specimens.
- 1981 **Poplar Hawk-moth** Bedfordshire's most common Hawk-moth, it can be found throughout the county. It comes readily to light, sometimes in good numbers.
- 2000 **Iron Prominent** An attractive species, it comes readily to light and is well distributed throughout the county.
- 2087 **Turnip Moth** A common, widely distributed moth, but only recorded from two sites during 1988.
- 2133 **Six-striped Rustic** A species that was only recorded from R. Revels' garden trap in Biggleswade and a Rothamsted trap at Cockayne Hatley during 1988. This species does not appear to be common in the county.
- 2145 **The Nutmeg** A common, widely distributed Bedfordshire moth. It can come to light in good numbers, but in some years it is only seen in singletons.
- 2154 **Cabbage Moth** A common moth that can be found throughout the county.
- 2160 **Bright-line Brown-eye** This species has now been recorded in all of the 10 km squares in Bedfordshire.
- 2166 **The Campion** Although this species is distributed throughout the county, it is not a common moth. Only recorded once during 1988, from L. Field's garden moth trap, in Luton.
- 2178 **Feathered Gothic** This locally common moth was only recorded once during 1988, from a moth trap run by Miss J. Kemp-Gee at Dell Farm, Whipsnade.

- 2182 **Small Quaker** This common moth can be abundant at moth traps during March and April. This species was only recorded from three sites during 1988.
- 2266 **Brown-spot Pinion** This normally common species was only recorded from two sites in the county during 1988. From a Rothamsted trap at Cockayne Hatley, and from a trap site at Cople Pits by R. Passley.
- 2267 **Beaded Chestnut** This common species was only recorded from a Rothamsted trap at Cockayne Hatley during 1988.
- 2269 **Centre-barred Sallow** This very attractive moth can be found throughout the county during the months of August and September, when it comes readily to light.
- 2278 **Poplar Grey** A common Bedfordshire moth that is well distributed throughout the county. It comes readily to light, especially when trapping in the vicinities of its food plants, poplar, willow and aspen.
- 2289 **Knot Grass** This species was considered to be common in the county, however, since 1983 this situation has changed. During 1988 it was only recorded from J.B. Barnwell's garden light trap at Aspley Guise.
- 2297 **Copper Underwing** A common Bedfordshire moth, found normally in wooded areas.
- 2203 **Straw Underwing** Found throughout the county. Considered to be a common species.
- 2316 **Lesser-spotted Pinion** This species has not been recorded in the county since 1985. As the larval food plant is English and Wych Elm, its future is uncertain.
- 2322 **Light Arches** This species has now been recorded in all of the 10 km squares in Bedfordshire.
- 2353 **Flounced Rustic** This normally common species was recorded from only a Rothamsted trap at Cockayne Hatley and from Mr and Mrs E.G. Bowskill's garden light trap at Stotfold.
- 2470 **Small Purple-barred** This attractive day flying moth can be found on the chalk downlands flying during May and June near its food plant, Common Milkwort. Last recorded in 1985 from Sewell cutting.
- *2484 **Pinion-streaked Snout** A new county record from a Rothamsted trap at Cockayne Hatley, on 19th July 1988. The larval food plant of this species is unknown.

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V.W. ARNOLD

MICRO-MOTHS (Lepidoptera) Report of the Recorder

During the year only eight species have been added to the county list, reflecting a much lower level of recording than in previous years. A survey has continued at West Wood, Knotting, and I have examined specimens in new collections started by W. Champkin and R. Passley. I have also examined the micro-moths obtained at the Rothamsted trap at Cockayne Hatley.

ADDITIONS TO THE BEDFORDSHIRE LIST

Yponomeutidae

Argyresthia laevigatella Larval damage on larch at Rowney Warren (5 May 1982)

Oecophoridae

Agonopterix ciliella In trap at Cockayne Hatley (July)

Gelechiidae

Recurvaria nanella In garden, Rosamund Road, Bedford (13 July)

Scrobipalpa acuminatella In trap at Cockayne Hatley (May)

Olethreutinae

Epinotia signatana Cople pits (13 June)

Rhyacionia pinicolana West Wood, Knotting (15 July)

Dichrorampha flavidorsana On Tansy at Rosamund Road, Bedford (21 July)

Pyralidae

Dioryctria mutata King's Wood, Heath and Reach (13 August 1987)

In my report for 1985 (*Bedf. Nat* 40 53-55) I referred to a new record for *Narycia monilifera* (Psychidae). I have recently been advised that the record refers to larval cases found at Rowney Warren and Flitwick, both on 5 May 1982.

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I would like to thank the following for their contributions during the year:

V.W. Arnold, Mr and Mrs B.M. Bowskill, W. Champkin, B. Clutton, L. Field, R. Passley, E.C. Pelham-Clinton, I. Woiwod.

DAVID MANNING

HOVERFLIES (Diptera-Syrphidae) Report of the Recorder

Since the last report (*Bedf. Nat.* 38 61) recording has been only on an occasional basis but has yielded several species new to the county.

Many of the less frequently observed species occur briefly early in the season, as illustrated by the new species recorded in May 1984. *Criorhina floccosa*, a bumble-bee mimic that breeds in dead wood, was taken in Wilstead Wood, and *Paragus haemorrhous*, a small low-flying all-black hoverfly, on a sloping roadside verge at Thurleigh corner.

The only previous record of the wasp-mimicking genus *Sericomyia* was of *S. lappona* in the marshy area at the NE end of Stockgrove Park, so it is of particular interest that, in September 1988, Dr Nau took the other species, *S. silentis* in the same park but at the other end of the lake. The latter is nationally more common and typically frequents poorly drained acidic terrain.

As well as these three new species, six new 10 km records were obtained as summarised below. I am very grateful to Mr V.W. Arnold and Dr B.S. Nau for their observations and samples.

NEW 10 KM RECORDS

- 1984 *Criorhina floccosa* TL 04*
Epistrophe eligans TL 04
Platycheirus tarsalis TL 04
Rhingia campestris TL 04
Cheilosia paganus TL 04
Paragus haemorrhous TL 05*
Leucozona lucorum TL 05
1987 *Syrphus ribesii* TL 16
1988 *Sericomyia silentis* SP 92*

* new county record

N.F. JANES

THE STATUS OF BEDFORDSHIRE HETEROPTERA

by B.S. Nau

On the basis of extensive recording of the Heteroptera (true bugs) in the county during the past 15 years it is now possible to assign a provisional status to most species. This cannot easily be done on a purely quantitative basis, such as the tetrad counts used for some other groups, but recording has been distributed widely and fairly intensively over the county and this provides the basis for a realistic subjective assessment. The categories used are as tabulated below.

Code	Description	No. species	Definition
C	common	142	Widely distributed and fairly numerous where present
L	local	88	Restricted to certain areas, such as the Greensand or the Chalk, and fairly numerous where present.
N	notable	33	Only occasionally recorded, or established in numbers at very few sites, or only a few records but known to be under-recorded.
R	rare	49	1-2 records only.
X	extinct	1	Recorded in the past but no longer found in suitable habitat.
?	indeterminate	9	insufficient information to assess status.

Also given is the status in Britain, this information is very provisional but for the rare species (R1, R2) it is the NCC Red Data Book status and for the rest it is based on unpublished information (P. Kirby *in lit.*). The codes for Great Britain are similar to those for Bedfordshire except as follows:

R1	Endangered species
R2	Vulnerable species
R3	Rare
Nat	Naturalised introduced species.
Syn	Synanthropic species, only in artificial habits.

The present list accounts for 322 species and follows the numbering of Southwood and Leston (1959), indicated by S & L. The first seven species are not represented in S & L and thus have been listed separately. The nomenclature follows Kloet and Hincks (1964). To complete the statement of our knowledge of Bedfordshire Heteroptera a detailed account of those species in categories N, R, X and ? is planned for a future issue of the *Bedfordshire Naturalist*.

SYSTEMATIC LIST

	S&L	Beds	G.B.		S&L	Beds	G.B.
Miridae: Phylinae				<i>Macrodemia micropteryum</i>	97	L	C
<i>Atractotomma mirificus</i>		L	C	<i>Stygnocoris rusticus</i>	104	R	L
<i>Campylomma annulicornis</i>		L	C	<i>S. sabulosus</i>	105	C	C
<i>Monosynamma sabulicola</i>		L	N	<i>S. fuliginosus</i>	106	L	C
<i>Placochilus seladonicus</i>		R	R1	<i>Plinthinus brevipennis</i>	107	N	L
Miridae: Dicyphinae				<i>Lasiozoma enervis</i>	108	R	N
<i>Neodicyphus rhododendri</i>		L	Nat	<i>Drymus sylvaticus</i>	113	C	C
Lygaeidae				<i>D. ryei</i>	114	C	C
<i>Nysius ericae</i>		C	C	<i>D. brunneus</i>	115	C	C
Miridae: Mirinae				<i>Lampyris picea</i>	117	R	N
<i>Orthops basalis</i>		R	C	<i>Scolopostethus affinis</i>	119	C	C
Aradidae				<i>S. grandis</i>	120	N	L
<i>Aradus depressus</i>	3	N	L	<i>S. thomsoni</i>	122	C	C
Aneuridae				<i>S. decoratus</i>	123	L	C
<i>Aneurus laevis</i>	6	?	C	<i>Eremocoris podagricus</i>	125	R	N
Acanthosomatidae				<i>Taphropeltus contractus</i>	127	?	C
<i>Acanthosoma haemorrhoidale</i>	8	C	C	<i>Gastrodes abietum</i>	129	N	L
<i>Elasmostethus tristriatus</i>	9	L	L	<i>G. grossipes</i>	130	L	C
<i>E. interstinctus</i>	10	C	C	Berytinidae			
<i>Elasmucha grisea</i>	12	C	C	<i>Cymus clavicularis</i>	131	N	C
Cydnidae				<i>C. melanocephalus</i>	132	C	C
<i>Legnotus limbosus</i>	13	L	C	<i>C. glandicolor</i>	133	C	C
<i>L. picipes</i>	14	R	N	<i>Berytinus montivagus</i>	136	?	C
<i>Sehirus bicolor</i>	15	C	C	<i>B. signoreti</i>	137	?	C
<i>S. luctuosus</i>	18	R	N	<i>B. minor</i>	139	C	C
<i>Thyreocoris scarbaeoides</i>	21	R	N	<i>B. clavipes</i>	140	?	L
Pentatomidae				<i>Gempisocoris punctipes</i>	142	C	C
<i>Podops inuncta</i>	27	L	C	<i>Metatropis rufescens</i>	143	L	C
<i>Aelia acuminata</i>	29	R	C	<i>Pisma maculatum</i>	144	R	C
<i>Neottiglossa pusilla</i>	30	N	L	<i>P. quadratum</i>	145	R	C
<i>Eysarcoris fabricii</i>	31	C	C	Tingidae			
<i>E. aeneus</i>	32	R	R2	<i>Campylosteira verna</i>	146	N	L
<i>Palomena prasina</i>	34	R	C	<i>Acalypta brunnea</i>	147	R	N
<i>Dolycoris baccarum</i>	37	R	C	<i>A. carinata</i>	148	N	N
<i>Piezodorus lituratus</i>	38	L	C	<i>A. parvula</i>	151	?	C
<i>Pentatoma rufipes</i>	39	C	C	<i>Dictyonota strichnocera</i>	152	L	C
<i>Eurydema oleracea</i>	40	R	L	<i>D. fuliginosa</i>	153	N	N
<i>Picromerus bidens</i>	42	L	C	<i>Kalama tricornis</i>	154	R	L
<i>Troilus luridus</i>	43	N	C	<i>Derephysia foliacea</i>	155	R	L
<i>Rhacognathus punctatus</i>	44	N	L	<i>Tingis ampliata</i>	159	C	C
<i>Zicrona caerulea</i>	45	R	L	<i>T. cardui</i>	160	C	C
Coreidae				<i>Physatocheila dumetorum</i>	163	N	C
<i>Coreus marginatus</i>	48	L	C	<i>Dictyyla convergens</i>	167	N	L
<i>Coriomerus denticulatus</i>	55	L	C	<i>Agramma laeta</i>	168	?	L
Alydidae				Reduviidae			
<i>Alydus calcaratus</i>	56	R	N	<i>Empicoris vagabundus</i>	169	C	C
Rhopalidae				<i>E. culiciformis</i>	170	?	C
<i>Rhopalus subrufus</i>	62	N	L	<i>Reduvius personatus</i>	173	R	L
<i>Myrmus miriformis</i>	63	C	C	<i>Coranus subapterus</i>	174	N	N
<i>Chorosoma schillingi</i>	64	R	L	Nabidae			
Lygaeidae				<i>Nabicula flavomarginatus</i>	175	C	C
<i>Heterogaster urticae</i>	68	C	C	<i>Nabis ferus</i>	176	C	C
<i>Chilacis typhae</i>	70	C	C	<i>N. rugosus</i>	178	C	C
<i>Ischnodemus sabuleti</i>	73	C	C	<i>N. ericetorum</i>	179	L	C
<i>Nysius thymi</i>	74	N	C	<i>Aptus mirmicoides</i>	181	L	C
<i>Kleidocerys resedae</i>	77	C	C	<i>Himacerus apterus</i>	182	C	C
<i>K. truncatulus</i>	78	N	C	<i>Anaptus major</i>	183	C	C
<i>Pachybrachius fracticollis</i>	79	R	N	<i>Nabicula limbatus</i>	185	C	C
<i>Peritrechus lundii</i>	81	N	L	Cimicidae			
<i>Peritrechus geniculatus</i>	83	C	C	<i>Anthocoris confusus</i>	190	C	C
<i>P. nubilus</i>	85	L	L	<i>A. simulans</i>	191	L	C
<i>Megalonotus dilatatus</i>	92	R	N	<i>A. nemoralis</i>	192	C	C
<i>M. chiragra</i>	93	L	C	<i>A. butleri</i>	193	L	C
<i>Trapezonotus arenarius</i>	96	L	C	<i>A. sarothamni</i>	194	L	C
<i>T. dispar</i>	96	R	N	<i>A. visci</i>	195	N	N

	S&L	Beds	G.B.		S&L	Beds	G.B.
<i>A. gallarum-ulmi</i>	196	L	L	<i>P. vitellinus</i>	280	R	L
<i>A. nemorum</i>	197	C	C	<i>Chlamydatius pullus</i>	281	L	C
<i>A. limbatus</i>	198	L	L	<i>C. salitans</i>	282	L	C
<i>Tetraphleps bicuspis</i>	199	L	C	<i>Sthenarus roseri</i>	287	L	C
<i>Acomporis alpinus</i>	200	L	C	<i>S. rotermundi</i>	288	L	C
<i>A. pygmaeus</i>	201	L	C	<i>Asciodema obsoletum</i>	289	L	C
<i>Orius majusculus</i>	202	C	C	<i>Hallodapus rufescens</i>	291	R	N
<i>O. vicinus</i>	203	C	C	Miridae: Dicyphinae			
<i>O. niger</i>	204	C	C	<i>Macrophus rubi</i>	294	L	C
<i>O. laevigatus</i>	205	C	C	<i>M. nubilus</i>	295	C	C
<i>Lycocoris campestris</i>	206	L	C	<i>Dicyphus constrictus</i>	296	R	L
<i>Xylocoris galactinus</i>	207	L?	C	<i>D. epilobii</i>	297	C	C
<i>X. cursitans</i>	208	L?	C	<i>D. errans</i>	298	C	C
<i>Oeciacus hirsutinus</i>	214	?	C	<i>D. stachydis</i>	299	C	C
<i>Cimex lectularius</i>	215	L	Syn	<i>D. pallicornis</i>	300	L	C
Microphysidae				<i>D. annulatus</i>	301	C	C
<i>Loricula pselaphiformis</i>	218	C	C	<i>D. globulifer</i>	302	C	C
<i>L. elegantula</i>	219	C	C	<i>Campyloneura virgula</i>	303	C	C
<i>Myrmedobia distinguenda</i>	221	L	N	Miridae: Orthotylinae			
Miridae: Bryocorinae				<i>Pilophorus cinnamoptenus</i>	304	L	C
<i>Monalocoris filicis</i>	225	C	C	<i>P. perplexus</i>	307	L	L
<i>Bryocoris peridis</i>	226	C	C	<i>Halticus luteicollis</i>	311	R	N
Miridae: Deraeocorinae				<i>Strongylocoris leucocephalus</i>	312	N	L
<i>Deraeocoris lutescens</i>	228	C	C	<i>Orthocephalus coriaceus</i>	315	L	L
<i>D. ruber</i>	229	C	C	<i>O. saltator</i>	316	L	C
<i>D. scutellaris</i>	230	R	N	<i>Malachocoris chlorizans</i>	317	C	C
<i>Alloetomus gothicus</i>	232	L	C	<i>Fieberocapsus flaveolus</i>	318	?	C
Miridae: Phylinae				<i>Cyllecoris histrionicus</i>	319	C	L
<i>Lopus decolor</i>	233	L	C	<i>Dryophyllocoris flavoquadrimaculatus</i>	320	C	C
<i>Oncotylus viridiflavus</i>	234	L	L	<i>Heterocordylus genistae</i>	324	R	L
<i>Hoplomachus thunbergi</i>	238	N	L	<i>H. tibialis</i>	325	L	L
<i>Tiniccephalus hortulanus</i>	239	L	C	<i>Heterotoma meriopenum</i>	326	C	C
<i>Megalocoleus milliculus</i>	240	C	C	<i>Blepharidopterus angulatus</i>	327	C	C
<i>M. pilosus</i>	241	L	C	<i>Pachylops bicolor</i>	328	L	C
<i>Amblytylus nasutus</i>	244	C	C	<i>Orthotylus tenuillus</i>	330	C	C
<i>Macrotylus solitarius</i>	245	C	C	<i>O. viridimeris</i>	331	C	C
<i>M. paykulli</i>	246	C	C	<i>O. marginalis</i>	332	C	C
<i>Orthonotus rufifrons</i>	247	C	C	<i>O. flavinervis</i>	333	L	C
<i>Harpocera thoracica</i>	248	C	C	<i>O. nassatus</i>	335	C	C
<i>Tythus geminus</i>	250	R	N	<i>O. ochrotichus</i>	336	C	C
<i>Brachyarthrum limitatum</i>	251	L	N	<i>O. ericetorum</i>	338	L	C
<i>Phylus palliceps</i>	252	C	C	<i>O. adenocarci</i>	339	L	C
<i>P. melanocephalus</i>	253	C	C	<i>O. virescens</i>	340	L	C
<i>P. coryli</i>	254	C	C	<i>O. concolor</i>	341	L	C
<i>Plesiodema pinetellum</i>	255	L	C	<i>O. flavosparvus</i>	342	C	C
<i>Psallus betuleti</i>	256	L	C	<i>O. diapharus</i>	345	C	C
<i>P. ambiguus</i>	257	C	C	<i>Pseudoloxops coccineus</i>	346	C	C
<i>P. perrisi</i>	258	C	C	<i>Cyrtorhinus caricus</i>	347	N	C
<i>P. wagneri</i>	259	C	C	<i>Orthotylus bilineatus</i>	348	L	C
<i>P. assimilis</i>	260	C	C	<i>Mecomma ambulans</i>	349	C	C
<i>P. variabilis</i>	261	L	L	Miridae: Mirinae			
<i>P. haemotodes</i>	263	C	C	<i>Pithanus maerkeli</i>	352	L	C
<i>P. flavellus</i>	264	C	C	<i>Lygus maritimus</i>	356	L	C
<i>P. lepidus</i>	265	C	C	<i>L. rugulipennis</i>	357	C	C
<i>P. falleni</i>	266	L	C	<i>Liocoris tripustulatus</i>	358	C	C
<i>P. scholtzi</i>	267	L	C	<i>Orthops rubricatus</i>	360	N	C
<i>P. diminutus</i>	268	C	C	<i>O. cervinus</i>	361	C	C
<i>P. mollis</i>	269	N	C	<i>O. visciola</i>	362	R	N
<i>P. albicinctus</i>	279	R	N	<i>O. campestris</i>	363	C	C
<i>P. varians</i>	271	C	C	<i>O. kalni</i>	364	L	C
<i>Phoenicocoris obscurellus</i>	272	L	C	<i>Lygocoris pabulinus</i>	365	C	C
<i>Compsidolon salicellus</i>	274	C	C	<i>L. viridis</i>	366	C	C
<i>Altractotomus mali</i>	275	C	C	<i>L. populi</i>	367	L	L
<i>A. magnicornis</i>	276	N	C	<i>L. contaminatus</i>	368	C	C
<i>Plagionathus albipennis</i>	277	C	C	<i>L. spinolai</i>	369	C	C
<i>P. arbustorum</i>	278	C	C	<i>L. luconum</i>	370	C	C
<i>P. chrysanthemi</i>	279	C	C	<i>Agnocoris reclairei</i>	371	L	N

	S&L	Beds	G.B.		S&L	Beds	G.B.
<i>Camptozymum aequale</i>	372	L	C	Notonectidae			
<i>Plesiocoris rugicollis</i>	373	C	C	<i>Notonecta glauca</i>	472	N	C
<i>Charagochilus gyllenhalii</i>	377	R	L	<i>N. obliqua</i>	473	R	C
<i>Polymenus nigrinus</i>	377	C	C	<i>N. marmorea</i>	474	C	C
<i>Dichroscytus rufipennis</i>	379	N	C	<i>N. maculata</i>	475	L	L
<i>Miris striatus</i>	381	N	C	Pleidae			
<i>Calocoris quadripunctatus</i>	382	C	C	<i>Plea minutissima</i>	476	N	C
<i>C. styxi</i>	383	C	C	Corixidae			
<i>C. fulvomaculatus</i>	384	L	C	<i>Micronecta scholtzi</i>	477	C	C
<i>C. roseomaculatus</i>	386	C	C	<i>M. poweri</i>	478	N	C
<i>C. norvegicus</i>	387	C	C	<i>Cymatia coleoprata</i>	480	L	L
<i>Adelphocoris lineolatus</i>	390	C	C	<i>C. bonsdorffi</i>	481	L	L
<i>Megacoelum infusum</i>	391	C	C	<i>Callicorixa praeusta</i>	483	C	C
<i>M. beckeri</i>	392	R	N	<i>Corixa punctata</i>	485	C	C
<i>Stenotus binotatus</i>	393	C	C	<i>C. dentipes</i>	486	L	L
<i>Phytocoris tiliae</i>	395	C	C	<i>C. panzeri</i>	488	L	L
<i>P. populi</i>	396	L?	C	<i>Hesperocorixa sahlbergi</i>	489	C	C
<i>P. dimidiatus</i>	397	L	C	<i>H. linnei</i>	490	C	C
<i>P. longipennis</i>	398	C	C	<i>H. moesta</i>	492	R	L
<i>P. reuteri</i>	399	C	C	<i>Arctocorisa germari</i>	493	N	C
<i>P. ulmi</i>	401	C	C	<i>Sigara dorsalis</i>	495	C	C
<i>P. varipes</i>	402	C	C	<i>S. fossarum</i>	497	C	C
<i>Capsus ater</i>	404	C	C	<i>S. scotti</i>	498	R	C
<i>Pantillus tunicatus</i>	406	L	C	<i>S. falleni</i>	499	C	C
<i>Acetropis gimmerthali</i>	410	L	L	<i>S. distincta</i>	501	C	C
<i>Stenodema calcaratum</i>	411	C	C	<i>S. lateralis</i>	502	C	C
<i>S. laevigatum</i>	413	C	C	<i>S. nigrolineata</i>	503	C	C
<i>Notostira elongata</i>	415	C	C	<i>S. concinna</i>	504	N	L
<i>Megaloceraea recticornis</i>	416	C	C	<i>S. venusta</i>	505	R	L
<i>Trigonotylus ruficornis</i>	418	C	C	<i>S. limitata</i>	507	R	L
<i>Teratorcis antennatus</i>	419	R	L				
<i>T. saundersi</i>	421	R	C				
<i>Leptopterna ferrugata</i>	422	C	C				
<i>L. dolabrata</i>	423	C	C				
Dipsocoridae							
<i>Ceratocombus coleoprata</i>	424	N	L				
Saldidae							
<i>Saldula orthochila</i>	433	C	C				
<i>S. saltatoria</i>	434	C	C				
<i>S. pallipes</i>	440	L	C				
<i>Chartoscirta cincta</i>	445	L	C				
Mesoveliidae							
<i>Mesovelia furcata</i>	449	C	N				
Hebridae							
<i>Hebrus ruficeps</i>	451	R	L				
Hydrometridae							
<i>Hydrometra stagnorum</i>	452	C	C				
Veliidae							
<i>Velia caprai</i>	454	C	C				
<i>V. saulii</i>	455	R	C				
<i>Microvelia reticulata</i>	456	C	C				
<i>M. pygmaea</i>	457	R	R3				
Gerridae							
<i>Gerris argentatus</i>	459	R	L				
<i>G. lateralis</i>	460	R	N				
<i>G. thoracicus</i>	461	C	C				
<i>G. lacustris</i>	464	C	C				
<i>G. odontogaster</i>	465	C	C				
<i>Aquarius najas</i>	466	X	C				
Nepidae							
<i>Nepa cinerea</i>	468	C	C				
<i>Ranatra linearis</i>	469	L	L				
Naucoridae							
<i>Ilyocoris cimicoides</i>	470	L	C				
Aphelocheiridae							
<i>Aphelocheirus montandoni</i>	471	L	N				

BEETLES (Coleoptera) Report of the Recorders

This report is the first by the present Recorders and gives results from sites mainly in the south of the county. The main intention was to survey ground beetles (Carabidae) using pitfall traps. These are small plastic pots which are placed in holes in the ground, with the lip of the pot flush with the soil surface. However, these traps catch many other types of beetle and therefore the report covers all Coleoptera. Occasionally, some samples were taken by sweeping with a net or by searching.

Eight sites were investigated and we thank Nature Conservancy Council and landowners for permission to sample in Sites of Special Scientific Interest. Also our thanks to Ian Woivod who managed the traps in Potton Wood and Sandy Warren.

SITES

Blows Downs, Dunstable (TL040220)

Chalk downland with mainly Hawthorn scrub and open grassland. Generally the vegetation is cropped relatively short by grazing.

Dunstable Downs (TL005220) S.S.S.I.

Again, chalk downland with Hawthorn scrub and open grassland.

King's Wood, Heath and Reach

(SP925295) S.S.S.I. Ancient woodland and with mixed deciduous and coniferous trees, partly on the Greensand Ridge.

Potton Wood (TL252502) S.S.S.I.

Ancient woodland with mixed deciduous and coniferous trees on chalky boulder clay.

Sandy Warren (TL198478) S.S.S.I. Birch woodland and heathland on the Lower Greensand Ridge.

Totternhoe Knolls (SP979220) S.S.S.I.

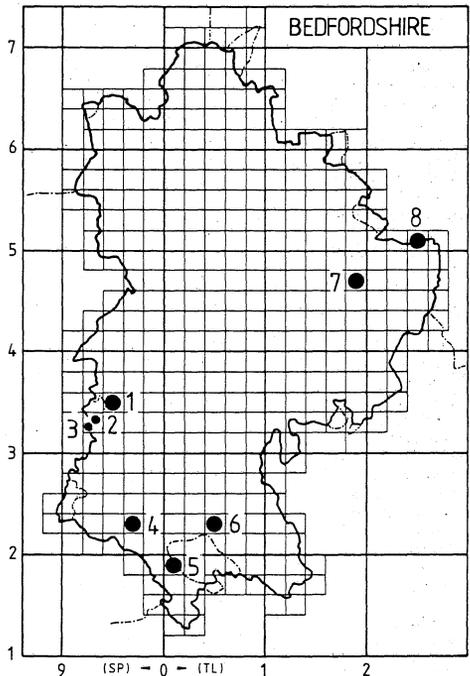
Chalk downland with areas of open grassland, mixed scrub and Beech.

Wavendon Heath Ponds (SP931338)

S.S.S.I. Three ponds with dense stands of bog moss and sedge, surrounded by birch with some Scots Pine.

Woburn (Aspley Guise) (SP948354)

Two distinct habitats which were very close together. The first was a hedgerow and roadside verge at the edge of arable fields, the second a roadside verge next to a stream.



Pitfall trap localities

Table 1 (continued.) Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
<i>Pterostichus diligens</i> (Strm.)								x	
<i>Pterostichus madidus</i> (F.)		x		x	x	x	x	x	x
<i>Pterostichus melanarius</i> (Ill.)		x	x			x			x
<i>Pterostichus minor</i> (Gyll.)								x	
<i>Pterostichus niger</i> (Schal.)				x				x	
<i>Pterostichus nigrita</i> (Pk.)								x	
<i>Pterostichus strenuus</i> (Pz.)					x				
<i>Stomis pumicatus</i> (Pz.)			x	x	x				
<i>Synuchus nivalis</i> (Pz.)		x	x					x	x
<i>Trechus obtusus</i> Er.				x					x
<i>Trechus quadristriatus</i> (Schr.)									x
<i>Trechus secalis</i> (Pk.)				x					
DYTISCIDAE									
<i>Agabus bipustulatus</i> (L.)								x	
<i>Hydroporus gyllenhali</i> Schiod.								x	
<i>Hydroporus pubescens</i> (Gyll.)								x	
HYDROPHILIDAE									
<i>Anacaena globulus</i> (Pk.)*				x	x			x	
<i>Anacaena lutescens</i> (Steph.)*								x	
<i>Cercyon atomarius</i> (F.)		x							
<i>Cercyon haemorrhoidalis</i> (F.)		x					x		
<i>Cercyon melanocephalus</i> (L.)		x					x		
<i>Cercyon pygmaeus</i> (Ill.)*		x					x		
<i>Cercyon quisquilius</i> (L.)*		x					x		
<i>Cryptopleurum minutum</i> (F.)		x							
<i>Helophorus brevipalpis</i> Bed.			x					x	
<i>Hydrobius fuscipes</i> (L.)								x	
<i>Megasternum obscurum</i> (Marsh.)		x	x	x	x	x	x	x	x
HISTERIDAE									
<i>Onthophilus striatus</i> (Forst.)									x
LEPTINIDAE									
<i>Leptinus testaceus</i> Mull.*		x							
LEIODIDAE									
<i>Agathidium atrum</i> (Pk.)*									x
<i>Agathidium convexum</i> Shp.*		Na		x				x	
<i>Agathidium laevigatum</i> Er.			x			x			
<i>Agathidium marginatum</i> Strm.*		Nb							x
<i>Agathidium nigrinum</i> Strm.*				x					
<i>Amphicyllis globus</i> (Er.)				x				x	x
<i>Catops chrysoloides</i> (Pz.)				x					x
<i>Catops coracinus</i> Kell.*				x					
<i>Catops fuliginosus</i> Er.		x	x		x	x	x	x	x
<i>Catops grandicollis</i> Er.									x
<i>Catops nigricans</i> (Spence)		x	x	x		x	x	x	x

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
<i>Catops nigrita</i> Er.				x	x				
<i>Catops tristis</i> (Pz.)				x					
<i>Choleva angustata</i> (F.)			x				x		x
<i>Choleva oblonga</i> Lat.*			x			x			
<i>Choleva spadicea</i> (Stm.)			x						
<i>Colenis immunda</i> (Stm.)*	Nb		x						
<i>Colon brunneum</i> (Lat.)	Nb				x		x		
<i>Colon serripes</i> (Sahlb.)*	Na								x
<i>Leiodes badia</i> (Stm.)	Nb	x							
<i>Leiodes gallica</i> (Reitt.)*			x						
<i>Leiodes litura</i> Steph.*	Nb	x							
<i>Leiodes obesa</i> (Schm.)*	Nb	x							x
<i>Leiodes polita</i> (Marsh.)*		x		x					x
<i>Leiodes rugosa</i> Steph.*	Na	x							
<i>Nargus anisotomoides</i> (Spence)*		x	x						
<i>Nargus velox</i> (Spence)		x	x	x	x	x	x		x
<i>Nargus wilkinki</i> (Spence)*				x		x			
<i>Ptomaphagus subvillosus</i> (Goez.)			x			x			x
<i>Ptomaphagus varicornis</i> (Rosen.)*	Na	x	x	x			x		
<i>Sciodrepoides watsoni</i> (Spence)						x	x		
SILPHIDAE									
<i>Nicrophorus vespilloides</i> Hbst.					x	x		x	x
<i>Silpha atrata</i> L.		x		x				x	
SCYDMAENIDAE									
<i>Cephennium gallicum</i> Gangl.		x	x	x			x	x	x
<i>Neuraphes elongatulus</i> (Mull. & Kunz.)*									x
<i>Stenichnus collaris</i> (Mull.)				x		x			
SCAPHIDIIDAE									
<i>Scaphisoma agaricinum</i> (L.)									x
STAPHYLINIDAE									
<i>Acrolocha sulcula</i> (Steph.)*		x							
<i>Aleochara lanuginosa</i> Gr.		x							
<i>Aleochara ruficornis</i> Gr.*	Nb								x
<i>Anotylus rugosus</i> (F.)		x		x		x		x	x
<i>Anotylus sculpturatus</i> (Gr.)		x	x	x	x	x	x		x
<i>Anotylus tetracarinatus</i> (Block)		x	x				x		x
<i>Anthobium atrocephalum</i> (Gyll.)						x			
<i>Anthobium unicolor</i> (Marsh.)		x	x	x	x	x			x
<i>Aploderus caelatus</i> (Gr.)			x						
<i>Autalia impressa</i> (Ol.)			x	x					
<i>Bolitobius analis</i> (F.)						x			
<i>Bolitobius cingulatus</i> (Mann.)					x				
<i>Cypha longicornis</i> (Pk.)									x
<i>Cypha pulicaria</i> (Er.)*	Nb			x					
<i>Drusilla canaliculata</i> (F.)		x	x						x
<i>Encephalus complicans</i> Steph.			x				x		x

Table 1 (continued). Species recorded from specified sites during 1988

Species	Status	BD	DD	KW	PW	SW	TK	WH	W
<i>Habrocerus capillaricornis</i> (Gr.)						x			x
<i>Lathrobium brunripes</i> (F.)				x	x			x	
<i>Lathrobium fulvipenne</i> (Gr.)					x				
<i>Lesteva heeri</i> Fauv.				x				x	
<i>Lesteva longoelytrata</i> (Goez.)									
<i>Lordithon thoracicus</i> (F.)					x			x	
<i>Megarthus affinis</i> Miller				x					x
<i>Megarthus denticollis</i> (Beck)	x	x							
<i>Megarthus depressus</i> (Pk.)	x								
<i>Megarthus sinuaticollis</i> (Bois. & Lac.)*			x						x
<i>Metopis retusa</i> (Steph.)	x	x					x	x	x
<i>Micropeplus staphylinoides</i> (Marsh.)	x	x		x			x		x
<i>Mycetoporus clavicornis</i> (Steph.)								x	
<i>Mycetoporus lepidus</i> (Gr.)	x		x			x			x
<i>Olophrum piceum</i> (Gyll.)	x	x							
<i>Omalium caesum</i> Gr.				x		x			x
<i>Omalium excavatum</i> Steph.				x					x
<i>Omalium italicum</i> Bern.	x	x				x	x		x
<i>Omalium rivulare</i> (Pk.)	x	x	x			x			x
<i>Othius myrmecophilus</i> Kies.	x	x	x	x			x	x	x
<i>Othius punctulatus</i> (Goez.)				x	x	x		x	x
<i>Oxyopoda spectabilis</i> Mark.					x				
<i>Oxytelus laqueatus</i> (Marsh.)	x								
<i>Phacophallus parumpunctatus</i> (Gyll.)*	x								
<i>Philonthus addendus</i> Shp.									x
<i>Philonthus cognatus</i> Steph.	x					x	x		
<i>Philonthus decorus</i> (Gr.)*	x		x	x				x	x
<i>Philonthus fimetarius</i> (Gr.)	x								
<i>Philonthus laminatus</i> (Cr.)			x						
<i>Philonthus splendens</i> (F.)	x					x			
<i>Philonthus tenuicornis</i> Muls. & Rey*	x								
<i>Philonthus varians</i> (Pk.)	x								
<i>Philonthus varius</i> (Gyll.)	x						x		
<i>Phloeonomus punctipennis</i> Th.					x				
<i>Plataraea brunnea</i> (F.)							x		x
<i>Platydacus stercorarius</i> (Ol.)						x			
<i>Platystethus arenarius</i> (Fourc.)	x								
<i>Platystethus capito</i> Heer	x								
<i>Proteinus brachypterus</i> (F.)			x	x				x	x
<i>Proteinus macropterus</i> (Gyll.)*		x	x			x		x	x
<i>Proteinus ovalis</i> Steph.						x			
<i>Quedius fuliginosus</i> (Gr.)	x	x		x	x			x	x
<i>Quedius mesomelinus</i> (Marsh.)		x							
<i>Quedius molochinus</i> (Gr.)		x	x					x	
<i>Quedius nemoralis</i> Baudi									x
<i>Quedius nigriceps</i> Kr.			x				x		
<i>Quedius picipes</i> (Mann.)	x	x						x	x
<i>Quedius scintillans</i> (Gr.)*	x								x
<i>Quedius semiobscurus</i> (Marsh.)	x								
<i>Rugilus rufipes</i> Germ.									x

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
<i>Sepedophilus marshami</i> (Steph.)								x	
<i>Sepedophilus nigripennis</i> (Steph.)						x			x
<i>Staphylinus aeneocephalus</i> Deg.		x		x					
<i>Staphylinus brunnipes</i> F.				x					x
<i>Staphylinus compressus</i> Marsh.		x	x	x		x			x
<i>Staphylinus globulifer</i> Fourc.				x	x				x
<i>Staphylinus nero</i> Fald.	RDB3								x
<i>Staphylinus olens</i> Mull.		x							
<i>Stenus bifoveolatus</i> Gyll.								x	
<i>Stenus bimaculatus</i> Gyll.									x
<i>Stenus brunnipes</i> Steph.							x		
<i>Stenus clavicornis</i> (Scop.)		x	x	x			x		x
<i>Stenus impressus</i> Germ.								x	
<i>Stenus nitidiusculus</i> Steph.									x
<i>Stenus picipes</i> Steph.				x					
<i>Stenus rogeri</i> Kr.					x				
<i>Syntomium aeneum</i> (Mull.)							x		
<i>Tachinus humeralis</i> Gr.									x
<i>Tachinus marginellus</i> (F.)			x						x
<i>Tachinus signatus</i> Gr.		x	x	x	x	x	x		x
<i>Tachyporus chrysomeloides</i> (L.)		x	x		x	x			
<i>Tachyporus hypnorum</i> (F.)		x	x			x	x		
<i>Tachyporus obtusus</i> (L.)				x		x			x
<i>Tachyporus solutus</i> Er.		x	x	x	x	x			x
<i>Xantholinus glabratus</i> (Gr.)									x
<i>Xantholinus linearis</i> (Ol.)			x		x	x	x		
<i>Xantholinus longiventris</i> Herr		x							
<i>Xantholinus tricolor</i> (F.)	Na		x						x
PSELAPHIDAE									
<i>Bryaxis bulbifer</i> (Reich.)*					x				
<i>Euplectus duponti</i> Aube*	Na					x			
<i>Euplectus nanus</i> (Reichen.)*									x
<i>Pselaphus heisei</i> (Hbst.)		x							
LUCANIDAE									
<i>Dorcus parallelepipedus</i> (L.)				x					
GEOTRUPIDAE									
<i>Odontaeus armiger</i> (Scop.)*	RDB3	x							
SCARABAEIDAE									
<i>Aphodius ater</i> (Deg.)		x							
<i>Aphodius contaminatus</i> (Hbst.)		x							
<i>Aphodius equestris</i> (Pz.)*		x				x	x		
<i>Aphodius fimetarius</i> (L.)		x							
<i>Aphodius foetens</i> (F.)		x							
<i>Aphodius pusillus</i> (Hbst.)*		x						x	
<i>Aphodius rufipes</i> (L.)		x							
<i>Aphodius rufus</i> (Moll)		x							

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
<i>Colobopterus fossor</i> (L.)		x							
<i>Colobopterus haemorrhoidalis</i> (L.)		x							
<i>Serica brunnea</i> (L.)		x		x		x			x
SCIRTIDAE									
<i>Cyphon coarctatus</i> Pk.								x	
<i>Cyphon hilaris</i> Nyholm*								x	
<i>Cyphon padi</i> (L.)								x	
<i>Cyphon variabilis</i> (Thun.)								x	
<i>Microcara testacea</i> (L.)								x	
BYRRHIDAE									
<i>Byrrhus pilula</i> (L.)		x							
<i>Byrrhus pustulatus</i> (Forst.)				x					
<i>Chaetophora spinosa</i> (Ross.)*		x							
<i>Cytilus sericeus</i> (Forst.)									x
<i>Simpliocaria semistriata</i> (F.)		x						x	x
ELATERIDAE									
<i>Adrastus pallens</i> (F.)									x
<i>Agriotes obscurus</i> (L.)			x			x	x		x
<i>Agriotes pallidulus</i> (Ill.)				x		x		x	x
<i>Agriotes sputator</i> (L.)			x				x		
<i>Agrypnus murinus</i> (L.)							x		
<i>Ampedus balteatus</i> (L.)								x	
<i>Athous bicolor</i> (Goez.)			x				x		x
<i>Athous haemorrhoidalis</i> (F.)		x	x	x		x			x
<i>Cidnopus minutus</i> (L.)			x						x
<i>Dalopius marginatus</i> (L.)				x				x	
<i>Denticollis linearis</i> (L.)				x					
<i>Melanotus erythropus</i> (Gmelin)								x	
THROSCIDAE									
<i>Trixagus dermestoides</i> (L.)				x				x	x
CANTHARIDAE									
<i>Cantharis decipiens</i> Baudi									x
<i>Cantharis nigricans</i> (Mull.)									x
<i>Cantharis pallida</i> Goez.	Nb			x					x
<i>Malthinus flaveolus</i> (Hbst.)				x					x
<i>Malthodes marginatus</i> (Lat.)					x		x		
<i>Malthodes minimus</i> (L.)			x	x				x	
<i>Rhagonycha fulva</i> (Scop.)		x	x	x					x
<i>Rhagonycha lignosa</i> (Mull.)		x		x		x			
<i>Rhagonycha lutea</i> (Mull.)	Nb		x						x
ANOBIIDAE									
<i>Anobium inexpectatum</i> Lohse*	Nb						x		
<i>Anobium punctatum</i> (Deg.)									x
<i>Dryophilus pusillus</i> (Gyll.)*						x			

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
MELYRIDAE									
<i>Dasytes aeratus</i> Steph.					x				
NITIDULIDAE									
<i>Brachypterus glaber</i> (Steph.)			x						
<i>Epuraea aestiva</i> (L.)				x					
<i>Epuraea unicolor</i> (Ol.)					x	x	x		x
<i>Glischrochilus hortensis</i> (Fourc.)						x			x
<i>Meligethes aeneus</i> (F.)		x	x	x	x	x	x	x	x
RHIZOPHAGIDAE									
<i>Rhizophagus dispar</i> (Pk.)				x		x			
<i>Rhizophagus perforatus</i> Er.							x		x
CRYPTOPHAGIDAE									
<i>Atomaria atricapilla</i> Steph.		x	x		x	x	x		x
<i>Cryptophagus lycoperdi</i> (Scop.)						x			
<i>Cryptophagus setulosus</i> Strm.*				x			x	x	x
<i>Ephistemus globulus</i> (Pk.)*		x							
BIPHYLLIDAE									
<i>Diplocoelus fagi</i> Guer.*							x		
	Nb								
BYTURIDAE									
<i>Byturus tomentosus</i> (Deg.)						x		x	
CERYLONIDAE									
<i>Cerylon histeroideis</i> (F.)									x
COCCINELLIDAE									
<i>Adalia bipunctata</i> (L.)									x
<i>Coccinella septempunctata</i> L.							x	x	x
<i>Propylea quattuordecimpunctata</i> (L.)			x	x		x	x		x
<i>Thea vigintiduopunctata</i> (L.)									x
<i>Tytthaspis sedecimpunctata</i> (L.)									x
ENDOMYCHIDAE									
<i>Sphaerosoma piliferum</i> (Mull.)		x	x				x		
LATHRIDIIDAE									
<i>Aridius bifasciatus</i> (Reitt.)*		x	x	x		x	x		x
<i>Aridius nodifer</i> (West.)		x	x	x	x	x	x	x	x
<i>Corticaria elongata</i> (Gyll.)									x
<i>Corticaria impressa</i> (Ol.)									x
<i>Corticaria fuscula</i> (Gyll.)							x		x
<i>Corticaria gibbosa</i> (Hbst.)									x
<i>Dienerella elongata</i> (Curt.)*			x	x					x
<i>Dienerella separanda</i> (Reitt.)*									x
<i>Enicmus histrio</i> Joy & Tom.		x	x			x	x		x
<i>Stephostethus lardarius</i> (Deg.)		x	x	x			x		x

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
CISIDAE									
<i>Cis boleti</i> (Scop.)									x
<i>Cis festivus</i> (Pz.)*	Nb			x					
MYCETOPHAGIDAE									
<i>Typhaea stercorea</i> (L.)							x	x	
TENEBRIONIDAE									
<i>Alphitobius diaperinus</i> (Pz.)*							x		
<i>Cylindronotus laevioctostriatus</i> (Goez.)						x			
<i>Isomira murina</i> (L.)		x							
<i>Lagria hirta</i> (L.)									x
SALPINGIDAE									
<i>Rhinosimus planirostris</i> (F.)		x							
<i>Vincenzellus ruficollis</i> (Pz.)									x
PYROCHROIDAE									
<i>Pyrochroa serraticornis</i> (Scop.)							x		
MELANDRYIDAE									
<i>Orchesia minor</i> Walk.*					x				
SCRAPTIIDAE									
<i>Anaspis frontalis</i> (L.)				x					
<i>Anaspis humeralis</i> (F.)								x	
<i>Anaspis maculata</i> Fourc.				x				x	x
<i>Anaspis regimbarti</i> Schil.							x	x	x
<i>Anaspis rufilabris</i> (Gyll.)								x	
MORDELLIDAE									
<i>Mordellistena neuwaldeggiana</i> (Pz.)	Nb								x
CHRYSOMELIDAE									
<i>Apteropeda orbiculata</i> (Marsh.)		x							
<i>Batophila rubi</i> (Pk.)			x		x				x
<i>Chaetocnema concinna</i> (Marsh.)									x
<i>Chalcoides fulvicornis</i> (F.)					x				
<i>Chrysolina staphylaea</i> (L.)									x
<i>Crepidodera ferruginea</i> (Scop.)									x
<i>Crepidodera transversa</i> (Marsh.)								x	
<i>Cryptocephalus labiatus</i> (L.)		x	x						
<i>Lochmaea suturalis</i> (Th.)			x						
<i>Oulema melanopa</i> (L.)								x	
<i>Phaedon tumidulus</i> (Germ.)		x					x		x
<i>Phyllodecta vitellinae</i> (L.)				x					
<i>Phyllotreta ochripes</i> (Curt.)							x		
<i>Phyllotreta undulata</i> Kuts.									x
<i>Psylliodes affinis</i> (Pk.)		x							
<i>Sphaeroderma rubidum</i> (Graells)							x		
<i>Sphaeroderma testaceum</i> (F.)		x							

Table 1 (continued). Species recorded from specified sites during 1988

	Status	BD	DD	KW	PW	SW	TK	WH	W
ATTELABIDAE									
<i>Deporaus betulae</i> (L.)					x				
<i>Deporaus mannerheimi</i> (Hum.)*					x				
<i>Rhynchites aequatus</i> (L.)		x							
APIONIDAE									
<i>Apion assimile</i> Kirb.		x							
<i>Apion carduorum</i> Kirb.							x		
<i>Apion ervi</i> Kirb.*				x					
<i>Apion meliloti</i> Kirb.							x		
<i>Apion pisi</i> (F.)		x							
<i>Apion subulatum</i> Kirb.				x					
<i>Apion viciae</i> (Pk.)							x		
<i>Apion virens</i> Hbst.		x							
CURCULIONIDAE									
<i>Acalles ptinoides</i> (Marsh.)*	Nb			x					x
<i>Anthonomus pedicularis</i> (L.)							x		
<i>Barynotus moerens</i> (F.)					x				
<i>Barynotus obscurus</i> (F.)							x		
<i>Barypeithes araneiformis</i> (Sch.)		x	x		x		x		x
<i>Barypeithes pellucidus</i> (Boh.)		x	x	x	x		x		x
<i>Brachysomus echinatus</i> (Bons.)	Nb	x	x				x		
<i>Ceutorhynchus pollinarius</i> (Forst.)									x
<i>Ceutorhynchus quadridens</i> (Pz.)									x
<i>Cidnorhinus quadrimaculatus</i> (L.)			x						x
<i>Cionus scrophulariae</i> (L.)					x				
<i>Leiosoma deflexum</i> (Pz.)		x							
<i>Liophloeus tessulatus</i> (Mull.)							x		
<i>Micrelus ericae</i> (Gyll.)*				x					
<i>Otiiorhynchus desertus</i> Rosen.*	Nb								x
<i>Otiiorhynchus raucus</i> (F.)	Nb								x
<i>Otiiorhynchus singularis</i> (L.)				x					
<i>Phyllobius pomaceus</i> Gyll.									x
<i>Phyllobius pyri</i> (L.)				x					
<i>Phyllobius roboretanus</i> Gred.				x					x
<i>Phyllobius viridiaeris</i> (Laich.)					x				
<i>Polydrusus cervinus</i> (L.)				x					x
<i>Ramphus pulicarius</i> (Hbst.)				x					
<i>Rhynchaenus fagi</i> (L.)							x	x	
<i>Sciaphilus asperatus</i> (Bons.)		x			x				
<i>Sitona lineatus</i> (L.)		x	x	x		x	x		
<i>Strophosomus capitatus</i> (Deg.)				x					x
<i>Strophosomus melanogrammus</i> (Forst.)				x					x
<i>Trachyploeus asperatus</i> Boh.	Nb	x							
SCOLYTIDAE									
<i>Hylastes ater</i> (F.)					x				

Key to Table 1 BD = Blows Downs, DD = Dunstable Downs, KW = King's Wood, PW = Potton Wood, SW = Sandy Warren, TK = Totternhoe Knolls, WH = Wavendon Heath Ponds, W = Woburn (Aspley Guise), * = species new to the Checklist of Bedfordshire Coleoptera.

355 species were recorded from these sites in 1988, of which two were RDB3, six were Na and 22 were Nb. 56 species are new to the Checklist of Bedfordshire Coleoptera published in the *Bedfordshire Naturalist* (Nau, 1983, 1984, 1985, 1986). It was interesting to find that the 'best' site (in terms of number of species and species with a status of RDB3, Na or Nb) was the roadside verge situated between Woburn and Aspley Guise (Table 2). This demonstrates the need to investigate habitats which may appear to be very ordinary.

Site	BD	DD	KW	PW	SW	TK	WH	W
Status								
RDB3	1							1
Na	2	2	2		1	1	1	2
Nb	5	3	6	2	1	4	1	10
Species recorded	113	95	103	56	74	76	74	158

Table 2. Analysis of species recorded from each site

Blows Downs produced records of interest. In autumn 1987, *Leiodes rugosa* Steph. was found in extremely large numbers from the end of October until the pitfall traps were removed in early January 1988. Investigations were continued in autumn 1988 and the same phenomenon occurred again. Also, the occurrence of *Odontaeus armiger* (Scop.) at the same site in June was noteworthy. The larvae of this beetle are not dung feeders as are other members of the same family, but develop in fungi in subterranean burrows.

ADDITIONAL RECORDS

In March 1988, two mouse nests were found under a rotting garden shed in Dunstable which produced 21 species of beetle. These included four species new to the Bedfordshire checklist and not already mentioned in Table 1:

- Bibloporus bicolor* (Denny)
- Cryptophagus distinguendus* Stm.
- Lithostygnus serripennis* Broun
- Rhizophagus cribratus* Gyll.

Marston Thrift was visited on 25th June 1988 to collect Coleoptera. Here, 40 species of beetle were found and new additions to the checklist are:

- Gabrius pennatus* Shp.
- Ennearthron cornutum* (Gyll.)
- Anaspis garneysi* Fowl.

We have received one record of *Dorcus parallelepipedus* (L.) this year from Joan Childs. This was found inside Sharnbrook Church (SP994596) on 12th July.

A specimen of *Tachys parvulus* Dej. has been found in Bernard Nau's garden in Toddington. This is of interest because this species usually occurs 'on open gravel often near the sea' (Lindroth, 1974). However, according to the national Carabid Recorder, who has confirmed the identification, four or five scattered records have been reported around the country in the last few years.

In the surveys that have been carried out during 1988, a total of 379 species of Coleoptera have been recorded, of which 63 species are new to the Checklist of Bedfordshire Coleoptera. Although this is encouraging for our first year's work, we feel that it reflects the lack of intensive beetle recording in recent years.

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J.E. ASHBY
W. POWELL

FLOWERING PLANTS, FERNS AND FERN ALLIES (Spermatophyta and Pteridophyta) Report of the Recorder

The year 1988 was the second and last recording year for the Monitoring Scheme organised by the Botanical Society of the British Isles (BSBI). As stated in last year's report (Boon, 1988), recording was concentrated in the two 10km squares TL12 and TL15. The majority of the survey was completed during 1987 but several species which had only one or two known sites were missed. It is good to report that most of these were refound and a few are mentioned in the species list.

In the list I have chosen some 20 species which are among the more interesting or noteworthy records. In a county so well botanised as Bedfordshire (Dony, 1953, 1976) any species new to the county are most likely to be aliens. These are plants that have either become naturalised, often of garden origin, or are casuals. These latter usually survive for only one season because they are unable to compete with the local vegetation or the climate. In several cases the plants have been checked or determined by the appropriate BSBI referee.

SYSTEMATIC LIST

In the following list the Latin names are as in Clapham *et al* (1981) and the English names are as in Dony *et al* (1986).

Leguminosae

Anthyllis vulneraria ssp *carpatica* var. *pseudovulneraria* **Kidney Vetch** Chalk cutting, Streatley (TL02V). This species has been well split with four subspecies occurring in the UK. Det. J.R. Akeroyd. New county record (JD CD).

Vicia tenuissima **Slender Tare** Roadside verge near Stevington (SP95Q). This is a new 10km record and increases the number of tetrad records from three to four. This site is a good example of natural regeneration (GD).

Rosaceae

Potentilla anglica **Trailing Tormentil** Kidney Wood, Luton (TL012). In Dony (1976) it is stated that this species is of doubtful occurrence in the county as previous records may refer to the hybrid *P. erecta* x *P. reptans* (Tormentil and Creeping Cinquefoil). The true species was found in one of the sites given in Dony (1953) and has been confirmed by P.M. Benoit (JD CD).

Cotoneaster dielsianus Houghton Regis Chalk Pit (TL02B). Det. J.R. Palmer (CD).

C. simonsii **Himalayan Cotoneaster** Waste ground. Sundon Park, Luton (TL02M). Det. J.R. Palmer (CD).

C. horizontalis **Wall Cotoneaster** Dallow Hills, Luton (TL02Q). This is a relatively frequent bird-sown escape from gardens but has not been recorded for the county list (CD).

Crassulaceae

Crassula helmsii **New Zealand Pigmyweed** Pond near Podington (TL96G). This is a new county record and has been expected for some time. This plant, an alien water plant, has been spreading from the south since about 1960 but seemed to have by-passed Bedfordshire. It originated, as many of this genre of plant, from aquaria and garden ponds. It has a very vigorous growth and has caused problems on some nature reserves in other counties (MP).

Umbelliferae

Falcaria vulgaris **Longleaf** Reported from a garden in Aspley Guise (SP93M). It was last recorded about 1960 (GW).



Euphorbia serpens var. *fissistipula*. Arable field Maulden 22 Oct 1988

(Photo: Chris Boon)

Euphorbiaceae

Euphorbia serpens var. *fissistipula* Arable field, Maulden (TL03T) probably a wool alien. This is a new county record and, indeed, a new record for UK. It has not been recorded outside southern Europe. It is a native of America and occurs frequently as a casual in southern France and Spain where it may be locally naturalised. Its occurrence in Maulden is puzzling as shoddy had not been applied at the site for many years. Presumably the seed had lain dormant and been brought to the surface by cultivation, Det. Dr Radcliffe-Smith (JD CD).

Gentianaceae

Gentianella amarella **Autumn Gentian** Growing in a garden lawn Haynes (TL04Q). The lawn was a remnant of an old meadow untouched by fertiliser or weed-killer and contained several calcicolous plants. This is a new 10km record and almost 10km north of its typical habitat on the chalk downs (MP).

Adoxaceae

Adoxa moschatellina **Moschatel** Near Great Barford (TL15B). This was one of the species refound for the BSBI Survey. This site is one of the few in the north of the county (JD CD).

Compositae

Xanthium echinatum Rubbish tip, Arlesey (TL13X). The first record for the county of this alien species (JD CD CB)

Doronicum plantagineum **Plantain-leaved Leopard's-bane** Near Woburn Park (SP93Q). A large patch naturalised on the fringe of a wood. New county record (JD CD).

Anthemis cotula **Stinking Chamomile** Cornfield near Halsey Wood, Sharnbrook. In Dony (1976) there are 103 tetrad records, however this plant has been seen only rarely in recent years. It is one of the growing list of cornfield weeds that is decreasing in the county as a whole (JD CD).

Taraxacum sp. **Dandelion** In Rundle and Dony (1986) a survey of this genus in Bedfordshire was published. Three new species were identified in 1988, determined by C.C. Howarth. These are *T. laevicolor* Dt. (TL15S), *T. interveniens* Hagl. (TL02L) and *T. subpratensis* Hagl. (TL05F) (CD).

Liliaceae

Ornithogalum nutans **Drooping Star-of-Bethlehem** Roadside verge, Maulden (TL03P) where it appears well naturalised. There is an old record of this species from Maulden and it was last recorded in 1846 (JC).

Cyperaceae

Carex pseudocyperus **Cyperus Sedge** Home Wood, Northill (TL14N). A new 10km record for this rare sedge with previously only three tetrad records (JD CD).

C. nigra **Common Sedge** Marsh, Little Barford (TL15T). Despite its name an uncommon Bedfordshire species, refound in TL15 for the BSBI survey (JD CD).

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CHRIS BOON

MOSSES AND LIVERWORTS (Bryophyta)

Report of the Recorder

Tetrad recording continued during 1988 but field work was restricted by a combination of new professional responsibilities and mycological commitments.

The most profitable excursion was a field meeting I led on 12th March for members of the Cambridge University Botany School and British Bryological Society to King's Wood, Heath and Reach. Here Dr C. Preston and I were able to refine the small liverwort *Fossombronia pusilla* at its only recent Bedfordshire site. Dr Preston also found the attractive little yellow-green liverwort *Ptilidium pulcherrimum* growing as an epiphyte on an Ash tree. This is an uncommon species in SE England and this find represents only the third Bedfordshire record.

Ironically though the two best finds of the day were mine. *Calypogeia arguta* is a small leafy liverwort with bidentate leaves, this was new to the county. It might easily be overlooked as a depauperate *Lophocolea* sp. More remarkable was *Rhytidiadelphus loreus*, a large handsome dark green moss, more characteristic of western and northern Britain especially in upland woods but rare in the south, although it is recorded for Cambridgeshire and Northamptonshire. The single large, well established patch of this species represents a very attractive addition to the county list. These finds further confirm the very considerable importance of this wood as one of the best Bryological sites in the county.

ALAN R. OUTEN

LICHENS

Report of the Recorder

An area of derelict land, covered with colonising vegetation and amongst this, scattered lumps of concrete and rubble, would not seem at first sight of interest to a lichenologist. However this site has produced a number of potential lichen substrates, eg. bricks, mortar, timber, concrete, rubble and dumped material, including leather materials.

Growing on the compacted, nutrient deficient ground were a number of *Cladonia* species such as *C. chlorophaea*, *C. coniocraea*, *C. fimbriata* and *C. furcata* and a small specimen of *Placynthiella icmalea*. Lumps of concrete and mortar were colonised by the expected common calcicoles eg. *Candelariella vitellina*, *Caloplaca aurantia*, *C. citrina*, *Lecanora dispersa*, *L. muralis*, *Verrucaria muralis* and *V. nigrescens*. The bricks were poorly colonised, perhaps as a result of recent disturbance, and only a few specimens of *Lecania erysibe*, *Lecidea lucida*, and *Trapelia coarctata* were found. On pieces of timber specimens of *Lecanora conizaeoides*, *Physcia adscendens*, *P. grisea* and *Xanthoria parietina* were recorded. Growing on pieces of discarded leather were *Lecanora conizaeoides* and *Caloplaca citrina*, whilst some broken sections of iron machinery supported large growths of *Lecanora polytropa*.

Although none of the lichens recorded were rare, this site, albeit temporary in nature, is providing a variety of lichen substrates not normally found in any one habitat.

FRANCES B.M. DAVIES

FUNGI

Report of the Recorder

The recorder received a number of reports from members giving details of fungi found in various parts of the county. Many of the fungi mentioned in these reports were new to the county and are cited below.

A particularly long and detailed list was provided by Dr Jerry Cooper (JC). This was particularly welcome since it included data relating to many microfungi and plant pathogens, which tend to be rather neglected in Bedfordshire. Dr Cooper's list also included reports of seven aquatic Hyphomycetes identified from the foam which collects in places along streams. This is virtually an unworked habitat in the county. Because of the length of Dr Cooper's report it was decided to abstract and publish herewith the new county records and to file the rest of the data with the Society's archives.

Other contributors were L. Greenwood (LG), George Hooper (GH), Alan Outen (AO), Tony Rhodes (TR), Kerry Robinson (KR) and Bernard Verdcourt (BV). To all these members our grateful thanks.

BASIDIOMYCETES: AGARICALES

- Agaricus bohussii* Bramingham Wood, Luton, 31 Aug. 1988 (TR).
Agaricus fuscofibrillosus Bramingham Wood, Luton, 6 Sept. 1986 (TR).
Agaricus lanipes Bramingham Wood, Luton, 27 Sept. 1987 (TR).
Agaricus squamuliferus Dunstable, 19 Oct. 1968 (LG); Bramingham Wood, Luton, 6 Sept. 1986 (TR).
Coprinus nudiceps Stockgrove Park, 18 Oct. 1987 (confirmed by Dr R. Kemp, Edinburgh, following mating tests) (AO).
Coprinus stercoreus On deer dung, Woburn Abbey grounds, 12 May, 1988 (JC).
Crepidotus autochtona Bramingham Wood, Luton, 27 Sept. 1987 (TR).
Inocybe margaritipora Bramingham Wood, Luton, 27 Sept. 1987 (TR).
Inocybe paludinella Hanger Wood, Bedford, 18 Sept. 1958. Previously in Herb. Kew as '*Inocybe* sp.' but redetermined by Dr T. Kuyper (Leiden, Netherlands) as above.
Lepiota ignivolvata Warren Wood, Clophill, 1988 (AO).
 + *Panellus mitis* On pine stump, Charle Wood, 15 Nov. 1987 (JC).
Phaeomarasmium erinaceus Rowney Warren, 19 Oct. 1986 (KR).
Russula cf. *violacea* Kingshoe Wood, Flitwick, 5 Nov. 1978 (AO).
Tubaria pallidispora Waterloo Thorns near Tempsford, June 1986 (AO). [2 spored form].
 † *Tylophilus felleus* Warren Wood, Clophill, 1988 (AO).

BASIDIOMYCETES: APHYLLOPHORALES

- Auriculariopsis ampla* On *Populus*, Willington Wood, 15 Dec. 1987; 18 Feb. 1988; 30 Oct. 1988 (GH).
 + *Botryobasidium candicans* Flitwick Moor, 15 May 1988 (JC). [With *Alysidium* stage; deposited in Commonwealth Mycological Institute].
 + *Ganoderma adpersum* Wavenden Heath, 1 November 1987 (JC).
 + *Typhula sclerotioides* Rowney Warren, 19 October 1986 (KR).

BASIDIOMYCETES: UREDINALES

- Coleosporium tussilaginis* On *Petasites*, Flitwick Moor, 2 October 1983 (BV).
Melampsora euphorbiae Flitwick, 30 September 1979 (AO).
 + *Milesina kriegeiana* On *Dryopteris dilatata*; Flitwick Moor, 15 May 1988; same host, Wavenden Heath, 16 May 1988 (JC).

ASCOMYCETES: DISCOMYCETES

- + *Ascobolus immersus* On incubated deer dung, Woburn Abbey grounds. Dung collected 10 April 1988 (JC).
- Geoglossum cookeianum* Clifton Plantations, 18 November 1984 (AO).
- Heterosphaeria patella* Potton Wood, March 1986 (KR).
- + *Meloderma desmazieresii* On needles of *Pinus sylvestris*, Woburn Abbey Garden Centre, April 1988 (JC).
- Micropodia pteridina* On *Pteridium aquilinum*, Wavendon Heath, 26 June 1988 (JC).
- + *Mollisia pteridis* On *Pteridium aquilinum*, Wavendon Heath, 26 June 1988 (JC).

ASCOMYCETES: PYRENOMYCETES

- † *Cordyceps militaris* Rowney Warren, 1 October 1987 (GH).
- Daldinia vernicosa* On burnt gorse stems, Cooper's Hill, Ampthill, 20 Oct. 1987 (GH).
- Erysiphe artemisiae* On *Artemisia vulgaris*, Rowney Warren Wood, 25 October 1987 (JC).
- + *Lidophia graminis* On *Holcus mollis*, Flitwick Moor, 15 May 1988 (*Dilophospora* state) (JC).
- Schizothecium conicum* On incubated deer dung, Woburn Abbey grounds, from dung collected 10 April 1988 (JC).
- Podospora curvula* On incubated deer dung, Woburn Abbey grounds, from dung collected 10 April 1988 (JC).
- + *Venturia rumicis* On *Rumex obtusifolius*, Flitwick Moor, 15 May 1988 (JC).

DEUTEROMYCETES: HYPHOMYCETES

- Alatospora acuminata* Stream foam in Poplar plantation, Willington, 10 Jan. 1988 (JC).
- Arthrinium sporophleum* Potton Wood, March 1986 (KR).
- Cercosporidium depressum* On *Angelica sylvestris*, Wavendon Heath ponds, 16 October 1988 (JC).
- Dactyllella aquatica* Stream foam in Poplar plantation, Willington, 10 Jan. 1988 (JC).
- Fusidium aërginosum* On leaves of *Quercus* and *Castanea*, Wavendon Heath, 1 November 1988 (JC).
- Helisus lugdunensis* Stream foam in Poplar plantation, Willington, 10 Jan. 1988 (JC).
- + *Mastigosporium album* On *Alopecurus*, Maulden Church Meadow and Woods, 2 May 1988 (JC).
- + *Periconia byssoides* On Umbellifer stem, Flitwick Moor, 15 May 1988 (JC).
- + *Pycnostysanus azaleae* On *Rhododendron ponticum*, Wavendon Heath, 13 November 1988.
- Ramularia didyma* On *Ranunculus repens*, Flitwick Moor, 15 May 1988 (JC).
- Ramularia rubella* On *Rumex obtusifolius*, Flitwick Moor, 15 May 1988 (JC).
- † *Tetracladium marchalianum* Stream foam in Poplar plantation, Willington, 10 January 1988; Stream foam, Flitwick Moor, 15 May 1988 (JC).
- Tetracladium setigerum* Stream foam in Poplar plantation, Willington, 10 January 1988 (JC).
- Tricladium angulatum* Stream foam in Poplar plantation, Willington, 10 January 1988 (JC).
- Volucrispora aurantiaca* Stream foam in Poplar plantation, Willington, 10 January 1988 (JC).

DEUTEROMYCETES: COELOMYCETES

- + *Phomopsis araucariae* On fallen leaves of *Araucaria*, Woburn Abbey Gardens, 10 April 1988 (JC).
- + *Sclerophoma pithyophila* Needles of *Pinus sylvestris*, Wavendon Heath, 6 February 1988 (JC).

MYXOMYCETES

- + *Arcyria obvelata* Jackdaw Hill, 30 June 1987 (JC).
- +† *Hemitrichia clavata* Old Wavendon Heath, 10 April 1988 (JC).

† confirmation of existing record.

NOTE

There are no specimens of Dr Cooper's collections in the Kew Herbarium and specimens have not been seen by the Recorder, however, when specimens have been preserved in the collector's private herbarium the fact is indicated by a +.

BIBLIOGRAPHY

A gathering of *Entoloma sphagnetii* is recorded from Flitwick Moor, 23 Oct. 1985 by Orton in *Trans. Brit. Mycol. Soc.* **91** 553 1988.

DEREK A. REID

THE FUNGUS FORAY, 1988

The fungus foray, led by Dr D.A. Reid on October 9th, was held at King's Wood, Heath and Reach, with about 20 people in attendance; the venue being of particular interest since it has not often been searched intensively from a mycological view point.

The woodland was clearly an ideal collecting ground with a rich accumulation of humus and fallen branches. However, because of the generally poor season the numbers of agarics found were not as high as one would have expected from such a promising site with a good mix of host trees. It is, therefore, to be hoped that a return visit will be possible in the future.

Of the additions to the county list, *Clitocybe langei* was of particular interest since it is seldom collected and even when reported is often found to be confused with the very similar *C. vibecina*. Both are small brownish-grey hygrophanous species, with a striate margin and a strong smell of meal when bruised, but whereas *C. vibecina* has tiny blunt elliptic spores, those of *C. langei* are tear-drop-shaped.

Hygrophorus quercetorum resembles *H. cossus* and *H. eburneus*, having a similar sticky cap and stem and peculiar smell. However it tends to be more robust, to be more distinctly cream-coloured, as well as having a slightly different smell; it also decays very rapidly. Collections of the *Hygrophorus cossus* group found in the vicinity of oak should be carefully compared with this species.

Two species of *Inocybe* new to the county were found. *I. cincinmatula* with a small brown tomentose cap, has violet tints on the fibrillose stem; under the microscope its thick-walled cystidia appear yellow when examined in ammonia. *Inocybe flocculosa* [syn. *I. gausapata*] also has a brown tomentose cap which is distinctly umbonate, a whitish stem, pruinose with caulocystidia but only at the apex, and as in the previous species cheilocystidia which appear yellow in ammonia.

Lepiota sistrata is a tiny white species with the cap often somewhat acorn-shaped at first, and with a mealy surface; the stem is white above but dark purplish below. It tends to grow in small swarms, often by roadside verges under nettles and rank vegetation. *Pholiota lenta* and *P. tuberculosa* are both lignicolous species. The former has a sticky, pallid fawn cap, sometimes beset with whitish fleck-like scales, suggestive of some *Cortinarius* species of the Phlegmacium-group but with more clay-coloured gills; the stem is whitish-cottony below the ring zone. It has large facial cystidia. *Pholiota tuberculosa* is recognized by having a small, laterally attached, golden yellow cap with a dry, fibrillose, adpressedly scaly surface. Microscopically it is characterized by its capitate or clavate cheilocystidia with elongated stalks, and by its brown bean-shaped spores, measuring 7-9 x 4-5 μm .

Additions to the rust fungi of Bedfordshire have been rare over the last few years, although doubtless many species still await detection in the county; *Puccinia annulais* on *Teucrium scorodonia* is one such record.

In all a total of 150 species was recorded of which 7 were new additions to the county list and one a confirmation of an existing record.

SPECIES LIST

Agaricus lutosus; *Amanita citrina*; *A. fulva*; *A. muscaria*; *A. phalloides*; *Armillaria mellea*; *Boletus badius*; *B. chrysenteron*; *B. granulosus*; *B. pruinatus*; *Clitocybe clavipes*; *C.icolor*; *C. ditopa*; *C. flaccida*; *C. fragrans*; **C. langei*; *C. odora*; *Collybia confluens*; *C. dryophila*; *C. erythropoda*; *C. maculata*; *C. peronata*; *Conocybe arrenhii*; *C. mesospora*; *Coprinus acuminatus*; *C. micaceus*; *Cortinarius psammocephalus*; *C. semisanguineus*; *Crepidotus variabilis*; *Cystoderma amianthina*; *Galerina hypnorum*; *G. mniophila*; *G. mutabilis*; *G. mycenopsis*; *Gymnopilus penetrans*; *Hebeloma crustuliniforme*; *H. saccharioides*; *Hygrophorus conicus*; *H. niveus*; **H. quercetorum*; *H. strangulatus*; *Hypholoma fasciculare*; **Inocybe cincinnatula*; *I. fastigiata*; **I. flocculosa*; *I. geophylla*; *I. geophylla* var. *lilacina*; *Laccaria amethystea*; *L. laccata*; *Lactarius glyciosmus*; *L. pyrogalus*; *L. quietus*; *L. torminosus*; *L. turpis*; *Leccinum melaneum*; *L. scabrum*; **Lepiota sistrata*; *Lepista nuda*; *Marasmius androsaceus*; *M. ramealis*; *M. undatus*; *Melanoleuca melaleuca*; *Mycena candida*; *M. epipterygia*; *M. fibula*; *M. galericulata*; *M. inclinata*; *M. leptocephala*; *M. leucogala*; *M. polygramma*; *M. pura*; *M. sepia*; *M. speirea*; *M. vitilis*; *Panaeolus sphinctrinus*; *Paxillus involutus*; †*Pholiota lenta*; **P. tuberculosa*; *Pleurotus dryinus*; *Pluteus cervinus*; *P. lutescens*; *P. xanthophaeus*; *Psathyrella squamosa*; *Psilocybe semilanceata*; *Russula atropurpurea*; *R. betularum*; *R. delicata*; *R. emetica*; *R. ochroleuca*; *R. nitida*; *R. parazurea*; *R. puellaris*; *R. vesca*; *R. xerampelina*; *Stropharia aeruginosa*; *S. semiglobata*; *Tricholoma album*; *T. sulphureum*; *Tricholomopsis rutilans*; *Tubaria furfuracea*.

Basidiaradulum radula [*Radulum orbiculare*]; *Bjerkandera adusta*; *Chondrostereum purpureum*; *Clavulina cinerea*; *C. rugosa*; *Clavulinopsis helveola*; *Coriolus versicolor*; *Daedalea quercina*; *Daedaleopsis confragosa*; *Fistulina hepatica*; *Gloeocystidiellum porosum*; *Grifola frondosa*; *Heterobasidion annosum*; *Hirschioporus abietinus*; *Hymenochaete rubiginosa*; *Hyphoderma praetermissum*; *H. setigerum*; *Piptoporus betulinus*; *Pseudotomentella* (*Tomentella*) *echinospora*; *Schizopora paradoxa*; *Stereum gausapatum*; *S. hirsutum*; *S. rugosum*; *S. sanguinolentum*; *Typhula quisquiliaris*.

Calocera cornea; *C. viscosa*; *Dacrymyces stillatus*; *Exidia glandulosa*; *Tremella foliacea*.

Coleosporium tussilaginis; *Melampsoriidium betulinum*; **Puccinia annularis*; *P. epilobii*; *P. lychnidearum*; *Pucciniastrum epilobii*.

Lycoperdon foetidum; *L. perlatum*; *L. pyriforme*; *Phallus impudicus*; *Scleroderma citrinum*.

Coryne sarcoides; *Cudoniella acicularis*; *Helvella lacunosa*; *Rhytisma acerinum*.

Diatrype stigma; *Helminthosphaeria clavariarum*, *Nectria cinnabarina*; *Xylaria hypoxylon*.

Lycogala epidendrum.

* — new county record

† — confirmation of existing record

DEREK A. REID

RECORDERS

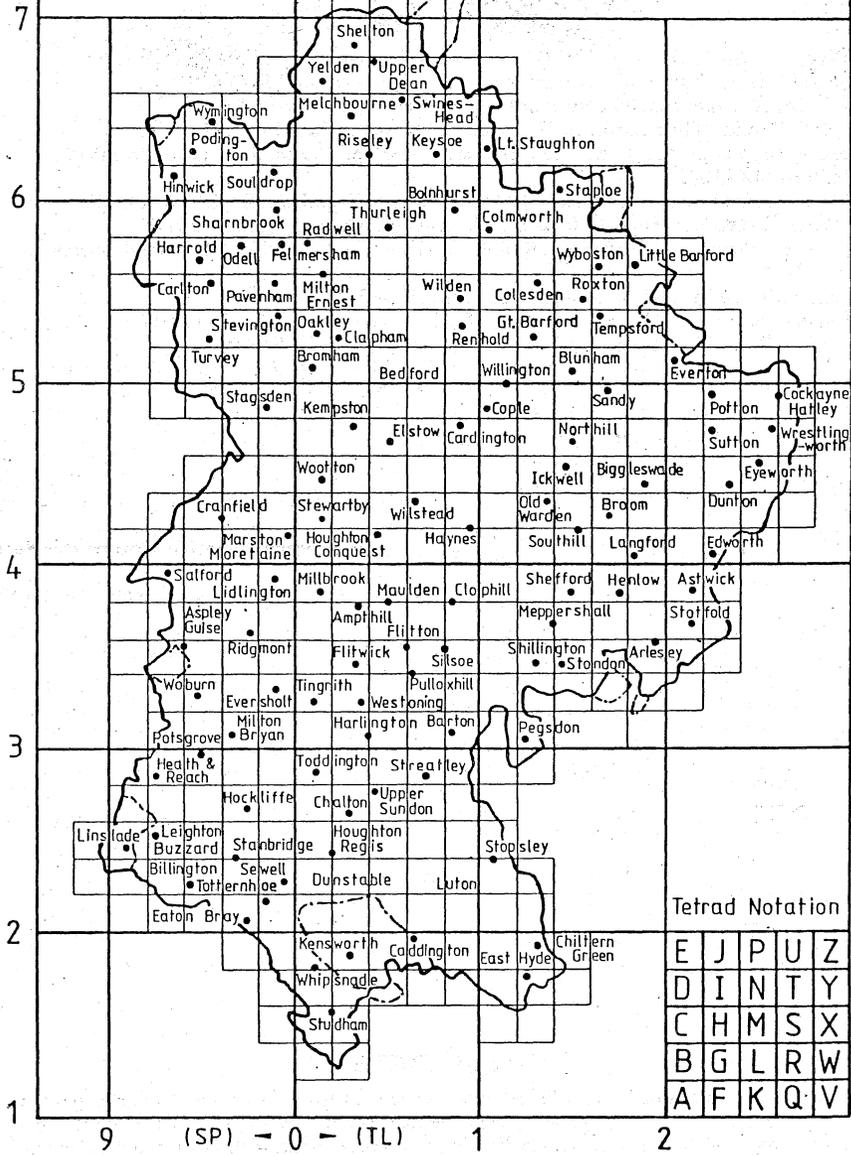
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The Society depends on the annual subscriptions which are devoted entirely to carrying out its work, as all officers are honorary. Membership is open to anyone, whether resident in the county or not.

BEDFORDSHIRE



Tetrad map of Bedfordshire showing the main towns and villages

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