The Bedfordshire Naturalist

THE JOURNAL OF THE

BEDFORDSHIRE

NATURAL HISTORY SOCIETY

FOR THE YEAR

1978

No. 33

Price: £1.50

PUBLISHED BY THE
BEDFORDSHIRE NATURAL HISTORY SOCIETY

October 1979

BEDFORDSHIRE NATURAL HISTORY SOCIETY 1979

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THE BEDFORDSHIRE NATURALIST

No. 33 (1978)

Edited by C. R. BOON

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REPORT OF THE COUNCIL

It has given the Council much pleasure to see the membership figures rise during 1978 to the record number of 426, the highest since the Society was formed. The membership figures are as follows:–

	1975	1976	1977	1978
Ordinary Members	263	271	273	311
Associate Members	41	49	41	52
Student Members	66	65	49	45
Corporate Members	8	9	9	9
Life Members	5	5	5	5
Honorary Life Members	3	4	4	4
	386	403	381	426

The Society owes much of the above increase to the high standard of the Annual Library Exhibition compiled by Mr A. J. Martin, with material supplied by the recorders, and to an exhibition at the Open Day at Shuttleworth Agricultural College. During the year a new advertising campaign was launched with the help of the Town and Country Building Society. 'Mini' exhibitions have been appearing regularly in their windows throughout the county and have also been borrowed by many libraries and the Teachers' Centre in Dunstable. The Council hopes that despite the inevitable increase in the subscription rates this year, due to ever rising costs, the members will remain loyal and continue to support the Society.

Our thanks must go to the joint Editors, Dr J. G. Dony and Mr C. R. Boon, for their efforts in getting the *Bedfordshire Naturalist* published in record time. The very high standard was maintained and there has been a steady demand for copies from outside the county. We are sorry to announce that Dr Dony will not be continuing as joint Editor but is handing over entirely to Mr Boon. They made a very good team and we feel confident that Mr Boon will be able to rely on Dr Dony for help and advice whenever needed.

Our thanks must also go to Dr Dony for steering the *Bedfordshire Bird Atlas* through all its crucial stages and we look forward to its publication on 31st. March 1979. The survey work was begun by Mr J. N. Dymond, continued by Mr P. F. Bonham and finished by Mr B. D. Harding. Our thanks, however, must go not only to these three recorders but also to Mr R. Turley, the artist, to Mr B. Nightingale and all the many people who contributed records over the years. During the pre-publication period much valuable help was given by Mrs C. M. Dony, Dr J. T. R. Sharrock and Mr D. G. Rands.

During the year outside bodies have continued to consult the Society for information and it has been with pride that the Society has been making a major contribution to the County Council's *Landscape and Wildlife Subject Plan* for Bedfordshire. The Scientific Committee invited 40 members, including all the recorders, to answer a questionnaire about approximately 600 sites with Natural History interest. 36 members took part and have produced a wealth of information about their own disciplines for the individual sites. This is of great importance and has increased our knowledge of the county. We would like to thank all those who took part and gave up so much of their very valuable spare time. Analysis work is still continuing but it is hoped that 1979 will see the County Council's plan in print.

Finally the Council wishes to thank all members for their support and interest. We hope that many of you will send in your contributions to our Newsletter, *The Muntjac*, and we thank Mr R. V. A. Wagstaff for editing the Newsletter so efficiently and continuing to make this such an important part of the Society's publications. We would also like to thank Mrs. Wagstaff who types all the stencils for the Newsletter.

E. BERYL RANDS

EDITORIAL

Looking through past Journals I can only find one editorial and that was in the special issue to celebrate our 25th anniversary in 1971. There being a few column inches of space in approximately the right place and this being the first issue over which I have sole responsibility, I am taking the liberty of penning a few words of thanks to those who have helped me produce this issue.

I would like to record my grateful thanks to Dr Dony for guiding me into this task of editing over the last two years when we were joint editors. Although this journal is for the year 1978, when we go to press Dr Dony will have celebrated his 80th birthday and I feel I cannot let the opportunity pass without sending him our congratulations and best wishes.

This journal would not be the interesting read that is if it were not for the tremendous amount of work put in by the Society's recorders and published here, these recorders' reports are the backbone of the Journal. With this issue we return, after several years absence, to having photographs and I hope this will be a continuing feature. My thanks to Derek Rands for improving or redrawing the many diagrams to obtain some consistency in presentation.

To anyone who feels the urge to write an article for the next Journal, please let me have full warning by the end of this year, 1979. I would appreciate all articles and recorders' reports to be sent in by March 31st 1980.

C.R. BOON

REPORT OF THE TREASURER

A first sight of the accounts suggests that the Society did very well last year, but you will note that the last section of the Income is for interest on our Bonds and Deposit Account which is obviously not part of our current income. When this £581 is taken out there is a loss on the year of £456 which required a transfer of £400 from our Deposit Account. This loss is mainly accounted for by the second Journal which our editors were able to produce during the year to bring us completely up-to-date.

Even allowing for this there was an excess of expenditure over income of some £50. As all costs continued to rise we needed to increase our annual subscription for 1979 and this was approved unanimously at a Special General Meeting on 2nd November. There have been no resignations following this and subscription renewals continue well so that I must again thank the members for their continuing loyalty.

You will all know that the Society is producing a Bird Atlas and although it is expected that this will eventually make a profit, the venture will need financial support to cover all the costs before the break-even number of copies has been sold – this will be about £600. We have been waiting for this amount to become known before arranging for a further purchase of Bonds to give us higher interest. We can now consider transferring £1000.

Turning now to the individual items in the accounts you will see that subscription income increased due to the improved recruitment of new members mentioned by the Secretary. The surplus on meetings is halved, due mainly to increased coach charges which have caused us to cost on full coaches to peg the fares charged to members.

On the expenditure side there is a large increase against the Newsletter, but this is for the purchase of a stock of paper to cover future issues.

The other items show levels very similar to those of the previous year and in line with the finance committee's budgets.

Depreciation is again shown at 10% on the slide projector and duplicator which brings their book value below their true value, thanks to rapidly rising prices. However, the Auditors insist that this is correct procedure.

M. CHANDLER

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1978

Year to 31-12-77

£	£	INCOME	£	£
		SUBSCRIPTIONS		
745		Current Year		817
		OTHER INCOME		
	40	Sales	38	
	51	Surplus on Meetings	26	
	13	Warden Hills	–	
104	–	Donations	25	89
		INTEREST		
	235	Interest on Deposit Account	96	
465	230	Interest on Nottingham City Bonds	492	588
1314		TOTAL INCOME		1494
		EXPENDITURE		
		ADMINISTRATION		
	3	Officers' Expenses	–	
	13	Postage	15	
	10	Stationery	11	
	5	Sundries	–	
	8	Purchase of Car Stickers	50	
	13	Insurance	20	
	20	Auditors' Fee	20	
	72		116	
		MEETINGS		
	112	Hire of Halls	115	
	19	Lecturers and Films	9	
	51	Programmes	58	
	2	Officers' Expenses	–	
	9	Student Section	–	
	193		182	
		SCIENTIFIC		
	341	Journal (2 Issues)	771	
	16	Subscriptions to other Societies	31	
	8	Recorders' Expenses	12	
	24	Sundries	20	
	15	Warden Hills	–	
	404		834	
		PUBLICITY		
	47	Newsletter	159	
	–	Application Forms	36	
	–	Advertising	5	
	47		200	

733	17	DEPRECIATION Of Equipment at 10% on Cost	17	1349
£581		**EXCESS OF INCOME OVER EXPENDITURE.**		£145

BALANCE SHEET AS AT 31st DECEMBER 1978

Year to 31-12-77		**FIXED ASSETS**	**COST**	**DEPRECIATION**	
	35	Books and Journals	35	–	35
	10	O.S. Maps	10	–	10
	8	Bird Song Records	8	–	8
	15	Display Boards	15	–	15
	15	Microscope	15	–	15
	3	Tools	3	–	3
	2	Screen	2	–	2
	48	Slide Projector	60	18	42
	88	Duplicator and Stand	110	33	77
224			258	51	207
		CURRENT ASSETS			
	93	Bank Account		368	
	1646	Deposit Account		1815	
	45	Cash in Hand		11	
	6000	City of Nottingham Bonds		6000	
	230	Debtors – Interest on Bonds		250	
	14	Debtors – Subscriptions		12	
	50	Stock of Car Stickers		–	
8078					8456
8302					8663
		CURRENT LIABILITIES			
	20	Creditors		22	
20	–	Bird Atlas Account		214	236
£8282					£8427
		REPRESENTED BY CAPITAL ACCOUNTS			
2370		Balance Brought Forward			2951
581		Excess of Income over Expenditure			145
2951					3096
5331		Theed Pearce Legacy			5331
£8282					£8427

Honorary Auditors
O. R. MORGAN
S. M. CROSS

PROCEEDINGS

Indoor Meetings

386th Ordinary Meeting, 4th January, Bedford. "An introduction to ladybirds" by Mr J. Niles. Chair: Dr B. S. Nau.

387th Ordinary Meeting, 12th January, Dunstable. "Any Questions?" Questionmaster: Mr W. J. Drayton.

388th Ordinary Meeting, 24th January, Ampthill. "Kenya National Parks" by Dr D. K. Toomer. Chair: Mr S. Cham.

389th Ordinary Meeting, 2nd February, Bedford. Members' evening. Chair: Mr J. M. Dymond.

390th Ordinary Meeting, 7th February, Dunstable. "Get to know your butterflies" by Mr A. J. Martin. Chair: Mr V. W. Arnold.

391st Ordinary Meeting, 16th February, Ampthill. "Birds of California" by Mr P. Smith. Chair: Mr R. V. A. Wagstaff.

Special Meeting, 23rd February, Potton. "Discovering wildlife in Bedfordshire" by Mrs E. B. Rands. "The Great Ouse : Bedford to the Wash" by Mr J. P. Knowles.

392nd Ordinary Meeting, 1st March, Bedford. "The identification of some common flowers" by Mr C. R. Boon. Chair: Mr G. Hooper.

393rd Ordinary Meeting, 9th March, Dunstable. "The Amphibians of Britain" by Miss H. M. Webb. Chair: Mr J. P. Knowles.

Annual General Meeting, 16th March, Ampthill.

394th Ordinary Meeting, 23rd March, Luton. "Enjoying Natural History" by Mrs E. B. Rands. Chair: Mr D. G. Rands.

Special Meeting, 4th May, Ampthill. Ornithological Forum – "Birds in Bedfordshire". "Birds of the Seychelles" by Mr I. J. Ferguson-Lees. Chair: Mr P Smith.

395th Ordinary Meeting, 11th October, Bedford. Members' evening. Chair: Mr H. A. S. Key.

396th Ordinary Meeting, 17th October, Dunstable. "Caves of England and Wales" by Mr V. W. Arnold. Chair: Mr T. S. Hollingworth.

397th Ordinary Meeting, 26th October, Flitwick. "Weeds of Bedfordshire" by Dr J. G. Dony. Chair: Mr V. W. Arnold.

398th Ordinary Meeting, 2nd November, Bedford. "The identification of local rocks and fossils" by Mr A. G. H. Osborn. Chair: Mrs E. B. Rands.

399th Ordinary Meeting, 7th November, Barton-le-Cley. "Enjoying Natural History" by Mrs E. B. Rands. "The Life of the Common Frog" by Miss H. M. Webb. Chair: Mr T. Peterkin.

400th Ordinary Meeting, 21st November, Dunstable. "An Introduction to Ants" by Dr A. J. Rundle. Chair: Mr D. G. Rands.

401st Ordinary Meeting, 7th December, Bedford. Films: "Animals in Action". "The Living Forest." "The Private Life of the Large White Butterfly." Introduced by Mr K. Taylor of the World Wildlife Fund. Chair: Mrs S. K. Fothergill.

402nd Ordinary Meeting, 19th December, Dunstable. Identification evening. Chair: Mr D. G. Rands.

403rd Ordinary Meeting, 28th December, Luton. Members' evening. Chair: Mr A. J. Martin.

Field Meetings

29th January	**Ouse Washes.** Coach trip.
12th February	**Grafham Water.** Leader: Mr T. S. Hollingworth
9th April	**Knowle Park, Sevenoaks, Kent.** Coach trip.
16th April	**Barton Hills** in spring. Leader: Mr A. R. Outen.
30th April	**Waresley Wood.** Visit to Beds. and Hunts. Naturalists' Trust Reserve. Leader: Mr M. Chandler.
7th May	**Radwell Gravel Pits.** To look for bird life. Leader: Mr B. Nightingale.
14th May	**Selborne, Hants.** Coach trip.

17th May	**Mowsbury Hill, Bedford**. General natural history. Leader: Mr H. A. S. Key.
20th May	**West Wood, nr Knotting.** Plants and general natural history. Leader: Dr J. G. Dony.
25th May	**Wrest Park, Silsoe.** Bird song – including 'Evening chorus'. Leader: Mr J. P. Knowles.
28th May	**Harrold Gravel Pits.** Bird watching. By kind permission of Hall Aggregates Ltd. Leader: Mr B. D. Harding.
3rd June	**Cambridge Botanical Gardens.** Leader: Mr M. Chandler.
7th June	**Old Warden Tunnel.** General interest including plants, moths, and mosses. Beds. and Hunts. Naturalists' Trust Reserve. Leader: Dr N. Dawson.
11th June	**Aston Rowan, Bucks.** National Nature Reserve. Leader: Dr B. S. Nau.
14th June	**Barton-le-Cley.** Lichens. Leader: Mrs F. B. M. Davies.
17/18th June	**Maulden Wood.** The annual all-night meeting.
25th June	**Sutton Fen.** General natural history. Leader: Mr K. O. Pressland.
28th June	**Barton Springs.** Insects. Leader: Mr D. G. Rands.
7th July	**Oakley.** General natural history ending with moth trapping. Leader: Mr A. Muir-Howie.
9th July	**Shuttleworth College.** A one day course on a variety of natural history subjects.
16th July	**The Wren's Nest and Wyre Forest.** Coach trip.
23rd July	**Woodwalton Fen, Cambs.** Leader: Mr A. J. Martin.
13th August	**Dunton Green Lane.** General interest including butterflies. Leader: Dr B. S. Nau.
16th August	**Howbury Hall, Renhold.** General interest including moths. Leader: Mr W. J. Champkin.
20th August	**Longholme Boating Lake, Bedford** and the surrounding area. Leader: Miss H. M. Webb.
17th September	**Henlow Grange.** General interest. Leader: Dr J. G. Dony.
1st October	**Ampthill Park.** General interest. Leader: Dr J. G. Dony.
8th October	**Rowney Warren.** Joint meeting with Letchworth N.H.S. Berries, fungi, fir-cones etc. Leader: Mr A. R. Outen.
15th October	**New Wavendon Heath.** The annual fungus foray. Joint meeting with the British Mycological Society. Leader: Dr D. A. Reid.
29th October	**Gibraltar Point, Lincs.** Coach trip.
10th December	**Morston, Norfolk.** Coach trip.

METEOROLOGY

Report of the Recorder

THE WEATHER OF 1978

On the basis of total rainfall and average temperatures 1978 gives a misleading impression of having been a fairly normal year, but to most people it was a disappointing one, with a wet winter, a cold spring, a premature 'summer' which lasted about a fortnight and a long and often very pleasant autumn which came too late for most holiday-makers to enjoy.

January and, especially, February and March were all unusually wet, with intermittent periods of snow, particularly on the 11th, 18th, 19th and 30th January and the 8th and 9th February. A spell of spring-like weather during the first fortnight of March did not persist, and there were heavy snowfalls on the 16th, with the rest of the month unsettled. April was unusually cold, with northerly and north-easterly winds throughout the month and into the first fortnight of May. There was a heavy blizzard during the afternoon and evening of the 10th April and further snow on the 13th.

A general rise of temperature began during the third week of May, and was followed by the longest and warmest period of fine weather, from the 20th May to the 16th June. Although there were single days of seasonable weather during the three summer months, the general tendency was for relatively cool and unsettled conditions to predominate and the only other spell of fine weather occurred between the 13th and 21st August.

It was the autumn, however, which provided the best conditions, with nearly three weeks of dry, warm and mostly sunny days, with westerly breezes, in mid-September. Nearly the whole of October, too, was exceptionally dry, with measurable rainfall on only three or four days in some places, and remarkably high temperatures on the 11th and 12th.

November was also deficient in rainfall, but temperatures were, of course, lower, and the first really cold weather of the winter was established on the 25th. December was dull and exceptionally wet, with cold spells just before Christmas and again at the end of the year, which closed with a day of persistent frost and with overnight snow lying unmelted.

RAINFALL

The year's totals were below the average by less than 10 per cent in most places, but the variations between the months were very marked. January, February and March were all much wetter than usual, and December was the wettest since 1963. On the other hand, all the months from May to November inclusive were much drier than normal and the low rainfall in October was quite exceptional; at Silsoe only 1.5 mm was recorded for the whole month, and the only comparable figure in this century was the 1.3 mm at Cardington in September, 1959 (see *Bedf. Nat.* **14**:26).

The heaviest day's total was the 35.1 mm recorded at Silsoe on the 31st July; Cardington's figure for that day was 29.1 mm. The longest dry period was from the 16th May to the 4th June – 19 days. However, less than 1 mm of rain fell in the 22 days between 21st October and the 11th November.

SNOW

Snow fell in Bedford on at least 12 occasions during the year, but the falls were heavy on only two occasions – the 16th March and the 10th April.

TEMPERATURES

No high maximum temperatures were recorded during the year and 80 deg. F. (26.6 deg. C) was reached on one day only; the decision as to whether this was the 31st May or the 4th June depends on a mere fraction of a degree! October 11th, with a maximum of 25 deg. C

(77 deg. F) was the warmest October day for 20 years.

The lowest night temperature was on the night of 30th November/1st December, when minus 9.0 deg. C. (16 deg. F.) was recorded at Silsoe and minus 8 deg. C. at Cardington.

The mean average temperature for the whole year was 9.2 deg. C. (48.6 deg. F.); this is only very slightly below the average of about 9.4 deg. C. (48.9 deg. F.).

THUNDER

Thunder was heard in Bedford on nine occasions during the year, but there were no spectacular or prolonged storms, and no high accompanying rainfalls. The heaviest storm was that on the afternoon of the 4th June, following a warm and humid day.

RAINFALL FOR 1978

	Bedford	Cardington	Luton	Sandy	Silsoe
January	60.9	59.9	–	66.4	74.5
February	41.3	41.9	–	43.2	41.5
March	51.5	54.1	–	61.1	52.6
April	51.1	44.6	69.0	52.8	48.3
May	40.4	41.5	63.2	42.0	45.6
June	36.9	40.1	47.3	42.2	33.0
July	53.6	49.2	67.0	27.4	68.7
August	46.2	28.5	24.9	36.8	40.6
September	28.1	23.0	27.4	31.0	26.5
October	2.5	3.1	3.5	3.9	1.5
November	18.5	16.7	26.3	18.6	17.5
December	104.9	95.2	109.4	–	90.7
Total	535.9	497.8	–	–	541.0
1977	588.3	605.9	–	649.8	552.4

Bedford: Chaucer Road, Dr D. M. Jeffreys.
Cardington: Ministry of Defence, per Mr L. A. Speed.
Luton: Runley Wood, Lea Valley Water Co., per Mr S. R. Rippon, Chief Engineer.
Sandy: R.S.P.B., Sandy Lodge, Mr A. Parker, Warden.
Silsoe: N.I.A.E., Mr A. Hunter, Instrumentation Research.
Dunstable: Periwinkle Lane, no rainfall records during 1978.

A. W. GUPPY

MAMMALS

Report of the Recorder

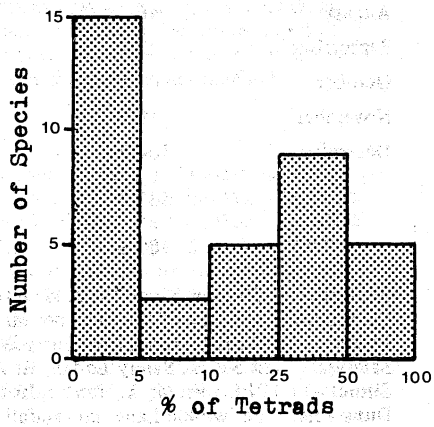
1978 was a very good year for records, showing a considerable increase over the previous year. From these records, 415 new tetrad records were obtained, compared to 306 for 1977. The records also produced 25 new 10 km. square records, as against 13 for 1977, showing the high increase obtained. It should be remembered that new records must be harder to get as the species maps get filled in each year, leaving fewer unrecorded spots.

As in most previous years, 1978 also produced a new species for the county, this year it being the rather dubious one of Red-necked (or Bennett's) Wallaby. The two records obtained, both in the Dunstable area, are no doubt of escaped animals, but it must be remembered that two colonies of this animal live wild in England, and if enough animals get together in a suitable habitat, we may well develop a colony in Bedfordshire.

Most of the previously recorded species obtained a good number of new records, only nine species not getting new records. It was good to see 15 new tetrad records for Badger, but the top spot for new records went to the Harvest Mouse with 93 tetrads, almost all contributed by the enthusiasm of D. G. Rands. These two species, the Badger and Harvest Mouse, show the value of our recording, because, as recently as 1971, I would have listed both of them as very rare in the county, while now they can be listed as widespread or at least not unusual.

The new 10 km. square records have been sent on to the National Recording Centre at Monks Wood, to add to their national maps. During the year the Mammal Society, in conjunction with Monks Wood, has published distribution maps for all mammal species in Britain, and I am glad to see that our efforts have produced far better coverage for most species in Bedfordshire than was shown on the previous maps published in 1971.

If, for each species, the tetrad records from 1971 to 1978 are added together and then expressed as a percentage of the possible tetrads in the county, we obtain the histogram shown.



The species in the 0 – 5% group are very rare and probably stand little chance of being moved up into the next higher group. The 5 – 10% group, Pygmy Shrew and Pipistrelle Bat, I am sure can be moved up at least one group if time is spent on getting records. Both of these species, however, are not likely to be recorded casually and special effort will be required to obtain additional records. The 10 – 25% group and the 25 – 50% group both contain some species that can move up, and some species that are probably in their correct position. It will be interesting to see in the coming years how these groups change. The final group 50 – 100% consists of Hedgehog, Mole, Rabbit and Brown Hare, all of which can be classed as common, and also Harvest Mouse which is widespread but certainly not common.

The new tetrad records for 1978 are listed below, and, if added to the distribution maps published in *Bedf. Nat.* **29**: 36-39 (1974) and the updated lists published each year since then, will give a full record up to the end of 1978.

Red-necked Wallaby *Macropus rufogriseus* – 1 tetrad. 91Z.
Hedgehog *Erinaceus europaeus* – 28 tetrads. 91Y, 92RUW, 93GHKY, 94S, 95JMP, 96FM, 01E, 03ALR, 04D, 05M, 06DG, 15BEH, 16A, 23E, 25F.

Mole *Talpa europaea* – 33 tetrads. 91Y, 93M, 95IJMY, 96CM, 01U, 03F, 04JW, 06DGHILMX, 12E, 13AEHX, 15JPS, 16K, 23I, 24GLM, 25A.
Common Shrew *Sorex araneus* – 17 tetrads. 92SX, 95ST, 96R, 02A, 03Y, 06ACHT, 13JY, 15I, 16AB, 24B.
Pygmy Shrew *Sorex minutus* – 6 tetrads. 91Z, 92JR, 06C, 23I, 24C.
Water Shrew *Neomys fodiens* – 1 tetrad. 15R.
Bat – 9 tetrads. 95MPZ, 01D, 14AI, 15S, 24JP.
Daubenton's Bat *Myotis daubentoni* – 1 tetrad. 14M.
Noctule Bat *Nyctalus noctula* – 1 tetrad. 14M.
Pipistrelle Bat *Pipistrellus pipistrellus* – 5 tetrads. 93W, 95Z, 02EF, 03X.
Rabbit *Oryctolagus cuniculus* – 23 tetrads. 92BCF, 93HN, 951JM, 96CH, 04N, 06JQ, 11CH, 13IX, 15EFJY, 24U, 25A.
Brown Hare *Lepus capensis* – 17 tetrads. 92ST, 93JK, 95R, 96K, 01H, 02H, 03AR, 04N, 13EIX, 15BY, 23D.
Bank Vole *Clethrionomys glareolus* – 10 tetrads. 92X, 95MTW, 04R, 06V, 14G, 23I, 25BK.
Short-tailed Vole *Microtus agrestis* – 24 tetrads. 92X, 95JNST, 96L, 02G, 03IY, 04CPW, 05U, 06ACRT, 13IJ, 14G, 15FK, 23I, 24T.
Water Vole *Arvicola terrestris* – 7 tetrads. 92QV, 95Z, 04J, 13Z, 23I, 24B.
Harvest Mouse *Micromys minutus* – 93 tetrads. 92BCFNZ, 93EMNPSTY, 94KLMST, 95JPR, 96F, 02E, 03FKLMRSX, 04DGIMN, 05IMNPUVWZ, 06ABCEHJKMNPW, 07AF, 11HI, 12BG, 13BRTWX, 14JKRSTUX, 15GJLMPQSX, 16BKQ, 23CJ, 24BEHILMNST.
House Mouse *Mus musculus* – 9 tetrads. 94L, 95NWZ, 03N, 06T, 14G, 24J, 25B.
Wood Mouse *Apodemus sylvaticus* – 21 tetrads. 92VX, 95SWZ, 04PQW, 05U, 06ACP, 12A, 13CI, 14Q, 15I, 24DJ, 25AB.
Brown Rat *Rattus norvegicus* – 12 tetrads, 92RS, 94W, 95TW, 96G, 04C, 13C, 14Y, 15S, 16B, 24J.
Grey Squirrel *Sciurus carolinensis* – 14 tetrads. 91Y, 951JTZ, 03B, 05FH, 06C, 15Y, 23H, 24LS, 25A.
Fox *Vulpes vulpes* – 19 tetrads. 92V, 93MPQS, 95NP, 01C, 03J, 04LW, 06DHT, 15RV, 24I, 25AB.
Badger *Meles meles* – 15 tetrads. 92KQX, 93N, 95FPR, 01BC, 02X, 03J, 14FZ, 23J, 25B.
Ferret *Mustela furo* – 1 tetrad. 95Z.
Stoat *Mustela erminea* – 18 tetrads. 91Z, 93JLQ, 94R, 95J, 96F, 01D, 02EFH, 04H, 06AP, 13A, 14F, 15Q, 23D.
Weasel *Mustela nivalis* – 19 tetrads. 92V, 93KL, 96F, 01J, 02EHM, 03J, 04CQY, 05Z, 13AB, 14R, 15FRV.
Chinese Water Deer *Hydropotes inermis* – 2 tetrads. 92R, 03A.
Muntjac Deer *Muntiacus reevesi* – 9 tetrads. 93X, 95IY, 03B, 04W, 11J, 15V, 25AB.

The number of people supplying records is also a good increase over last year. My thanks go to the 42 members and three non-members for their increased efforts.

D. Anderson, C. Banks, C. R. Boon, R. Bradshaw, M. Clark, B. Clutten, F. B. M. Davies, W. J. Drayton, R. Drydon, D. Green, D. J. Green, J. Green, M. Green, P. Green, B. Harding, J. Harris, R. Howard, C. Hill, T. S. Hollingworth, G. Hooper, M. Hooper, L. Janes, J. Kemp-Gee, J. Knowles, D. Lawrence, A. J. Livett, J. Messer, B. S. Nau, M. E. Nellist, B. Nightingale, D. G. Rands, E. B. Rands, M. B. Rowland, A. Rundle, J. T. R. Sharrock, B. Stephenson, C. Tack, T. J. Thomas, J. Tirrell, G. Turvey, I. Turvey, O. Turvey, A. Woodgate, D. S. Woodhead, R. Woolnough.

DAVID ANDERSON


D.G.R.

THE DISTRIBUTION OF THE HARVEST MOUSE (*MICROMYS MINUTUS*) IN BEDFORDSHIRE

by D. G. Rands, 51 Wychwood Avenue, Luton, Beds.

INTRODUCTION

A study of the Harvest Mouse in Bedfordshire began in December 1972 and an interim report was published the following year (Rands and Banks 1973). The survey began by concentrating on wetland habitats. These early results established the widespread existence of this mouse in the county, whereas literature declared that it was declining and becoming rare. The theories and statements that have been written as to the possible reasons for the decline were based on the mechanisation of modern farming. For this to be true, the cornfield must have been considered its main habitat.

The Harvest Mouse population at present appears to be increasing whereas the reasons for its supposed decline have not changed. One must therefore conclude that the cornfield was not its main habitat and that some other 'environmental change' brought about the decline of the Harvest Mouse.

The present report, and the extensive field work carried out, represents an attempt to establish the true distribution and the varied habitats of this mammal in the county.

FIELDWORK

All the fieldwork was carried out during the winter months. The systematic searching of vegetation that was required would have caused a major disturbance to wildlife if done at any other time of year. The evidence for the presence of the Harvest Mouse was based on locating nests that had been used as summer residences (Rands and Banks 1973). When a nest was not found initially on a site that looked favourable, that site was often revisited. This revisiting of sites proved that, however thorough the original search had been, it was possible to overlook or miss a nest.

The information from a site was classified into four categories.

1. Type of habitat.
2. Type of vegetation in which the nest was built.
3. The land use adjacent to the site.
4. Whether a nest was near a hedge or not and the state of the hedge.

The first two categories are self-explanatory and the third indicates whether adjacent land was pasture or arable. The arable crop being grown was not noted except when it was a Brassica crop (brussels and cabbages are extensively grown in Bedfordshire). The fourth category was to find the effect of hedges on the habitat. Nests were never found under or near trees (Rands and Banks 1973) and it was thought that hedges might have some similar effect on the position of nests.

RESULTS

The map, fig. 1, shows the distribution by tetrads (2km x 2km squares). These records incorporate the original sites found in 1972-73 and those found from April 1976, when the survey was restarted, to April 1979. The number of tetrad records is 284 out of a possible 381, giving

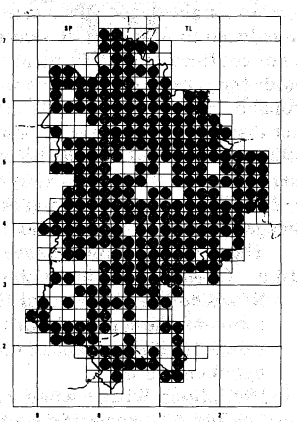


Fig. 1. Distribution, Dec. 1972-Apr. 1979.

a 75% coverage. The number of individual sites found was 322 and these have been analysed in the table on a percentage basis.

Column 'A' in the table analyses the total number of sites whereas column 'B' only analyses the sites based on the interim report. By comparing these figures it becomes obvious that a survey of this nature should not be biased in its approach (i.e. wetland habitat) as at the start of this survey. It is equally important to note that this survey has covered a large area thus eliminating any local conditions which could have given a totally different result. The hedges, where 11% of nests were found, see table, were not tall thick hedges but thin and well-trimmed allowing ample light through.

TYPE OF HABITAT		(A)	(B)
ROADSIDE VERGE WITH DITCH	24%	53% ●	27%
ROADSIDE VERGE WITHOUT DITCH	29%		
FIELD DITCH		18%	29%
WASTE GROUND / ROUGH AREA		10%	12%
BRIDLE ROAD OR LANE		5%	2%
MARSH / WET AREA		5%	22%
ROUGH FIELD		4%	1%
PLANTATION		3%	4%
RAILWAY / ROADSIDE EMBANKMENT		2%	

VEGETATION HOLDING NEST	(A)	(B)
LONG GRASS (STRONG STEMMED)	64% ●	33%
LONG GRASS (WEAK STEMMED)	8%	7%
WET PLACES		
PHALARIS ARUNDINACEA	23%	44%
PHRAGMITES COMMUNIS	4%	13%
GLYCERIA	1%	3%

LAND USE ADJACENT TO SITE		
ARABLE	83% ●	
PASTURE	4%	
MIXED ARABLE / PASTURE	2%	
BRASSICA		
CABBAGE	8%	11%
BRUSSELS	3%	

NEST NEAR HEDGES	
NO	89% ●
YES	11%

EXTRA NEST SUPPORTS (NUMERICALLY)			
BARBED WIRE	4	BRAMBLE	22
CHAIN FENCE	1	BLACKTHORN	3
WIRE NETTING	1	HAWTHORN	2

TOTAL NUMBER OF SITES - 322 (A) 322 SITES 1972-9
TOTAL NUMBER OF RECORDED TETRADS - 284 (B) FIRST 80 SITES 1972-3
● INDICATES PREFERRED CONDITIONS IN BEDFORDSHIRE

It will be seen that the preferred habitat was a hedgeless roadside verge with long grass adjacent to arable land. This means that in Bedfordshire the majority of suitable habitats have been reduced to our roadside verges. The grasses themselves were not identified and the search was not confined to specific plant species as in the first year of the survey. A preference towards the type of grass chosen in which to build nests gradually emerged. The stem must be reasonably strong and the leaves must grow out from this stem (e.g. *Dactylis glomerata*) rather than from the base (e.g. *Deschampsia caespitosa*). The grass must also have a tendency to 'clump' or to grow in thick patches. The hedge also had an effect on the siting of nests. The higher the hedge, the further away from it a nest was found. This became obvious when nests were found frequently around gaps in hedges. The preferred condition was when there was no hedge at all. Nests were found on very narrow roadside verges if the hedge was absent.

The habitat described above was the one most favoured by the Harvest Mice in Bedfordshire. Other habitats in which nests have been found are as follows:–

1. Roadside and field ditches. These can be wet or dry, shallow or deep and nests were found on the sides and bottom of the ditch.
2. Rough neglected fields of rank grass. In larger fields the nests were confined to the peripheral zone.
3. Plantations. When a wood was clear felled and a ground vegetation had become established then nests were found. This habitat is transient as the young trees growing up gradually affect the ground cover.

4. Roadside and railway embankments. Nests were usually found at the base of the embankment.
5. Marshy and damp areas. These habitats were very restricted within the county.
6. Roadside and field banks. Nests were usually found on the top of these banks.
7. Waste ground. Nests were usually found around the edges.

Nests were not, however, totally confined to strong-stemmed grasses. When grass was growing amongst low-lying brambles and seedlings of hawthorn and blackthorn it was often a weak-stemmed grass. In these cases the stronger plant was used to support the nest. Other supports were wire netting, barbed wire and fencing. These various forms of support only appear to be used where a strong-stemmed grass is not available.

Only one nest was seen with young and that was in August 1973. If the size of that nest was representative of a breeding nest then approximately six have been found since. All the others would have been shelter nests. The small number of nests that were found on a site and the limited size of some of the habitats would indicate that some breeding could be elsewhere than in the stalk zone.

One important factor that affected all the habitats described was the presence or absence of Rabbits. The habitat can appear to be ideal but if Rabbits are present in large numbers then Harvest Mouse nests were never found. On some roadside verges where Rabbits were abundant it was possible to recognise the fringes of the territory of these local Rabbit populations. By searching outside these territory boundaries it was possible to find nests of Harvest Mice. There are areas in Bedfordshire where Rabbits are widespread and this partly explains the lack of records in the 10km squares SP92, SP93 and SP95.

DISCUSSION

The survey has attempted to establish the true distribution of the Harvest Mouse in Bedfordshire. Some of the later records of nests found in 1979 may have distorted this distribution because of the effort needed to acquire them. These records represent scarcities within the areas in which they were found and this is not reflected on the distribution map. To correct this possible distortion all records (60 tetrads) since December 31st, 1978 are omitted from the second map, fig. 2. As a result this map defines more clearly the areas where the Harvest Mouse is still a relative scarcity. The date is arbitrary but it approximates the point at which new records became increasingly difficult to find. All these areas were visited many times before a nest was eventually found.

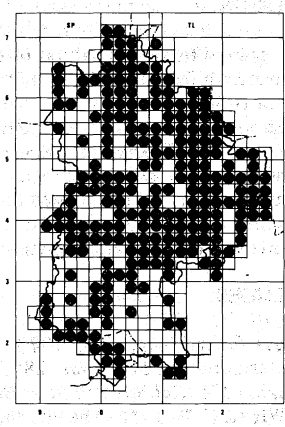


Fig. 2. Distribution, Dec. 1972-Dec. 1978

Some tetrads that have no records are in built-up areas of Bedford, Leighton Buzzard, Luton and Dunstable but others are wooded, parkland or pasture areas.

Two main differences between the arable and pasture areas of the county that have affected the distribution of the Harvest Mouse are the hedges and the type of grass. There is far less hedge around arable land than there is around pasture land and the grasses on the roadside verge are generally coarser in arable areas and more lush near pasture land.

The removal of some hedges was to enable arable fields to be increased in size. Other hedges have been removed to reduce maintenance. The increase in the size of fields has reduced the linear habitat on the farmland itself and this may have favoured an increase of suitable habitats along the roadside.

With few exceptions nests were never abundant and it became very time consuming to search for more than one or two nests. The exceptions were six nests around a bramble patch at Bromham and twenty six along a 110 metre length of ditch near Billington.

The roadside verges that were searched have included the A1, A5 and A6 and nests were found along all of them. One nest on the A6 was within ½ metre of the road with heavy traffic continually rushing by.

THE RETURN OF THE HARVEST MOUSE

When did the Harvest Mouse make its return? In Bedfordshire it was reported in 1949, 1953 and 1968 but all were single records. More detailed research has been done in Oxfordshire. '. . . the Harvest Mouse was a common and occasionally abundant rodent in corn ricks around Oxford in the winter of 1954-55 . . . it has apparently increased to its present abundance within one or two years' (Southwick, C.H. 1956). The author gave no reason why this increase had happened within one or two years.

In Bedfordshire nests were never found where Rabbits were abundant and both Rabbits and Harvest Mice require a similar type of habitat. The estimated Rabbit population of this country in the early 1950's was between 60 million and a 100 million until myxomatosis struck in 1953-54 when the population was reduced by 99% (Sheail, J. 1971). Could the Rabbit have caused the 'environmental change' that originally caused the decline of the mouse and did the Harvest Mouse populations begin to expand with the decrease in the Rabbit population? The Rabbit itself is now rapidly on the increase again, so what will happen to the Harvest Mouse? This mouse lives and breeds in the 'stalk zone' during the summer months and a large mammal like a Rabbit must have a very disturbing influence on the habitat.

CONCLUSION

In general terms the habitat of the Harvest Mouse could be described as a rough, open, undisturbed area free from shade that can be either wet or dry. The specific micro-habitat can be quite variable. This survey has tried to cover a very wide variety of habitats and plants to show that no bias towards a wetland habitat is shown by the Harvest Mouse in Bedfordshire. The total number of nests found was c.500 and they can easily be overlooked unless a determined search is made for them.

Full details of all the sites found are available if anyone genuinely wishes to carry the study further. Intensive surveys of a similar nature in other counties might well produce equally interesting and perhaps different results.

REFERENCES

RANDS, D. G. and BANKS, C. 1973. The Harvest Mouse (*Micromys minutus*) in Bedfordshire. Interim report. *Bedf. Nat.* 28: 35-41.

SHEAIL, J. 1971. *Rabbits and their History.* David and Charles, Newton Abbot.

SOUTHWICK, C. H. 1956. The abundance and distribution of Harvest Mice (*Micromys minutus*) in corn ricks near Oxford. *Proc. Zool. Soc. London* 126: 449-452.

BIRDS

Report of the Recorder

INTRODUCTION

164 species were recorded in the county in 1978, the highest ever total for one year, and one that included some outstanding birds. However, for some of our commoner species it was a very poor year with breeding success low, due to the cool, wet summer.

It was indeed adverse weather – strong blustery westerlies, which opened the years account with a Great Northern Diver at Stewartby Lake, the county's second in three months, and a Black-throated Diver at Elstow. February also brought a Snow Bunting to Sewell and a Smew to Harrold, both scarce winter visitors, while one fortunate observer at The Lodge, Sandy, reported a Goshawk.

With the coming of March observers turned their thoughts to spring migration but, as in recent years cold northerly airstreams during March and early April held back all but the most determined individuals. Nevertheless, seven species of summer visitor were recorded before the end of March, with the first, Chiffchaff and Sand Martin, appearing on the 12th. The main passage was delayed until well into April when the wind changed to a more favourable, southerly direction. Unusual migrants in the following period included Oystercatcher, Blue-headed Wagtail and Temminck's Stint, the latter only the second record for the county.

With breeding under way came the usual raised hopes and disappointments. Once again Red-backed Shrikes and Whinchats failed to breed, Black Redstarts remained absent and Stonechats did not repeat their 1977 success. However, on the credit side, Quail were reported from three sites, Hobbies were well represented and a Spotted Crake was heard calling in June. Sparrowhawks were thought to have bred, and both Ringed and Little Ringed Plovers maintained their breeding numbers.

The year's first major rarity arrived in July, with a Black-winged Stilt, a rare vagrant from the Mediterranean area, appearing all too briefly at Houghton Regis. The rest of the early autumn passage could hardly be expected to live up to this opening and, apart from a Kittiwake at Stewartby Lake, the situation stayed quiet until early September.

Two Ospreys, maintaining their annual status in the county, were then reported from the Studham area, whilst a more unexpected visitor, a Raven, was seen over Everton, the first confirmed record this century.

Predominately westerly winds caused an interesting wader movement, particularly at Bedford Sewage Works, where Curlew Sandpiper, Little Stints and two Pectoral Sandpipers followed in quick succession. The same westerlies also drove a Leach's Petrel to Stewartby, one of several that were seen inland at that time.

November, normally a quiet month for inland vagrants, turned up trumps with an adult Rose-coloured Starling. It is perhaps only coincidental that, like the Stilt, it last appeared in the county in 1855.

To round the year off, highlights in December included an influx of Short-eared Owls, a Hen Harrier and several Bewick's Swans, perhaps giving a hint of the hard winter to come.

Altogether a memorable year in terms of quality and quantity and, of course, thanks go to the following whose contributions enabled it to be put on record.

P. H. Addington, D. Anderson, C. R. Boon, R. Bradshaw, R. Brewer, C. W. Burton, R. Catchpole, A. Chapman, R. Cinderey, Miss B. Clutten, Mrs F. B. M. Davies, I. K. Dawson, L. Evans, D. J. Fisher, J. Flint, J. Foster, D. J. Green, J. Green, M. J. Green, B. D. Harding, J. Headon, S. Housden, R. A. Hume, D. J. King, J. P. Knowles, D. P. Lawrence, A. J. Livett, G. Marlow, E. Newman, B. Nightingale, M. J. Palmer, A. Parker, T. Peterkin, Mrs E. B. Rands, G. Robinson, Miss D. Rook, B. Sacree, Dr J. T. R. Sharrock, M. Simmonds, P. Smith, B. R. Squires, R. B. Stephenson, T. Stowe, C. E. Tack, R. Thorpe, J. Tirrell, P. Trengrove, K. R. Weedon, S. G. Williams, D. A. Woodhead.

SYSTEMATIC LIST FOR 1978

Species recorded in Bedfordshire during 1978 and not included in the systematic list are:

Mute Swan, Kestrel, Red-legged Partridge, Grey Partridge, Pheasant, Moorhen, Coot, Lapwing, Common Gull, Great Black-backed Gull, Woodpigeon, Collared Dove, Green Woodpecker, Great Spotted Woodpecker, Meadow Pipit, Pied Wagtail, Wren, Dunnock, Robin, Blackbird, Song Thrush, Mistle Thrush, Goldcrest, Long-tailed Tit, Marsh Tit, Willow Tit, Coal Tit, Blue Tit, Great Tit, Nuthatch, Treecreeper, Jay, Jackdaw, Rook, Carrion Crow, Starling, House Sparrow, Chaffinch, Greenfinch, Goldfinch, Linnet, Bullfinch, Yellowhammer, Reed Bunting, Corn Bunting.

English and scientific names follow the, *'British Birds' List of Birds of the Western Palearctic* (1978)

The following abbreviations are used in the text:–

CHP = Chalk Pit; CLP = Clay Pit; GP = Gravel Pit; L = Lake; NR = Nature Reserve; SW = Sewage Works; R = River.

Black-throated Diver *Gavia arctica.* Single at Elstow CLP from 25th to 26th February, the first since 1966 (MJP, SGW et al).

Great Northern Diver *G. immer.* Following the 1977 bird, one at Stewartby L 15th January (BRS, BN et al).

Little Grebe *Tachybaptus ruficollis.* Notable winter flocks included 19 on R. Ivel, Blunham 14th January and 34 at Blunham GP 12th November.

Great Crested Grebe *Podiceps cristatus.* Maintained its 1977 status with breeding proved at 8 sites, present at another 2 in the breeding season. Probably the largest ever gathering in the county at Stewartby L on 12th February when c200 were present.

Fulmar *Fulmarus glacialis.* Additional 1977 record: single over Houghton Regis on 31st May was only the second record, the first being October 1888.

Leach's Petrel *Oceanodroma leucorhoa.* A storm-driven bird at Stewartby L on 1st October followed large numbers all along the west coast of England (TP).

Cormorant *Phalacrocorax carbo.* Seen in every month except July, mainly at Brogborough CLP, Harrold GP, Stewartby L, Luton Hoo L, Blunham GP.

Grey Heron *Ardea cinerea.* No change in status with breeding from 3 sites.

Purple Heron *Ardea purpurea.* The 1977 record was accepted by the National Rarities Committee.

Bewick's Swan *Cygnus columbianus.* One at Blunham GP 26th December and eleven at Luton Hoo L 31st December (DTK, AJL).

Bean Goose *Anser fabalis.* Single at Harrold GP on 17th and 28th December was probably of captive origin, but numbers of this species have been high in Norfolk this winter, with flocks also reaching the Ouse Washes. (DAW).

White-fronted Goose *A. albifrons.* 3 from 15th January to 12th February near Lidlington. Singles at Luton Hoo L. 23rd April, at Harrold GP on 25th April and then from 18th June to 16th July were probably escapes.

Greylag Goose *A. anser.* Broods of 5 at Roxton GP; 1, 3 and 5 at Blunham GP; 5 and 2 at Harrold GP. Seen throughout the year at Harrold GP with peak of 77 during June and July. Maximum of 82 at Roxton GP on 12th September. Smaller numbers from Blunham GP, Radwell GP, Luton Hoo L, Girtford GP.

Snow Goose *A. caerulescens.* One with White-fronts at Lidlington (see above) and with Greylags at Harrold GP from 9th June to end year. Almost certainly from captive origins.

Canada Goose *Branta canadensis.* Following young raised: 6 Brogborough CLP, 2 Southill L, 3 Harrold GP, 8 Woburn L, 9 Millbrook CLP, 4 Luton Hoo, 13 Eversholt L, 5 Tingrith Trout Farm. From the many records received there would appear to be three distinct flocks; one in the south based at Luton Hoo with a maximum of 35; the "brick-pits" flock including an albino with maximum of 195, and one in the north based at Harrold/Radwell GP with maximum of 65.

Barnacle Goose *B. leucopsis.* Single at Harrold GP 4th June and at Luton Hoo on 17th December must be of suspect origin.

Egyptian Goose *Alopochen aegyptiacus.* 3 at Harrold GP 23rd January and then 2 to 19th February were presumably local escapes, rather than genuine wanderers from the East Anglian population.

Shelduck *Tadorna tadorna.* Present at Harrold GP 5th February, 23rd April, 14th May, 20th August and 26th November with maximum of 4; at Brogborough CLP 5th February, 2nd April and 13th August with maximum of 4; 2 at Stewartby L 9th April; 2 at Bedford SW 18th June, sub-adult at Vicarage Farm CLP 17th September, Lidlington CLP 8th October and Blunham GP on 3rd September. With pairs now regular in spring, breeding attempts should not be overlooked.

Mandarin *Aix galericulata.* Bred at Woburn L. with 7 young, and at Eversholt L with 2 young. Elsewhere in Blunham area during February, March and December with maximum of 4, and at Harrold GP 1st October and 5th November.

Wigeon *Anas penelope.* As in 1977 numbers were high in both winter periods with maximum of 88 on 19th February and 120 on 28th December at Harrold GP, 53 on 6th February and 120 on 17th December at Radwell GP, and Blunham GP with 44 on 20th February. Smaller numbers reported from many areas with the last in spring 16th April and first in autumn 1st October.

Gadwall *A. strepera.* Records indicate an increasing abundance. A pair at Girtford GP on 22nd and 29th May could have been prospecting for a nest site. At Blunham GP 10 on 1st January, 15 on 30th January with 18 on 5th February and the last on 28th March. In the second winter period one on 1st October increasing to 7 by 13th December with 4 still present at year end. At Harrold GP present all year, except June and July, with maximum of 4 on 3 dates. Elsewhere at East Hyde, Luton Hoo L, Radwell GP, Felmersham NR, Dunstable SW and Brogborough CLP.

Teal *A. crecca.* Wildfowl counts continued at selected waters during the winter months on specific dates and the totals are shown below and elsewhere for the species concerned.

	15/1	12/2	18/3	17/9	15/10	12/11	17/12
Total	28	83	20	82	96	189	217

Typically the numbers in the second winter period were higher than the first. Mention should be made of 135 on 20th January at Bedford SW, 200 on 26th October at Barkers Lane GP, and 100 each at Vicarage Farm CLP, 12th November, Harrold GP on 26th November, Radwell GP on 17th December and c160 at Bedford SW, 10th December.

Mallard *A. platyrhynchos.*

	15/1	12/2	18/3	17/9	15/10	12/11	17/12
Total	494	596	69	1887	2453	704	703

Numbers below average, but typical autumn build-up, with up to 1200 at Brogborough CLP during October.

Pintail *A. acuta.* Remains an uncommon winter visitor with only a single at Blunham GP 12th February and 2 Brogborough CLP 7th February.

Garganey *A. querquedula.* After a complete absence in 1977 just a single record, with 2 drakes at Radwell GP 14th May (BN).

Shoveler *A. clypeata.* Recorded in every month. Reports from twelve sites with maximum of 70 at Dunstable SW. 10th September. A pair bred raising 6 young at Luton Hoo.

Red-crested Pochard *Netta rufina.* Repeating events of 1976 and 1977 a duck arrived at Blunham GP 21st January, joined by a drake on 15th February, sporadically showing until 6th April. The pair reappeared on 9th November (JTRS, MJP).

Pochard *Aythya ferina.* 6 young raised Luton Hoo. Winter counts as follows:

	15/1	12/2	18/3	17/9	15/10	12/11	17/12
Total	157	102	41	174	498	161	438

Numbers remained low during the first winter period but reached record levels in October

and December. Worthy of particular mention were flocks at Blunham GP, where 300+ were present on 5 dates during November and December, with 405 on 17th December.

Tufted Duck *A. fuligula.* Present during the breeding season at 15 sites with 19+ broods raised. Winter counts as follows:

	15/1	12/2	18/3	17/9	15/10	12/11	17/12
Total	171	179	183	304	211	238	329

Well above average numbers from September. High counts included 200+ at Harrold GP on 10th August, 211 at Blunham GP 16th February and 156 there on 18th December.

Common Scoter *Melanitta nigra.* A single drake on 16th April at Stewartby L fits well into previous spring movements (TP).

Goldeneye *Bucephala clangula.* Recorded from 8 localities with last in spring on 3rd May and first in autumn on 22nd October. Largest gathering was eleven at Blunham GP on 2nd January.

Smew *Mergus albellus.* A 'redhead' at Harrold GP 15th February (DAW).

Gossander *M. merganser.* Singles at Harrold GP on 23rd January, 12th February and 17th December, when 2 at Radwell GP. Single at Blunham GP 29th November to 1st December.

Hen Harrier *Circus cyaneus.* A 'ring-tail' near Roxton from 4th to 7th December was the 6th occurrence in the county (PHA)

Goshawk *Accipiter gentilis.* An immature female at The Lodge, Sandy on 9th February was the county's second record (SH).

Sparrowhawk *A. nisus.* The welcome increase in records continues. Nesting was suspected in two localities in mid-Beds. Recorded from The Lodge, Sandy on 4 dates, from Luton Hoo from May to July and in November, from Harrold GP, Odell Woods, Potton, Markham Hills, Hexton, Charle Wood, Blunham and Whipsnade Zoo Park.

Buzzard *Buteo buteo.* A better year for this species with single in the Everton area from 23rd September to 4th October, 2 near Sandhouse Inn, A5, on 8th October, singles at The Lodge, Sandy, 6th November and Charle Wood 24th December.

Buzzard sp *Buteo* sp. Singles over Potton in early June, Pegsdon Hills in mid-June, Luton Hoo in late August/early September and Old Warden Tunnel area 25th October.

Osprey *Pandion haliaetus.* 2 over Studham on 5th September (JL).

Hobby *Falco subbuteo.* A remarkable year for this species with records from 13 localities from 3rd May to 23rd September. 2 young raised mid-Beds.

Quail *Coturnix coturnix.* A sprinkling of records, in what was not a good 'quail year' elsewhere, was perhaps as a result of intensive work on the 'Atlas' survey. Records from Yielden, Warden Hills and near Stanbridgeford during June and July involved at least 5 birds.

Reeves's Pheasant *Syrmaticus reevesii.* Three of this 'D' category species from Woburn 25th November.

Lady Amherst's Pheasant *Chrysolophus amherstiae.* Records from Charle Wood, Luton Hoo, Maulden Woods, Eversholt Lake area, and Woburn Park.

Water Rail *Rallus aquaticus.* Maintains its tenuous breeding status with records only from Flitwick Moor. Outside the breeding season noted at Harrold GP, Luton Hoo, near Barkers Lane GP, by R. Ouse west of Bedford and Girtford GP.

Spotted Crake *Porzana porzana.* A male, heard calling on 10th – 12th June in suitable breeding habitat, is only the fourth county record.

Oystercatcher *Haematopus ostralegus.* Single Roxton GP 16th June (PHA).

Black-winged Stilt *Himantopus himantopus.* An immature at Houghton Regis CHP 6th – 7th July is only the second county record. Accepted by the national Rarities Committee.

Little Ringed Plover *Charadrius dubius.* 17 pairs present at 8 sites during breeding season, with passage noted at 4 others. First in spring 29th March and last 14th September.

Ringed Plover *C. hiaticula.* Extension of breeding range with 11+ pairs present at 6 sites. Winter records from Dunstable SW with single 25th February, Girtford GP 26th February when 6+ at Harrold GP. Small passage noted at 5 sites away from breeding localities from 1st April to 11th September.

Golden Plover *Pluvialis apricaria.* More numerous in first winter period with sizeable flocks of 3-400 at Rowney Warren 1st January and 114 at Copt Hall 15th January. Latest spring record was 54 near Old Warden Tunnel on 15th April, and first in autumn were 2 over The Lodge, Sandy on 26th August. The only flock of note in the second winter period was 300 between Stanford and Clifton on 28th December (see also the results of the B.T.O. survey on p. 25)

Grey Plover *P. squatarola.* One heard Brogborough CLP 9th August.

Little Stint *Calidris minuta.* Single at Bedford SW. 11-14th September, and again on 30th September, increasing to 4 on 1st October with 2 staying until 8th October. A single also at Harrold GP 1st October. (DJF, DAW et al).

Temminck's Stint *C. temminckii.* Single at Harrold GP on 4th June was the second county record (DAW).

Pectoral Sandpiper *C. melanotos.* A sequence of observations at Bedford SW brought the county's 3rd and 4th records. A single present from 15th September was joined by a second on 1st October, both staying until 4th October, with one last seen on 8th October (IKD et al).

Curlew Sandpiper *C. ferruginea.* Single Bedford SW 10th-11th September (IKD, MJP).

Dunlin *C. alpina.* Winter records with singles at Harrold GP 4th January, 12th November and Blunham GP same day. Spring passage at Harrold GP from 5th March to 10th June with maximum of 4 on four dates. Elsewhere single at Stewartby L on 24th March and then c30 on 26th March.

Autumn passage from 21st August with 2 at Harrold GP, single at Bedford SW 30th September, 4 on 1st October, with the last on 8th October.

Ruff *Philomachus pugnax.* Unusual winter record with one at Bedford SW 3rd January. A reeve was at Harrold GP 30th May. Typical autumn passage with singles at Harrold GP 20th-29th August and 15th October, 2 at Radwell GP 6th August, Girtford GP on 19th August, 3 at Brogborough CLP 28th August, Bedford SW from 28th July to 1st October with maximum of 11 on 11th September.

Jack Snipe *Lymnocryptes minimus.* Recorded in first winter period from Bedford SW, with a maximum of 10 on 7th January and 18th March; Girtford GP, Harrold GP, Houghton Regis CHP and near Streatley with the last on 11th May. Scarcer in second winter period with records only from Harrold GP.

Snipe *Gallinago gallinago.* Drumming at 6 localities during the breeding season. 140+ near Harrold 15th January the only large flock noted.

Woodcock *Scopolax rusticola.* Little change in breeding status with roding at 10 sites.

Whimbrel *Numenius phaeopus.* One south over The Lodge, Sandy 19th April, 2 over Harrold GP 27th April, and in autumn one south over Luton 2nd August and 3 west over Sutton Fen, 3rd August.

Curlew *N. arquata.* Single by R. Ouse, Felmersham 2nd April, 12 over Harrold GP 16th April, singles over Everton 1st July and Sutton Fen 11th August.

Curlew/Whimbrel *Numenius* sp. Single over Ampthill Park 20th April, c30 over Carlton 30th April and 4 over Whipsnade Zoo Park 28th June.

Spotted Redshank *Tringa erythropus.* Singles on 30th April at Bedford SW, 7th May at Radwell GP and 20th September over Dunstable.

Redshank *T. totanus.* Breeding proved at 4 sites, and present in breeding season at another 6 sites.

Greenshank *T. nebularia.* Unusual winter records from Bedford SW with 4 on 28th January and 2 on 6th February. Typical autumn passage from 5th July to 3rd September at 6 sites, with also a single at Harrold GP on 17th September.

Green Sandpiper *T. ochropus.* Present in winter and early spring at 6 sites with maximum of 5 on 13th November at Bedford SW. A single in Houghton Regis CHP. 11-12th June and then autumn passage at 8 sites with maximum on 6th August with 8 at Bedford SW, and 5 at both Harrold GP and Radwell GP.

Wood Sandpiper *T. glareola.* Singles Harrold GP 21st May and Bedford SW. 4th August.

Common Sandpiper *Actitis hypoleucos.* Interesting winter record with a single on R. Ivel, Blunham on 1st January. Main spring passage noted from 2nd April to 22nd May with a

late bird on 25th June. Autumn passage from 9th July to 8th October with maximum of 12+ Harrold GP on 10th August.

Turnstone *Arenaria interpres.* Singles Stewartby L. 1st May and over Blunham 19th August (TP, JTRS).

Little Gull *Larus minutus.* This scarce migrant to Bedfordshire appeared twice at Stewartby L – 29th May and 28th August (TP).

Black-headed Gull *L. ridibundus.* A dead bird, found at Wrest Park, Silsoe on 21st July by H. J. M. Messer, had been ringed as a pullus at Reeuwijk (Zuid Holland) on 15th June 1978. See also record for 1977.

Lesser Black-backed Gull *L. fuscus.* Flocks of 200 at Elstow Hardwick CLP, 21st May and at Dunstable SW 18th November.

Herring Gull *L. argentatus.* A pair seen displaying at Brogborough CLP 9th April.

Kittiwake *Rissa tridactyla.* An immature at Stewartby L 26th July (TP).

Common Tern *Sterna hirundo.* Three fledged juveniles at Wyboston GP 14th July and 2-3 juveniles being fed at Stewartby L 19th July. Display noted at Roxton GP and Harrold GP. Birds recorded from several localities from 19th April to 27th September with maximum of 12 on 27th July at Stewartby L.

Black Tern *Chlidonias niger.* In spring singles at Harrold GP on 17th and 31st May. Autumn records from Stewartby L with single 6th August and 5 on 20th August. Additional 1977 records: Good passage on 15th May with 16 at Brogborough CLP, 3 at Harrold GP and single Stewartby L. Up to 2 from Dunstable SW, Radwell GP and Girtford GP with 12 at Harrold GP on 4th September. Lastly one at Stewartby L 16th October.

Stock Dove *Columba venas.* c100 Odell Woods 5th March.

Turtle Dove *Streptopelia turtur.* First in spring 23rd April at Vicarage Farm CLP and the last in autumn 24th September at Whipsnade Zoo Park. c100 on 17th June at Shelton.

Ring-necked Parakeet *Psittacula krameri.* Expansion in the range of this 'D' category species continues. Singles seen over Luton in April and at Streatley in June, when, also, four took up residence in the Harlington area. They were still present at the end of the year.

Cuckoo *Cuculus canorus.* The first on 14th April at Aspley Heath was about typical; well reported by 22nd April. Last of the year on 24th September at Harrold GP.

Barn Owl *Tyto alba.* Obviously under recorded with spring and summer reports from only 3 sites, and autumn/winter records from 5 sites.

Little Owl *Athene noctua.* Widespread with no apparent change in status, with records from over 20 localities.

Tawny Owl *Strix aluco.* Reports from 14 localities probably do not reflect the true status.

Long-eared Owl *Asio otus.* Heard calling in February from traditional site near Hexton, and in May from Warden Warren.

Short-eared Owl *A. flammeus.* Two over Everton airfield 1st January. An influx, involving perhaps eleven individuals, took place from November with sightings from Brogborough CLP, near Billington, Girtford GP, Millbrook, Old Warden, Potton, Stanford and Tempsford.

Nightjar *Caprimulgus europaeus.* Breeding suspected at Charle Wood, Chicksands Wood and Warden Warren involving up to 7 pairs. Also heard at The Lodge, Sandy 29th May.

Swift *Apus apus.* Arriving a few days later than average, the first sightings were at Stewartby L and Blunham GP on 1st May. A late bird was seen over Luton on 11th October. Large gatherings reported from Stewartby L with c800 on 21st May, c900 18th June and from Chalk Hill with c1500 on 26th July.

Kingfisher *Alcedo atthis.* Reported from 15 localities including 7 during the breeding season.

Lesser Spotted Woodpecker *Dendrocopos minor.* Maintains its status with sightings at 15 sites.

Skylark *Alauda arvensis.* Hard weather movement noted on 20-21st December when flocks of 200 at Harrold, 800 at Blunham and 200 at Maulden.

Sand Martin *Riparia riparia.* One at Blunham GP 12th March is the earliest county record. The next arrivals were 2 at Stewartby L on 27th March, with the main influx about a

week later. Colonies at 7 sites with the largest of 250 at Harrold GP, where the last bird was still present on 2nd October.

Swallow *Hirundo rustica.* Very early bird at The Lodge, Sandy on 17th March is the earliest county record. Not widespread until about 4 weeks later. Last on 25th October with 2 over Potton.

House Martin *Delichon urbica.* The first, at Dunstable SW, on 17th April was a week later than average. Last seen Luton Hoo on 22nd October.

Tree Pipit *Anthus trivialis.* Breeding records from Maulden Woods, Charle Wood/Wavendon Heath, with at least 10 pairs, The Lodge, Sandy with 4 pairs and Old Warden. First migrant on 19th April at The Lodge, Sandy.

Yellow Wagtail *Motacilla flava.* Two remarkably early records with single males by R. Lea in Leagrave 21st March and Stewartby L 26th March. The main arrival took place 23-24th April. Breeding records from Barton SW, Biggleswade Common, Harrold GP, Kempston Hardwick, Radwell GP, Roxton GP and Wyboston GP. Autumn passage noted at Radwell GP with 20 on 6th August and Harrold GP with 40 on 20th August.

A female showing the characteristics of the race *M. flava flava,* colloquially known as the Blue-headed Wagtail was seen at Harrold GP on 28th May (BDH).

Grey Wagtail *M. cinerea.* Evidence of breeding from Luton Hoo where food carrying was seen in late May. Remains widespread in the county outside the breeding season with records from 17 sites.

White Wagtail *M. alba alba.* Typical early spring passage with 2-3 at Radwell GP 27th March, singles Houghton Regis CHP and Harrold GP 29th March, again at Harrold GP 29th April and 17th May.

Nightingale *Luscinia megarhynchos.* Reported from Chicksands Wood, Felmersham NR, Marston Thrift, Maulden Woods, Old Warden Tunnel, Potton Wood and Sutton Fen. The first noted was on 1st May at two sites.

Black Redstart *Phoenicurus ochruros.* Not reported during 1978.

Additional 1977 record: single male on Warden Hills Golf Course 20th September.

Redstart *P. phoenicurus.* Bred at Charle Wood and New Wavendon Heath. Present also at Potton Wood. Passage noted at The Lodge, Sandy on 16th May, Girtford GP 24th May, Bedford SW 25th August and a late bird at Radwell GP 15th October.

Whinchat *Saxicola rubetra.* Remains absent as a breeding species. Spring passage from Harrold GP 23rd April, Whipsnade Zoo Park 6th May and Radwell GP 7th May. More numerous in autumn with records from 8 localities from 14th July to 10th September.

Stonechat *S. torquata.* Recent increase in winter records maintained with reports from 12 sites. A female present in May at a previous breeding locality.

Wheatear *Oenanthe oenanthe.* First at Radwell GP 18th March and then at 6 other sites by end March. Spring passage mainly from 2nd April to 14th May. Autumn passage from 17th July to 22nd September with a straggler staying until 1st October.

Ring Ouzel *Turdus torquatus.* The now regular spring passage with 2 on Barton Hills from 9th to 19th April, 2 Bison Hill from 24th to 28th April and single Markham Hills 16th April.

Fieldfare *T. pilaris.* Single at The Lodge, Sandy, 17th June. Heavy passage noted in early April with 150 Maulden on 2nd and 400 north of Shefford on 4th. Last in spring were 5 at Odell Great Wood 1st May. Return first noted on 27th August at Everton, but then not again until 1st October with a single at Harrold GP. Generally numbers well down during second winter period.

Redwing *T. iliacus.* Hard weather movement noted from Charle Wood on 10th February when 1000+ present. Latest spring birds on 16th April with 9 at Eversholt L and one in song on Markham Hills. First autumn bird at The Lodge, Sandy on 2nd October, but like the previous species not so numerous in the second winter period.

Grasshopper Warbler *Locustella naevia.* Presence noted at 10 sites with 18 singing males. First arrival, on 30th April was a week later than average.

Sedge Warbler *Acrocephalus schoenobaenus.* First spring arrival on 15th April was typical. Last on 17th September was at Harrold GP.

Reed Warbler *A. scirpaceus.* A poor breeding season although singing heard at 5 localities. The first, on 7th May at Harrold GP, was typical.

Lesser Whitethroat *Sylvia curruca.* Generally late in arriving with first at Dunstable on 1st May. The last, on 17th September was at Harrold GP.

Whitethroat *S. communis.* Like the previous species late in arriving with the first, at Charle Wood, on 23rd April. The last, in a Luton garden, was on 28th September.

Garden Warbler *S. borin.* First in spring from near Biddenham on 6th May.

Blackcap *S. atricapilla.* First arrivals on 22/23rd April at 5 localities were somewhat later than average. Last in autumn at The Lodge, Sandy on 16th October. No wintering records.

Wood Warbler *Phylloscopus sibilatrix.* A poor breeding year. Singing birds from Charle Wood, The Lodge, Sandy, Marston Thrift and Maulden Woods, but no further evidence of breeding success.

Chiffchaff *P. collybita.* First spring arrivals at Harrold GP on 12th March and Felmersham NR on 18th March, with the main arrival on 2nd April.
Winter records from Bedford on 28th January, Luton on 10th December and Blunham 15th December.

Willow Warbler *P. trochilus.* First arrival heard on 30th March at Markham Hills, with the next at Felmersham NR on 2nd April. Main arrival 14-16th April.

Spotted Flycatcher *Muscicapa striata.* Typically late arrival with first on 10th May at Whipsnade Zoo Park, with the last on 21st September at Harrold GP.

Pied Flycatcher *Ficedula hypoleuca.* Records from The Lodge, Sandy with a male 29-30th April and then 6th September when one also in Ampthill Park. A late bird from Sutton Fen on 21st October (AP, MJP, AC).

Red-backed Shrike *Lanius collurio.* A male seen in the south of the county 10-11th June.

Magpie *Pica pica.* Usual winter roost of 150-200 at Dunstable Downs in February.

Hooded Crow *Corvus corone cornix.* One frequented Whipsnade Zoo Park from 24th January to 9th April. One over Potton 31st December.

Raven *Corvus corax.* One over Everton on 25th September of this largely sedentary species was the first in the county this century (AC).

Corvidae c1000 near Leighton Buzzard 13th December.

Rose-coloured Starling *Sturnus roseus.* An adult in Caddington from about 12th November to 23rd November is the county's second record, the first in August 1855. Record subject to ratification by the National Rarities Committee (BN).

Tree Sparrow *Passer montanus.* Winter flock of c300 Maulden Moor 11th February.

Brambling *Fringilla montifringilla.* More typical numbers this year with up to 30 during January – March at Radwell GP, 15 Sutton Fen during March, 50 + at Sharnbrook on 23rd March. Smaller numbers from Charle Wood, Blunham, Bedford SW and The Lodge, Sandy where 1-2 present all winter, with one on 22nd June, a remarkable date.

Siskin *Carduelis spinus.* Recorded in small numbers only, from Flitwick Moor, Eversholt L, Girtford and Odell Woods. c30 at Harrold GP 15th January. Small passage noted at Sutton Fen from 3rd to 24th October. Up to 3 present at The Lodge, Sandy to the end of March, 2 until 14th April, 1 on 21st April and 1 on 29th July. Two parties frequented Luton gardens in March.

Redpoll *C. flammea.* Flocks of up to c50 from Sutton Fen and The Lodge, Sandy.

Crossbill *Loxia curvirostra.* Recorded only from The Lodge, Sandy where at least 2 on 10th May and 7 on 25th May (AP)

Hawfinch *Coccothraustes coccothraustes.* More records than usual, with sightings from Whipsnade Zoo Park on three dates, Markham Hills 5th April, 3 at Old Warden 9th April, The Lodge, Sandy 18th April, 2 at Cooper's Hill 17th May, Potton Wood 2nd June and Odell Woods 19th December. Breeding proven at Eversholt.

Snow Bunting *Plectrophenax nivalis.* A male, with possibly a second, at Sewell Railway Cutting 12th February (BDH).

BARRY NIGHTINGALE

GOLDEN PLOVER SURVEY IN BEDFORDSHIRE

by A.J. Livett. British Trust for Ornithology Representative for Bedfordshire. 12 Broughton Avenue, Luton, Beds.

The Golden Plover, *Pluvialis apricaria*, is a breeding bird of northern and western Britain and Ireland, which winters further south. In January 1977, the British Trust for Ornithology (B.T.O.) carried out a preliminary survey of the Golden Plover in order to determine their wintering sites and the numbers involved. This prepared for the major survey, in the following winter, during the weekends 26th to 27th November, 31st December 1977 to 1st January 1978, and the 4th to 5th February 1978.

This was the first major survey of the species in Bedfordshire and an estimate of the total numbers involved was obtained plus its distribution. It is clear that the Golden Plover was previously under-recorded in the county.

The survey was carried out with each county having a local organiser, usually the local B.T.O. representative. Local ornithologists who are members of the B.T.O., the Royal Society for the Protection of Birds, and the Bedfordshire Natural History Society were invited to take part in the survey and those who agreed to do so were supplied with instructions and record cards, a separate card being used for each 10km grid square, or part square in the county. Recorders were asked to give the date, time of day, grid reference and number of birds involved in each sighting, with additional relevant information with regard to the habitat. Also they were asked to provide a simple map indicating the area they had covered and the locations of the sightings made. They were also requested, if possible, to add any additional counts made outside the principal dates during the winter of 1977-8. The additional data have been included in this paper.

RESULTS

The results of the three major surveys are shown in the table below:

Date	Sightings	Total number of birds	Average flock size	Range of flock sizes
26/27 Nov	11	603	55	1-245
31 Dec/1 Jan	11	1867	170	4-540
4/5 Feb	6	345	58	1-250

Figs 1, 2, and 3, illustrate the sightings made and the number of birds involved for each of the three major surveys. Fig 4 shows the combined results of all sightings made during the surveys and the additional records made outside the three principal survey dates. Fig 4 thus shows more effectively the apparent distribution of wintering Golden Plover in the county in the winters of 1976-77 and 1977-78.

The largest flocks reported during the major survey were c.540 near Wyboston on the 1st January when, on the same day, c.350 were observed near Rowney Warren and 312 on Henlow Airfield.

It is clear from the results obtained, and from additional information received as a result of the survey, that in mild winters the Golden Plover is more abundant and widespread than had been previously thought. A schedule of the results will be deposited with the Society, to be available if needed for comparison with any future surveys.

DISCUSSION

A curious result of the survey was the apparent absence of wintering Golden Plovers

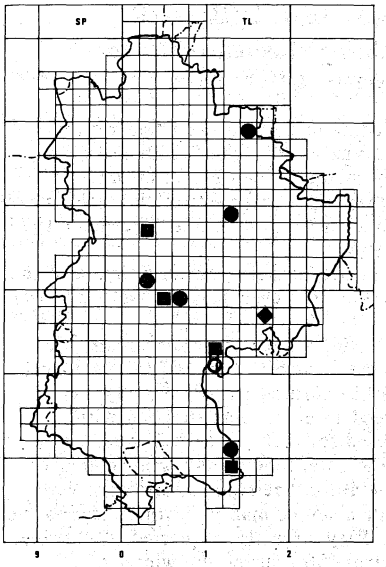


Fig. 1. Sightings 26th and 27th Nov. 1977

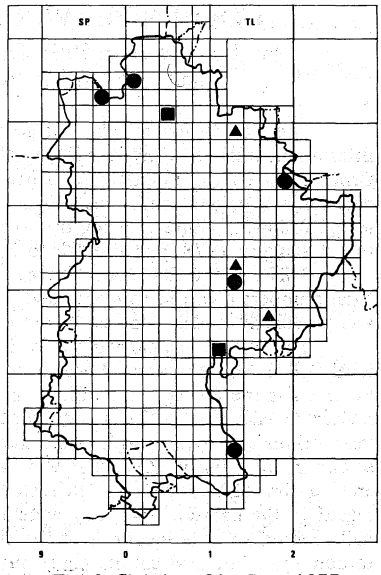


Fig. 2. Sightings 31st Dec. 1977 and 1st Jan. 1978.

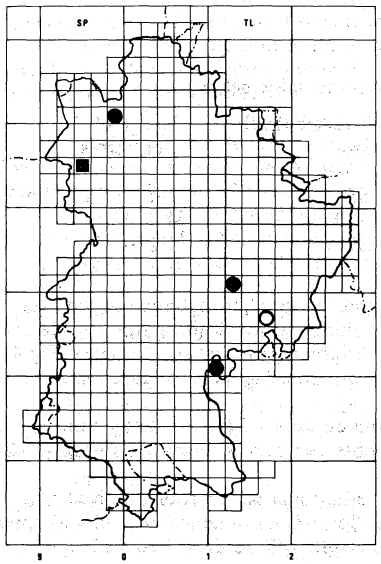


Fig. 3. Sightings 4th and 5th Feb. 1978.

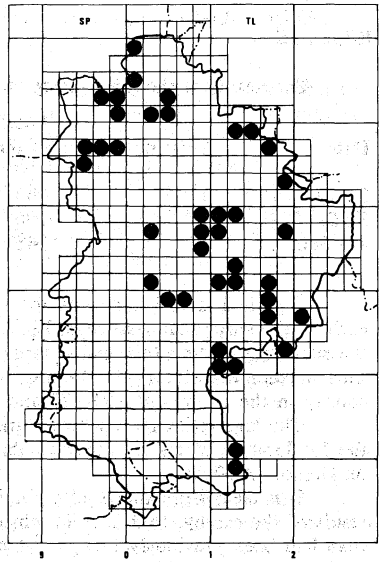


Fig. 4. Sightings 1977 and 1978.

■ 1–10 ● 11–100 ◆ 101–200 ○ 201–300 ▲ 301+

in the south and south-western parts of the county which may be in part due to the absence of large areas of permanent grassland and the conurbations of Luton, Dunstable and Leighton-Linslade, Golden Plovers being averse to frequent disturbance. On the other hand it is difficult to determine common factors which could account for the concentrations at, and around, Henlow Airfield, Rowney Warren, Cardington, Biggleswade, Wyboston and Harrold.

The food of the Golden Plover, based on data obtained in south-east England (Ratcliffe 1976), showed a preference for earthworms, beetles and flies with fewer numbers of butterflies, moths, spiders and molluscs. In addition a small quantity of grass and stones or shell fragments was also eaten. As this species has a short bill and is unable to probe more than one or two centimetres below the soil surface it shows a clear preference for permanent grassland and winter cereals. These habitats are subject to both heavy grazing by cattle and sheep and applications of fertilizers which result in a richer environment for earthworms, beetles etc.

As illustrated in fig. 5, the Golden Plover shows a clear preference for grassland and winter cereals in Bedfordshire and this habitat appears to be restricted in the south and south-western parts of the county, and this could be one of the reasons for the lack of records received.

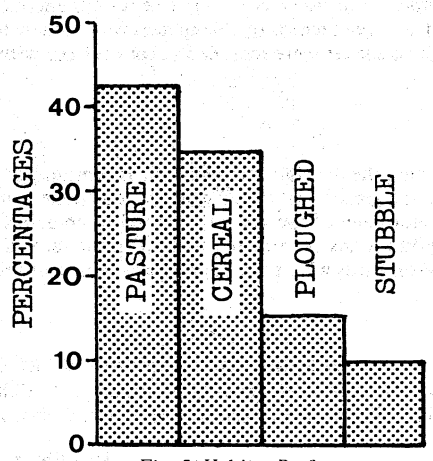


Fig. 5, Habitat Preference

ACKNOWLEDGEMENTS

I am particularly grateful to Dr. J.G. Dony for his help and encouragement in the preparation of this short paper. My thanks also to D. G. Rands for redrawing my diagrams.

I would also like to express my thanks to the following observers who assisted me in the surveys:- J. Andrews, A. Chapman, D. Court-Smith, F. Dawson, W. Drayton, Dr A.W. Ferguson, D. Green, N. Hammond, B.D. Harding, R.A. Husband, L. Kindleysides, D.J. King, J.P. Knowles, D. Lloyd, B.J. Nightingale, J. Niles, M.R. Seaman, P. Smith, B.R. Squires, A.N. Stephens, P. Trengrove, R.V.A. Wagstaff, D.P. Willison, D.S. Woodhead, P.R. Woods.

REFERENCE

RATCLIFFE D.A. (1976) Observations on the breeding of the Golden Plover in Great Britain. *Bird Study*. **23** (2) pp 63-116

REPTILES AND AMPHIBIANS

Report of the Recorder

AMPHIBIANS

Common Frog *Rana temporaria* This was the most numerous amphibian recorded in the county with records from 20 tetrads being obtained. Of these, 18 were in different tetrads to the previous year, bringing the total to 36.

Common Toad *Bufo bufo* This was almost as numerous as the previous species with records being obtained from 16 tetrads. Common Toad has now been recorded in 39 tetrads.

Common or **Smooth Newt** *Triturus vulgaris* Records from nine tetrads were obtained, all being new. These bring the total to 26, but this includes ten "old" records (i.e. pre-1977 when I became Recorder).

Great Crested or **Warty Newt** *Triturus cristatus* This newt was recorded in only two tetrads, these being TL 13G and 15L.

REPTILES

Common Lizard *Lacerta vivipera* This was recorded in five tetrads and all were new.

Slow Worm *Anguis fragilis* The three records of this species were in new tetrads

Grass Snake *Natrix natrix* Grass snakes were recorded in four tetrads with one being a new record TL 25K.

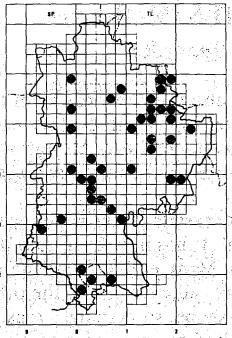
DISTRIBUTION MAPS

This year I am publishing the distribution maps of the reptiles and amphibians of Bedfordshire. It can be seen at a glance that much work is to be done before the maps show a true record of the distribution of any of the species. I intend to up-date the maps at intervals in my reports and will be grateful for any records to assist me in the recording. The full dots represent records from 1977 onwards whilst the open circles represent pre-1977 records.

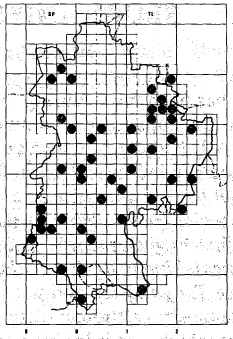
ACKNOWLEDGEMENTS

I would like to thank the following who sent records – V.W. Arnold, W.J. Champkin, J.R. Couchman, F.B.M. Davies, D. Green, N. Janes, A.J. Martin, S. McCallum, A. Muir-Howie, D.G. Rands, E.B. Rands, J.T.R. Sharrock, C. Tack, J. Tirrell, I.P. Woiwood.

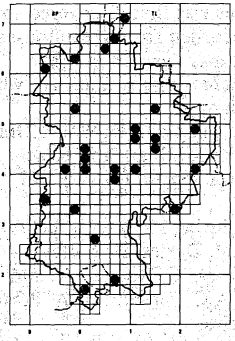
HELEN M. WEBB



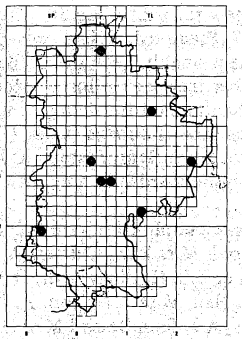
Common Frog
Rana temporaria



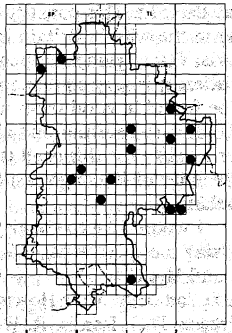
Common Toad
Bufo bufo



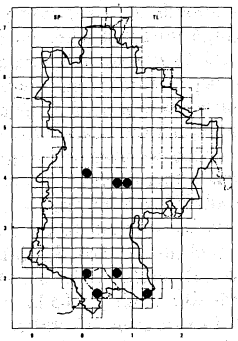
Common or Smooth Newt
Triturus vulgaris



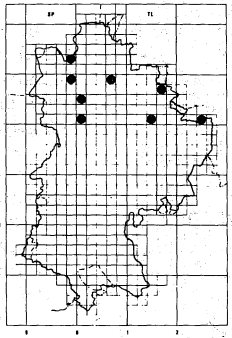
Great Crested or Warty Newt
Triturus cristatus



Common Lizard
Lacerta vivipera



Slow Worm
Anguis fragilis



Grass Snake
Natrix natrix

SLUGS AND SNAILS (Mollusca)

Report of the Recorder

Fair progress has been made during 1978 in obtaining records from tetrads all over the county and many of the maps for the common species show satisfactory coverage. I have had a lot of help from Dr A.J. Rundle who always records the molluscs present when he is doing field work. I am especially indebted to him for records of the very small species which turn up when he is sieving soil to find woodlice, etc.

The minute species *Helicodiscus singleyanus inermis* Baker which was found at Dell Farm, Whipsnade was the first English record for this snail. It has now been found at Potton on the site of the very rare *Truncatellina cylindrica* (Férussac). Many eminent conchologists have visited this Potton site to see *T. cylindrica* and yet they have all overlooked the other species. Both are approximately the same size, although different in shape, so perhaps a reason may be that one tends to find that for which one is looking and is blind to other species. Dr R. Williams from Sussex University was passing through Potton and decided to take a small soil sample back to his laboratory and, with Mr D.T. Holyoak, spotted the presence of *H. singleyanus inermis*.

Another unusual find was made by Dr R. Preece of Imperial College. He was given some samples of mud from various stations along the River Ouse. He extracted all the molluscs and found a fresh specimen of *Ferrisia wautieri* (Mirolli), a freshwater limpet, from a sample near Great Barford. This constitutes a new record for v.c.30. This species was first discovered to be living in the wild in Britain in 1977. Previously it had only been recorded from greenhouses and aquaria. Once again this species has probably been overlooked and may turn up in other localities. It is very similar to another freshwater limpet, *Acroloxus lacustris* (Linnaeus), which can be found in good fresh water habitats on the stems of water plants.

A very exciting find also was that of *Vitrina major* (Férussac) in Maulden Wood. Only one other locality for this snail is known from Bedfordshire, at Kings Wood, Heath and Reach. It is on the edge of its range eastwards in Bedfordshire and is an indicator species for very old woodland.

I would like to thank all those people who have helped me during 1978 with records or by giving me specimens. V.W. Arnold, Miss B.M. Clutten, Mrs F.B.M. Davies, Dr Nancy Dawson, J.G. and Mrs C.M. Dony, K. Erskine, T.S. Hollingworth, D.T. Holyoak, G. Hooper, N. and Miss L. Janes, A. Muir-Howie, B.S. Nau, Miss J. Nelson, A. Norris, A.C. Peterkin, R.A. Porter, R. Preece, D.G. Rands, R. Williams, A.J. Rundle and Miss H.M. Webb.

I would also like to thank all those members who let me loose in their gardens. This proved a most interesting venture and I look forward to continuing the garden survey during 1979.

E. BERYL RANDS

BADGERS IN BEDFORDSHIRE

by J. Green, 77 London Road, Biggleswade, Beds.
and R.J. Woolnough, 24 Bungay Road, Halesworth, Suffolk.

INTRODUCTION

A national badger survey, organised by the Mammal Society, was started in 1963 but, as the Bedfordshire Natual History Society had not at that time a recorder for mammals, it was not until the winter of 1973-4 that a similar survey in the county was begun. The aims of the national survey were as follows (Neal 1972), to determine the exact distribution, and population of badgers in Britain, to examine the ecological and persecution factors affecting their distribution and population, and to estimate, as far as possible, the changes which could affect the future status of the badger in Britain. It was with these aims in mind that one of us (R.J.W.) began the Bedfordshire survey, initially under the guidance of Clive Banks. Early in 1974 the discovery of a new sett near Potton and the resulting liason between the two of us, led to J.G. joining the survey. The work has continued ever since.

HISTORY

The earliest record known of the badger in Britain is of fossil remains at Barrington in Cambridgeshire estimated to be 250,000 years old. Similar evidence is frequent in the middle and late Pleistocene periods. Remains dating from 1600-1400 B.C. have been found at Grimes Graves in Norfolk (Vine 1970), which makes it reasonable to suppose that the badger was also present in Bedfordshire at that time.

The earliest Bedfordshire records are provided by the payments for vermin published in the churchwardens' account books. These payments were made under an Act of Elizabeth I giving authority for the destruction of "Noyfull Fowles and Vermyn" and laying down certain rewards for their death. These accounts have been exhaustively researched in Bedfordshire (Elliot 1936). Renditions of the spelling contained within the accounts perhaps reflect the local pronunciation and/or poor spelling of the churchwardens. The following are some of the variations found:- bager, bagger, badgares, bagongs, baggour, badgett, bagett, bagitts, baggotts, baget, bagert, barget, bagott, badgotts, badgits, badgitts, badget. The reward for a badger head was one shilling (quite a considerable sum) which, with the same reward for a fox head, was the top amount paid although it is difficult to understand, in the light of present day knowledge, why the badger had such an unjustified reputation.

Many parish accounts have been lost, others cover only a short period and some seem to have made few if any vermin payments. It is therefore not possible to draw from them any firm conclusions on the previous status and distribution of the badger in the county. However there are records of payments from 15 parishes (Fig. 1) ranging from Melchbourne in the north, Meppershall in the south-east and Husborne Crawley in the west. Harlington is the furthest south which is surprising bearing in mind the present distribution of badgers in the south of the county. Of these 15 parishes ten have no active setts at the time of writing, viz. Mogerhanger, Northill, Eaton Socon, Meppershall, Milton Bryan, Flitwick, Harlington, Husborne Crawley, Kempston and Pertenhall. In the south there are four parishes with reasonably full accounts of vermin payments: Caddington, Eaton Bray, Houghton Regis and Standbridge. Here, despite a high level of control of polecats, stoats and weasels, there were only two

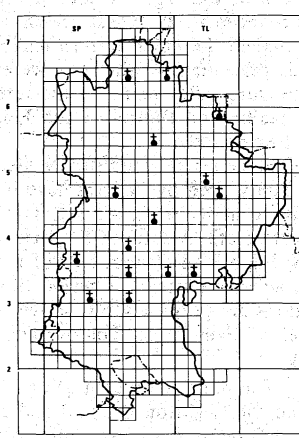


Fig. 1, Vermin payment records, 1665-1774

records of foxes (Stanbridge) and no mention of badgers. Northill parish had the highest count of badgers taken, there were listed payments for 130 over a period of nearly 100 years between 1665 and 1764. Mogerhanger, a neighbouring parish, was second but a long way behind with 22, then there were 13 parishes with less than ten.

No records have been found since the last vermin payments in 1764 until 1890 when a badger was killed at Sundon (Luton Museum 1978). There is then a gap to 1930 when two animals were taken at Clapham (they can be seen in Bedford Museum). This was the last pre-war record.

With the revival of the Bedfordshire Natural History Society after the Second World War, and the publication of the Bedfordshire Naturalist, the badger began to receive sporadic mention. Two were reported killed on the road at Leighton Buzzard (Palmer 1946), unfortunately still a not uncommon occurrence. In 1948 one was killed as a result of being caught in a rabbit trap near Haynes (the specimen is now in Luton Museum). Wasp nests were dug out by badgers on Flitwick Moor (Palmer 1949), an area from which badgers are unknown now. Oliver Pike wrote (Pike 1952) of the introduction of two cubs into his garden-reserve at Leighton Buzzard. There were reports of setts on the Greensand (Key 1953, 1954) and Henry Key stated that there were probably more setts on the Greensand than any other parts of Bedfordshire. The setts named by Key are no longer active and some have proved difficult to find. Gassing was reported (Key 1955) but with no locations given. Several parishes in the west of the county were reported as having active setts and road casualties were reported from Ampthill and Stagsden (Key 1957). A field meeting report mentioned active setts at Cainhoe (Dymond 1959) but recent searches have failed to find any signs of activity. An active sett at Ravensden Wood was also recorded (Dymond 1959) and despite much tree felling, badgers remain in the area. A sett near Dunstable was reported (Cooper 1958) as having 32 entrances; it is still flourishing despite a large housing estate being built within 150 yards.

Although the dates of origin are not known it is notable that in the village of Maulden there are a public house, a private house, a hill and a nursery all with the name badger in their titles. They are situated on high ground near Maulden Wood and would seem to indicate some past presence of badgers in the area.

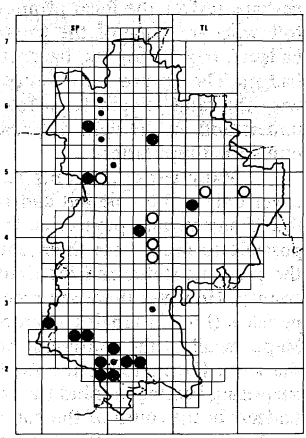
DISTRIBUTION

The information available at the start of the survey was a list of 34 badger records collected by the mammal recorder since his appointment in 1971. When duplicates and records too vague to identify were eliminated these were reduced to 27. These are shown in Fig. 2. It can be seen that in the north-eastern half of the Greensand ridge a large percentage of the setts were found to be inactive. In the Ouse valley many of the setts could not be found. The area around Dunstable and Leighton Buzzard shows no such loss of setts.

Since starting the survey just over 100 sites within the county used by badgers have been located. These consist of active setts, old setts, outliers, drains, artificial fox earths etc. A total of 54 setts were active at the end of 1978, Fig 3, and at least half of the remaining sites showed some activity during the period from 1974 to 1978. Exact locations are purposely not shown in keeping with the wishes of many of the landowners.

Chalk

The densest concentration of active setts occurs around the Leighton Buzzard and Dunstable area. Those around Dunstable are associated with the Upper Chalk where 13 active setts have been found concentrated to the south



● Setts Active
○ Setts found but not used
• Setts not found

Fig. 2. Records to December 1973

and west of Luton and Dunstable. In 1974 there were at least another four active setts giving an approximate spacing between them of 1 km. This area has the densest population of badgers in the county despite many of the setts being close to human habitation and suffering a certain amount of disturbance. Four setts are on land belonging to Rugby Portland Cement Company but only one is likely to be affected by quarrying and then not until after the year 2000. To the south of this area between Whipsnade and Studham no setts have been found in what seems to be good habitat but, near the county boundary, there are two active setts and a large one just over the border.

To the south of Luton is the Hoo estate and despite a high level of gamekeeper activity there is one active sett on the estate, but there are records of at least three others in the past. A badger was killed on the road between the Hoo and Luton itself in 1976.

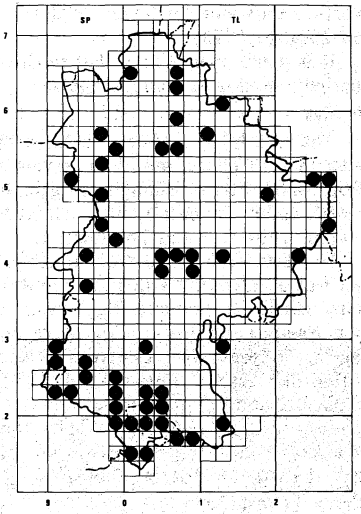


Fig. 3, Tetrads with active setts at December 1978

It is difficult to understand the complete lack of setts on the rest of the Bedfordshire chalklands stretching from Warden and Galley Hills to the north of Luton, through Sundon, Sharpenhoe and the Barton Hills to the Pegsdon Hills on the border with Hertfordshire. There is one sett just over the county boundary at Little Offley. A badger was killed on Barton Cutting in 1971 and there are verbal reports of setts at Streatley and in Sundon Pits which have not been found. Even if these setts exist there would still be a marked difference in the densities of badgers on the other side of Luton and Dunstable and there is no explanation that is immediately obvious.

Lower Greensand

Badgers on the Greensand ridge have also a rather patchy distribution. There seems to be a concentration of setts in the Leighton Buzzard and Heath and Reach area with a total of seven active setts. Four of these are associated with relatively recent sand extraction operations, two being in waste spoil heaps and two on the edge of disused workings. There were strong rumours of badgers in the Double Arches pit but no sett was found. It seems inevitable that, with the amount of mineral extraction in this area, there will be some affected by quarrying operations, but, with a stable population in the district, this will not be serious.

North-east of Heath and Reach no active setts were found in the whole of the Woburn estate, presumably because of the high level of "vermin" control. There is an isolated sett at Aspley Guise which showed signs of human interference when last visited. Then there is nothing until a cluster of setts around Ampthill, Houghton Conquest and Haynes. No setts have been located to the west of Ampthill despite reports of two dead bodies on the road near Millbrook. At the end of 1978 there were no active setts in Rowney Warren, Chicksands, Wilstead or Maulden Woods, all relatively large stands of conifers. All had active setts in the past, and Maulden Woods had three small ones for a short time during the survey, but these quickly became inactive again. It is interesting to speculate whether the setts found in this area during the survey period were in existence when those in the four woods were active, or if the badgers moved out of the conifer woodland, as it matured, perhaps because of diminishing food supply.

In the last decade the remaining setts at Old Warden, Northill and Mogerhanger have been deserted. One at Northill was gassed to exterminate the foxes even though a local countryman was regularly watching badger cubs at the sett. There are active setts at Everton.

Tetworth, Sandy and Potton although there is evidence to suggest some loss during the period 1960 to 1973,

It is worth mentioning that most of these active setts are in areas controlled by sympathetic landowners and keepers.

Gault Clay

The area lying between the Greensand and the Chalk is predominately Clay but there are also areas of glacial sand and gravels which provide better habitats for badgers. There are flourishing setts at Billington, Eggington and on the glacial sands and gravels at Tebworth and as far east as Fancott. Recent losses of setts seem to have occurred at Eggington, Tebworth and Toddington.

No setts were found from Harlington and Flitwick through to Shefford although a badger was accidentally killed at Campton during tree felling work in a local wood. Enquiries at Meppershall, Henlow and Biggleswade all drew blanks, this area is intensively farmed and some parts are liable to flooding. A vague report of a sett near Langford was followed up but again the result was negative. One sett at Silsoe was active in 1970 and the possible site of an old sett at Cainhoe was located. There are some setts on the clay, two of which, at Stanbridge and Eaton Bray, seem to have been in use intermittently. In the far east of the county near the county boundary there are more permanent setts at Edworth, Eyeworth and Cockayne Hatley, with a small non-active sett at Wrestlingworth. There are two old reports of road casualties at Dunton.

Southern Oxford Clay

North of the Greensand ridge and to the west of Bedford in an area of clay there are active setts in the parishes of Marston Moretaine, Cranfield and Stagsden. Again there are signs of recent decrease in the number of active setts, two becoming non-active during the survey, at Cranfield and Stagsden, and a third, at Stagsden, which had become inactive before the survey started showed signs of being dug. Two of these setts are near a road crossing-point where badgers are reported killed quite frequently but it is doubtful if they could account for all the badgers killed.

Upper Ouse Valley

In the Ouse valley there is an active sett at Turvey and many old reports of setts which seem to be long gone. One sett at Chellington has suffered in the past through control measures against the large rabbit population but is still active. The sett at Stevington has large lumps of Oolite Limestone on the spoil heaps. Another sett in the parish of Stevington was apparently destroyed in hedge clearance operations, whilst Pavenham and Oakley both have records of old setts which could not be refound, although some riverside workings at Oakley could have been an old site. The story is the same at Bromham and Biddenham with previous reports but no setts found now.

Lower Ouse Valley

Downstream from Bedford a badger was killed on the road at Renhold in 1975 and a sighting reported at Great Barford in 1976 but no setts were located. There was an old report of a sett being gassed at Renhold and a woodland sett in Roxton was lost despite the landowner trying to re-establish badgers. At Tempsford, in a predominantly low flat area liable to flooding, there is a report of a badger killed on the road in 1977 and an older report of one being seen crossing the A1. One countryman reported seeing one in a meadow by the Ivel in 1976 but, despite many enquiries, no setts have been located.

Northern Oxford Clay

North of Bedford in the intensively farmed Boulder Clay country there are, perhaps surprisingly, good setts at Clapham, Ravensden, Bolnhurst, Keysoe and Colmworth. The first has the benefit of an extremely sympathetic farmer but those at Colmworth are frequently disturbed during fox control operations, although the badgers here do make use of a nearby artificial fox earth by way of compensation. In the summer of 1976 wasp nests were dug out at Wilden but a search of suitable sites provided no new setts. The sett at Ravensden is an old-established one but has been much disturbed recently by tree clearance operations. There are several reports of dead badgers from the Thurleigh area but no sett was found despite considerable fieldwork.

Northern Uplands

In the far north-west of the county is a broad belt of more wooded countryside apparently with less intensive agriculture. Unfortunately there is no corresponding increase in the number of setts and, in fact, the setts are all quite small and isolated from each other. Setts have been found in the parishes of Odell, Melchbourne, Yielden and Swineshead. The one at Swineshead has only recently been recolonised after suffering from interference in the past. A nearby sett was purposely destroyed several years ago and has not been active since, although the site has been revisited by badgers. Further north another small sett on the bank of a stream, and uncomfortably close to some game feeders, showed signs of being molested when last checked.

These last two areas north of Bedford have not shown the same recent decrease that, for example, the Ouse valley has shown, in fact only one of these setts was recorded before 1971.

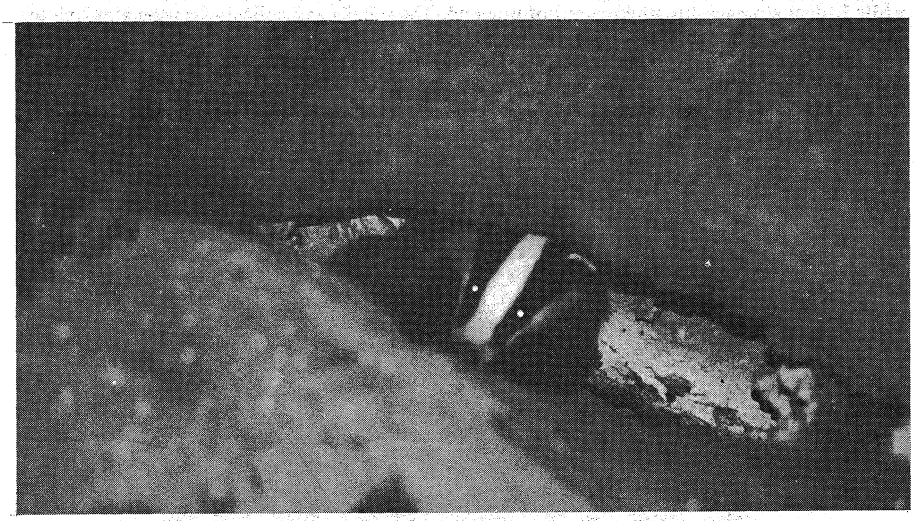


Plate 1, Badger cub at sett entrance under ash tree root, Haynes 1976. T. J. Thomas

CHOICE OF SITE

There is no doubt that badgers prefer a well-drained soil for excavating their setts. Certainly, in Bedfordshire, there are many setts on the chalk and they are only on the overlying Clay-with-Flints where this is very thin and quickly excavated through. Chalk also has the advantage of being self-supporting, tunnel collapses not being common unless the badgers dig too close to the surface. The undulating chalk countryside also provides ample slopes into which the badgers can dig. Large pieces of chalk in the spoil heaps, deeply scored with claw marks, show the badger's strength when digging. It seems that, prior to the spread of myxomatosis, the steep scarp, largely devoid of scrub, was not used but since 1954, and the rapid increase of scrub cover, setts have become established on Blows Downs and Dunstable Downs. Both sites were used by rabbits before badgers moved in and this seems to be a common beginning for setts rather than the badgers starting at completely new sites.

Sand in its many forms provides sites for a large percentage of the setts in the county. Where the sand is soft, tunnel collapses are obviously a problem but, in the Greensand, veins of hard sandstone are not uncommon and setts excavated under these can be seen at Leighton Buzzard, Heath and Reach and Ampthill. Roots also provide stability and there are setts at Haynes and Tebworth under trees (Plate 1). In the north of the county, on Boulder Clay soils,

pockets of sand are utilised and some of these setts are excavated where the clay overlies the sand thus providing an impervious and stable roof. Large spoil heaps are a common feature of setts dug in the sand. One farmer pointed out a large pile of sand in his yard which he had removed from his field where the spoil heap from the sett had spilled out, and he said that this was an annual exercise which kept him in sand for the whole year.

The flat clay lands pose problems for the badger because, in times of heavy rain, they are liable to become waterlogged. One bankside sett at Clapham actually had a stream of water gushing from one of the lower entrances after heavy rain and entrances half-full of water have been seen on numerous occasions. Even so the most common site for setts on the clay is the banks of streams and some of these have been in use continuously so they must avoid waterlogging. An unusual problem associated with clay was highlighted by the finding of nine balls of clay in the vicinity of a bankside sett (Plate 2). These hard egg-shaped balls of clay were of varying size, the largest being 2 in. long and weighing 6 oz., and all had tufts of white badger stomach-fur sticking out of one end. These balls had collected on the stomach of the badgers when foraging or excavating in very sticky clay and had then dried out. They were obviously very difficult to remove because much of the hair had been pulled out at the roots and there were claw marks scored into the dried clay. Other balls of clay have been found on spoil heaps but these were where the badger had been excavating and rolled the clay towards the entrance.

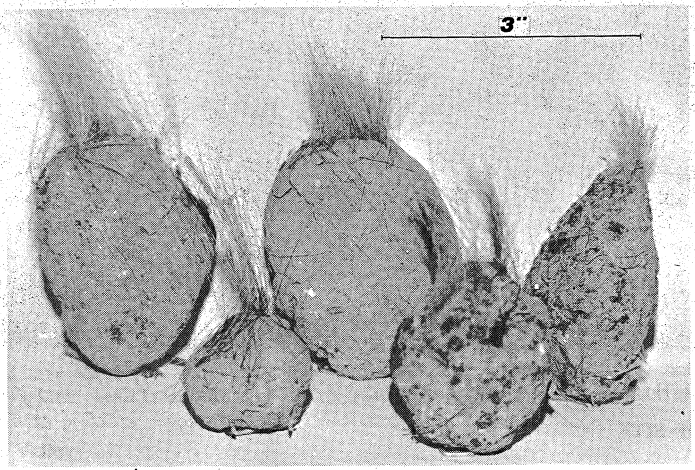


Plate 2. Balls of clay with badger stomach fur.
Eyeworth 1976. T.J. Thomas

Ground disturbed by man is often used, perhaps because it provides easy digging and sometimes raises the ground slightly higher than the surroundings.Three setts near Dunstable are situated on ancient cultivation terraces and badgers occasionally use holes in the mound at Maiden Bower near Dunstable. Three setts north of Bedford are dug in the mounds adjacent to old moat excavations and two near Leighton Buzzard are in the spoil heaps formed during quarrying operations. More direct use of man's works are found in the use of land drains. Two farmers at Caddington report bedding being taken into certain land drains, situated on their land, during the summer, and a drain at Potton has been in use continuously for at least the last two years and so is presumably above normal water level. The network of drains associated with a disused airfield in the north of the county has been used by badgers making their sleeping quarters in the manhole chambers. These drains are very similar to artificial fox earths which are often used by badgers. One keeper in the middle of the county found badger cubs in his artificial fox earth when inspecting the chamber, fortunately he allowed them to continue in

residence. Another artificial fox earth, in the north of the county, had an obvious trail of straw from a pheasant feeder, over a narrow wooden footbridge and into the pipe, a distance of c100 yards. The badger had in fact managed to drag some complete bales part of the way. The keeper there, although sympathetic, thought that the landowner would not be pleased if he knew that badgers were in residence.

When enquiries were made about the exposed situation of two setts near Leighton Buzzard it was discovered that during the war there were anti-aircraft guns there. After the war, when these were removed and the underground portions filled in, the badgers moved in and have been there ever since. Similar opportunism is shown at a sett in the far north of the county which has been dug under a concrete road which, fortunately, is virtually unused so the badgers should feel secure.

In some counties it has proved possible to relate setts to certain soil types. Both the two soil types most likely to show this in Bedfordshire, the chalk and the greensand, have some over-riding factor which has given rise to the patchy distribution at present existing.

10km square	Deciduous Wood	Coniferous Wood	Copse	Hedge	Scrub	Open Field	Total
SP91					2		2
SP92		1	1	6	3	3	14
SP93			1				1
SP94			1	3			4
SP95	1		3				4
TL01	2			1	1		4
TL02			2	1	1	1	5
TL03			1	1			2
TL04	1			2			3
TL05	1			2			3
TL06		1				2	3
TL14	2						2
TL15			1				1
TL16	1						1
TL24			1	1			2
TL25	3						3
Total	11	2	11	17	7	6	54
%	20	4	20	32	13	11	100

The table shows the 54 active setts in the county split into broad habitat types. Only 4% of Bedfordshire is woodland (Dony, 1976), of which only a small proportion is deciduous. Perhaps this is the reason why only 20% of setts occur in deciduous woodland. On a national scale 8% of the land surface is woodland, and 53.5% of all setts are found in woodland. Much of Bedfordshire's woodland is coniferous, particularly the large woods on the Greensand but despite the Forestry Commission's extremely sympathetic attitude towards badgers there are no active setts in any of the Commission's woods, although there have been in the past.

Hedgerows have most setts and, if combined with scrub, provide nearly half the sites in Bedfordshire. The recent loss of hedges in the interests of farming efficiency could have had a disastrous effect on the badger but there is evidence that the destruction of hedgerow does not necessarily affect the sett. There were two setts, one at Haynes and another at Totternhoe, in dense hedgerows which were removed without any apparent decrease in badger activity. Admittedly both setts were adjacent to streams or ditches and so the ground itself was disturbed very little. However there is an active sett in the north of the county which is now in the middle of an arable field following the removal of a hedge. Here the farmer is sympathetic towards badgers but the sett can obviously withstand the weight of a combine harvester without collapsing. When hedgerow setts begin to spread into the adjacent field, farmers will often discourage the badgers from using these holes because of the danger of subsidence but one particular farmer, north of Bedford, ploughs around these entrances in order not to disturb the

badgers.

Setts in arable fields have very good cover during the summer months which is the critical period for the cubs starting life above ground.

It seems, therefore, that large blocks of woodland, particularly coniferous, are not favoured and, although cover is probably quite important when the sett is started, badgers will be loth to leave if the cover is removed.

Plate 3. Badger caught in a snare (released alive), Potton 1978. J. Green

RELATIONS WITH MAN

The beginning of the study coincided with the passing of the 1973 Badger Act which gives the badger a certain amount of protection from human interference. Badger digging has certainly been carried out in Bedfordshire and no doubt still goes on but, from the information available, it seems that much of the digging is done at the request of farmers and the badgers are moved to other areas rather than killed. Apparently the sett on Dunstable Downs was started with badgers moved from Buckinghamshire at a farmer's request and similarly with the one at Totternhoe Knolls. It is now known that badgers imported into an area may be attacked by the local badgers so how many of these translocated animals survive is impossible to assess. Suffice to say that badger digging does not now seem to be a large problem but there are other factors which, although not directed against the badger, have an appreciable effect.

The rearing of game birds for shooting is widespread in the county and the measures taken to protect the young birds, especially from the fox, often affect the badger. Snares are often used and although in theory they can be set high enough to miss the badger it is not

unusual for badgers to be caught. A cub was snared on Blows Downs, an adult at Eaton Bray and only recently two adults were found in the Potton area, one was dead but, fortunately, the second (Plate 3) was found in time to be released. Investigation showed that it was highly probable that a third badger from this sett had been caught but its fate was not determined. There has been a noticeable increase in snaring for foxes generally in response to the high price being offered for pelts. Information was received from north Bedfordshire concerning five badgers being found dead after eating poisoned bait put down for foxes outside pheasant rearing pens. In this area, at about the same time, a mother and cub were found lying dead by a stream – animals will sometimes head for water when they have been poisoned – so this might have been their fate. On an estate near Biggleswade the decayed remains of two young badgers were seen hanging on a keeper's gibbet. It cannot be a coincidence that there are no active setts on many of the larger estates in the county, although it must be said that some keepers are very proud of their badgers and guard them jealously. They invariably control their foxes by shooting and do not put their badgers under threat. These keepers are also unanimous in their view that badgers do no harm to their young pheasants.

Terriers are often used in the county to bolt foxes from holes and stories of confrontations between terriers and badgers, whether intentional or otherwise, are often told. Terriers of course could not kill an adult badger but they have found cubs left unattended and killed them and on one occasion brought them out alive. The blocking of sett holes by the hunt is not uncommon in some areas but this does not seem to affect the badgers as they soon dig their way out. More out of character was the killing of two badgers by hounds in north Bedfordshire recently, the badgers being found above ground in thick cover during daylight. Why they had not returned to their sett is not known.

The taking over of setts by foxes at cubbing time is a frequent occurrence. At Dunstable Downs, in a relatively large sett by Bedfordshire standards, the foxes took up residence in the hole from which the badgers had been emerging and the badgers moved to another part of the sett. However, at Totternhoe, Leighton Buzzard and Heath and Reach, the badgers left the sett completely after foxes moved in. Unfortunately, whereas many landowners are willing to co-exist with the badger, foxes are unacceptable at any price and are quickly dug out or gassed. This, of course, may result in the death of some badgers and the destruction of the sett. At Totternhoe, soon after a hedge had been grubbed out, a vixen had her cubs in the sett. The farmer used a mechanical excavator to dig them out and the foxes were destroyed but at least one badger was reported found and allowed to run off unharmed. After an absence of two months badgers reoccupied the sett but, the following year, foxes were again present in the spring. This time the sett was reportedly gassed but again a badger was seen to escape. The badgers resumed use of the sett immediately. At Heath and Reach the sett was checked after the farmer reported that he had gassed it due to foxes being in residence and three badger cubs were playing on the spoil heaps in the early evening. Similarly at a sett near Upper Shelton, when foxes were gassed, it was checked soon after and badgers had reopened the holes as if nothing had happened. It is unlikely that badgers would be forced out of a sett if they had cubs.

Rabbits are often found in the vicinity of a sett and, in some places, they are returning to pre-myxomatosis levels and obviously have to be controlled. A sett at Chellington was regularly gassed because of the number of rabbits living in the same bank. It would appear that the gassing was being done in ignorance of the badgers' presence. Rabbits are a great enemy of the forester, but the value of the badger in controlling rabbits and other pests is realised and badger gates are put in the protective fences around young plantations to allow badgers to pass through whilst keeping the rabbits out.

During the 1960's the widespread use of seed dressings such as "Dieldrin" caused many deaths among wildlife (Jefferies 1969). Dead or dying badgers were reported in many parts of East Anglia and one keeper in north Bedfordshire remembers at that time finding many dead foxes and badgers. The sett on his land was non-active for many years but has now become active again and shows signs of flourishing with an active outlier and badgers using the drain system on the adjacent airfield. There is little doubt that many badgers in Bedfordshire were affected by seed dressings although one can only surmise the true extent of the damage.

During the period of the survey eight bodies have been recovered as a result of road accidents and reports have been received of another twelve where the bodies were not recovered.

It is unlikely that this represents less than half the actual fatalities that occur and a figure of ten killed per year on the roads is probably not unreasonable, which could represent between 2 and 4% of the total badger population of the county.

Evidence has been found of only three setts being destroyed by new roads and buildings in recent years, two west of Bedford and one south of Dunstable, although one very large sett near Leighton Buzzard was almost completely destroyed when the disused pit it was in was used as a waste tip by contractors involved in gas-pipe laying operations.

Some setts are now very close to new housing estates but there is nothing to suggest that the proximity of houses and an increased level of daytime disturbance has any harmful effect on the setts concerned. At the sett on Blows Downs which is very close to a footpath and was watched regularly for some time, the badgers would emerge nearly an hour later than those on Dunstable Downs which suffer little or no casual disturbance. Even so the badgers at Blows Downs sometimes would emerge within a few minutes of people walking along the footpath.

Reports of badgers raiding dustbin sacks on the outskirts of Dunstable and Leighton Buzzard are quite common. One householder on the edge of a new estate became increasingly annoyed by large holes that were continually being dug under his garden fence. When he waited one night in his garage to catch the culprit he was amazed to find that badgers were responsible. He then built a gate in the fence and fixed a switch which activated a bell in the house so that he could watch each time the badgers came into the garden. Food was provided on the patio and badgers were regular visitors for three or four years. The dish of food had to be replenished after each badger had visited because they would always finish everything that was available. The nightly visits tailed off in the autumn and then ceased completely for two or three months before starting again in the early spring. Further building operations have now caused the visits to cease altogether.

A farmer near Leighton Buzzard found that badgers were breaking holes in the bottom of the doors where the sacks of cattle food were kept. He has now put strips of metal on the doors to prevent further damage but leaves a door open so that the badgers can continue feeding. His wife, returning to the house one night, met a badger leaving the dairy where it had been eating powdered calf's milk. The farmer reported that before the badgers arrived they had great trouble with moles, but have no such problem any longer. Another farmer, who has land on both sides of the county boundary, had a similar problem with rats which disappeared when the estate disbanded its force of keepers and the badgers returned to the sett from which they were constantly being ousted.

Minor interference, mainly by children, is more common where setts are near centres of population. Fires lit in entrance holes, logs, posts and tin cans pushed down the holes probably only cause temporary inconvenience. At one old sett, near a gipsy encampment, 26 shoes were remove from one hole. A more determined attempt to interfere was made at a small sett in the east of the county recently. All the holes were found freshly blocked and, when the earth was removed, each hole had a smoke canister in it of the type used to fumigate greenhouses. Happily the sett is still used.

Much of what has been written above makes rather depressing reading and there is little doubt that man is one of the biggest factors affecting the distribution and numbers of badgers in Bedfordshire. It must be said that during the survey the majority of landowners and farmers contacted were prepared to accept the badgers and a few were extremely keen to do everything possible to protect and help theirs.

BADGERS AND T.B.

Attempts to completely eradicate Bovine Tuberculosis from cattle in this country have been almost completely successful except in certain areas of the West Country where investigation of wild animals has established the presence of the disease in the wild badger population and has shown a link between diseased badgers and outbreaks of the disease in cattle. To ensure that this problem is confined to these areas the Ministry of Agriculture, Fisheries and Food (M.A.F.F.) has asked that all badger corpses found be reported to them for collection and testing. Dead badgers from Potton, Ampthill, Leighton Buzzard and Eggington have so far been tested and all have proved negative.

A serious outbreak of Bovine T.B. occurred in a herd of dairy cows in the south of the county in 1978. Isolated outbreaks of the disease are not unknown and usually the sources can be traced, for example to the introduction of an infected cow to the herd. In this outbreak there was a particularly high number of reactors, over 50 at the first test, and no source was found after all the usual investigations had been carried out. M.A.F.F. decided that a sample of the local badger population would have to be taken to ensure that this was not the cause. It was generally felt that badgers would not be capable of causing such a large outbreak, especially bearing in mind their relatively low population in the area compared with the problem areas in the West Country, but rumours were already rife that badgers were the cause and it was felt that this action would effectively squash the rumours. Dung samples were taken and two experts were brought in from Gloucestershire to trap a badger. It took nearly two weeks but eventually a sow was trapped, humanely killed and sent for tests. These tests proved negative (M.A.F.F. 1978).

The most worrying aspect of the whole problem was the way in which a rumour spread in the farming world that the outbreak had been caused by naturalists importing infected badgers into the area from the West Country. Obviously misleading rumours of this type can do both badgers and naturalists a lot of harm.

FOOD

It is now generally recognised that earthworms provide the staple diet of the badger. The effect, therefore, of the prolonged drought in 1975 and 1976 must have been quite substantial. Death from starvation, reduced number of cubs, or no cubs born at all, are suggested by some authorities (Neal 1977) as the probable result of droughts of this severity. Numbers of badgers at the sett on Dunstable Downs seen during evening watches certainly dropped quite dramatically in 1977 and 1978. There was a peak of 13 consisting of at least five cubs from two families and, during 1977/1978, these were reduced to just two adults and two cubs. Of course one family could have moved to other holes in the areas and, as has already been shown, there are many other factors that could have influenced the numbers. One source of food that was exploited during the drought was wasp nests, many being reported dug out in areas not known to contain active setts. This can also be taken to show the greater distances travelled in search of food when the need arises. At least 30 nests were dug out in Maulden Wood alone in 1976. Does this show that there was a shortage of other food or that there were more wasp nests?

During 1976 and 1977 random dung samples were collected from setts in Bedfordshire and analysed by J.G. 85% of the 56 samples taken were found to contain some earthworm chatae. Earthworms, of course, make little contribution to bulk in faeces but the following list gives the other items found after the bulk of unidentifiable fur and vegetable matter had been removed. The order is no indication of bulk or preference:-

> Assorted corn husks (particulary at harvest time), broken bones of birds and mammals, grass, beetle elytra and abdomens, acorn husks, sycamore seeds, wheat grain (some burnt), waste corn, hedgehog spines, jaw bones of rabbit (juvenile) and brown rat, barley grains, partly digested larva, bird crop, rabbit ear (juvenile), leaf skeletons, wasp bodies, bumble bee wings, feathers of wood pigeon, starling and thrush and the remains of a tea bag.

POPULATION

There is one large sett near Dunstable with over 30 recognisable entrances of which probably no more than ten are in use at one time. The sett on Dunstable Downs is large with about 15 entrances but many of these are not active at present. These setts are the exception, far more consist of only three or four holes. It seems unlikely, therefore, that many setts contain more than one breeding sow. If it is assumed that at the end of 1978 each active sett consisted of a boar and a sow and two others, for example yearlings, surviving cubs or adults, a figure of 216 animals is arrived at. Assuming also that there are other active setts which have not been found a figure of approximately 300 for the total badger population of Bedfordshire is reached. Even if this figure is a hundred percent in error the population is not very large.

CONCLUSIONS

If the comparatively denser badger population around Dunstable and Leighton Buzzard is due to surplus badgers spreading from the neighbouring counties of Buckinghamshire and Hertfordshire, it is possible that in future years this spread may continue into the areas north of Luton which are devoid of badgers.

From the centre of the county northward there appears to have been a recent decline; whether this will continue only a future survey will show. Reasons for the decline are open to conjecture, the two most likely ones being

a) the effects of the Organo-chlorine seed dressings upon the reproduction rate of the badger,
b) more recently the effects of the drought summers of 1975 and 1976, when a high badger mortality was reported.

The large increase in human population that has occurred in the county has probably had little effect upon the badgers as the consequent increased disturbance does not seem a crucial factor to their staying at a sett.

Losses from direct control are probably quite small, most being no doubt accounted for during the control of other animals (vermin), but these may have decreased over the past two decades with the changing attitudes of many keepers and landowners.

Throughout the five years of the survey in Bedfordshire the setts have been visited periodically to record any changes that have taken place. At the same time every endeavour has been made to foster the interest and good relations of the land owners on whose land the setts are situated.

Although more problems have been posed than solved, a good basis has been established for any future surveys or monitoring of the badger population of Bedfordshire.

ACKNOWLEDGEMENTS

To everybody who has helped throughout the survey and there have been many. To the landowners, farmers and keepers who have put up with us and especially to those who go out of their way to protect their badgers. But most of all to the badgers who have provided us with hours and hours of unmitigated pleasure, not only during the survey work but during the many successful, and not so successful, evenings watching at setts. We have both seen it many times but the sight of those black and white stripes emerging in the semi-darkness never fails to thrill.

REFERENCES

COOPER, N. 1958. Badgering. *Bedf. Mag.* **6** : 105
DYMOND, J.M. 1959. *Bedf. Nat.* **14** : 4
DONY, J.G. 1976. *Bedfordshire Plant Atlas*. Luton Museum.
ELLIOT, J. STEELE. 1936. *Bedfordshire Vermin Payments*. Luton Museum.
JEFFERIES, D.J. 1969. Causes of Badger Mortality in Eastern Counties of England. *J. Zool. Lond.* **157** : 429-436
KEY, H.A.S. 1953. *Bedf. Nat.* 8 : 5
1954. *Bedf. Nat.* **9** : 40
1955. *Bedf. Nat.* **10** : 28
1957. *Bedf. Nat.* **12** : 41
LUTON MUSEUM. 1978. Private communication.
M.A.F.F. 1978. Private communication.
NEAL, E. 1972. The Badger Survey. *Mammal Rev.* **2**(2) : 55-64
1977. *Badgers*. Blandford Press, Poole, Dorset.
PALMER, R. 1946. *J. Bedf. Nat. Hist. Soc.* **1** : 48
1949. *Bedf. Nat.* **4** : 49
PIKE, O.G. 1952. *Bedf. Nat.* 7 : 15
VINE, A.E. 1970. Badgers in Norfolk. *Norfolk Bird and Mammal Report.* **22**(3) : 191-200

FISH

Report of the Recorder

Since work on the fish distribution in the county began in April 1976, each annual Fish Report has indicated a steady decline in the number of species reported; from 26 in 1976, 21 in 1977 down to the following 15 in this current report (figures in brackets refer to the number of "new" county tetrad records received during the year for the species concerned):

Pike (1), Perch (4), Roach (4), Rudd (1), Dace (1), Chub (2), Common Bream (7), Gudgeon (2), Tench (4), Carp (4), Zander (1), Eel (1), 3-Spined Stickleback (2), 10-Spined Stickleback (4), Rainbow Trout (3).

It is interesting to note that the Bleak, a very common species in virtually every stretch of our linear waters, is absent from the 1978 list, yet the Zander, a non-indigenous and highly localized species, has reappeared thanks to the efforts of D. Anderson.

The 1978 records have all been incorporated into the distribution maps, so this report is not concluded with the usual tetrad lists. This year those who contributed fish records are 100% B.N.H.S. members and my sincere thanks go to the following:

D. Anderson, V.W. Arnold, A. Muir-Howie, Mrs E.B. Rands, A. J. Rundle, R.B. Stephenson and Miss H.M. Webb.

DISTRIBUTION MAPS

In my first fish report, *Bedf. Nat.* **31** : 43-44(1976), I stated that the distribution maps would be published when they were in a more "healthy" state. Although they are by no means as healthy as I would like, I feel they should now be published in fairness to the members of the Society – particularly those who have worked so hard to contribute fish records.

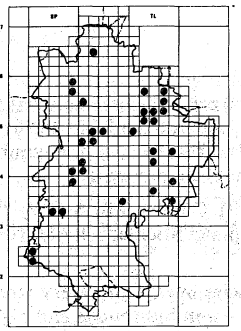
As fish are so difficult to identify in the field, anglers are obviously a most important source of information. They do, however, tend to overlook the "smaller" species such as Sticklebacks, Loach, Minnows and Bullheads, etc. For these records we rely upon people such as Beryl Rands, who discovers them whilst searching for aquatic Mollusca, and observant sportsmen, notably W.J. Drayton and two junior members – Martin Green and Michael Dawson. Also, V.W. Arnold has supplied valuable records by asking children out "tiddlering" with nets for reports of their catch!

Of the 26 species which, so far, make up our "total" county list, five – namely Zander, Silver Bream, Grass Carp, European Catfish and Loach – are either non-indigenous, localized or finical species, so we cannot expect them to be frequently recorded or very widespread.

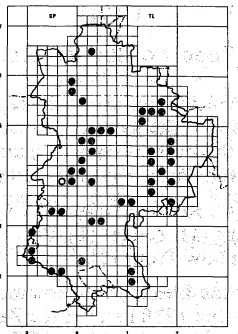
As we still require much more information on the range and distribution of even the common species, the following maps, which represent the distribution patterns obtained by records received from April 1976 onwards, are far from complete. Therefore, I hope members will spot the glaring omissions and help fill in the gaps by supplying records. Consequently, next time the maps are published I hope they will present a more accurate picture of the county's fish distribution. The last map shows the numbers of species recorded in the 10km squares.

The full circle indicates the species has been recorded in the tetrad and the open circle denotes recorded in the tetrad but with some doubt regarding the subsequent status.

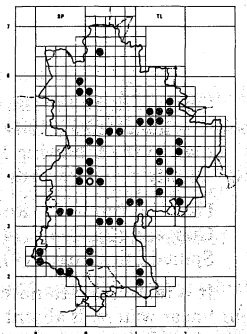
TONY PETERKIN



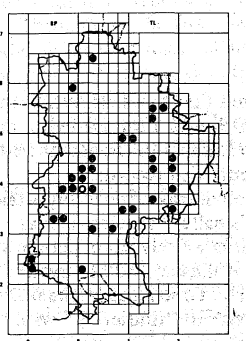
Pike
Esox lucius



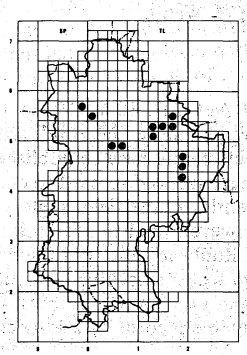
Perch
Perca fluviatilis



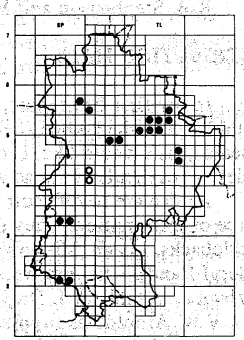
Roach
Rutilus rutilus



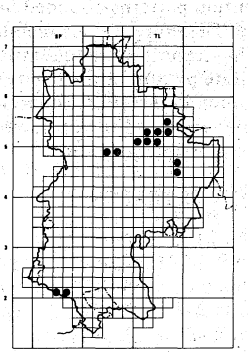
Rudd
Scardinius erythrophthalmus



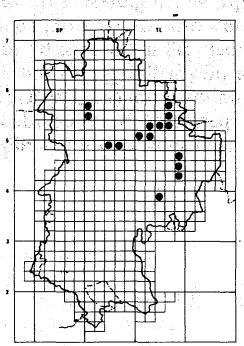
Dace
Leuciscus leuciscus



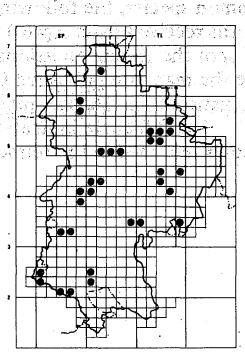
Chub
Leuciscus cephalus



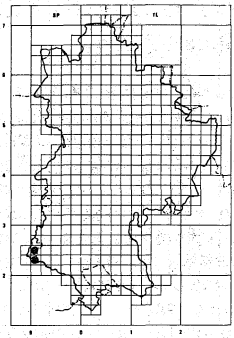
Gudgeon
Gobio gobio



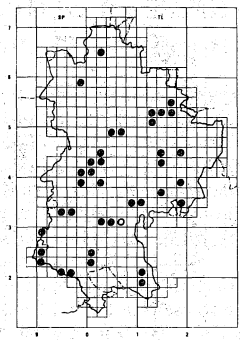
Bleak
Alburnus alburnus



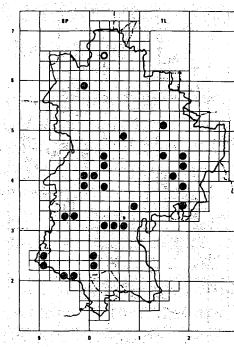
Common Bream
Abramis brama



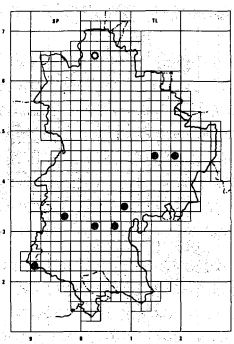
Silver Bream
Blicca bjoerkna



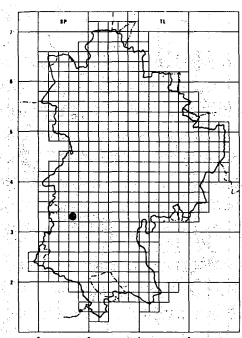
Tench
Tinca tinca



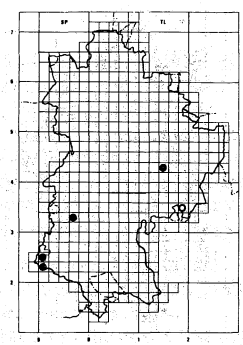
Carp
Cyprinus carpio



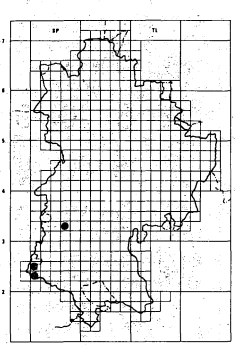
Crucian carp
Carassius carassius



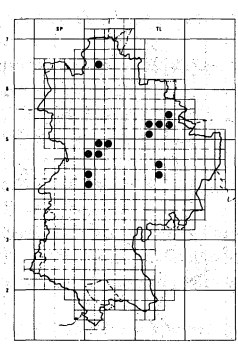
Grass carp
Ctenopharyngodon idella



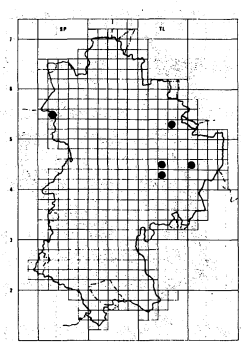
Zander
Stizostedion lucioperca



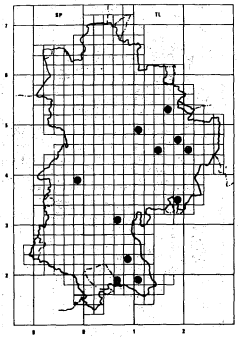
European Catfish
Silurus glanis



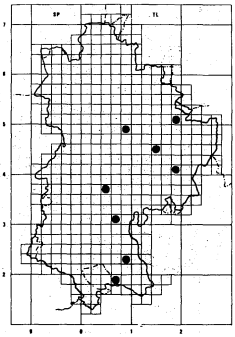
Eel
Anguilla anguilla



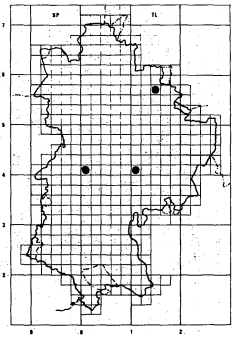
Bullhead
Cottus gobio



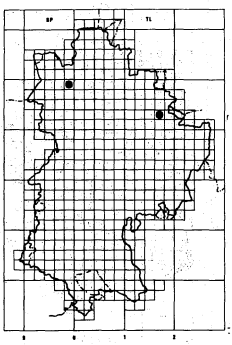
3-spined Stickleback
Gasterosteus aculeatus



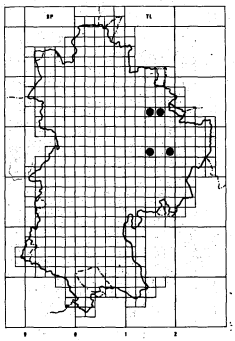
10-spined Stickleback
Pungitius pungitius



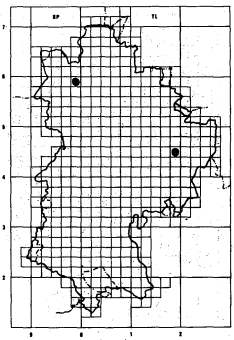
Stone Loach
Noemacheilus barbatulus



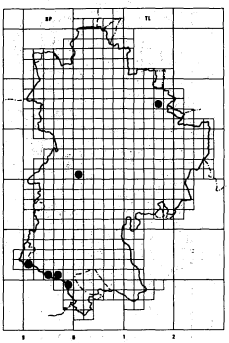
Spined Loach
Cobitis taenia



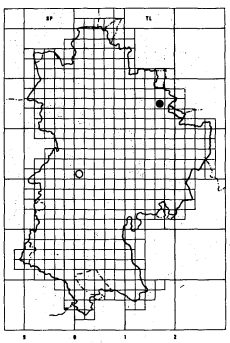
Minnow
Phoxinus phoxinus



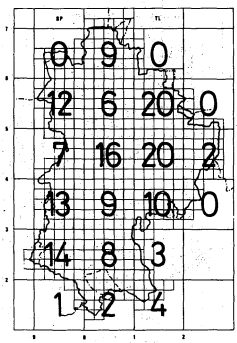
Ruffe
Gymnocephalus cernua



Rainbow Trout
Salmo gairdneri



Brown Trout
Salmo trutta



Numbers of species
per 10 km square

PSEUDOSCORPIONS AND HARVESTMEN IN BEDFORDSHIRE

by A.J. Rundle, Ph.D., 29 Burlington Avenue, Kew, Surrey

Pseudoscorpions and harvestmen are two arachnid groups which generally have been ignored by workers in Bedfordshire in the past. Even though keys to both groups have been available – Evans and Browning (1954) for the pseudoscorpions and Sankey and Savory (1974) for the harvestmen – members of these groups are often difficult to identify with certainty and thus tend to go unrecorded. In addition to this most harvestmen are seasonal animals and recording has to be done in the periods when species are adult (usually late summer to late autumn) and the pseudoscorpions, whilst occurring all the year round, are minute animals living in cryptic habitats and are therefore rarely seen.

The records noted here have mostly been gathered since the author commenced studying the woodlice, etc. in the county in April 1975 and increase our knowledge of these groups in the county considerably. At the time of starting only four species of pseudoscorpion had been reported to the National Recorder for the group (P.E. Jones) and this total has now been increased to ten, although one has yet to be found in vice-county 30, Bedford. The harvestmen were better known, Sankey and Savory (1974, p. 21) listing twelve species to which a further four have been added.

PSEUDOSCORPIONS (Pseudoscorpiones)

91 tetrad records have been noted so far. These not only include records obtained by the author and by members of the Society but also those previously submitted to the National Recorder. Notes on each species are presented below together with locality details for the rarer species, the 10 km. distribution is summarised in Table 1 and a tetrad summary map is given in Fig. 1. A further six species of the twenty-five known nationally almost certainly occur in Bedfordshire; these are *Cheiridium museorum*, *Chelifer cancroides*, *Lamprochernes godfreyi*, *Allochernes powelli*, *A. wideri* and *Dinocheirus panzeri*. Four of these are known from barn debris in Hertfordshire (Judson, 1979) so this habitat needs to be investigated in the future.

Chthonius ischnocheles (Hermann, 1804) – this is much the commonest pseudoscorpion occurring in a wide variety of permanent habitats, in soil, in deciduous leaf litter, under stones and pieces of dead wood as well as in two old farmyard manure heaps.

Chthonius orthodactylus (Leach, 1817) – this species is not as common as the above but occurs in the same permanent habitats.

Chthonius tenuis L. Koch, 1873 – This species has only been found twice in the administrative county but not yet in the vice-county.

TL 032148 Two males and one female in litter in wood, 1 mile S.E. of Studham (10-9-1977 – E.B. Rands).

TL 014133 One male under piece of dead wood in roadside ditch, 1½ miles S.S.W. of Studham (21-5-1978 – AJR).

This species is at the northernmost limits of its range and the former record is the most northerly to date (see Judson, 1979, p. 61).

Chthonius tetrachelatus (Preyssler, 1790) – There are only three records to date.

TL 033256 One male under piece of cardboard on roadside verge, ½ mile S. of Chalton (27-5-1978 – AJR).

TL 127386 One male and one protonymph in old farmyard manure heap, ½ mile N.N.W. of Campton (2-7-1978 – AJR).

TL 032223 One male under stone in back garden, Dunstable (15-7-1978 – AJR).

Neobisium muscorum (Leach, 1817) – this is one of the commonest British species but is rather uncommon in Bedfordshire occurring in moss and leaf litter in woodlands and marshes.

Roncus lubricus L. Koch, 1873 – this is a southern species near the northern edge of its range. It occurs in permanent habitats, especially the soil.

Lamprochernes nodosus (Schrank, 1761) – this is a common species occurring in old farmyard

manure heaps and in hay barns. It often occurs with the woodlouse *Metoponorthus pruinosus* in the dry leached surface layers of manure heaps a few years old. *L. nodosus* is a species most often recorded as phoretic, hitching a lift on the legs of such insects as flies. Generally considered an uncommon species due to the lack of enthusiasm of other recorders for its preferred habitat.

Pselaphochernes scorpioides (Hermann, 1804) – one record to date.
TL 073382 One male and one female in nest of the ant *Formica rufa* in Maulden Wood (20-12-1975 – AJR).

Allochernes dubius (O. P.-Cambridge, 1892) – an infrequently found species most often occurring in soil, but has also been found under stones and in straw.

Chernes cimicoides (Fabricius, 1793) – only one site to date.
TL 174561 One female under bark of dead sycamore stump in roadside wood, ¾ mile S.S.W. of Little Barford (2-4-1978 – AJR).

HARVESTMEN (Opiliones)

270 tetrad records have been obtained so far by the author and by members of the Society. Notes on certain species are given below, the 10 km. distribution is given in Table 2 and the tetrad summary map in Fig. 2. The list presented in Table 2 must be a fairly full one for the county as most of the remaining seven British species are either very rare or very local. The nomenclature used here differs somewhat from that used by Sankey and Savory (1974, pp. 30-31) in using the up-to-date names of Martens (see review by Merrett, 1978). The Bedfordshire species whose names have been changed are as follows:

Sankey, 1974	Martens, 1978
Oligolophus agrestis	*Paroligolophus agrestis*
Oligolophus (Odiellus) spinosus	*Odiellus spinosus*
Platybunus triangularis	*Rilaena triangularis*
Leiobunum blackwallii	*Leiobunum blackwalli*

Anelasmocephalus cambridgii (Westwood, 1874) – three sites for this rare species.
TL 096237 One amongst vegetation under slab of concrete by side of footpath, Bradger's Hill, Luton (21-4-1975 – AJR).
TL 013188 Two in moss litter in roadside ditch, ½ mile N.N.E. of Whipsnade (10-9-1977 – E.B. Rands).
TL 129377 One small juvenile in soil next to roadside culvert, just S.W. of Campton (2-7-1978 – AJR).

Nemastoma bimaculatum (Fabricius, 1775) – a common, widespread, easily identified species which can be found at any time of the year. By far the best recorded species in the county.

Mitostoma chrysomelas (Hermann, 1804) – a common species most often found as juveniles.

Homalenotus quadridentatus (Cuvier, 1795) – three records of this rather rare species.
TL 096237 One amongst grass, Bradger's Hill, Luton (1976 – A. Norris).
TL 044221 One under rubbish on Chalk scarp between Luton and Dunstable (25-6-1977 – E.B. Rands).
TL 216402 One under piece of dead wood on roadside verge, ½ mile S.W. of Edworth (15-4-1978 – AJR).

Odiellus spinosus (Bosc, 1792) –one record of this rather local species.
TL 125218 One on rubbish dump near Luton Airport (13-10-1975 – D.G. Rands).

Opilio parietinus (Degeer, 1879) – only two records to date.
TL 101376 One under piece of dead wood in disused sand pit, 1 mile E.S.E. of Clophill (27-6-1975 – AJR).
SP 989625 One in West Wood, just N.N.E. of Souldrop (4-7-1976 – C.M. Dony).

Megabunus diadema (Fabricius, 1779) – one record from the administrative county but not the vice-county.
TL 008154 One juvenile in roadside ditch, about ¾ mile W.S.W. of Studham (21-5-1978 AJR).

TABLE 1: DISTRIBUTION OF PSEUDOSCORPIONES BY 10 KM. SQUARES

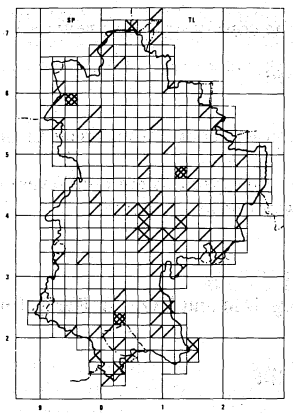
Grid Square	TL 07	SP 96	TL 06	TL 16	SP 95	TL 05	TL 15	TL 25	SP 94	TL 04	TL 14	TL 24	SP 93	TL 03	TL 13	TL 23	SP 82	SP 92	TL 02	TL 12	SP 91	TL 01	TL 11	No. of tetrad records
Chthonius ischnocheles	x	x	x	x	x	.	.	.	x	x	x	x	.	x	x	x	.	x	.	x	.	x	x	36
*Chthonius orthodactylus	.	.	x	.	x	.	.	.	.	x	x	x	.	x	x	.	.	.	.	.	x	.	x	x	11
+Chthonius tenuis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	2
*Chthonius tetrachelatus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	x	.	.	.	.	3
*Neobisium muscorum	.	.	.	.	.	.	.	.	.	x	.	x	.	.	.	.	.	.	.	.	.	.	x	5
Roncus lubricus	.	.	.	.	.	.	x	.	.	x	x	.	.	x	x	.	.	.	x	x	.	.	.	11
Lamprochernes nodosus	x	.	x	.	x	.	.	x	x	x	.	.	x	x	.	.	x	x	.	.	.	.	.	14
*Pselaphochernes scorpioides	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	1
Allochernes dubius	.	.	.	.	.	x	.	.	x	.	.	.	x	x	.	.	.	x	x	.	.	.	.	7
*Chernes cimicoides	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Totals:	2	1	3	1	3	1	2	0	3	4	5	2	1	6	6	1	0	2	5	3	1	3	3	91

* Species new to the vice-county.

\+ Species only recorded from the present administrative county, but not from the vice-county.

TABLE 2: DISTRIBUTION OF OPILIONES BY 10 KM. SQUARES

Grid Square	TL 07	SP 96	TL 06	TL 16	SP 95	TL 05	TL 15	TL 25	SP 94	TL 04	TL 14	TL 24	SP 93	TL 03	TL 13	TL 23	SP 82	SP 92	TL 02	TL 12	SP 91	TL 01	TL 11	No. of tetrad records
*Anelasmocephalus cambridgii	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	x	.	.	x	.	3
Nemastoma bimaculatum	x	x	x	x	x	x	x	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	112
*Mitostoma chrysomelas	.	.	.	.	x	.	.	.	x	x	x	x	x	x	.	.	.	x	x	.	.	.	.	17
*Homalenotus quadridentatus	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	x	.	.	.	3
Mitopus morio	.	.	.	.	x	x	x	.	x	x	x	.	.	.	x	x	.	x	x	.	.	.	.	14
Oligolophus tridens	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	-
Paroligolophus agrestis	x	.	.	x	x	.	x	x	.	x	x	x	x	x	x	.	.	x	x	.	x	x	x	32
Odiellus spinosus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	1
Lacinius ephippiatus	x	.	.	.	x	.	.	.	.	.	.	.	x	x	x	.	.	x	x	.	.	.	.	10
Phalangium opilio	x	x	x	.	.	.	.	.	x	.	.	.	.	x	.	.	.	x	x	.	.	.	.	7
Opilio parietinus	.	x	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	2
*Opilio saxatilis	x	x	x	.	.	.	x	.	.	.	.	.	.	x	.	x	.	.	.	.	.	.	.	8
Rilaena triangularis	.	x	.	.	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	x	.	x	x	47
Megabunus diadema	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	1
Leiobunum rotundatum	.	.	x	.	.	.	.	.	.	x	x	.	.	.	.	x	.	.	x	.	.	x	x	8
Leiobunum blackwalli	.	.	.	.	.	x	.	.	.	.	.	x	.	x	.	x	.	.	x	.	.	.	.	5
Totals:	5	5	4	2	7	3	5	2	5	6	6	6	5	8	8	6	1	7	11	3	2	6	4	270



KEY

No. OF SPECIES

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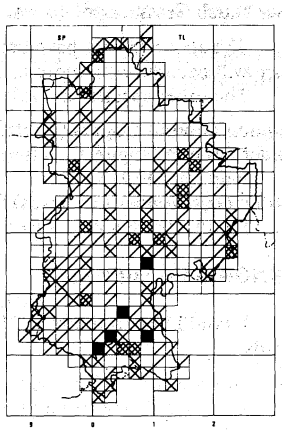


FIGURE 1
PSEUDOSCORPIONES SUMMARY MAP

FIGURE 2
OPILIONES SUMMARY MAP

ACKNOWLEDGEMENTS

The author would like to thank Mr P.E. Jones for identifying all the pseudoscorpions and for sending details of previous records from the county on his files, Mr J.H.P. Sankey for naming some of the harvestmen and all those who have supplied records or specimens whether specifically referred to above or not.

REFERENCES

EVANS, G.O. and E. BROWNING. 1954. *Synopses of the British Fauna. No. 10 – Pseudoscorpiones.* London (Linnean Society of London), 23 pp., 24 figs.

JUDSON, M.L.I. 1979. Pseudoscorpions in Hertfordshire. *Trans. Herts. Nat. Hist. Soc.*, **28**(2) : 58-64

MERRETT, P. 1978. Book Review – J. Martens: Spinnentiere; Arachnida: Weberknechte Opiliones. *British Arachnological Society Newsletter*, no. 22, pp. 7-8.

SANKEY, J.H.P. and T.H. SAVORY. 1974. *Synopses of the British Fauna (New Series). No. 4 – British Harvestmen.* London (Linnean Society of London), 76 pp., 27 figs., 7 maps, 5 tables.

GRASSHOPPERS AND CRICKETS (Orthoptera/Saltatoria)

Report of the Recorder

The records for the common bush-crickets and grasshoppers were an anti-climax after the intensive survey of 1977 which was published in *Bedf. Nat.* **32** : 25-30

New tetrad records for the year are as follows:-

Oak Bush-cricket (9 tetrads) 93G 96Q 01D 13P 14L 15MV 24V 25Q
Dark Bush-cricket (6 tetrads) 91X 01BCI 14H 24J
Speckled Bush-cricket (17 tetrads) 96F 03E 04WZ 06N 13DEIP 14K 15M 23B 24AV 25CDQ
Common Green Grasshopper – no records.
Meadow Grasshopper (5 tetrads) 96R 14F 15DM 24D
Common Field Grasshopper (11 tetrads) 92C 93G 96MRY 11C 12B 15M 23BE 24A
Lesser Marsh Grasshopper (4 tetrads) 04N 14K 15M 24E

The above species have been so well searched for in the county now that new records in future will become even more difficult to make.

The other species for which new records were obtained:-

Common Ground Hopper (1 tetrad) 09I
Slender Ground Hopper (1 tetrad) 92D This is the second county record, found near Linslade, map ref. SP/913273
Mottled Grasshopper (3 tetrads) 93H 14Y 24E New sites for this species were old Wavendon Heath, the R.S.P.B. Reserve, Sandy and disused railway line at Deepdale.

ACKNOWLEDGEMENTS

I would like to thank R. Hawkins, A. Muir-Howie, B.S. Nau and Mrs E.B. Rands for records.

D.G. RANDS

DRAGONFLIES (Odonata)

Report of the Recorder

A landmark in 1978 was the production by the Biological Records Centre at Monks Wood of Part 7 (Odonata) of the *Provisional Atlas of the Insects of the British Isles* edited by John Heath. All records received up to the end of May 1977 were incorporated. Bedfordshire shows up well compared with neighbouring Midland counties. Northamptonshire, for instance, has few post 1960 records, and the National Recorder, Mr D. Chelmick, 6 Gander Hill, Haywards Heath, Sussex would welcome a note of any sightings, even of the commonest species, in that county.

No new species were recorded in Bedfordshire this year. The Atlas suggests that, apart from the rare *Libellula fulva*, mentioned in *Bedf. Nat.* **32** : 24 (1977), three species might still be awaiting recording. These are *Aeshna juncea*, the Common Aeshna, that looks like a large version of *Aeshna mixta*; *Coenagrion pulchellum* which needs to be captured to distinguish it from *C. puella*, the Common Coenagrion; and *Sympetrum scoticum* (formerly *S. danae*) which is unique among dragonflies in having a jet black adult male.

Three large dragonflies that are only found in South England seem to have become much commoner in Bedfordshire since the war, possibly because they are able to colonise new habitats formed by wet gravel and sand workings and ornamental lakes. These are the blue and green Emperor dragonfly, *Anax imperator* (recorded in two more 10km squares in 1978, bringing the total in the county to 8); the Scarce Aeshna, *A. mixta* probably under-recorded as it needs to be seen perched to distinguish it from *A. cyanea* and *A. juncea* (now recorded in 13 10km squares); and *Orthetrum cancellatum*, perhaps now the commonest of the broad-bodied darter dragonflies (recorded in 11 10km squares). This last was not recorded at all in the county until 1950, and is right on the edge of its range here. It will be interesting to see if it continues to spread northward.

In 1978 my husband, John Dawson, visited many of the good dragonfly sites in the county to try to obtain coloured prints of our Bedfordshire species. I hope to use these to help interested members with identification problems. There is still an urgent need for a field guide for dragonfly identification, which makes use of differences in habits between closely related species instead of such esoteric things as wing venation and genitalia. An example was drawn to my attention by A.J. Martin who described how *Agrion virgo* flew high in the air if disturbed. *Agrion splendens*, common along the Ouse, does just the opposite, it drops down among the reeds, disappearing from view.

The most staggering sight last year, when we had left our camera at home of course, was a Brown Aeshna, *A. grandis* catching a white butterfly in flight, settling with it on a grass blade, and biting off the wings before munching it up.

I would like, as always, to thank Mrs E.B. Rands and B.S. Nau who have over the past few years supplied me with many valuable records and drawn my attention to some excellent sites.

NANCY DAWSON

BUTTERFLIES (Lepidoptera)

Report of the Recorder

Considering the year as a whole, 1978 was a good year for butterflies, but not such a good one for the observer as there were so few really long warm spells of weather when a really intense survey could be made.

The late spring saw a large number of the common species with reports of Orange Tip Whites from all over the county. The Green Hairstreak was common in its localities and on one

particular day on Bison Hill in June, V.W. Arnold and I saw no fewer than fourteen specimens, all having recently emerged, about three weeks later than normal. This species is not easily seen as it does not fly much and, having green underwings, is difficult to find when at rest. Nevertheless neither of us had ever seen such large numbers of this insect at any one time before.

Generally speaking all species were two to three weeks late in emerging and later on in June, V.W. Arnold found a colony of Grizzled Skippers on Dunstable Downs where it was expected to be, however R.B. Stephenson found one in the centre of Bedford on an old disused allotment site near the town centre. This unusual habitat shows the way in which insects, as well as other organisms, will recolonise any suitable area even when surrounded by intense human activity.

One species that does enjoy the urban environment is the Holly Blue. It too has had a good season with many reports coming out of Bedford Town. Bedford seems to be very well off for this particular species as there has been a constant stream of records for it from there over many years.

Late in June I found very large numbers of Peacock and Small Tortoishell larvae on the nettle beds below Dunstable Downs. Normally these would be devastated by the Cuckoos but somehow they must have been missed. I took a small number of the Small Tortoishell larvae to photograph the final life history stages, but found when they eventually pupated that just over half of them had been parasitised and failed to complete their pupal stage.

Despite all these pressures, there were large numbers of both Peacock and Small Tortoishell on the wing in August but sadly the Painted Lady and Red Admiral were very scarce this year. There was only one sighting of the Painted Lady for the whole of Bedfordshire. The low numbers of these two migratory species are explained by the almost total absence of southerly wind during the summer months, thus preventing these insects from making the long journey from Southern Europe.

The Small Copper was common during the summer months, and I saw a reasonable number of the aberration *caerulea punctata* among them. This form has a row of blue spots inside the outer edge of the hind wing, the aberration occurring in about 2% of any population, and is among the most beautiful of butterflies.

Among the summer browns, the Meadow Brown, Gatekeeper and Speckled Wood seem to have all done well but the Wall Brown did not seem to be very common. There does not seem to be any logical explanation for this as they all feed on various grasses during their larval stages; they may just have been overlooked.

Another species that must be very under recorded is the Wood White. B.S. Nau found a new site for it this year in Wilsted Wood. It only flies in the rides of old woodland where it keeps low to the ground. The flight is very feeble and can best be likened to a small piece of tissue paper being blown along by the wind. This description should differentiate it from the common white species which all have powerful flight patterns.

With all food plants in good leaf throughout the year most of the species have had a good opportunity to increase their numbers, a fact that was confirmed by the large numbers of Purple Hairstreak and Brown Hairstreak eggs found by Richard Revels and myself when egg hunting in November. Although the Brown Hairstreak has had such a good year, it still cannot be found in its old Bedfordshire haunts. That does not mean that it has disappeared altogether from the county, as when numbers get very low they prove very difficult to find.

Finally I am indebted to the following people who have sent in their records for the year, the results of which have made the distribution maps really start to look impressive.

V.W. Arnold, C.W. Burton, Miss B.M. Clutten, Mrs F.B.M. Davies, Miss A. Doody, B.D. Harding, N. Janes, K. Lee, A. Muir-Howie, B.S. Nau, D.G. Rands, Mrs E.B. Rands, A.J. Rundle, R.B. Stephenson, T.J. Thomas, Miss H.M. Webb, K.R. and Mrs Weeden.

ALAN J. MARTIN

MOTHS (Lepidoptera)

Report of the Recorder

Once again the weather played a major part in keeping down the numbers of moths seen. The cold weather at the beginning and the end of 1978 restricted field work to the period late spring to early autumn, and even then many of the evenings became clear and cold – not ideal conditions for moths to be abundant.

During the year much work was done on the chalk in the south of the county. It was pleasing to find that (222) Cistus Forester was common on the hills between Dunstable and Bison Hill, Whipsnade. Flying with it, but in much smaller numbers was (199) Wood Tiger. One moth which was abundant during late June and early July on the downs at Dunstable was (802) Chimney-sweeper. This small black moth looked most attractive when seen in numbers on the pink flowers of Sainfoin. Both the larvae and pupae of the (152) Fox Moth, were found on Warden and Galley Hills, Luton. This was considered at one time to be a common moth, but recent records for this species are scarce.

Moth trapping was carried out at both Totternhoe Knolls and the old disused railway track at Sewell, and several interesting species were recorded. At both sites (95) Small Elephant Hawk was found - this species was, however, more common at Totternhoe Knolls than at Sewell. Also abundant at Totternhoe Knolls was (281) Light Feathered Rustic – this appears to be restricted to the chalk in the south of the county. Some of the other species recorded were (354) Light Shears (both sites), (357) Light Brocade (both sites), (359) Pale Shouldered Brocade (both sites), (366) Common Marbled Coronet (Sewell only), (761) Purple Bar Carpet (both sites) and (854) Netted Pug (Sewell only). A moth that is normally considered to be uncommon, the (515) Alder Dagger, appeared at Sewell in fair numbers on one evening. It was also recorded from both Maulden Wood and the grounds of Clarendon School, Haynes during the year.

The surveys of Flitwick Moor and Maulden Wood continued during the year. It is hoped to carry on work at Flitwick Moor for some time to come, but trapping should cease at Maulden Wood during 1979. At Flitwick Moor (173) Round-winged Footman was, once again, fairly abundant; also seen again was (606) Silver Hook. A new record for Flitwick Moor was (785) May Highflyer, several specimens were taken at light, on the night of 2nd. June. The only other records for the county for this moth during this century are from a Rothamsted trap at Old Warden for 1974-76. As an Alder feeder it should be fairly abundant in the county. Another moth seen again was (834) Dingy Shell – this is the only site in the county from which this moth has so far been recorded. Maulden Wood continued to produce good results, and the total number of species recorded now stand at 310. A.J. Martin recorded (159) Empress from the wood – this species seems to have had a good year judging from the records from various sites that I received for 1978. (R. Munday from Bedford stated that the larvae could be counted in hundreds in Ampthill Park). Other moths of interest from Maulden Wood included (311) Dotted Clay, (413) Small Wainscot, (484) Common Ear, (720) Small Scallop Wave, (811) Small Seraphim, (830) White Waved Carpet, (898) Barred Red, (914) September Thorn and (924) Common Bordered-Beauty.

During the year various people supplied me with records. D. Brunt recorded (82) Death's Head Hawk from Ickwell for 1977. It has been a number of years since this unmistakable moth was last recorded, so I would be interested to receive any additional records for this species. R.J. Woolnough recorded (559) Common Merveille-du-jour, from Ampthill Park, where it was found resting on a tree trunk. This species was also recorded from a Rothamsted trap at Cockayne Hatley during 1978, so it would appear that this moth is not now as rare as it was once thought. P. Smart from Bedford claims to have found the larvae of (265) Goat, near Poplar trees by the Embankment at Bedford. This is another species that has not been recorded for many years and any records would be most welcome. This site was where the species was last recorded in 1956. D.M. Jeffreys, R. Munday and A. Muir-Howie recorded (505) Old Lady, from three different sites in Bedford. T.J. Thomas also recorded it from a culvert in the Biggleswade – Sutton area. This is another species that was once considered

common, but has not been recorded recently.

T.S. Hollingworth, D.V. Manning, A. Muir-Howie and R. Munday have also been running traps during the year, with interesting results. D.V. Manning has now started to do a survey of the moths of Felmersham Nature Reserve as well as continuing his search for Microlepidoptera.

MICROLEPIDOPTERA

The following note has been prepared by D.V. Manning of Sharnbrook.

A record of the moth (1748) *Blastobasis decolorella* (Wollaston) at Sharnbrook, Bedford

I obtained a male of this species from my kitchen window on 29th. October 1978, and a female on the 8th. November. Seven eggs were laid on the 13th. November and these hatched on the 21st. November. The larvae were fed on sallow leaves, and were active until the 10th. December, but have not been seen since that date.

Both specimens were taken to the British Museum (Natural History) where Mr D. Carter confirmed the identification of this species by comparison with the collection in the Museum.

The distribution of this species is recorded in a paper by S.N.A. Jacobs (1948) as 'suburban London';'abroad Madeira' and the 'food plant' as probably 'vegetable rubbish'.

I am advised that this species is now rather more widespread, and in a letter from the Rev. D. Agassiz dated 26th. January 1979, "is quite common in many places around the coasts of Kent, Essex and Suffolk, but seldom seems to get established far inland".

ACKNOWLEDGEMENTS

My thanks goes to the following for records and assistance:

C.R. Boon, R. Bradshaw, D. Brunt, V.H. Chambers, W.J. Champkin, R. Collings, N. Dawson, R. Harris, T.S. Hollingworth, Miss L. Janes, N. Janes, D.M. Jeffreys, K. Lee, D.V. Manning, A.J. Martin, A. Muir-Howie, R. Munday, Mrs M.J. Pettit, D.G. and Mrs E.B. Rands, A.J. Rundle, P. Smart, T.J. Thomas, R.V.A. Wagstaff, Miss H.M. Webb, A. Woodgate, R.J. Woolnough.

Also to I.P. Woiwod and colleagues at Rothamsted; Alan Parker, Warden of the R.S.P.B. at Sandy; Mr. G.H. Tawell for permission to trap at Sewell; and to the Forestry Commission at Maulden Wood.

SPECIES LIST

The following list contains species of particular interest and some species that have not been recorded in the Journal before. It is hoped that the majority of the species recorded from Bedfordshire will appear in the Journal before the proposed Check List is published. The references used in the list are:

BARRETT, C.G. 1904. Lepidoptera. *Victoria County History of Bedfordshire* **1**, 78-88. (Abbreviated V.C.H.)

FOSTER, A.H. 1934. Butterflies and Moths. *The Natural History of the Hitching Region* (R.L. Hine, Ed.), Hitchin 120-140 (Abbreviated N.H.H.R.)

83 **Convolvulus Hawk** This large migratory moth has only been recorded from the county five times in the last 78 years. It was last recorded in mid-October 1970, from Caddington, by D. Green, B.D. Harding and A.J. Livett. Prior to this, D. Green found a dead specimen at Dunstable in 1946.

149 **Small Eggar** During June 1976, Nancy Dawson found the larvae of this species feeding on hawthorn at Lavendon on the Beds-Bucks border. Moths emerged from specimens collected during early April 1977. This is the first record for this moth since N.H.H.R.,

when it was regarded as being common. It is now considered to be nationally scarce, so I would urge members to look out for this species. As its food plant, hawthorn, is hardly uncommon, and the larvae live in communal webs, it should be conspicious and fairly easy to look for. More records are certainly needed.

238* **Six-belted Clearwing** V.H. Chambers obtained a specimen of this moth by 'sweeping' vegetation at Sewell railway cutting in July 1978. The only other previous record was from Souldrop Tunnel in July 1965 by W.J. Champkin. Probably fairly common, but either overlooked or mis-identified.

341* **Scarce Bordered Straw** Recorded by I.P. Woiwod from a light trap at St. Neots Road, Sandy on 28/8/74. First county record for this migratory moth.

358* **Dog's-tooth** Recorded from a Rothamsted trap at Cockayne Hatley in 1976. The only other record for this species comes from Stevington in August 1964 – recorded by W.J. Champkin.

432 **Smooth Rustic** Common everywhere.

433* **Vine's Rustic** Recorded from a Rothamsted trap at Old Warden in 1977 – first county record for this species. It is very probable that this moth has been confused with other very similar species in the past.

482* **Brown Crescent** From Rothamsted traps in 1974 at The Lodge, Sandy and Old Warden. The first record of this moth comes from Bromham in 1965 and 1966 recorded by R. Harris.

500* **Olive Kidney** At light, Stockgrove Park, Heath and Reach, 1975 and at light in Maulden Wood in 1976. Also from a Rothamsted trap at Old Warden in 1975. First county record from W.J. Champkin, Ampthill Firs, 1965.

624* **Slender Burnished Brass** St. Neots Road, Sandy, 19th. August 1974 – another migratory species recorded by I.P. Woiwod.

661 **Brown Fanfoot** Generally common.

710 **Small Dusty Wave** Derek Rands recorded this moth at light in Wychwood Avenue, Luton, during 1978. Also recorded by D.V. Manning from Sharnbrook and from Rothamsted traps at Sandy, Old Warden and Cockayne Hatley.

728* **Flame Carpet** This very attractive insect has only been recorded a few times from the county. From Rothamsted traps at The Lodge, Sandy and from Old Warden, my only record comes from Stockgrove Park, Heath and Reach in August 1975.

740 **Beautiful Carpet** Recorded from Maulden Wood in 1975 and from a Rothamsted trap at the Lodge, Sandy – more records are needed for this moth.

749 **Grass Rivulet** Recorded at light, Warden Hills, Luton, June 1976. Also from Rothamsted traps in 1973 at Sandy and Whipsnade. The first record for this moth since V.C.H. and N.H.H.R. comes from W.J. Champkin, August 1965, Ampthill Firs.

762 **Water Carpet** At light from a wood near Chute Farm, Whipsnade, May 1976. The only other records for this moth since V.C.H. are from Rothamsted traps at Sandy in 1969 and Whipsnade 1973. It appears to be an uncommon insect.

787 **Brown Scallop** At light, June 1976, Warden Hills, Luton. Also from Sharnbrook by D.V. Manning. These are the only records, so far, for this species, since V.C.H. As the larvae feed on Purging Buckthorn it is probably an under-recorded moth.

807 **Umber Waved Carpet** At light, Maulden Wood, 1976 and 1977. Has been taken at a Rothamsted trap at Old Warden and by D.V. Manning at Sharnbrook. First record since V.C.H. appears to be from W.J. Champkin at both Stevington and Putnoe Wood, Bedford in June 1965.

809 **Fern Carpet** Recorded from all four Rothamsted trap sites, but never seems to appear in very large numbers. As it is a rather drab moth in appearance, it probably gets overlooked.

860* **Wormwood Pug** At light, St. Augustine Avenue, Luton, 1976, also by T.S. Hollingworth at Stotfold in 1978. These appear to be the first county records for this moth.

872 **Narrow-winged Pug** At light, June 1978, The Lodge, Sandy. Also from Rothamsted traps at The Lodge, Sandy, 1969-75, Whipsnade 1972-73 and Cockayne Hatley 1978. T.S. Hollingworth also took it at light during 1978 at Stotfold. Once again the first record

since V.C.H. comes from W.J. Champkin for this species – Ampthill Firs and Sandy, August 1965.

877* **Brindled Pug** At light, Flitwick Moor and Maulden Woods, Spring 1977, also from Sharnbrook in 1975 by D.V. Manning. The first county record for this moth appears to be from a Rothamsted trap at The Lodge, Sandy in 1969.

897 **Common Waved Silver** Generally common.

Species marked * are new county records.

Numbers and English names as per *Checklist of the British Lepidoptera* by I.R.P. Heslop (1964 Library Edition).

ADDENDUM

365 **White-spot Coronet** was recorded in error, please delete reference to this species (*Bedf. Nat.* 30 : 22)

V.W. ARNOLD

BUGS (Hemiptera-Heteroptera)

Report of the Recorder

During 1978 I have been systematically mapping the county's bugs by 10km. squares, which has been rewarding in several ways and not least for the discovery of two species new to Britain. The first is *Placochilus seladonicus* (Fallen), this lives on the Field Scabious *Knautia arvensis* and was found near the old railway crossing SE of Leighton Buzzard and beside the railway between Dunstable and Luton. The second species is *Campylomma annulicornis* (Signoret), and its host plant is Osier, *Salix viminalis*. This bug was found first near Potton water tower, in stubble, and subsequently at both Langford gravel pits and beside the R. Ivel at Broom, on its host plant. Full details have been submitted for publication in the *Entomologist's Monthly Magazine.*

A total of ten new species have been added to the county list this year, these are listed below with certain other changes. The number of species for the county now stands at 301.

It was pleasing to find that the shield bug *Aelia acuminata* (L) is well established at Deepdale (Sandy) on the disused railway, a single specimen from Potton the previous year was the county's first. The bug *Anthocoris simulans* Reuter (*A. minki* Dohrn) was recorded some years ago by Leston, this year I have found it in three areas of the county. *Eremocoris podagricus* (Fab.) is a ground bug on the edge of its British range here so it is good to report that it is on Whipsnade Downs as well as Sharpenhoe cutting.

A special search was made for two bugs. The Rock Rose Bug *Tinicephalus hortulanus* was found in all the 10km. squares where its host plant is recorded and the Rhododendron species *Dicyphus rhododendri* Dolling – first described in 1972 and recorded then from Aspley Heath (and elsewhere in S. England) – was found in all areas where the host plant could be examined, some seven 10km. squares in all.

A negative feature of the year was extensive dredging of the R. Great Ouse at Kempston where *Aphelocheirus aestivalis* (Fab.) was well established, it is not known whether it will survive this trauma. The only other known site in the county is just upstream, at Bromham Mill, and this is also to be dredged shortly.

The 10km square mapping has proceeded to the level where 71 species are recorded for at least half the squares, however, 42 species are known only from single squares.

It is again a pleasure to record my thanks to all who provided bugs for identification and particularly the assistance of N.F. Janes, D.G. and Mrs E.B. Rands, and A.J. Rundle.

ADDITIONS TO THE BEDFORDSHIRE LIST

LYGAEIDAE

Plinthisus brevipennis (Latreille) – a male was sieved from grass and heather litter on 7th Jan. at Cooper's Hill, Ampthill.

BERYTINIDAE

Neides tipularis (L.) – found at two sites on 3rd Sept, a pair being swept from grass in a sandpit S. of Deepdale, Potton, and three from grasses bordering the disused railway below Sandy Warren.

MICROPHYSIDAE

Loriculus pselaphiformis Curtis – a female was beaten from Spruce on 23rd Aug. at Stockgrove Park, Heath and Reach.

CIMICIDAE

Orius vicinus Ribaut – using the key given by Woodroffe (*The Entomologist*, Sept-Oct. 1971) all the Bedfordshire "*Orius minutus*" I have dissected prove to be *O. vicinus*, this is consistent with Woodroffe's review of specimens in the British Museum. It follows that *O. minutus* is deleted and *O. vicinus* added to the Beds. list.

MIRIDAE

Psallus betuleti (Fallen) – found on Birch in various localities, but not at Maulden Wood.

Plagiognathus vitellinus (Sch.) – a female was swept from young Spruce on 22nd July at Odell Plantation, Odell, *Atractotomus magnicornis* was also present.

Campylomma annulicornis (Signoret) – a female swept from stubble near Potton water tower on 3rd Sept. appears to be the first British record. Further specimens were swept from Osier (the true host plant) at Langford gravel pits on 17th and 20th Sept. and Osier by R. Ivel at Broom on 20th Sept. A search at Wyboston on the latter date was unsuccessful Details have been submitted for publication in the *Entomologists' Monthly Magazine.*

Placochilus seladonicus (Fallen) – a female swept from tall grass etc. by the disused railway W. of Townland Fm., Leighton Buzzard, on 3rd Sept. 1977, appears to be the first British record. This year further specimens were swept from the disused railway, or shaken from the Field Scabious *Knautia arvensis*, at the same locality on 8th Sept. and from the quarry by the Luton-Dunstable railway on 16th Sept. Details have been submitted for publication as above.

Dicyphus constrictus (Boheman) – as this species was deleted in my last report it is pleasing to report that two females were swept from Red Campion at the edge of Bakers Wood in Stockgrove Park, Heath and Reach, on 23rd Aug.

Orthocephalus saltator (Hahn) – two females were swept from the sandy verge of the A6 road at Warren Wood, Clophill, on 12th July – this site is a Roadside Nature Reseve.

Acetropis gimmerthali (Flor) – a colony was discovered on 6th July in a sandy meadow above the R. Ouzel near Grange Mill, Leighton Buzzard; and on 25th July at Aspley Heath a small colony was found on a broad sandy ride near Fullers Earth Lodge.

B.S. NAU

LACEWING FLIES (Neuroptera)

Report of the Recorder

Only two records of this order for Bedfordshire are given in Killington's monograph (1936-7). I increased this number to 20 when living in the county (Verdcourt, 1947, 1948, 1949). Since I have recently undertaken to record this group again for the county it seemed useful to summarise all the records available to date. These are given in the order of the recent check-list published by P.C. Barnard (1978). When the names used in Killington's monograph (1936-7) and his check-list (1937) differ they are added in brackets. Collector's initials are abbreviated as follows B.R.L. – Brian Laurence, B.S.N. – Bernard Nau, D.G.R. – Derek Rands, E.B.R. – Beryl Rands, B.V. – Bernard Verdcourt. I wish to thank Dr P.C. Barnard of the British Museum (Nat. Hist.) for confirming many of the recent records.

Coniopteryx tineiformis Curtis. Deadmansey Wood, on ground debris, 19.6.48, B.V; Kidney Wood, Luton, frequent on oak and hazel, 18.7.48, B.V.

C. borealis Tjeder. Maulden Wood, 17.7.78, B.V., P.C. Barnard is almost certain the specimen is this species rather than *C. pygmaea* as I had named it. New county record.

Semidalis aleyrodiformis (Stephens). Maulden Wood, 17.7.78, B.V. Confirmed by P.C. Barnard. New county record.

Hemerobius humulinus L. Deadmansey Wood, oak-birch, 13.6.48, B.V., 20.5.78, B.S.N.; Fancott, 9.4.45, B.R.L.; Woodcock Wood, *Mercurialis* in mixed oak wood, 17.4.46, B.R.L.; Flitwick Moor, birch, 25.7.48, B.V.; Maulden Wood, L.D. UV light, 16.8.76, B.S.N., 17.7.78, B.V.; Kingswood, mixed oak, 16.5.48, B.V.; Wavendon Heath, birch-hawthorn, 30.5.48, B.V.

H. stigma Stephens. Ravensdell Wood, *Pinus*, 1.8.48, B.V.; Luton, 7.3.48, B.V.; Flitwick Plantation, pine and spruce, 27.7.48, B.V.; Clophill State Forest, pine and oak, 10-17.7.48, B.V.; Kingshoe Wood, Eversholt, 4.6.78, B.S.N.; Maulden Wood, pine, 12.11.77, E.B.R.; Sutton Fen, oak, 25.6.78, D.G.R.; Wavendon Heath, pine, 30.5.48, B.V.

H. nitidulus Fabr. Clophill State Forest, spruce, 10.7.48, B.V.; Maulden Woods, U.V. Light, 6.7.1976, B.S.N.; Wavendon Heath, pine, 30.5.1948, B.V.

H. micans Oliv. Deadmansey Wood, oak, 24.6.78, N. Janes; Fancott (var. *fuscinervis*) B.R.L.; Maulden Wood, 27.5.78, 17.7.78, B.V.; Oakley Hill Wood, mixed beech, 17.8.46, B.V.

H. lutescens Fabr. Luton, 6.10.45, 6.10.46, B.V., at light, 8, 11, and 12.9.46, B.V.; Maulden Wood, U.V. light, 16.8.76, B.S.N., 17.7.78, B.V.; Blackhafields Plantation, oak, 20.8.48, B.R.L. and B.V.; Wavendon Heath, *Crataegus*, 30.5.48, B.V.

Wesmaelius ravus (Withycombe) *(Kimminsia rava)*. Ravensdel Wood, pine, 1.8.48, B.V. (named by Fraser); Luton, 21.5.46. B.V. (specimen lacked basal cross vein between R and Rs; Killington named it *subnebulosa* but Fraser thought it was probably *rava*)

W. betulinus (Strom) *(Kimminsia betulina)*. Colmworth, 28.8.78, D.G.R. and E.B.R. New county record.

W. subnebulosus (Stephens) *(Kimminsia subnebulosa)*. Luton, at light, 10.10.45, 19, 21, and 23.8.46, 22.5.47 B.V.; Harlington, 7.48, B.R.L.; Clophill State Forest, oak, 17.7.48, B.V.; Maulden Woods, U.V. Light, 16.8.76, B.S.N. This is one of the commonest species in the Luton area frequently coming to light in early autumn between 8pm and 2am.

W. concinnus (Stephens). Clophill State Forest, pine, 3.7.48, B.V.; Aspley Heath, 2.7.77, B.V. My report of this as a new county record (1977) was erroneous since I had forgotten my previous record from Clophill.

Sympherobius pygmaeus (Rambur). Maulden Woods, 17.7.78, B.V. New county record. Confirmed by P.C. Barnard.

S. fuscescens (Wallengren). Aspley Heath, 2.7.77, B.V.

Chrysopa flava (Scop.). Deadmansey Wood, oak, 13.6.48, B.V.; Maulden Woods, 27.7.75, B.S.N., 17.7.78, B.V.; Flitwick Moor, light, 14.7.78, D.G.R. and E.B.R.; Colmworth, 28.8.78, D.G.R. and E.B.R.; Sewell, light, 22.9.78, D.G.R. and E.B.R.

C. vittata Wesmael. Fancott, Woodcock Wood, on trunks, 27.7.47, B.R.L. and B.V.; Kidney Wood, hornbeam, 18.7.48, B.V.; Sewell, light, 22.9.78, D.G.R. and E,B.R.

C. ciliata Wesmael. Deadmansey Wood, oak, 8.6.46, 13.6.48, B.V.; Kidney Wood, 18.7.48, B.V.; Ampthill Heath, birch 23.7.47, B.V. Confirmatory specimens are needed; recent specimens I thought to belong here have proved to be other species.

C. flavifrons Brauer. Clophill State Forest, pine, 10.7.48. B.V.; Maulden Woods, Wellhead, 6.7.76, B.S.N.

C. albolineata Killington. Deadmansey Wood, oak, 24.6.78, N. Janes; Luton, 30.7.45, 22.8.46, B.V.; Flitwick Plantation, elm, 25.7.48, B.V.; Maulden Woods, 23.8.76, B.S.N.; Flitwick Moor, light, 9.9.78, D.G.R. and E.B.R. This is one of the two species recorded for the county in Killington's monograph.

C. carnea Stephens. Deadmansey Wood, 20.5.78, B.S.N.; Luton, at light, 1942, 3.8.45, 30.3.46, 2.9.46, 12.9.46, B.V.; Fancott, Hipsey Spinney, oak and ash, 30.3.45, B.R.L., on *Mercurialis*, 14.4.46, B.R.L. and B.V.; Woodcock Wood, 13.7.45, 17.4.46, B.R.L.; Kidney Wood, 18.7.48, B.V.; Maulden Woods, 27.5.78, B.V., 19.7.75, 27.7.75, B.S.N. (one of these had the vein at the loop, not beyond); S. Ridgmont, female and male under bark of felled elm, 22.1.78, A. Rundle; W. of Holwell, Herts, [vc.30], 8.4.78, D.G.R. and E.B.R; Campton, 2.7.78, D.G.R. and E.B.R.; Colmworth, 28.8.78, D.G.R. and E.B.R.; Sewell, light, 22.9.78, D.G.R. and E.B.R. This species overwinters and often turns distinctly reddish. Probably the commonest lacewing.

C. septempunctata Wesmael. Luton, 23.7.45, 29.5.46, at light, 29.7.46, 4.8.46, 19.8.46, B.V.; Flitwick Moor, light, 9.9.78, D.G.R. and E.B.R.

C. ventralis ventralis Curtis. Deadmansey Wood, oak, 13.6.48, B.V.; Luton, at light, 3.8.45, B.V., Border Wood, Whipsnade, hornbeam, 1.8.48, B.V. and B.R.L.; Clophill, 17.7.48, B.V.; Wavendon Heath, 30.5.48, B.V., Maulden Woods, 19.7.75, B.S.N., U.V. light, Wellhead, 6.7.76, B.S.N.; Sutton Fen, oak, 25.6.78, D.G.R. and E.B.R.; Beadlow Manor oak, 2.7.78, D.G.R. and E.B.R.

C. ventralis prasina Burm. Kidney Wood, 18.7.48, B.V.; Flitwick Plantation, oak, 25.7.48, B.V.

C. commata Kis & Ujhelyi (a species fairly recently separated from *C. phyllochroma* Wesmael). Maulden Woods, U.V. light, wellhead, 6.7.76, B.S.N. Named by P.C. Barnard. New county record.

C. perla (L.). Studham Wood, mixed oak wood, 23.5.43, B.V.; Chiltern Green Wood, birch, 8.7.46, B.V.; Bramingham, B.V.; Kidney Wood, hazel, 18.7.46. B.V.; Fancott, Woodcock Wood, oak, 18.5.46, B.R.L.; Flitwick Marsh, willow-alder-oak, 27.7.47, B.V.; Clophill, broom, 13.6.48, B.V.; Maulden Woods, 8.6.75, B.S.N.; Kings Wood, oak, 6.46, B.V.; Elstow, nettles, 22.7.78, D.G.R. and E.B.R.

Nothochrysa fulviceps (Stephens) (*Nathanica fulviceps*). This rare species is recorded for Bedfordshire by Killington. With the kind aid of Dr B.M. Hobby and J.W. Ismay the specimen concerned has been found in the Dale collection in the Hope Dept, Oxford, and was collected by Dale in Clapham Park Wood near Bedford on 2 June 1820.

This list amounts to only 25 of the 57 species recorded for the British Isles and it is certain that several more species will be found in the county. The two Mecopterans *Panorpa germanica* L. and *P. communis* L. were common in the late 40's and probably still are. Records from Maulden Woods are as follows, *P. communis* 25.5.75, B.S.N. *P. germanica* 18.5.75, B.S.N., on hawthorn flowers, 31.5.75, B.S.N. The Megalopteran *Raphidia maculicollis* Stephens also occurs, Maulden Woods, 26.6.76, B.S.N.; Aspley Heath, 2.7.77, B.V.; *R. xanthostigma* Sch. is recorded from Bramingham Pond, B.R.L. *Sialis lutaria* L. used to be common in the county.

REFERENCES

(including some papers of value for identification not actually quoted in this note)

BARNARD, P.C. (1977). *Sialis nigripes* Pictet (Megaloptera, Sialidae) an Alder-fly new to Britain and Ireland. *Entomologist's Gazette* **28** : 269-274.

BARNARD, P.C. (1978). A check-list of the British Neuroptera with taxonomic notes. *Entomologist's Gazette* **29** : 165-176.
ELLIOTT, J.M. (1977). A key to the larvae and adults of British Freshwater Megaloptera and Neuroptera with notes on their life cycles and ecology. *Scient. Publs. Freshwat. biol. Ass.* No. **35**, 52pp. Ambleside.
FRASER, F.C. (1959). Mecoptera, Megaloptera, Neuroptera. *Handbooks Identif. Brit. Insects* **1**(12-13): 1-40.
HOBBY, B.M. & KILLINGTON, F.J. (1934). The feeding habits of British Mecoptera; with a synopsis of the British species. *Trans. Soc. Brit. Ent.* **1**: 39-49, pl.8,9.
KILLINGTON, F.J. (1936-7). *A Monograph of the British Neuroptera*, 2 vols. London (Ray Society).
KILLINGTON, F.J. (1937). The generic names of the British Neuroptera, with a check list of the British species. *Gen. Names Brit. Insects (part 4)*; 65-80. London (Royal Ent. Soc.).
KIMMINS, D.E. (1962). Keys to the British species of aquatic Megaloptera and Neuroptera with ecological notes. *Scient. Publs. Freshwat. biol. Ass.* No. 8, 23 pp. Ambleside.
VERDCOURT, B.(1947) Bedfordshire Neuroptera and allied orders. *J. Bedf. Nat. Hist. Soc.* **1**: 27-8.
VERDCOURT, B. (1948). Neuroptera Report. *Bedf. Nat.* **2**: 45
VERDCOURT, B. (1948). *Kimminsia rava* (With.) (Neur., Hemerobiidae) and other Neuroptera in Bedfordshire. *Ent. Mon. Mag.* **84**: 286.
VERDCOURT, B. (1949). Some venational abnormalities in the Neuroptera. *Ent. Mon. Mag.* **85**:90-1.
VERDCOURT, B. (1949) Neuroptera Report. *Bedf. Nat.* **3**:27.
VERDCOURT, B. (1977). A visit to Aspley Heath. *Bedf. Nat. Hist. Soc. Newsletter* '**28**' [**29**]: 1.

B. VERDCOURT

HOVERFLIES (Diptera – Syrphidae)

Report of the Recorder

The order Diptera (two-winged flies) in Britain comprises over 70 families and more than 5,000 species in all, yet there are hardly any Bedfordshire records of the group.

Hoverflies were chosen as a family worth studying, for several reasons: they are attractive and easily recognised in the field, they have fascinating behaviour and flying ability, and they are the subject of a National Recording Scheme to which we can contribute. In addition, a species list for an area of woodland near Fancott studied by B.R. Laurence in 1944-49 (published in *Ent. Mon. Mag.* 1945,**81**,125; 1950,**86**,351) provides a baseline for comparison.

Collecting in 1977-78 was at numerous sites throughout the county; those visited more frequently were Maulden Wood and latterly Flitwick Moor where several uncommon species were taken.

I am indebted to the following members for samples: V.W. Arnold, A.J. Martin, B.S. Nau, Mrs. E.B. Rands, D.G. Rands and A.J. Rundle, also to Dr M.C.D. Speight for confirming the identity of several specimens.

SPECIES LISTS

1. Species found in 1944-49, and in 1977 (54 species)

Bacha sp.
Chrysotoxum bicinctum
C. cautum
Dasysyrphus albostriatus
D. venustus
Epistrophe eligans
Episyrphus balteatus
Leucozona lucorum

Melangyna lasiopthalma
Melanostoma mellinum
M. scalare
Metasyrphus corollae
M. latifasciatus
M. luniger
Platycheirus albimanus
P. ambiguus
P. clypeatus
P. manicatus
P. peltatus
P. scutatus
Pyrophaena granditarsa
Scaeva pyrastri
Sphaerophoria scripta
Syrphus ribesii
Cheilosia albitarsis
C. cynocephala
C. illustrata
C. paganus
C. proxima
C. variabilis
C. vernalis
Eristalinus sepulchralis
Eristalis arbustorum
E. intricarius
E. pertinax
E. tenax
Eumerus strigatus
Ferdinandea cuprea
Helophilus pendulus
Lejogaster metallina
Merodon equestris
Myathropa florea
Neoascia podagrica
Orthoneura splendens
Parhelophilus versicolor
Pipizella varipes
Portevinia maculata
Rhingia campestris
Syritta pipiens
Volucella bombylans
V. pellucens
Xylota segnis
X. sylvarum
Xylotomina nemorum

2. Species found only in 1944-49 (27 species)

Chrysotoxum festivum
C. verralli
Epistrophe nitidicollis
Leucozona laternarius
Melangyna compositarium
M. umbellatarum
Metasyrphus nitens
Xanthocramma citrofasciata
Anasimyia lineata
Cheilosia antiqua
C. grossa
C. impressa
C. intonsa
Cheilosia praecox
C. soror
Chrysogaster chalybeata
C. hirtella
Criorhina ranunculi
Helophilus parallelus
Mallota cimbiciformis
Parhelophilus frutetorum
Pipiza austriaca
P. bimaculata
P. noctiluca
Volucella inflata
Xylota xanthocnema
Xylotomina lenta

3. Species found only in 1977 (18 species)

Dasysyrphus tricinctus
Leucozona glaucius
Melangyna cincta
Meliscaeva auricollis
M. cinctella
Pyrophaena rosarum
Syrphus vitripennis
Xanthocramma pedissequum
Anasimyia transfuga
Cheilosia vulpina
Chrysogaster solstitialis
Eristalis horticola
E. nemorum
Neoascia dispar
Orthoneura nobilis
Sphegina kimakowiczi
Tropidia scita
Xylota tarda

The total number of species is 99 out of the 241 on the Biological Record Centre's card (Aug. 1977).

N. JANES

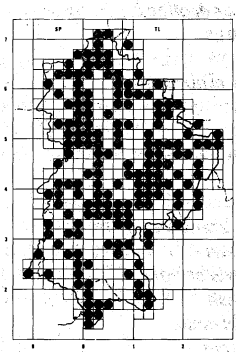
LADYBIRD BEETLES (Coleoptera – Coccinellidae)

Report of the Recorder

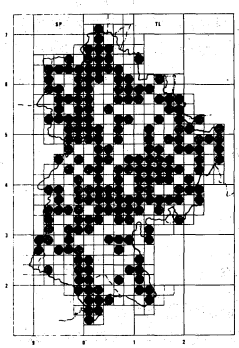
Records of ladybirds continue to arrive, albeit slowly and mostly as a result of the efforts of a few enthusiasts. The maps reproduced below show the extent of records for four of the commoner species. Illustrations of these may be found in *A Field Guide to the Insects of Britain and Northern Europe*, Michael Chinery (Collins 1973). It would be splendid if the gaps in these records could be filled in during 1979.

I am indebted to Mrs F.B.M. Davies, Miss L. Janes, D. Lawrence, B.S. Nau, D.G. and Mrs E.B. Rands and A.J. Rundle for their records.

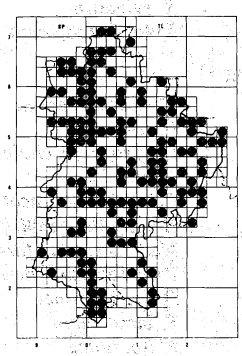
J. NILES



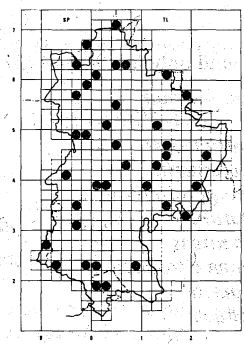
2-spot
Adalia bipunctata



7-spot
Coccinella 7-punctata



14-spot
Propylea 14-punctata



22-spot
Psyllobora (Thea) 22-punctata

ADDITIONS TO THE COUNTY LIST OF GROUND BEETLES (Coleoptera – Carabidae)

by B.S. Nau, Ph.D., 15 Park Hill, Toddington, Dunstable

Twenty-two years ago a British distribution chart was published by Moore (The British Carabidae, Part II: The county distribution of the species. 1957, *Ent. Gaz.* 8: 171-181) and in this there were 146 Carabidae listed for Bedfordshire, i.e. 42% of the species known from Britain. This is a surprisingly high total for a group which has received little attention in the county in recent years and is in large part due to the records of workers in the 19th Century.

During the last few years I have accumulated a number of records for Carabidae whilst engaged in other field-work. I find that these now comprise some 114 species of which 14 are additions to Moore's list. The county total is therefore now 160 species. Whilst these records have been forwarded to the national recording scheme it is appropriate here to put on record details of the new species. The nomenclature used is that of Kloet and Hincks (*A check list of British insects, Pt. 3: Coleoptera and Strepsiptera* 2nd ed., 1977, Roy. Ent. Soc. Lond.) and identifications were made with Lindroth's key (*Handbook for the identification of British insects IV, 2. Coleoptera: Carabidae* 1974, Roy. Ent. Soc. Lond.) My thanks are due to those whose names are given below for their assistance in collecting these records. The new species are as follows:

NEBRIINI

Leistus rufomarginatus (Duft.): several were found by E.B. Rands in leaf litter on the roadside verge adjoining Wavendon Heath woods (SP 938341) on 9th Aug. 1977. A single specimen was found by N.F. Janes in Warren Wood, Clophill (TL 085373) on 4th Jun. 1978.

Nebria brevicollis (Fab.): surprisingly, *N. salina* (F. and L.) was listed by Moore but not the present species, which is much more widespread and more numerous in Beds, being recorded from many areas.

NOTIOPHILINI

Notiophilus quadripunctatus Dejean: one was found in a ride in a wood NE of Palmers Wood, Old Warden (TL 132451) on 26th Sep. 1976.

BEMBIDIINI

Bembidion atrocoeruleum Stephens: two found on paths in Maulden Woods (TL 073385), one clay and one sandy-clay with sparse short grass, 26th Sep. 1974.

PTEROSTICHINI

Pterostichus angustatus (Duft.): one was found by D.G. Rands among wood chips and pine cones in Wavendon Heath woods (SP 920343) on 3rd Dec. 1978.

P. longicollis (Duft.): one in flood litter near the R. Great Ouse at Tempsford (TL 162539) on 5th Mar. 1977 and A.J. Rundle found one on 2nd Apr. 1978 in the same parish (TL 182523) in a roadside ditch; a third was found at Millbrook (TL 002383) under a plastic sack by the golf course on 23rd. April 1978.

P. oblongopunctatus (Fab.): one found under stone beside a green lane at Souldrop (SP 975624) on 3rd Apr. 1977, another on waste ground at Sharnbrook (TL 004606) on 22nd May 1977.

AMARINI

Amara montivaga Sturm: a single specimen under a log on a stream bank at Ravensden (TL 067547) on 30th Mar. 1974 and one in leaf litter in Maulden Wood (TL 070390) on 7th Apr. 1974, another likewise on 7th May 1977.

HARPALINI

Harpalus puncticeps (Stephens): one found at Sewell Quarry (SP 992228) by E.B. Rands on 3rd Sep. 1977; one from the disused railway near the Billington road at Leighton Buzzard (SP 928238) 15th Sep. 1977.

Trichocellus placidus (Gyll.): one at Begwary marsh by Wyboston gravel-pits (TL 167564) on 26th Feb. 1977; three at the edge of Worleys Wood, Knotting (TL 014641) on 29th

May 1977; and three from marsh south of the river at Oakley Bridge (TL 007528) on 18th March 1979.

Bradycellus ruficollis (Stephens): this heather species has been found under the host plant at the following sites: Sandy Warren (TL 194478) on 28th Jul. 1978 and 25th Mar. 1979; Coopers Hill, Ampthill (TL 029377) on 7th Jan. 1978; and the Shire Oak heath at Heath and Reach (SP 918284) on 9th Dec. 1978. It has not been found yet in possible sites at Wavendon Heath and Maulden Woods, although heather has been searched at both places. There are no other likely sites.

B. sharpi Joy: this was reported from Maulden Wood (TL 070390) in Dec. 1975 by a visiting Yorkshire naturalist, A. Norris.

Stenolophus mixtus (Herbst): one found under a log at the edge of a marsh by the R. Ouzel east of Grange Mill, Heath and Reach (SP 132273) on 5th Feb. 1978; two males were found in rough grass at the edge of a disused gravel working at Bromham (TL 028518) on 11th Mar. 1978.

LEBIINI

Metabletus obscuroguttatus (Duft.): as so often, a long name belies a small animal. Recorded from acid grass heath on the Greensand at Maulden Woods (TL 070386), one on 1st May 1977 and two on 5th March 1978.

WOODLICE, CENTIPEDES AND MILLIPEDES (Isopoda, Chilopoda and Diplopoda)

Report of the Recorder

There was a much increased level of recording during 1978 with the result that the number of tetrad records in each group was once again about doubled. Records have now been obtained from all but five of the 383 Bedfordshire tetrads. One woodlouse, one centipede and one millipede are recorded for the first time from the vice-county 30, Bedford.

WOODLICE AND WATER LICE (Isopoda)

The addition of *Porcellio laevis* to the vice-county list brings the total up to 20. It was found in an old farmyard manure heap near Cople on 1st May. This species is rare in the country as a whole and generally occurs in synanthropic (i.e. man-made) habitats. Its discovery in two hay barns in Hampshire in 1978 indicates that this habitat merits further investigation during the coming year. The 'rare' woodlouse *Trichoniscoides albidus* continues to be found when the right habitat is searched and is now known from 45 tetrads. The level of recording in the county is now so good that there are only three species at all likely to be added to the list. These are: *Asellus cavaticus*, a rarely found subterranean water louse occurring in southern England and South Wales; *Ligidium hypnorum*, which occurs only in damp habitats in South-East England and may occur although at the edge of its range; and *Porcellio spinicornis*, which has a generally scattered distribution and is likely to be found in limestone quarries and calcareous wall rubble.

1,041 tetrad records were obtained during the year, bringing the total to 2,123 (see Figure 1). On a larger scale this represents 252 10 km. records (see Table 1). Two previously recorded species have still to be refound.

CENTIPEDES (Chilopoda)

The finding of a juvenile *Geophilus electricus* near Everton on 2nd April brings the

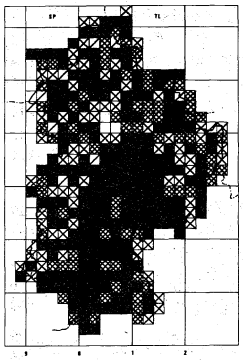


FIGURE 1
ISOPOD SUMMARY MAP

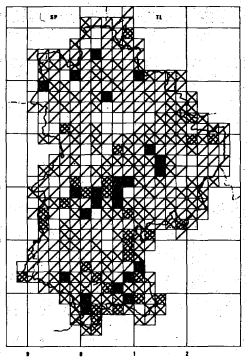


FIGURE 2
CHILOPOD SUMMARY MAP

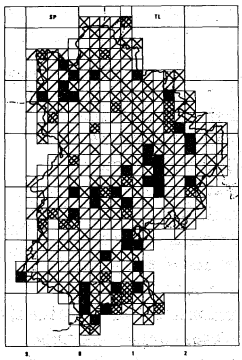


FIGURE 3
DIPLOPOD SUMMARY MAP

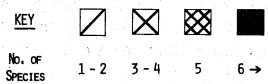


TABLE 1: DISTRIBUTION OF ISOPODS BY 10 KM. SQUARES

Grid Square	TL 07	SP 96	TL 06	TL 16	SP 95	TL 05	TL 15	TL 25	SP 94	TL 04	TL 14	TL 24	SP 93	TL 03	TL 13	TL 23	SP 82	SP 92	TL 02	TL 12	SP 91	TL 01	TL 11	No. of tetrad records
Asellus aquaticus	.	.	.	x	x	x	x	.	.	x	x	x	x	x	x	x	.	x	x	.	.	x	x	38
Asellus meridianus	.	.	.	.	x	x	x	.	.	x	x	.	x	.	.	.	.	.	.	.	.	.	.	11
Platyarthrus hoffmannseggi	.	x	x	.	x	x	x	.	x	x	x	x	x	x	x	.	.	x	x	.	x	x	x	70
Oniscus asellus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	358
Philoscia muscorum	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	354
Cylisticus convexus	.	.	.	.	.	.	x	.	x	x	x	.	.	.	.	x	.	.	x	.	.	.	.	11
Porcellio scaber	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	332
Porcellio dilatatus	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	o	.	.	.	.	1
*Porcellio laevis	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	1
Metoponorthus pruinosus	x	.	x	.	x	x	x	x	x	x	x	x	.	x	x	x	.	x	x	x	.	x	.	31
Trachelipus rathkei	o	.	.	.	.	.	x	.	.	.	.	.	.	.	x	.	.	x	.	.	.	.	.	3
Armadillidium vulgare	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	322
Armadillidium nasatum	.	.	.	.	.	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	–
Trichoniscus pusillus agg.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	318
Trichoniscus pygmaeus	x	x	x	x	x	x	x	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	127
Trichoniscoides albidus	x	.	x	.	x	x	x	.	x	x	x	x	x	x	x	.	.	.	x	.	.	x	.	45
Trichoniscoides sarsi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	o	.	.	.	.	–
Androniscus dentiger	.	x	x	o	x	x	.	.	x	x	x	x	.	x	x	.	.	x	x	.	x	x	.	44
Haplophthalmus danicus	.	x	x	x	x	x	x	.	x	x	x	.	x	x	x	.	.	x	x	.	.	x	.	49
Haplophthalmus mengei	x	.	.	x	.	.	.	.	.	x	x	x	.	.	.	.	.	.	.	x	.	.	.	8
Totals:	9	9	11	9	13	13	14	6	12	15	17	12	11	12	13	9	6	12	13	8	8	12	8	2,123

* Species new to the vice-county in 1978.

o Additional records given in Harding (1976) and not refound. These are not necessarily Bedfordshire records and are excluded from the totals given above.

TABLE 2: DISTRIBUTION OF CHILOPODS BY 10 KM. SQUARES

Grid Square	TL 07	SP 96	TL 06	TL 16	SP 95	TL 05	TL 15	TL 25	SP 94	TL 04	TL 14	TL 24	SP 93	TL 03	TL 13	TL 23	SP 82	SP 92	TL 02	TL 12	SP 91	TL 01	TL 11	No. of tetrad records
Haplophilus subterraneus	.	x	.	.	.	.	.	.	.	x	x	.	x	x	x	.	.	x	x	x	x	x	.	16
Schendyla nemorensis	.	x	.	.	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	x	.	x	x	70
Chaetechelyne montana	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	x	.	.	.	.	3
Strigamia crassipes	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	x	.	x	.	.	.	x	.	6
Strigamia acuminata	x	x	x	x	x	x	.	x	x	.	.	.	.	x	.	.	.	x	.	.	.	.	.	17
Geophilus carpophagus	.	x	x	.	x	.	.	.	.	.	x	x	x	x	x	.	.	.	.	.	.	.	.	15
*Geophilus electricus	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Geophilus insculptus	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	x	.	6
Necrophloeophagus longicornis	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	93
Brachygeophilus truncorum	.	.	x	.	x	x	.	.	.	x	x	x	x	x	.	.	.	x	x	x	.	x	x	29
Cryptops hortensis	.	x	x	.	x	x	x	.	x	x	x	.	x	x	.	x	.	x	x	.	.	x	.	23
Lithobius variegatus	.	x	x	x	x	x	.	x	x	x	x	x	x	x	.	.	.	x	.	x	x	x	x	43
Lithobius forficatus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	260
Lithobius melanops	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	74
Lithobius borealis (=lapidicola)	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	1
Lithobius macilentus (=aulacopus)	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	1
Lithobius muticus	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	x	.	.	.	.	.	3
Lithobius calcaratus	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	.	1
Lithobius crassipes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	x	.	x	x	95
Lithobius microps	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	223
Lamyctes fulvicornis	.	.	.	.	x	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	x	3
Totals:	5	11	11	7	13	10	8	8	9	10	13	9	12	14	9	8	4	11	13	9	6	12	9	982

*** Species new to the vice-county in 1978.**

TABLE 3: DISTRIBUTION OF DIPLOPODS BY 10 KM. SQUARES

Grid Square	TL 07	SP 96	TL 06	TL 16	SP 95	TL 05	TL 15	TL 25	SP 94	TL 04	TL 14	TL 24	SP 93	TL 03	TL 13	TL 23	SP 82	SP 92	TL 02	TL 12	SP 91	TL 01	TL 11	No. of tetrad records
Polyxenus lagurus	x	.	x	.	.	.	.	.	.	x	.	.	x	.	.	.	x	.	x	.	.	.	11
Glomeris marginata	.	x	x	x	x	x	x	x	x	x	x	x	x	x	.	.	.	x	x	x	x	x	95
Geoglomeris jurassica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	x	.	6
Chordeuma proximum	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	1
Polymicrodon polydesmoides	.	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	60
Polydesmus angustus	x	x	x	.	x	x	x	.	x	x	x	x	x	x	x	x	x	x	x	.	x	x	73
Polydesmus coriaceus	.	.	x	x	x	.	.	.	x	x	.	.	x	.	.	.	x	x	.	.	.	.	9
Polydesmus denticulatus	.	x	x	.	x	.	x	.	x	x	.	x	x	x	.	.	x	x	x	.	.	.	20
Polydesmus gallicus	.	x	x	x	x	x	x	x	x	x	.	x	x	x	x	.	.	x	.	.	x	.	63
Brachydesmus superus	x	x	x	x	x	x	x	.	x	x	x	x	x	x	x	x	.	x	x	.	.	x	x	129
Macrosternodesmus palicola	.	.	.	.	x	.	.	.	.	x	x	.	.	x	x	.	.	x	x	.	.	x	.	18
Ophiodesmus albonanus	.	.	.	.	x	.	x	.	x	.	.	.	.	x	x	.	.	x	x	.	.	.	.	12
Blaniulus guttulatus	.	x	.	.	x	.	x	.	.	x	x	x	.	x	x	x	.	x	x	x	.	x	x	30
Archiboreoiulus pallidus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	1
Boreoiulus tenuis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	4
Choneiulus palmatus	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	x	.	.	.	.	.	2
Isobates varicornis	.	.	.	.	x	.	.	.	.	.	.	.	x	x	.	.	.	.	x	.	x	.	5
Proteroiulus fuscus	x	.	x	.	x	x	x	.	.	x	x	x	x	x	.	x	x	x	x	.	x	.	26
Iulus scandinavius	x	x	.	.	.	.	.	.	x	.	.	.	x	x	.	x	.	.	.	.	.	x	10
Ophyiulus pilosus	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	x	.	.	x	52
*Cylindroiulus nitidus	.	.	.	.	.	.	.	.	.	x	.	.	.	.	.	.	.	.	.	.	.	.	1
Cylindroiulus teutonicus	.	.	.	x	.	x	.	.	x	x	x	x	x	x	x	.	.	x	.	.	x	x	28
Cylindroiulus punctatus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	134
Cylindroiulus britannicus	.	.	.	.	.	x	.	.	.	x	.	x	x	.	x	.	.	.	.	.	x	.	7
Cylindroiulus parisiorum	.	.	.	.	.	.	.	.	.	.	.	x	x	.	.	.	x	.	.	.	.	.	3
Brachyiulus pusillus	.	x	.	.	x	x	x	.	.	x	.	.	.	.	.	.	x	.	.	.	.	.	6
Ommatoiulus sabulosus	.	.	x	.	.	x	x	.	.	x	x	x	x	x	x	x	.	x	.	.	.	.	17
Tachypodoiulus niger	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	.	x	x	199
Totals:	7	11	12	8	17	11	16	6	8	17	18	12	14	22	17	9	7	15	19	11	2	16	10	1,022

* Species new to the vice-county in 1978.

number of centipedes to 21. This species is generally widespread, but local. Two name changes have been notified by A.D. Barber (pers. comm.), *Lithobius borealis* for *L. lapidicola* and *L. macilentus* for *L. aulacopus*, and these have been incorporated in Table 2.

479 tetrad records were obtained bringing the total to 982 (see Figure 2). 34 new 10 km. records brings the total to 215 (see Table 2).

MILLIPEDES (Diplopoda)

The new millipede, *Cylindroiulus nitidus*, brings the total to 28. Specimens of it were found by the roadside near Southill on 2nd July. It is another widespread local species.

539 tetrad records were obtained, bringing the total to 1,022 (see Figure 3). The addition of 84 new 10 km. records brings the total to 285 (see Table 3). The record of *Ophiodesmus albonanus* from TL01 was in error and is now deleted.

ACKNOWLEDGEMENTS

Especial thanks are again due to D.G. Rands and Mrs E.B. Rands for many records, for conveying me around the county and for accommodation during my many visits during the year. Records and specimens were also received from V.W. Arnold, Mrs C.M. Dony, T.S. Hollingworth, N.F. Janes, Miss L. Janes and B.S. Nau. The following gave permission for myself and Mrs Rands to study the fauna of their gardens: Mrs Baldwin, Mrs Chapman, Dr N. Dawson, Mrs Grayson, Mrs Mills, Mr W. Nourish, Mrs Toomer, Mr and Mrs Turvey and Mr and Mrs Warner. Mr A.D. Barber notified me of the two centipede name changes. Thank you all for your help.

REFERENCES

HARDING, P.T. 1976 *Provisional Atlas of the Crustacea of the British Isles. Part 1. Isopoda: Oniscoidea (Woodlice).* Abbots Ripton (Natural Environment Research Council), 48 pp.

A.J. RUNDLE

MOSSES AND LIVERWORTS (Bryophyta)

Report of the Recorder

The mosses and liverworts in the county have now almost fully recovered from the droughts of a couple of years ago, which most of us seem already to have forgotten. Field work in the last twelve months has thus been somewhat easier than in many recent seasons and records have therefore increased considerably, although there have been no new county records. Unfortunately my appeal for support from other members to send in records has met with very little response.

The most important bryological event of the year has undoubtedly been the publication of *The Moss Flora of Britain and Ireland*, A.J. Smith, (Cambridge Univ. Press £27.50). This is the first complete survey of the group since 1923 and long overdue but well worth waiting for. There are very many changes in the nomenclature of the group and also in the interpretation of the species limits in certain cases, such that much previous recording in the county will have to be checked. 692 species are described for Britain in the present work as compared to only 625 (in present day terms) in the previous volume. It is hoped next year to publish a check list of the Bedfordshire species in this journal.

ALAN R. OUTEN

PUCCINELLIA DISTANS (REFLEXED SALTMARSH-GRASS) IN BEDFORDSHIRE

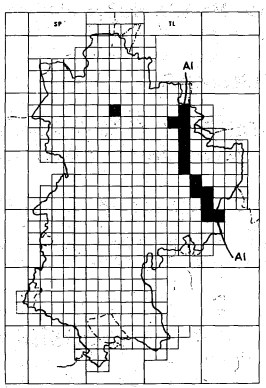
by Christina M. Dony, 9 Stanton Road, Luton, LU4 0BH.

Puccinellia distans is a maritime grass, common in salt marshes around the southern and eastern coasts of England, with a restricted distribution on the coasts of Ireland, Scotland and Wales. It has long been known as an occasional inland species in Britain but apparently not usually established away from the coast.

We (JGD and CMD) first observed it on the A1 in Bedfordshire on the verge of a lay-by north of Tempsford in July 1974. It was abundant for a length of about 200m and confined to the first metre of the verge. It was also seen in the same year on the verge of the A428, 400m. west of the A1 from the Black Cat roundabout and a single plant had earlier been observed at Thurleigh in 1973 where waste road material had been dumped. It has subsequently been reported (with other maritime species) on five major roads in Northumberland, including the A1, up to 13km. from the coast (Matthews and Davison, 1976). There are also reports of its occurrence on roadside verges in Derbyshire and Kent.

On 6th August 1978 we examined the whole length of the A1 in Bedfordshire, finding *P. distans* on the verges of both carriageways at frequent intervals, covering a distance of approximately 20km. It was the dominant grass on many stretches but always within a metre of the road surface. No other species of presumed maritime origin were observed.

We are informed by Mr R. Bradshaw of the Beds. C.C. Highways Department that a mixture of rock salt and sand was used as a de-icer on the A1 in Bedfordshire for the first time in 1950. From 1965 onwards salt only has been used. The salt was obtained mainly from Cheshire but following the drought in the summer of 1976, which affected British supplies, some Mediterranean salt was used on the most northerly sections. *P. distans* was only observed on the older sections of the road where salt had been used over a period of 28 years. It was apparently absent from the St. Neots by-pass, which was opened in 1970, and also from the old road through the town where the traffic flow has greatly diminished since 1970 and, perhaps, salting is not so intense.



Reflexed Saltmarsh-grass (*Puccinellia distans*) in Bedfordshire

DISCUSSION

Puccinellia distans can apparently be a successful coloniser of roadside verges inland where regular de-icing with salt occurs in winter. The A1 in Bedfordshire is approximately 100km. from the nearest coastline so it would appear to have travelled inland at the rate of about 4km per annum. It has been suggested (Matthews and Davison 1976) that *P. distans* and other maritime species could spread on trunk roads on the tyres of motor vehicles and no doubt heavy traffic would hasten such colonisation. It is also possible that it could be introduced as a rare constituent of grass seed mixture where new or disturbed parts of verges have been re-seeded, but notwithstanding the means of its introduction it would seem that a long period of continuous salting is necessary before a suitable habitat is provided.

ACKNOWLEDGEMENTS

I would like to thank Mr R. Bradshaw for information on the use of salt on trunk roads in Bedfordshire and Dr C.E. Hubbard for confirmation of identification and notes on the use of grass seed on roadside verges.

REFERENCE

MATTHEWS, P. and DAVISON, A.W. 1976. Martime species on roadside verges. *Watsonia* **11**, 146-147.

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

This has been another year of active recording in which 918 new tetrad records were made, compared with 1,280 in 1977 and 851 in 1976, the year the Plant Atlas was published. The 1978 additions included 60 new ten-kilometre grid square records, four being confirmations of earlier records. The most interesting record was of Flea Sedge (*Carex pulicaris*) by Dr. J. Mason at Knocking Hoe National Nature Reserve. A few weeks later my wife and I found the same species on a chalk bank on Sundon Hill. Flea Sedge was known with other species, including Butterwort and Grass-of-Parnassus, that normally grow in bogs or marshes, in a few sites on the Bedfordshire chalk downland, but all had long been feared to be extinct in the county. Other records of note include Musk Orchid (*Herminium monorchis*) by Mr S. Oakes-Monger, also on Sundon Hill and not far from where it was first found in the county in 1911, but not seen there for many years. Mrs Paynter showed us Green-winged Orchid (*Orchis morio*) still surviving in an old pasture at Yelden and Mr R.K. Saxton similarly drew our attention to Early Marsh-orchid (*Dactylorhiza incarnata*) in a small riverside marsh at Felmersham. Marsh Sowthistle (*Sonchus palustris*) was reported by Mr J.L. Parsons from Odell Plantation, thus making it appear that this fenland species, already known for some years at Dean and Shelton, may be extending its range in the north of the county. Mr I.P. Woiwod reported that Spiked Star-of-Bethlehem (*Ornithogalum pyrenaicum*) is still at Cockayne Hatley where T. Laflin found it 30 years ago. This is some distance from its main well-known distribution in the county and close to Cambridgeshire in which county it has not been recorded since 1774. Wild Daffodil *(Narcissus pseudonarcissus)* was reported by Mr C.R. Boon from Green End, Maulden, where it is apparently a survival of the colony recorded here in the early years of the present century by M.L. Berrill, a keen woman botanist who lived at Maulden. We were pleased to find Common Milkwort (*Polygala vulgaris*), previously observed only on the Chalk and Oolite, in an old pasture at Haynes and we also found Bay Willow (*Salix pentandra*), known previously in the county only on Leagrave Common, in a wet depression outside the wall of Woburn Park. During the year we were shown by a member of the Society a fragment of a waterweed collected in the pond in Russell Park, Bedford. Additional material collected by us has shown this to be *Elodea nuttallii* which is spreading in British waterways in much the same manner as Canadian Waterweed (*Elodea canadensis*) in the 19th century. Three wool aliens were added to the Bedfordshire list in *Eremopyrum bonaeparti* var. *bonaepartis* and *Schismus arabicus* (Gramineae); and *Hedysarum glomeratum* (Leguminosae).

J.G. DONY

LICHENS

Report of the Recorder

Not all lichen species are equally sensitive to sulphur dioxide pollution. As a general rule epiphytic or tree inhabiting communities are the most sensitive so trees growing in urban areas support few lichens except pollution tolerant species such as *Lecanora conizaeoides* and *Lepraria incana*. However, these few epiphytes can often be used in the monitoring of sulphur dioxide pollution.

By far the most important habitats for lichens in urban environments are walls or stones. Lichen assemblages may be found on siliceous (acid) or calcareous (alkaline) stone, those on calcareous stone showing more resistance to sulphur dioxide pollution. Many man-made materials such as concrete and asbestos are alkaline thus exerting a neutralizing or buffering effect on sulphurous compounds. This enables foliose lichens such as *Xanthoria* spp. and *Parmelia* spp. to grow and survive in towns and cities.

Data from a total of 160 tetrads in the county have been investigated and the effects of sulphur dioxide pollution can be clearly demonstrated. The table below shows that the abundance of a lichen species can be directly related to its sulphur dioxide (SO_2) tolerance.

Species	Maximum SO_2 tolerance $\mu g/m^3$	Presence in tetrads studied %
Lecanora conizaeoides	>170	100
Xanthoria parietina	125	76
Parmelia saxatilis	100	23
Evernia prunastri	50-60	8
Usnea subfloridana	40	3

The distribution of *L. conizaeoides* is unique amongst the lichens recorded as it occurs at all of the sites investigated. This crustose species occurs on trees and walls and can be found growing in urban and industrial areas all over Europe, yet it is often rare in rural areas. It not only resists the damaging effects of the sulphur dioxide but also benefits from the lack of competition from non-tolerant species. The reason for its tolerance is thought to be due to the large amounts of fumarprotocetraric acid produced in the thallus which makes this lichen water repellant. Thus the sulphur dioxide in solution is not taken up and so does not damage the lichen thallus.

This lichen has an interesting history. From old records it appears that it was rare or absent in Britain until 1860. However, by 1870 it was recorded as being widespread especially in and around cities. This rapid spread coincides with the rise of air pollution during the Industrial Revolution.

At the other end of the scale are the disappearing pollution sensitive lichens that were once common in Bedfordshire. These lichens are badly affected by sulphur dioxide pollution in many areas of the county and now only survive in their former luxuriance and fertility in relatively unpolluted areas. *U. subfloridana* is the most pollution tolerant of the very sensitive *Usnea* genera and a few specimens have been found in the county, although they are often stunted and usually confined to sheltered woodland areas.

I would like to thank the following members who have kindly sent me records and specimens throughout the year, especially T.S. Hollingworth, B.S. Nau, R.A. Porter, Mrs E.B. Rands and M.C. Williams.

FRANCES B.M. DAVIES

THE FUNGUS FORAY

The fungus foray held at New Wavendon Heath on October 15th was led by Dr D.A. Reid. About 40 people attended despite dull overcast conditions which finally gave way to rain as the party reached the cars at the end of the day.

Relatively few agaric fruitbodies were to be seen, but nevertheless a surprisingly large number of species was collected; several of these being either new to the county or interesting in various ways. The reason for the large total was due to the diversity of the region for although mainly coniferous woodland, there were areas of deciduous trees including beech and also sphagnum bog.

The genus *Hypholoma* was particularly well represented and a number of unfamiliar species were seen. *H. capnoides* is easily confused with the common "Sulphur Tuft" (*H. fasciculare*) from which it differs in being restricted to coniferous stumps, in its mild taste and in having violet-grey instead of olive gills. Unlike the previous species which grows in caespitose clusters at the base of stumps the following occur as discrete, although often gregarious fruitbodies with rather slender stalks. *H. polytrichi* occurs amongst moss in damp acid situations. It has an hygrophanous, campanulate or convex cap, 1-1.5 cm across, which is yellowish-buff or dirty brownish-ochre becoming more yellowish toward the non-striate margin; the stipe up to 6 cm tall, and 2 mm wide, is sulphur-yellow above, but elsewhere washed with reddish-brown. Microscopically this fungus, in common with all other members of the genus has conspicuous chrysocystidia which are broadly clavate with a sharp pointed apex; the spores are smooth, elliptic with a germ-pore, and measure 7-9 (-10) x 4-6 μm. *H. uda* is similar and grows in the same kind of habitat, but is at once distinguished by its enormous, minutely ornamented, fusiform spores, 13-15 x 6-7 μm. Liable to confusion with this species is *Pholiota myosotis* which is often placed in *Hypholoma*, although assigned to *Pholiota* in the British Check List on account of the lack of a violet tinge to the spore-print. This agaric grows in *Sphagnum* and is usually taller with the stem up to 10 cm high; the cap unlike the previous species usually has an olive tint, futher the spores while of similar shape are smooth with a range of 14-21 x 7-10 μm. *H. elongatum* also occurs in *Sphagnum*, but as on this occasion may also grow on bare peat. It has a small, slightly convex, pale honey-yellow cap about 1 cm diam., and a slender elongated pale stem; the spores measure 9.5-11.5 x 6.0-6.5 μm. Another species present in troupes under the conifers was *H. marginatum* recognised by its conico-campanulate, fawn to ochraceous coloured cap, 2-4 cm diam., and its tough silvery stipe which bruises brown on handling. This fungus has elliptic spores 7.0-9.5 x 4.0-5.0 μm. *H. capnoides*, *H. polytrichi* and *H. uda* are all new to the county.

Two species of *Inocybe* are also new county records and both belong to that section of the genus characterised by species with knobbly spores; further, both species have fibrillose stems. *I. acuta* has fusiform, thick-walled, apically encrusted cystidia and an acutely umbonate, brown fibrillose-rimose cap; *I. longicystis* has thin-walled cylindric cystidia and a brown fibrillose cap covered with squarrose scales.

Boletus pruinatus, while new to the county, is little more than a form of *B. chrysenteron* with a very dark chestnut or purplish-brown cap which does not crack. *Coprinus acuminatus* is a split from *C. atramentarius* differing in somewhat smaller fruitbodies which may occur singly or in tufts, and in having slightly narrower spores (4-5 μm wide). *Cortinarius cinnamomeo-lutescens* is a segregate from *C. cinnamomeus* and *Galerina hypnorum* f. *calyptrospora* is distinguished from the typical form in having spores in which the outer layer separates to form an irregular sheath.

Easily mistaken for a small *Mycena* is *Nolanea minuta* var. *polymorpha*, but the angular pink spores are a ready means of distinction under the microscope. It has a pale brown cap with a darker brown centre drying out pallid with a silky sheen, and distant pinkish gills which are adnexed with a decurrent tooth.

The most important find of the day was *Tomentella cyanea* with very thin arachnoid, blue resupinate corticioid fruitbodies, which produce blue warted and lobed spores. It was originally described from a specimen collected in Kew Gardens in 1911 on a rotten coniferous

log amongst rubbish put out for burning. Not surprisingly it was thought to be an exotic fungus, but the rediscovery of this species in a natural habitat shows this suggestion to have been erroneous. It is only the second known collection.

Other non-gill-bearing fungi new to the county or which confirm old existing records are *Coriolus versicolor var. azurea* – a blue-black variant of the common species; *Coniophora arida* which forms thin brown adnate resupinate fruitbodies with large brown elliptic spores; and *Xenasma pseudotsugae* which produces thin, waxy, adnate, greyish-white resupinate fructifications with pleurobasidia bearing hyaline, elliptic spores 6.5-7.0 x 3.0-3.5 μm.

Of the Ascomycetes *Gorgoniceps aridula* is of particular interest, for apart from being new to the county, it is a rare fungus in Britain, forming minute grey-brown cup-shaped apothecia on coniferous wood. The ascospores are curved, hyaline, multiseptate and measure 50.0-88.0 x 2.0-2.5 μm.

The total number of species collected was 132 of which 13 are new to the county and one confirms an old record.

*Amanita citrina; A. fulva; A. muscaria; A. rubescens; Armillaria mellea; Baeospora myosura; Boletus badius; B. bovinus; B. chrysenteron; B. piperatus; *B. pruinatus; B. subtomentosus; B. testaceo-scaber; Clitocybe clavipes; C. nebularis; C. vibecina; C. suaveolens; Collybia cirrhata; C. erythropus; C. maculata; C. peronata; *Coprinus acuminatus; C. lagopus; *Cortinarius cinnamomeo-lutescens; Crepidotus variabilis; Cystoderma amianthina; Deconica crobula; *Galerina hypnorum* f. *calyptrospora; G. mniophila; Gymnopilus hybridus; G. penetrans; Hebeloma crustuliniforme; Hygrophoropsis aurantiaca; *Hypholoma capnoides; H. elongatum.; H. marginatum; *H. polytrichi; *H. uda; *Inocybe actua; I. eutheles; I. lanuginella; *I. longicystis; I. napipes; Laccaria amethystea; L. laccata; Lactarius glyciosmus; L. hepaticus; L. quietus; L. rufus; L. tabidus; L. turpis; L. vietus; Lyophyllum decastes; Marasmius androsaceus; Melanoleuca cognata; M. melaleuca; Mycena fibula; M. galericulata; M. galopus; M. galopus* v *candida; M. leucogala; M. sanguinolenta; M. sepia; *Nolanea minuta* var. *polymorpha; Panaeolus papillionaceus; Paxillus involutus; Pholiota carbonaria; P. myosotis; P. squarrosa; Pleurotus ostreatus; Pluteus cervinus; P. salicinus; Psathyrella hydrophila; Russula atropurpurea; R. betularum; R. cyanoxantha; R. emetica; R. fellea; R. foetens; R. fragilis; R. nitida; R. ochroleuca; R. parazurea; R. puellaris; Stropharia semiglobata; Tricholoma portentosum; Tricholomopsis platyphylla; T. rutilans.*

*Chondrostereum purpureum; Clavaria argillacea; Coltricia perennis; †Coniophora arida; Coriolus versicolor; *C. versicolor* var. *azureus; Heterobasidion annosum; Hirschioporus abietinus; Ischnoderma resinosum; Leptotrimitus semipileatus; Oxyporus populinus; Peniophora gigantea; Phaeolus schweinitzii; Podoporia sanguinolenta; Piptoporus betulinus; Serpula himantioides; S. mollusca; Sparassis crispa; Stereum gausapatum; S. hirsutum; S. sanguinolentum; Thelephora terrestris; *Tomentella cyanea; *Xenasma pseudotsugae.*

Dacrymyces stillatus; Calocera viscosa;

Lycoperdon foetidum; L. perlatum; Phallus impudicus; Scleroderma citrinum; Sphaerobolus stellatus.

Melampsoridium betulinum;

*Aleuria aurantia; Cudoniella acicularis; *Gorgoniceps aridula; Scutellinia scutellata.*

Diatrype disciformis; D. stigma; Xylaria hypoxylon; X. polymorpha.

Sepedonium chrysospermum.

Lindbladia effusa; Fuligo septica; Stemonitis fusca.

* = New county record.

† = Confirmation of existing record.

DEREK A. REID

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Printed and Typeset by Advance Offset Ltd.