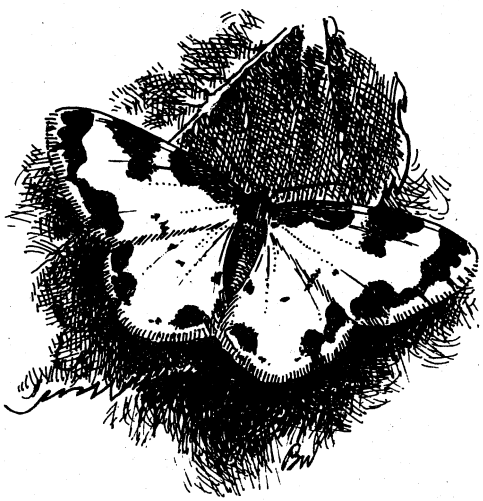
The Bedfordshire Naturalist 49 (Part 1)

Journal for the year 1994



Bedfordshire Natural History Society 1995
ISSN 0951 8959

BEDFORDSHIRE NATURAL HISTORY SOCIETY 1995

(Established 1946)

Chairman:
Mr D. Anderson, 88 Eastmoor Park, Harpenden, Herts AL5 1BP

Honorary Secretary:
Mr R.G. Cornes, 30 Park Street, Ampthill MK45 2LR

Honorary Treasurer:
Mr P. Clark, 43 Montrose Avenue, Luton LU13 1HP

Honorary Editor (Bedfordshire Naturalist):
Miss R.A. Brind, 46 Mallard Hill, Bedford MK41 7QS

Honorary Membership Secretary:
Mrs M.J. Sheridan, 28 Chestnut Hill, Linslade, Leighton Buzzard, Beds LU7 7TR

Honorary Scientific Committee Secretary:
Mr E. Newman, 15 Birchmead, Gamlingay, Sandy SG19 3ND

Honorary Chairman of Bird Club:
Mr K. Sharpe, 22 Russett Close, Stewartby, MK43 9LG

Council (in addition to the above):
Mr J. Adams, Ms J. Childs, Mr R. Dazley, Mrs G. Dickens, Mr D. Green, Mr P. Irving, Dr P. Madgett, Mr J. Niles, Mr P. Wilkinson, Mr M. Williams.

Honorary Editor (Muntjac):
Mrs R. Madgett, 27 Mardle Road, Linslade, Leighton Buzzard LU7 7UR

Honorary Librarian:
Mrs . G. Dickins, 9 Ullswater Road, Dunstable LU6 3PX

Committees appointed by Council:

Finance: Mr D. Anderson, Mr P. Clark (Chairman), Mr R.G. Cornes, Miss L. Wright (Bird Club), Mr E. Newman, Mrs M. Sheridan, Mr P. Wilkinson.

Scientific: Mr C. Baker, Dr G. Bellamy, Miss R. Brind, Mr J. Comont (Chairman), Mr A. Fleckney, Dr P. Hyman, Mr P. Irving, Mrs R. Madgett, Mrs H. Muir-Howie, Dr B. Nau, Mr E. Newman (Sec.), Mr D. Odell, Mr P. Smart, Mr H. Winter.

Development: Mrs A. Adams (Sec.), Mr P. Almond, Mrs P. Baker, Mr R.G. Cornes, Mr A. Dickens, Mrs G. Dickens, Miss G. Irving, Mrs R. Madgett.

Programme: Mr J. Adams, Mr C. Baker, Dr P. Madgett (Chairman), Mr J. Niles, Mr K. Sharpe

Registered Charity No. 268659

THE BEDFORDSHIRE NATURALIST

No. 49 Part 1 (1994)
Edited by R.A. Brind

CONTENTS

The Bedfordshire Bird Report for 1994 is published separately as Part 2 of the *Bedfordshire Naturalist*

Front cover: Clouded Border *Bernard West*

The Society would like to thank Bedfordshire County Council, Bedford Borough Council, Mid Bedfordshire District Council, South Bedfordshire District Council and Luton Borough Council for grants towards Society publications this year.

EDITORIAL

A major change was made in the Journal last year with the introduction of colour photographs. This step has been discussed for several years and the feedback received so far suggests that they are a welcome improvement and should be continued. Richard Revels has agreed to act as Photographic Editor so, if you have any photographs of field meetings, sites or species taken during the year that you would like to contribute for possible publication, please contact Richard who will be selecting photographs for next year's Journal.

A further change has taken place this year with the publication of the Journal in two parts. This has also been discussed for some years as the Journal has been reaching the limit of its size with the current method of binding. The thickness of paper and the size of the text had been reduced and last year I had great difficulty fitting all the contributions in! Part 1 of the Journal includes all the disciplines with the exception of birds and Part 2 is devoted to the Bird Report and related articles. All full Society members receive both Part 1 and Part 2, while Bird Club only members receive Part 2 of the Journal. This has already allowed a slight increase in the text size and I hope you will therefore find the Journal easier to read. As space is no longer a major limitation, we are also now able to consider more articles, in addition to the annual Recorders' reports. If you would like to contribute an article, or a brief note about an observation made in the County, then please contact me to discuss the format and timing.

One change which only contributors may be aware of is that we have now moved to a typesetter who can accept articles on floppy disk. This should have reduced everyone's work load as reports provided by this technology do not have to be retyped and rechecked for errors. If contributors don't have this facility, however, handwritten or typed articles are perfectly acceptable.

LIST OF COLOUR PLATES

REPORT OF COUNCIL FOR 1994

The variety and quality of the Society's programme of meetings have again been good. There were 19 indoor meetings and 46 field meetings within the County and further afield, in addition to a week in Majorca in April and a weekend trip to the Malvern Hills in June. Among the more unusual indoor meetings were Steve Cham's talk and high quality videos on dragonflies and Paul Madgett's talk and workshop on fossils. Recording and scientific work were a particular theme of the field meetings, with the Toothwort survey led by Chris Boon, two Butterflython weekends organised by Charles Baker, three meetings recording the behaviour of marked bats (jointly with the Bedfordshire Bat Group), the Wood Ant and Scarce 7-spot Ladybird survey led by Rosemary Brind, the fungus foray at Flitwick Moor, and the Dormouse survey (jointly with the Wildlife Trust). A system for recording at all in-county field meetings was successfully introduced and will continue in the future. Successful Recorders' Days were also held at Luton Hoo and The Lodge, Sandy. Joint meetings were also held with the Beds and Northants Branch of Butterfly Conservation, and the Bedford RSPB Group. A number of meetings were also organised in conjunction with the ornithological section of the Society, the Bedfordshire Bird Club. Visiting speakers included Gordon Beningfield, Peter Karner from MAFF, Alan Woodgate, David Alderman, and Peter Evans from the Seawatch Foundation (Cetacean Monitoring Unit).

The Bird Club has had a very successful year, with international links being made with the Newhaven Bird Club, U.S.A. and with Long Point Bird Observatory, Canada. *An Atlas of the Breeding Birds of Bedfordshire* by Paul Trodd and Rob Dazley was also published during the year.

A major item of expenditure for the Society was the purchase of an Acorn computer system to improve the production of Muntjac and for other future uses. Thanks are due to the group of members who put time and effort into investigating different computer systems and costings, and to Ro Madgett who, in her role as Muntjac editor, immediately and effectively put the system to use. Thanks are also due to John Adams, who stood down as Chair of the Development Committee after several years' sterling service; to Mary Sheridan, who stood down from the Programme Committee after several years of considerable involvement; and to Pete Soper, who wishes to stand down after the A.G.M. as Society Librarian after several years' service.

The Society has had direct involvement in conservation work with several work parties carrying out scrub control on the patch of heathland in Maulden Wood, and in continuing management work at the Dunstable Sewage Treatment Works (especially Paul Trodd, the Honorary Warden).

Membership of the Society 1990-1994:

	1990	**1991**	**1992**	**1993**	**1994**
Ordinary	360	348	435	450	430
Associate	52	46	62	68	41
Student	3	3	4	5	3
Corporate	8	10	12	13	10
Life	5	5	5	5	5
Hon. Life	2	2	1	1	1
Total	**430**	**414**	**511**	**542**	**490**

Membership figures for 1992 onwards cover all members of the Society, including those who are members of The Bird Club only.

BOB CORNES
Hon. Secretary

PROCEEDINGS

Indoor Meetings

683rd Ordinary Meeting 5th January, Bedford. "The life of a Countryside Ranger" by Mr N. Baker, Bedfordshire County Council. Chair: Mr B. Cornes.

684th Ordinary Meeting 12th January, Luton Museum. "The life and times of dragonflies" by Mr S. Cham. Chair: Dr B. S. Nau.

685th Ordinary Meeting 18th January, Dunstable. "Plants of Purbeck" by Dr G. Bellamy. Chair: Mr C. R. Boon.

686th Ordinary Meeting 25th January, Maulden. Twitchers' evening. Joint meeting with Bedfordshire Bird Club. Chair: Mr D. Ball.

687th Ordinary Meeting 3rd February, Bedford. "Priory Park 10 years on" by Mr D. Kramer. Chair: Mr M. Palmer.

688th Ordinary Meeting 15th February, Dunstable. "Wildlife in Southern India" by Mr C. Banks and Mr B. Barton. Chair: Dr A. Aldhous.

689th Ordinary Meeting 24th February, Aspley Guise. "Woodlands and wildlife" by Mr G. Beningfield. Joint meeting with Beds. and Northants Branch of Butterfly Conservation. Chair: Mr D. Anderson.

690th Ordinary Meeting 2nd March, Bedford. "Current affairs in Beds – wildlife protection issues" by Mr P. Karner, MAFF and Sgt. P. Cannings, Bedfordshire Police. Chair: Miss R. Brind.

691st Ordinary Meeting 15th March, Dunstable. "A Vet's life in Morocco" by E. Flack. Chair: Mr C. Tack.

Annual General Meeting 22nd March, Maulden.

692nd Ordinary Meeting 6th October, Bedford. "Champion trees of Bedfordshire" by Mr D. Alderman, Bedfordshire County Council. Chair: Mr C. Boon.

693rd Ordinary Meeting 18th October, Dunstable. "The Gambia" by Mr M. Williams. Chair: Mrs E. Fish.

694th Ordinary Meeting 27th October, Luton. "Arable weeds" by Mr G. Atkins M.B.E. Chair: Mr P. Clark.

695th Ordinary Meeting 2nd November, Bedford. "Whales and dolphins in British waters" by Dr P. Evans, Seawatch Foundation. Chair: Mr C. Tack.

696th Ordinary Meeting 15th November, Dunstable. "British orchids" by Mr J. Zorzi. Chair: Mrs P. Baker.

697th Ordinary Meeting 24th November, Aspley Guise. "Fossils" by Dr P. Madgett. Chair: Mr M. Williams.

698th Ordinary Meeting 26th November, Haynes. Fossil workshop. Organiser: Dr. P. Madgett.

699th Ordinary Meeting 1st December, Bedford. "Newts" by Mrs H. Muir-Howie. Joint meeting with Beds Herpetological Group. Chair: Mr P. Irving.

700th Ordinary Meeting 14th December, Maulden. "A taste of Scottish wildlife" by Mr R. Revels. Chair: Ms J. Childs.

Field Meetings

Abberton Reservoir, Essex marshes 16th January. Birdwatching. Leader: Mr P. Soper.

Stewartby Lake 29th January. Gull watch. Leader: Mr M. Palmer.

Ickwell Green 20th February. A walk studying trees and hedgerow shrubs. Leader: Mr J. Niles.

River Ouzel, Leighton Buzzard 26th March. A circular walk looking for mammal tracks and signs. Leader: Dr P. Madgett.

Hayley Wood, Cambs 9th April. To see the Oxlips. Leader: Mr D. Tyler.
Iffley Meadows, Oxford 16th April. Looking for Fritillaries. Leader: Mr C. Baker.
Majorca 23rd – 30th April. Leader: Mr P. Soper.
Blows Downs 24th April. Looking for spring migrants. Leader: Mr R. Dazley.
Chicksands Wood 30th April. Toothwort survey. Leader: Mr C. Boon.
Bedfordshire 1st May. County Toothwort hunt. Organiser: Mr J. Adams.
Maulden Woods 8th May. Dawn chorus. Leader: Mr P. Trodd.
Pegsdon Hills 11th May. Evening walk for general natural history. Leader: Dr G. Bellamy.
Bison Hill 13th May. Caterpillar crawl with Butterfly Conservation followed by moth trapping. Leaders: Mr G. Herbert and Mr V. Arnold.
Priory Country Park 15th May. Migration day – guided walks for the public. Joint meeting with Bedford RSPB group.
Dunstable Sewage Treatment Works 18th May. Visit to the wader scrape. Leader: Mr P. Trodd, Warden.
Brampton Wood, Cambs 21st May. For flowers and general natural history. Leader: Mr W. Fendley, Warden.
Isle of Sheppey and Cliffe, Kent 22nd May. Birds. Leader: Mr D. Green.
The Lodge, Sandy 26th May. Looking for the Natterjack toads. Leader: Mr M. Kemp, RSPB Warden.
Bedfordshire 28th and 29th May. Butterflython. Organiser: Mr C. Baker.
Stockgrove Country Park 4th June. Tracking marked bats. Joint meeting with Bedfordshire Bat Group. Leaders: Ms J. Childs and Dr A. Aldhous.
Totternhoe Knolls and Sewell Cutting 5th June. General natural history. Leader: Mr P. Irving, Warden.
Dropshort Marsh 8th June. Evening walk. Leader: Ms C. Aldridge.
Thursley Heath, nr Guilford 12th June. Looking for dragonflies, reptiles, bog and heath plants. Leader: Mr T. Norriss.
Bushmead Priory 17th June. Moths and bats. Leaders: Mr V. Arnold, Ms J. Childs and Dr A. Aldhous.
Barnack Holes, nr Wittering 18th June. Looking for limestone flowers and butterflies. Leader: Mr A. Smith.
Malverns 24th – 26th June. Weekend visit based at The West Malvern Outdoor Education Centre, Malvern. Organiser: Mrs M. Sheridan.
Sundon Hills 2nd July. Botanical meeting. Leader: Mr P. Irving.
The Lodge, Sandy 2nd July. All night bat detector workshop. Joint meeting with the Bedfordshire Bat Group. Organisers: Ms J. Childs and Dr A. Aldhous.
Stockgrove Country Park 16th July. Tracking marked bats. Joint meeting with Bedfordshire Bat Group. Leaders: Ms J. Childs and Dr A. Aldhous.
Waterloo Thorns, nr Tempsford. 17th July. Bird ringing demonstration. Leader: Mr E. Newman.
Therfield Heath and Ashwell Quarry, Herts 23rd July. Looking at butterflies and chalk downland. Leader: Mr J. Adams.
Bedfordshire 30th and 31st July. Butterflython No. 2. Organiser: Mr C. Baker.
Stockgrove Country Park 30th July. Tracking marked bats. Joint meeting with Bedfordshire Bat Group. Leaders: Ms J. Childs and Dr A. Aldhous.
Pegsdon Hills 6th August. Butterflies and general natural history. Leader: Mr A. Fleckney, BCNWT Reserves Officer.
Maulden Wood 14th August. Recording Wood ants and searching for the Scarce 7-spot Ladybird. Leader: Miss R. Brind.

Earls Barton Gravel Pits and Nene Valley, Northants 21st August. Looking at birds. Leader: Mr P. Campbell, Northants Bird Club.
Shuttleworth 27th – 29th August. BNHS display at the Bedfordshire Show.
Cople Pits 3rd September. Looking at dragonflies and reserve management. Leader: Mr B. Parsonage, Warden.
Dunstable Downs Countryside Day 4th September. Exhibiting at this major countryside event.
Castle Hill and Lullington Heath NNR, nr Brighton 11th September. General natural history. Leader: Mr M. Emery, Warden.
Maulden Wood 18th September. Small mammal trapping. Leader: Mr D. Anderson.
Flitwick Moor 25th September. Annual Fungus Foray. Leader: Dr D. Reid.
Silsoe–Shillington 2nd October. Circular walk of general natural history interest. Leader: Mr J. Knowles.
Woburn Park 16th October. Deer rut. Leader: Mr D. Anderson.
Epping Forest 22nd October. General natural history and autumn colours. Leader: Mr A. Woodgate, Warden.
Woburn Park 29th October. A tour of some of the Champion trees. Leader: Mr D. Alderman, Beds CC.
Welney and BTO headquarters, Thetford 30th October. A visit to the Wildfowl and Wetlands Trust Reserve followed by a visit to the headquarters of the British Trust for Ornithology to hear about the Golden Pheasant project. Leader: Mr P. Wilkinson.
Studham 6th November. Dormouse survey workshop including site visits. Leader: Mr C. Tack.
Woburn Park 26th December. A Boxing Day walk through the Park. Leader: Mrs M. Sheridan.

Wood Ant nest, Maulden Wood *Rosemary Brind*

REPORT OF THE TREASURER

The Society received grants towards its publications of £600 from Bedfordshire County Council, £300 from Luton Borough Council, £150 from South Bedfordshire District Council and £78 from Mid-Bedfordshire District Council. Income is £1054 lower than in 1993, while expenditure has increased by £7543, resulting in a reduced Closing Balance. However, the increase in expenditure includes the purchase of a computer for the benefit of the Society and publication costs of the Bird Atlas which it is expected will be recovered over the next few years.

Under the Statement of Assets, the computer is included as a fixed asset, and the stock of the Bird Atlas at cost as on 31st December 1994 as a current asset. They were paid for from the Woolwich Building Society account, but that account was also credited with £2000 from the Current Account on 2nd March 1994. Following the last AGM it was agreed that stock at cost of the Bedfordshire Wildlife Print should be written off as an asset because of poor sales. The final result over the year is that the net assets of the Society have increased by £1060 and now stand at £48,667.

P.S. CLARK
Hon. Treasurer

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31ST DECEMBER 1994

	1993	1994
OPENING BALANCE (Current Account and Building Society Account)	21,256	26,338
INCOME		
Subscriptions (for 1994)	3,548	2,947
Subscriptions (for 1995 received in 1994)	882	746
Sales	43	145
Journal and Bird Report sales	193	209
Receipts from meetings	390	229
Sundries/Donations/Grants	2,095	1,932
Bird Conference	975	-
Interest received from Building Society	1,798	1,903
Interest received from Bank (gross)	-	5
Receipts from Publication Account	1,219	1,973
SUB TOTAL – Income	**11,143**	**10,089**
EXPENDITURE		
1993 cheques presented in 1994	160	1,702
ADMINISTRATION		
Postage and stationery	30	-
Sundries	71	60
Insurance	250	256
Officers' expenses	-	110
Auditors' honorarium	20	20
Computer	-	2,431
Books	-	174
Bank charges (Safe Custody)	-	10
	371	**3,061**
MEETINGS		
Hire of halls	253	514
Lecturers and leaders	136	278
Programmes	328	338
Accommodation deposit	20	-
Bird Conference	931	-
	1,668	**1,130**

SCIENTIFIC		
Journal and Bird Report	2,432	78 [1]
Recorders' Expenses	-	69
Sundries	182	164
	2,614	**311**
PUBLICITY/DEVELOPMENT/MEMBERSHIP		
Newsletter	804	430
Sundries	420	853
Advertising/Publicity	302	-
Car stickers and items for resale	34	-
	1,560	**1,283**
PUBLICATIONS ACCOUNT - EXPENDITURE	**1,390**	**7,819**
SUB TOTAL - EXPENDITURE	**7,763**	**15,306**
1993 Adjustment - add back unpresented cheques	1,702	
CLOSING BALANCE (Current Account and Building Society Account	**26,338**	**21,121**

STATEMENT OF ASSETS AS AT 31ST DECEMBER 1994

FIXED ASSETS	**1993**	**Cost**	**Depreciation**		**1994**
			Total	**per Year**	
Display Boards	231	371	160	20	211
Display Table	48	69	28	7	41
Mist Nets	222	555	444	111	111
Computer	-	2,431	122	122	2,309 [2]
				2,672	

CURRENT ASSETS	**1993**	**1994**
Stock at cost - Bedfordshire Wildlife Print	1,247	-
- Vertebrate Fauna of Bedfordshire	485	428
- Bird Atlas	-	4,694
Bank Current Account	2,893	2,014
Woolwich Building Society	23,445	19,107
City of Nottingham Bonds to 30/6/95 (at 12%)	3,000	3,000
City of Nottingham Bonds to 30/6/95 (at10.25%)	3,000	3,000
M & G Charifund Accumulation 475 Units		
Cost £10,000, Bid Price at 21/12/94 3,052.3 pence per unit	15,620	14,498
TOTAL CURRENT ASSETS	**49,690**	**46,741**
Fixed Assets (see above)	501	2,672
TOTAL ASSETS	**50,191**	**49,413**
CURRENT LIABILITIES		
1993 unpresented cheques	1,702	-
Subscriptions received during 1994 for 1995	882	746
NET ASSETS OF THE SOCIETY	**47,607**	**48,667**

NOTES

1. No printing cost has been paid for the Journal and Bird Report during the year up to 31st December 1994.
2. The computer will be depreciated at the rate of 20% for a complete year (£486). Therefore a figure of £122 (5%) has been depreciated for 1994.

The Current Account includes Income of £1,434 and Expenditure of £1,081 in respect of the Bird Club.

P.S. Clark
Hon. Treasurer

P.A. Giles (F.C.C.A.)
Hon. Auditor

METEOROLOGY
Report of the Recorder

1994 was not an exceptional year as far as the weather was concerned. The winter periods continued recent trends towards milder weather, though with brief and sometimes localised cold spells in January and February. The spring was mixed, starting warm and dry, then turning cold and wet and with late frosts. The summer was warm, dry and sunny with occasional thunderstorms. The autumn period was variable, generally milder and wetter than normal, and with the coldest night of the year falling on Christmas Eve in some places.

January

This was a mild month, particularly by night, with temperatures about 1.6°C above average. However there was a period of localised heavy snow on the 6th of the month affecting predominantly the southeastern quarter of the County. Accumulated snow depths reached some 7cm in Barton, but 17cm at Meppershall and 15cm at Hitchin just into Hertfordshire. There were reports of 12cm at Everton near Sandy and of 10cm at Ickwell Green near Biggleswade. Luton was also badly affected. Yet both Leighton Buzzard and Bedford had no accumulations of snow at all, and neither did much of Cambridgeshire to the east. The snowfall was all the more remarkable for being preceded by heavy rain which turned rapidly to heavy snow in the affected areas at about 6pm and then continued for a further 2 hours, part of a narrow 50km wide band of snow which moved north from the Isle of Wight through to Lincolnshire. The greatest depths, in Bedfordshire, also occurred as might be expected over the higher ground within the affected area. Although very wet, the snow later froze solid and was still covering the ground two days later. The rainfall equivalents ranged from 12mm in Silsoe, to 17mm in Barton and 25mm in Meppershall. Overall, the month's rainfall equivalent was about 25% up on the long-term average. Sunshine was above average.

February

February was generally rather cold with temperatures by day and night about 0.7°C below average. There was a cold spell from 13th to 25th, with the temperature remaining below freezing all day on 14th. Frost occurred widely throughout this period but was seldom severe, and light snowfalls at the beginning and end of this period produced shortlived accumulations of around 5cm. Total precipitation was just a little above the norm for February.

March

The month was slightly drier than normal in Bedfordshire, though for many parts of the country rainfall was well above average. It was mild with day temperatures 1.5°C and night temperatures 2.4°C above average. There was little variation through the month, though the middle week was less mild and the second half of the month was wetter than the first half.

April

April was both cold (by day) and wet, particularly in the first half of the month, with total rainfall about 40% up on average. Despite the rain, frost was also quite frequent in the first half of the month, though mostly quite light.

May

May followed the pattern of April, with daytime temperatures 1.7°C below average, and rainfall again some 40% up on what might be expected. The 17th was a particularly cold day, for May, with a maximum of just 8.2°C at Silsoe, a temperature more suited to mid January!

June

June saw a marked change to the weather of the previous two months, with temperatures close to normal, and indeed becoming quite warm in the second half, while rainfall was less than half the expected average. The wettest day was the 24th with thunderstorms in many areas.

July

The warm weather of late June continued throughout July with the highest temperature of the year (30.4°C at Silsoe) being reached on 12th, and nearly as hot on 24th when thundery rain occurred in some places. At Houghton Regis hail up to 18mm across was reported at 7pm with some damage to buildings. For most places though, July was exceptionally dry.

August

The warm weather lasted into August with thundery rain overnight on the 3rd/4th, but after the first week temperatures were near to average. Rainfall was little more than 50% of average, the second half of the month being very dry apart from the last day.

September

Apart from the first few days, daytime temperatures in September were persistently below average, being 2.1°C down overall. Night-time temperatures were also down, but no early frosts occurred. Rainfall was above normal with 14th being a particularly wet day. It is not surprising that September was noticeably dull as well.

October

The first frost of the autumn occurred widely on the morning of 4th, and again on the following three nights. Temperatures were again below normal for much of the month, it was also wetter than normal (up 27%), but in contrast sunnier than usual. Most of the rainfall occurred in the last ten days, the coolest and driest period coinciding with winds from between north and east.

November

Daytime temperatures were 1.9°C above average, and night temperatures up by 3.0°C giving a very mild month, but also quite a dry one with rainfall just 50% of

average, and half of that falling on just one day, the 4th. The mean minimum temperature for the month of 6.3°C set a new high for Silsoe beating the previous record of 5.8°C in 1951, and averaging both day and night temperatures ensured that November 1994 was the warmest on record at this site (and generally over England). Despite the dryness, it was less sunny than usual, and there was a marked absence of the frost often associated with November.

December

The year ended as it had begun with temperatures above normal, but this hides a cold spell which lasted through from 14th to 25th. This was characterised particularly by widespread frost by night, and for some places the coldest night of the year was Christmas Eve. The few days leading up to Christmas were also foggy with considerable build-up of rime and spectacularly white scenes as the sunshine broke through. In one respect at least 1994 could lay claim to having a 'white' Christmas.

References to specific figures in the above report refer to records from the automatic weather station at the Silsoe Research Institute at Wrest Park, unless otherwise stated. I would like to record my thanks to Chris Boon for providing the relevant data, and also for providing copies of the data from the standard recording station at Silsoe College courtesy of Margaret Boon. I am also most grateful to Betty Chambers, Mike Collins and Nancy Dawson for providing data and descriptions of weather events from their own locations. More descriptive contributions from members of the Society would help to explore the variety of weather events which can arise even in a small county, and often provide the only accounts of important but localised events. The snowfall of 6th January was an example where data from a few individuals who simply pushed a ruler into the snow on their lawns and reported the result was invaluable.

	Mean Max °C	Mean Min °C	Highest Temp °C	Lowest Temp °C	Rainfall mm	Sunshine hours	Air Frost days	Ground Frost days
January	7.6	2.1	12.0	-1.8	53.6	72.0	7	18
February	5.7	-0.1	11.8	-4.8	47.2	65.2	15	22
March	10.8	4.0	16.0	-0.0	35.4	135.9	1	12
April	11.5	4.0	21.4	-0.9	53.2	186.4	2	14
May	14.3	6.5	20.5	-0.3	58.2	160.7	1	6
June	19.4	9.5	26.3	4.2	20.6	255.1	0	1
July	24.2	12.5	30.4	7.3	7.2	240.5	0	0
August	21.3	11.5	29.8	4.6	33.0	186.9	0	1
September	16.1	9.5	20.5	5.9	54.4	115.1	0	0
October	13.0	5.7	17.6	-0.3	60.8	108.7	2	7
November	11.3	6.3	16.8	-1.6	25.8	40.0	2	4
December	8.4	1.8	13.2	-7.9	52.2	58.5	11	16
Year	13.6	6.1	30.4	-7.9	501.6	1625.0	41	101

Table 1. Summary of the weather for 1994 recorded at the Silsoe Research Institute, Wrest Park.

Table 1 gives data from the automatic weather station at Wrest Park, Silsoe. Again, the data has been compromised by a failure, this time in the rainfall recorder from 1st to 7th February 1994 inclusive (the cause of the problem was apparently a spider blocking the rain gauge funnel!), and the corresponding total (uncorrected) from Silsoe College has been substituted. The sunshine totals are also taken from the Silsoe College record as the automatic station at Wrest Park station now measures solar radiation (in MJ/m2) rather than the more familiar sunshine hours. Interestingly, a comparison of the records from the two sites (Table 2) shows some apparently significant differences. The College site, on average, recorded 7.9mm rainfall per month more than the Wrest Park site, and the monthly mean maximum and monthly mean minimum temperatures were, on average, 1.1°C higher and 0.2°C lower respectively than the same means calculated from data recorded at the Wrest Park site.

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Max T °C	8.5	6.8	12.0	12.6	15.35	20.6	25.2	21.7	16.9	14.2	12.7	9.7
Min T °C	1.9	-0.6	3.7	3.6	6.1	9.1	12.3	11.4	9.1	5.6	6.5	2.2
Rain mm	79.6	47.2	36.8	56.8	61.1	23.5	16.5	36.7	60.1	66.2	30.5	58.4

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Max T °C	7.6	5.7	10.8	11.5	14.3	19.4	24.2	21.3	16.1	13.0	11.3	8.4
Min T °C	2.1	-0.1	4.0	4.0	6.5	9.5	12.5	11.5	9.5	5.7	6.3	1.8
Rain mm	53.6	*	35.4	53.2	58.2	20.6	7.2	18.0	54.4	60.8	25.8	52.2

Table 2. Comparison of selected parameters from Silsoe College (upper) and Wrest Park (lower) for 1994 (* missing data).

Eden (1982) carried out a comparison of the overlapping meteorological records from RAF Cardington (11km south of Bedford) and RAF Thurleigh (14km north of Bedford). Over a thirty year period Thurleigh was found to be wetter than Cardington by an average of 1.8mm per month. Its mean maximum was on average 0.7°C lower and its mean minimum was 0.1°C higher than equivalent figures for Cardington, differences which can be explained in terms of the characteristics of the two locations. The differences between the two Silsoe sites, approximately 1km apart, are greater than those for the two sites considered by Eden. However, it will be necessary to examine more fully the records at both sites, and over more than one year, before any sensible conclusions can be drawn.

REFERENCES

EDEN, G.P. 1982 A Comparison of Cardington and Thurleigh Climatological Records *Weather* **37** 334–341.

M.C. WILLIAMS

GEOLOGY AND PALAEONTOLOGY
Report of the Recorder

This year a temporary (ditch section) exposure in the Jurassic limestones in the north of the County was brought to the Recorder's attention, the initial notification being received by Rosemary Brind at Bedford Museum who then visited the site near Pavenham. Full details of this section and the fauna are at present incomplete, further visits being required during 1995 in order to obtain (if possible) either Zone ammonites or other molluscs that can be used to determine the formation within the Middle Jurassic.

The Cretaceous sedimentary deposits which constitute the Recorder's research area were studied extensively throughout the year and the first field visit, made in January in atrocious weather conditions, was to Arlesey Brick Works. The quarry extension reported in the Report for 1992 had remained unchanged, apart from some degree of weathering, as brick production has ceased. Hopefully, this cessation will only be temporary, as otherwise the quarry will be allowed to deteriorate and eventually be a landfill site as is already happening in the western part. Maintenance of the quarry and surroundings is, however, carried out by a small staff and a drainage cut had been excavated into the Chalk Marl face some thirty metres north of the southern boundary (TL 188348). Although not as extensive as the trench described in 1992, it showed a good section of the strata at this point, cutting through the upper part of the Upper Gault *Stoliczkaia dispar* Zone into the basal *Mantelliceras mantelli* Zone of the Lower Chalk (Chalk Marl). A diagram of the stratigraphical succession of the beds exposed is shown in Figure 1.

Although fossils were not common and few were obtained on this and subsequent visits, the Cambridge Greensand yielded two well preserved specimens of the Lower Cretaceous (Gault) brachiopod *Moutonithyris dutempleana* (d'Orbigny) and a number of selachian teeth, unfortunately without roots apart from a single large anterior tooth of *Cretolamna woodwardi* 28mm in height.

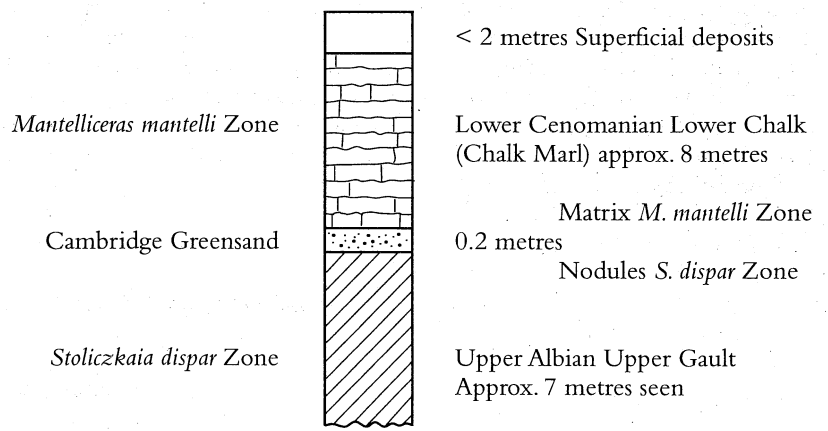


Figure 1. Stratigraphical succession of Lower and Upper Cretaceous sediments at Arlesey Brick Works (TL 188348), January 1994

Fossils in the overlying Upper Cretaceous (Lower Chalk) *Mantelliceras mantelli* Zone proved, unexpectedly, to be very rare and the result of several visits throughout the year as regards invertebrate fossils was one small and partly crushed specimen of the rhynchonellid *Orbirhynchia parkinsoni* E.F. Owen (Syn. *Rhynchonella sulcata*) from a bed some two metres above the Cambridge Greensand. Higher horizons yielded fragments of the oyster '*Inoceramus*' *crippsi* Mantell and occasional separated ossicles of *Isocrinus* sp. Sea urchin spines were also discovered in these higher beds but could not be determined other than to the Family Cidaridae, the majority being incomplete with extremities broken away. The most noteworthy specimen to occur was an isolated anterior tooth of the shark *Squalicorax falcatus* (Agassiz), discovered approximately 3.5 metres above the base of the Chalk Marl. This is the first record of this species made by the Recorder from the Arlesey Lower Cenomanian and indeed it is a very rare shark in the Bedfordshire Lower Chalk. Longbottom and Patterson (1987) suggest that it is a fairly common species, but the localities quoted in their distribution of *S. falcatus* range from Norfolk through Kent, Sussex, Surrey, Wiltshire to Dorset. Bedfordshire is not included, and no specimens from the County are in the collections of the Natural History Museum or the BGS at Keyworth.

It is of interest to note that a lateral tooth of this species also occurred in the basal Totternhoe Stone (Lower Chalk, *Acanthoceras rhotomagense* Zone) of the Totternhoe Lime Works, Totternhoe (SP 982221), being one of the results of the acid digestion method of tooth extraction from this stratum during the year and which is more or less permanently in progress. These two teeth are illustrated in Figure 2.

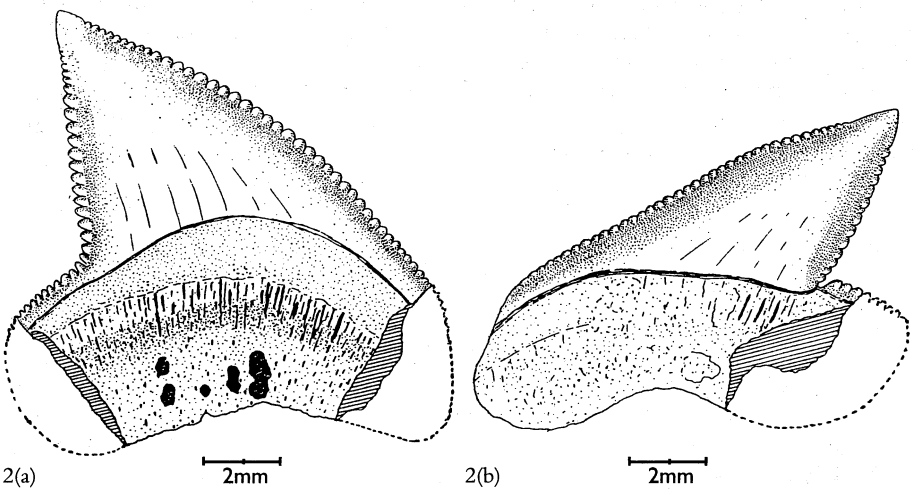


Figure 2. *Squalicorax falcatus* (Agassiz)
(a) Anterior tooth, lingual view. Lower Chalk *Mantelliceras mantelli* Zone, Arlesey Brick Works. PJS 15374 M.
(b) lateral tooth, lingual view. Lower Chalk *Acanthoceras rhotomagense* Zone, Totternhoe Lime Works. PJS 15328 M.

Further work on the Cenomanian was restricted to the Lower Chalk at Totternhoe Lime Works, it being not possible to visit the large quarry near Kensworth to view the Middle and Upper Chalk. Three visits were made to Totternhoe during the year and the "Grey Chalk" above the Totternhoe Stone thoroughly searched both in the old quarry and the present workings. Despite this, fossils proved, as on previous occasions reported, to be very rare. A poorly preserved specimen of the brachiopod *Orbirhynchia* sp. and several internal moulds of the bivalve '*Inoceramus*' *crippsi* on the surface of a newly excavated block of chalk being the only recorded material.

Fossiliferous samples of the basal Totternhoe Stone were, however, located and removed for subsequent acid digestion – the *Squalicorax falcatus* tooth illustrated in Fig. 2(b) being one of the largest teeth retrieved by this method and possibly the most important. Two other previously unrecorded species were obtained from this hard nodule bed, both microscopic, identified at the Natural History Museum as teeth of *Centrophoides* sp. and *Paranomotodon* sp. These have not been illustrated in the annual report, it being suggested at the NHM that rather than publish such results piecemeal as hitherto, a paper be prepared specifically for the selachian fauna present in this basal Totternhoe Stone and describing the specimens, with illustrations, resulting from perhaps five years' acid digestion work.

A worrying aspect with regard to the deepest section in the quarry from which basal nodule bed samples are obtainable is that, during the course of the year, limited tipping of rubbish took place on the southern side of the deep exposure, much of the Totternhoe Stone being obscured in this area by the end of the year. Fortunately, the stonemason working the rock has no plans to cease this deep excavating as it furnishes him with his raw material, but a close watch will be kept on the position and, should tipping increase, a "rock store" of this basal bed will be necessary before the lowest beds are totally lost to palaeontologists. Such a reserve store of the nodule bed may be necessary in any case for another reason. The basal Totternhoe Stone, which contains the phosphatic nodules and pebbles and which was described with a stratigraphical succession diagram previously (Smart 1991), is of no use to the stonemason and is sawn off after excavation. This waste rock is up to, or exceeds, one metre in thickness, and represents a great deal of wasted effort. As the Totternhoe Stone is approximately 6 metres in thickness at this point, to avoid excavating the rock down to the Chalk Marl and to merely extract the upper beds would certainly be beneficial as regards quarrying. A discussion on site during the summer indicated that this is being considered – another reason for keeping a close watch on developments.

Moving north-westwards into the Leighton Buzzard area, a number of interesting records can be added to the County palaeontological data. This year saw the completion of the Recorder's paper on Lower Cretaceous Hexanchid shark teeth, the specimens described and figured being obtained from three localities – Billington Road (Pratt's) quarry (SP 930241), Chamberlains Barn quarry (SP 929265) and Mundays Hill quarry (SP 936279). Having been re-submitted following the referees' comments, the paper will hopefully be published in the Geologists' Association Proceedings during 1995 or 1996 and thereby place on record a number of hitherto unknown teeth of the Lower Cretaceous shark *Notorynchus aptiensis* (Pictet 1865). In addition to adding new teeth to the known assemblage of UK specimens, the paper

also brings up to date the stratigraphy of the area with regard to the three locations described which is included in this annual report.

The most comprehensive study of the Leighton Buzzard Lower Cretaceous was by Owen (1972) in which he describes nine sections. Since then considerable changes have occurred, some quarries being either in-filled towards farmland restoration (Tiddenfoot, Garside's Old pit and Double Arches) or being now too dangerous for access due to underwater sand extraction (Grovebury). Others are badly overgrown with vegetation except for the working area of the quarry, which makes collecting difficult. This run-down in sand extraction may not be immediately obvious, but the Gault slopes originally cut back to gain access to the underlying Woburn Sands now remain untouched for several years instead of the one to two years in the 1960s and 1970s.

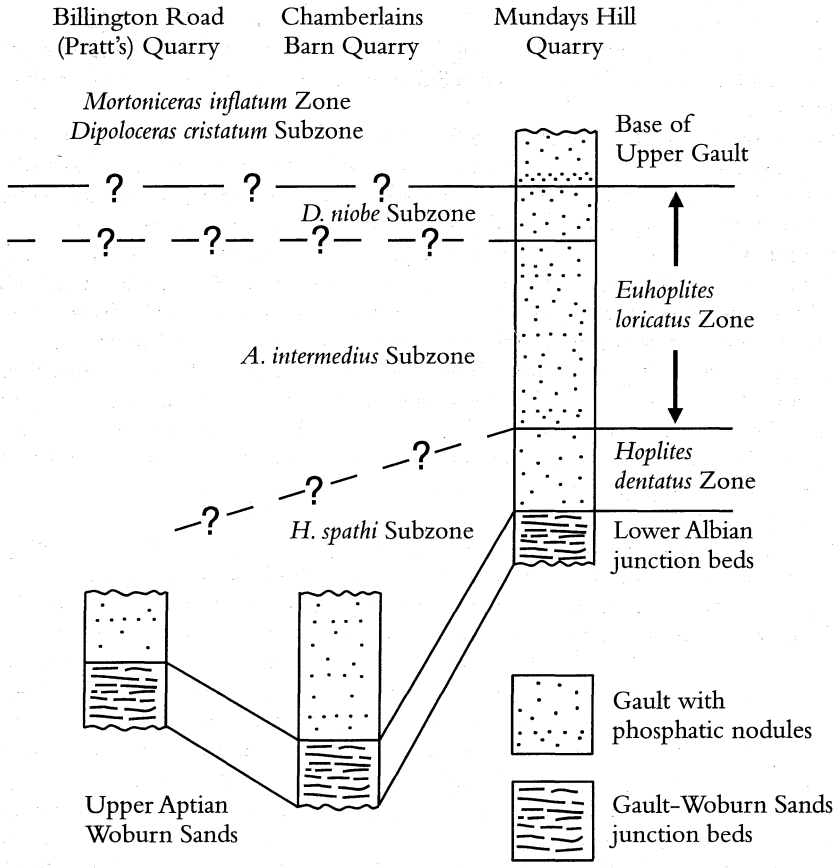


Figure 3. Stratigraphical correlation of Gault Clay Subzones with datum level at base of Upper Gault *Dipoloceras cristatum* Subzone.

The three localities from which the teeth were obtained expose varying sections above the Gault-Woburn Sands junction beds. The other six sections described by Owen have not yielded Hexanchid shark teeth to the Recorder, a contributory cause being the partial or entire eroding away of some Subzone sediments during Cretaceous times. At the time of writing (December 1994) the stratigraphical succession of Albian clays at the three localities and the correlation of the ammonite Zones and Subzones is illustrated in Figure 3.

The thickness and succession of clays within the Lower Gault (Middle Albian), from which the Hexanchid shark teeth were obtained, varies from north to south; from a thin succession in the Shenley Hill area such as is exposed in Mundays Hill quarry, to a thicker basinal succession in the immediate vicinity of Leighton Buzzard as at Chamberlains Barn quarry and Billington Road (Pratt's) quarry. The Lower Gault at Billington Road pit consists of sediments of *Hoplites dentatus* Zone, lower *Hoplites spathi* Subzone age resting upon the Gault-Woburn Sands junction beds (Lower Albian). Recent excavations into rising ground have exposed a greater thickness of Gault than hitherto, the lower *H. spathi* Subzone passing up into middle *H. spathi* Subzone clays.

This lower *H. spathi* Subzone is also thinly represented above the junction beds in the north-east part of Chamberlains Barn quarry, being overlain by clays of middle *H. spathi* Subzone age. At Mundays Hill quarry the equivalent lower and middle *H. spathi* Subzone sediments are absent and the upper part of the *H. spathi* Subzone is represented by 2.5 to 3.0 metres of grey clays with small brown phosphatic nodules and numerous small belemnites *Neohibolites minimus* (Miller). Above these beds, which are thinner along the present eastern side of the quarry than were recorded on the northern side, now overgrown with vegetation, are between 3 and 4 metres of sediments of the *Euhoplites loricatus* Zone, *Anahoplites intermedius* Subzone, above which are 1.5 to 2.5 metres of the *E. loricatus* Zone, *Dimorphoplites niobe* Subzone clays to the base of the Upper Albian Upper Gault *Mortoniceras inflatum* Zone, *Dipoloceras cristatum* Subzone. The top of the *D. niobe* sediments at Mundays Hill is an erosion surface, the Upper Gault resting upon it being of late *D. cristatum* Subzone age.

During the course of the field work carried out in the three aforementioned localities, the Middle and Upper Albian sediments yielded an interesting assemblage of ammonites, all preserved in the form of the familiar phosphatic casts. These were determined this year in order to confirm the Zones and Subzones referred to in the writer's Hexanchid shark paper and also to compare the species found with those recorded by Owen (1972). Although the majority are whorl fragments, fairly complete specimens are occasionally encountered and the species obtained are listed in Table 1 after identification by Dr Owen at the Natural History Museum.

The Gault ammonites are well documented, the monograph by Spath (1923 - 43) being the main reference work and which includes many of the species occurring at Leighton Buzzard. One can, however, still encounter unusual specimens, usually the result of morphological changes as a species evolved. Of particular interest was one very well preserved *Hoplites spathi* Breistroffer from the upper *H. spathi* Subzone of Mundays Hill and a single specimen of the rare *Hoplites maritimus* Owen from the lower *H. Spathi* Subzone of Billington Road.

Mundays Hill Quarry

Subzone: *Hysteroceras varicosum*. *Hysteroceras varicosum* (J. de C. Sowerby); *Euhoplites vulgaris* Spath; *Euhoplites serotinus* Spath; *Mortoniceras* (*Deiradoceras*) *cunningtoni* Spath; *Euhoplites gibbosus* Spath; *Hysteroceras binum* (J. Sowerby); *Euhoplites* spp.

Subzone: *Hysteroceras orbignyi*. *Hysteroceras orbignyi* Spath; *Mortoniceras* (*Deiradoceras*) sp. *Euhoplites vulgaris* Spath; *Euhoplites inornatus* Spath; *Beudanticeras beudanti* (Brongniart).

Subzone: *Dipoloceras cristatum*. *Euhoplites sublautus* Spath; *Beudanticeras beudanti* (Brongniart); *Euhoplites ochetonotus* (Seeley).

Subzone: *Dimorphoplites niobe*. *Dimorphoplites niobe* Spath; *Anahoplites planus* (Mantell); *Euhoplites* sp. – (*loricatus* group).

Subzone: *Anahoplites intermedius*. *Anahoplites praecox* Spath; *Anahoplites intermedius* Spath.

Subzone: *Hoplites* (*Hoplites*) *spathi*. *Anahoplites* sp.; *Hoplites* (*H*) *spathi* Breistroffer.

Chamberlains Barn Quarry

Subzone: *Hoplites* (*H*) *spathi*. *Hoplites dentatus* (J. Sowerby); *Hoplites* spp.

Billington Road (Pratt's) Quarry

Subzone: *Hoplites* (*H*) *spathi*. *Hoplites persulcatus* Spath; *Hoplites* (*H*) *spathi* Breistroffer; *Hoplites maritimus* Owen; *Hoplites osmingtonensis* Spath.

Table 1. Middle and Upper Albian ammonites recorded from the three locations referred to in Figure 3.

The Lower Albian Gault-Woburn Sands junction beds were well exposed both in Billington Road quarry and Chamberlains Barn. They occur throughout the area and differ considerably over quite short distances: their history of formation is obviously complex and extends in time from the *Leymeriella regularis* Subzone (which includes the Shenley Limestone) to the *Hoplites spathi* Subzone (Owen 1972 p299). At Billington Road and Chamberlains Barn many of the gritty phosphatic nodules were in evidence, both *in-situ* and scattered on the surface of the exposed Woburn Sands. Fossils were, however, scarce. One indeterminate lamellibranch was found in a nodule in Billington Road quarry, possibly a species of *Aetostreon* – (*Aetostreon latissimum* (Lamarck) ranges from the Valanginian to the Albian) – and a whorl fragment of the ammonite *Leymeriella* sp. was found in another phosphatic nodule.

Chamberlains Barn quarry proved to be slightly more productive, the junction bed yielding several specimens of *Douvilleiceras mammillatum* (Schlotheim) and *Beudanticeras newtoni* Casey, both previously recorded. These ammonites were partly crushed, as also mentioned by Owen, but one specimen of *D. mammillatum* was discovered in a very good state of preservation in the new extension to the quarry and is closely comparable to that shown in Figure 4.

In addition to the ammonites that were recorded in connection with the Hexanchid shark study, a very unusual discovery was made during the summer in the *Euhoplites loricatus* Zone, *Anahoplites intermedius* Subzone of Mundays Hill quarry. This was a hard bony structure, somewhat wedge-shaped, 6.1cm in length and tapering irregularly from a broad end 26mm wide at its widest part to 11mm at its narrow end. The heavy bone

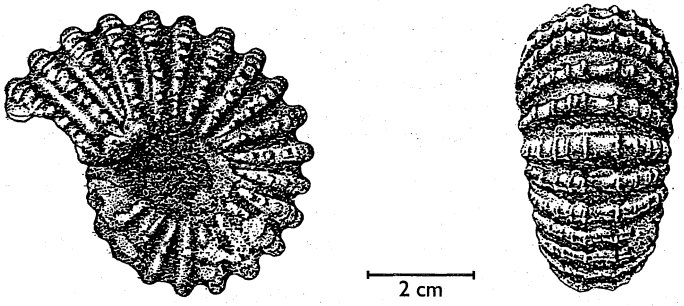


Figure 4. *Douvilleiceras mammillatum* (Schlotheim). Zone ammonite of Gault-Woburn Sands junction beds, Lower Albian *D. mammillatum* Zone.

structure suggested a skull fragment and it was subsequently taken to the Natural History Museum where it aroused considerable interest, being recognised as a palatine plate of a Chimaeroid fish. Comparison with the material in the collections determined the specimen as a right palatine plate of the chimaeroid *Ischyodus thurmanni* Pictet & Campiche.

The Chimaeroids, Subclass Holocephali, possess a cartilaginous skeleton and have a superficial external resemblance to sharks, fossil forms being generally larger than extant species. The skulls, however, are solid (autostylic) and the dentition consists of massive dental plates of thick bone with certain areas, the "tritors", being specially hardened by the deposition of calcareous salts within and around groups of medullary canals which rise to the functional surface (Woodward 1909).

Ischyodus thurmanni ranges throughout the Lower Cretaceous Gault clays, the Cambridge Greensand and the Upper Cretaceous Chalk, Woodward describing the mandibular and palatine plates in "Fossil Fishes of the English Chalk". The dental plates of the Gault species appear to be more massive than the same species in the Chalk, and several other differences between the Gault and Chalk plates of *Ischyodus thurmanni* are described (Woodward 1911). The Leighton Buzzard Gault specimen is illustrated in Figure 5, the positions of the tritors being indentations in the bone with granular bases, once occupied by the crown structures that were less hard than normal teeth.

Other fish remains obtained from the Lower Cretaceous Albian beds of Leighton Buzzard during the year were various unidentifiable vertebrae, almost always isolated vertebral centra, and a number of selachian and teleost teeth. All species represented had previously been recorded, but one particular tooth merits special mention. This is a large anterior tooth of the very rare shark *Synechodus recurvus* (Trautschold), 11.6mm in height and 13.2mm wide, much larger than any previously discovered. The specimen occurred in the *Euhoplites loricatus* Zone, *Dimorphoplites niobe* Subzone of Mundays Hill quarry. A smaller tooth of this species was figured in the Annual Report for 1993, being one of three teeth associated with the skeleton of the ichthyosaur *Platypterygius campylodon* (Carter) that was found in the *E. loricatus* Zone, *Anahoplites intermedius* Subzone of the same quarry (Smart 1994).

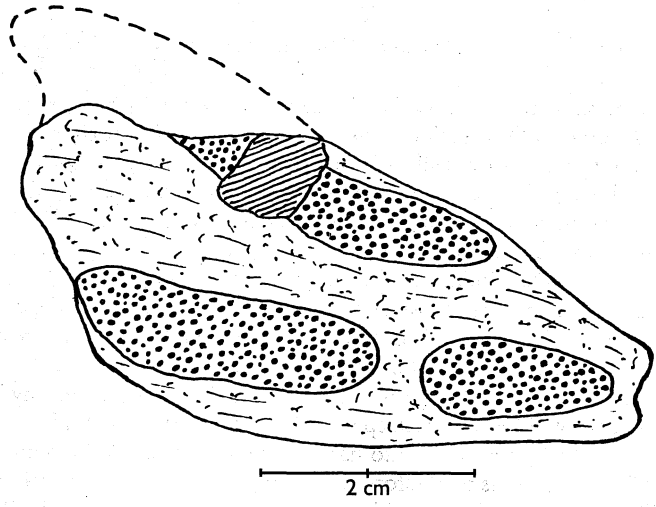


Figure 5. *Ischyodus thurmanni* Pictet and Campiche. Right palatine dental plate, inner or oral view, showing tritors (the stippled areas).
Middle Albian Lower Gault, *Euhoplites loricatus* Zone, *Anahoplites intermedius* Subzone, Mundays Hill quarry. PJS Coll. 15375 M.

ACKNOWLEDGEMENTS

I wish to thank Dr Colin Patterson, F.R.S., Dr Angela Milner, Dr Alison Longbottom and Mr David Lewis of the Department of Palaeontology, The Natural History Museum, for identifying various specimens and for allowing me access to the facilities and collections; also to Dr Hugh Owen, F.G.S., for his valuable help regarding the stratigraphy and for determining the ammonites.

My sincere thanks also to Messrs Joseph Arnold and Sons Ltd, Billington Road, Leighton Buzzard; CAMAS Aggregates, (Garside's Sands), Eastern Way, Heath & Reach, Leighton Buzzard; L.B. Silica Sand Ltd, Grovebury Road, Leighton Buzzard; Mr R.A. Bates and Mr Bruce Rogers, Totternhoe Lime and Stone Co. Ltd, Totternhoe; Mr P. Norton, Butterley Brick Company, Arlesey; Messrs Shanks and McEwan Ltd, Arlesey landfill site, and their staff who are always most helpful.

REFERENCES

LONGBOTTOM, A.E. & PATTERSON, C. 1987 In Fossils of the Chalk. *Palaeontological Assoc. Field Guide* No. 2, 238–265.

OWEN, H.G. 1972 The Gault and its junction with the Woburn Sands in the Leighton Buzzard Area etc. *Proc. Geol. Assn.* **83** Pt. 3. 287–312.

SMART, P.J. 1991 Geology and Palaeontology. Report of the Recorder. *Bedf. Nat.* **45** 17–21.

_____1994 Geology and Palaeontology. Report of the Recorder. *Bedf. Nat.* **48** 10–18.

SPATH, L.F. 1923 - 1943 A Monograph of the Ammonoidea of the Gault. *Palaeontographical Soc.* (*Monograph*), 1–787, pls 1–72.

WOODWARD, A.S. 1902–1912 The Fossil Fishes of the English Chalk. *Palaeontographical Soc.* (*Monograph*), 182–183, 188–190, pl XL(7).

P.J. SMART

MAMMALS
Report of the Recorder

The 1994 report has been compiled with records received from 41 observers. 28 species were recorded which included all the recent species seen in Bedfordshire apart from Water Shrew and Yellow-necked Mouse.

Mammal road deaths in the County show a high fatality rate for several species. The death of 40 Hedgehogs in the south-east of Bedfordshire was monitored by Ken Winder showing that evolution has not yet ironed out the roll-in-a-ball defence against vehicles. On a brighter note the numbers involved point to a high population level. Badgers were also regular casualties on the roads with over 30 deaths reported. The Bedfordshire Badger Group is keeping a record of all Badger road deaths so if you come across one please could you note the date, location including grid reference if possible and road number. If you could then pass this on to myself or any Badger Group member we will be able to keep a more comprehensive record.

The surprise of the year also came to light through road casualties. This was the appearance of three Polecats in Bedfordshire. Due to the presence of mind of John Niles, Ivor Dunn and John Comont by saving the bodies we have not only had the opportunity to examine them but also to send them to The Royal Museum of Scotland where DNA tests can be carried out. The origin of these Polecats is not known as yet but whatever their backgrounds it still gives us the opportunity to see Polecats in Bedfordshire for the first time this century.

From 1st January 1995 to 31st December 1999 we need all records of Bedfordshire mammals for a distribution mapping survey. I ask all members to be active in this project and make a note of all mammals that they find in the County, dead or alive. We can then print distribution maps for all Bedfordshire mammals at the end of this century and compare any distribution changes with the maps published in 1985 by David Anderson (*Bedf. Nat.* **40**). This will also give a distribution map for any future surveys to compare with, but to be really effective we need as many records as possible.

The following systematic list consists of 25 species. Records were also received for Mole, Brown Rat, and House Mouse.

SYSTEMATIC LIST FOR 1994

Red-necked Wallaby *Macropus rufogriseus*

There were two live sightings of this species both in July. One was seen near Tring Road, Dunstable (SP92V) and the other at Ampthill Tunnel (TL03J) (BC).

Hedgehog *Erinaceus europaeus*

Hedgehogs were observed in 11 months of the year with January the only month without sightings. The first and last records of the year were both from a garden at Woburn (BN) on 9th February and 21st December respectively. A total of 40 dead animals were counted between 16th April and 23rd November (KW).

Common Shrew *Sorex araneus*

Records were received from eight locations scattered throughout the County.

Pygmy Shrew *Sorex minutus*

The only records received of this species were from Woburn where a cat caught six during the year (BN). Singles were caught in June, July and September with three caught during August.

Water Shrew *Neomys fodiens*

No records were received.

Rabbit *Oryctolagus cuniculus*

Following the trend in recent years an autumn outbreak of myxamotosis decimated the population. Colour varieties included a black animal on the downs at Whipsnade, two white animals at Barton Hills and one buff colour, two white and two black all at Pegsdon Hills (KW).

Brown Hare *Lepus capensis*

Records were received from 22 tetrads. Counts of 15 at Chicksands (DP) and Eversholt (PT) were both made in May. The highest number was of 20+ animals on Thurleigh Airfield in June (PT).

Dormouse *Muscardinus avellanarius*

Continued survey work, looking for gnawed hazelnuts, has proven the species to be widespread in the woods and hedges of the Studham and Whipsnade area. Searches in other suitable habitats gave negative results so the known distribution is still confined to a 3km square in south Bedfordshire (CT).

Fat Dormouse *Glis glis*

The only record was of one caught in an outhouse on the Bedfordshire/ Buckinghamshire border at Whipsnade on 27th July (AR).

Bank Vole *Clethrionomys glareolus*

This was again the commonest small mammal caught in a live trapping exercise at Maulden Woods in September with nine caught from 39 traps set (DA). Other records were received from How End, Stondon, Woburn and Whipsnade.

Short-tailed Vole *Microtis agrestis*

Information received from live trapping and cat catches indicates a low population level this year.

Water Vole *Arvicola terrestris*

The River Lea population in Luton continues to thrive with five seen together at Cowslip Meadow (TL02X) in May and ten counted in TL02W in July (LJ). Away from this site only one record was received of a single animal seen on the River Ouzel at Billington Bridge in April (PM).

Harvest Mouse *Micromys minutus*

Three records: a nest was found in Wilstead Wood (JA), one killed by a cat at Beeston, and finally one found dead at Whipsnade.

Yellow-necked Mouse *Apodemus flavicollis*

No records were received.

Wood Mouse *Apodemus sylvaticus*

Two dormouse nestboxes at Whipsnade were taken over by this species with three animals disturbed from each box (CT).

Grey Squirrel *Sciurus carolinensis*

Observers reported Grey Squirrels as widespread across the County. The melanistic form or "Black Squirrel" was reported from six separate locations. The Kensworth group consisted of at least ten animals that regularly visited a bird table (NF). A black

squirrel seen in south Dunstable at the end of the year had probably moved north from Kensworth. Other singles were seen at Eversholt (SP93W), Henlow (TL13U), Sandy (TL14Y) and Woburn (SP93L).

Fox *Vulpes vulpes*

Records were received from over 40 locations. The urban foxes in Bedford Town continue to thrive (DP).

Badger *Meles meles*

There were over 30 deaths reported on the County's roads with the Dunstable-Leighton Buzzard bypass, the Dunstable-Luton A505, and the A6 south of Bedford particularly lethal (BBG). March was the month with the highest mortality rate.

Polecat *Mustela putorius*

Sightings of animals thought to be Polecat-type ferrets have been made in Bedfordshire over recent years. This year three bodies were found on roads in the County and thanks to the foresight of the finders they were preserved. These have been externally examined by Polecat expert Dr J. Birks who has stated that they look like true Polecats. The first was a juvenile near Woburn (SP93F) in July (JN), the second a male at Kings Wood (SP92J) in September (ID), and finally, also in September, another male near Souldrop (SP96V) (JC). The origin of these Polecats is at the present time unresolved. With over a hundred years of absence in south and east England there has been a recent eastward spread from the species' Welsh stronghold. Although this has resulted in recent records for Oxfordshire, Buckinghamshire and Northamptonshire, the Bedfordshire records are still rather isolated. Unofficial releases of Polecats in neighbouring counties has somewhat confused the issue.

Polecat road casualty, Kings Wood SP926202, 2nd September 1994 *Photo: Cliff Tack*

Mink *Mustela vison*

Reported during the early part of the year from Dunstable Sewage Farm where five were trapped. Also in Dunstable there was one with expensive tastes that visited a garden pond in the autumn to sample some prize Koi Carp. Others were recorded at Bromham Lake (PA), Clophill and Tiddenfoot (JCh).

Weasel *Mustela nivalis*

Recorded from 16 widespread sites throughout the County.

Stoat *Mustela erminea*

Records were received from 14 localities throughout the County. The most unusual sighting was of an animal that had assumed the white winter coat which is rarely seen in southern England. It was interacting with a normal coloured animal on Warden Hills, Luton in March (MsK).

Otter *Lutra lutra*

There was an unconfirmed report of one seen on the River Great Ouse in March. It was good to hear that spraints were found on the River Ivel for the second successive year.

Chinese Water Deer *Hydropotes inermis*

As expected the majority of records were from the Woburn/Eversholt area. The largest group were five seen together on 23rd January emerging from a communal resting area early in the morning (BN). There were two records received south of the A5 road where the species is rarely recorded. Both records were in December when rutting activity is at its height. One was found dead on the Dunstable bypass near Totternhoe (CT) and the other was seen at Grovebury Sand Pit, Leighton Buzzard (PS).

Fallow Deer *Dama dama*

Single animals were reported from Kings Wood, Heath and Reach (PC), Pegsdon Hills (KW), Wakes Farm, Eversholt (JA), Hudnall Corner and Whipsnade Heath (CT). A herd of seven was seen at Kingshoe Wood, Eversholt in March (KS) whilst the 26 counted in Potton Wood during a deer count in November was the largest herd seen in Bedfordshire (DA).

Muntjac Deer *Muntiacus reevesi*

Records were received from 25 widely scattered sites throughout the County. Six of those reported were of traffic fatalities.

Sika Deer *Cervus nippon*

Up to four animals were reported from Kingshoe Wood, Eversholt (RN).

ACKNOWLEDGEMENTS

I would like to thank the following for assisting with the study of mammals in the County during 1994:

J. Adams (JA), A. Aldhous, P. Almond (PA), D. Anderson (DA), K. Anderson, V. Arnold, Beds Badger Group (BBG), R. Brind, J. Childs (JCh), P. Clarke (PC), E. Clutten, J. Comont (JC), R.G. Cornes (BC), R. Dazley, A. Denyer, T. Donnelly, I. Dunn (ID), N. Finan (NF), D. Harlow, P. Irving, L. Jarrett (LJ), Mrs King (MsK), P. Madgett (PM), B. Nightingale (BN), J. Niles (JN), R. Nye (RN), D. Parsons (DP), T. Peterkin, A. Reeve (AR), T. Robson, M. Shadbolt, K. Sharpe (KS), P. Smith (PS), T. Smith, B. Squires, T. Stainsby, C. Tack (CT), P. Trodd (PT), K. Winder (KW), H. Winter, R. Woolnough.

CLIFF TACK

Plate 1: Toothwort *Lathraea squamaria* found at Chicksands Wood, 30th April 1994 during the "Toothwort survey" (p. 75) *Dave Tyler*

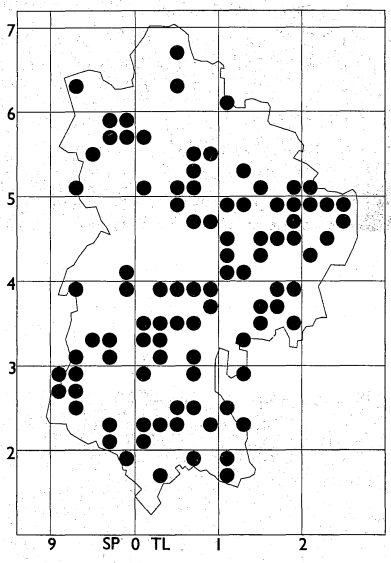
Plate 2: Natterjack Toad photographed at the field meeting at The Lodge, RSPB headquarters, Sandy 26th May 1994 *Richard Revels*

Plate 3: These Wood Ants were observed attacking the 7 Spot Ladybird for at least 5 minutes during the Wood Ant survey in Maulden Woods on 14th August 1994.
Richard Revels

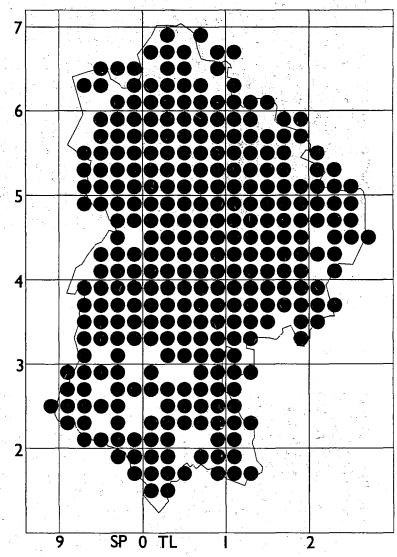
Plate 4: There has been a remarkable increase in records for the Brown Argus this year. Cut-leaved Crane's-bill, Dove's-foot Crane's-bill and Meadow Crane's-bill are all plants on which it has been seen egg laying. (p. 58) *Richard Revels*

MAMMALS – BATS
Report of the Recorders

In 1994, bats were recorded in 94 tetrads (2km x 2km squares). This is just a few more than in 1993 and 1992 when bats were recorded in 88 tetrads. Bats were recorded from 101 tetrads in 1991 and 98 tetrads in 1990. 1994's records are evenly spread across the county.



Bat records for 1994



Bat records from 1987 to 1994

Earliest non-hibernation bat records

There were only two records of active bats in February:

8 February	Unconfirmed Pipistrelle seen flying around a garden in Bromham at 5:30 pm. Seen by Mr Fawcett and reported by P. Almond, TL05A.
28 February	An unidentified bat seen flying over the road near Aperfield Farm, south-west of Woburn at 3:30 am. Seen by Paul and Ro Madgett, SP93F.

Latest non-hibernating bat records

There was just one record of a bat in December:

17 December	A 'bandit' Pipistrelle was found on the wall of a house in Upper Caldecote. It was brought to the bat group but was dead on arrival, TL14S.

Daubenton's Bat *Myotis daubentonii* (Kuhl, 1891)

Confirmed records: 4 maternity roosts, 2 hibernation sites
Unconfirmed records: 6 sightings of flying bats
Earliest active bat: 4 April
Latest active bat: 26 September
Hibernating bats: January, February and December

As well as the regularly monitored, confirmed maternity roost in Stockgrove Country Park, SP916288, two other tree roosts contained bats in the park. One was a known annexe roost, SP920293, from which three bats were recorded emerging. The second was a newly discovered maternity roost, SP917288, close to the ground in an oak tree, with an obvious stain from the hole. The traditional site had a maximum of 77 bats (9 May) and a maximum of 50 emerging bats (20 June and 27 June) while there were babies in the roost. In addition, the second maternity roost had a maximum of 34 emerging bats (4 July). The fourth confirmed roost was at The Lodge, Sandy, TL190481.

Bats were found hibernating in Silsoe ice-house and Woburn ice-house. The maximum number seen together was three.

A report on Stockgrove Country Park (Childs 1994) gives further details of the study of Daubenton's Bats.

Natterer's Bat *Myotis nattereri* (Kuhl, 1818)

Confirmed records: 1 maternity roost, 8 hibernation sites
Unconfirmed roosts: 1 maternity roost
Hibernating bats: January, February and December

The two maternity sites were both in churches: Westoning Church, TL028328 (confirmed) and Tingrith Church TL007325 (unconfirmed). Both churches are currently being restored, and there is extensive liaison with English Nature and the Bedfordshire Bat Group.

Hibernating Natterer's Bats were identified in Moggerhanger ice-house, Silsoe ice-house, Woburn ice-house, Woburn rockery tunnel, Linslade wine cellar, Barton lime kiln tunnel, Southill ice-house and Old Warden Tunnel. The maximum number seen together was 15 in Woburn ice-house.

Noctule *Nyctalus noctula* (Schreber, 1774)

Confirmed records: 1 roost, 1 dead bat
Unconfirmed records: 5 sightings
Earliest active bat: 11 April
Latest active bat: 22 August

All the unconfirmed records were of single bats flying at dusk over water or parkland.

Noctules were counted at Stockgrove Country Park (Childs 1994) and peaked at three on 2 May. Early in the year, a live, grounded Noctule was found on a ride in Bakers Wood in Stockgrove. The bat later died. In June, a Noctule roost was identified in the park, SP916290, in a hole on the underside of a branch, near the trunk, of a Scots pine. Eight bats emerged on 15 June and a male was caught by a licensed bat worker.

Pipistrelle *Pipistrellus pipistrellus* (Schreber, 1774)

Confirmed records: 17 summer roosts, 1 winter roost, 39 sightings
Unconfirmed records: 17 summer roosts, 2 winter roosts, 32 sightings
Earliest active bat: 8 February
Latest active bat: 17 December

Summer roosts were counted in Renhold (9 bats), Ampthill (10), Salford (30), Leighton Buzzard (36), Lidlington (57), Westoning (82), Haynes (111) and Maulden (164). (Also see bandit and brown accounts.)

Pipistrelles were found hibernating in two sites: in a house in Milton Bryan during building work in January, and in Maulden, in the door frame of an outbuilding that was being demolished in December. No count was received in 1994 from the record-breaking roost at Blunham (501 bats in 1993), but on 11 April, a bat was seen to enter the roost during the day.

'Bandit'/'Brown' Pipistrelles

Mid-year, we began to split the Pipistrelles, where possible, into 'bandit' or 'brown' types. Bats were identified using criteria established by Bristol University. Kate Barlow, a researcher at Bristol University, came to Bedfordshire to study some of our Pipistrelle roosts.

On 30 September, three bats were found when a sign was taken down from a pub wall in Deadmans Cross, TL111420. One, killed in the process, was a female 'brown'. The other two, both uninjured and released, were male and female 'bandits'.

'Bandit' Pipistrelle

Confirmed records: 3 summer roosts, 15 sightings
Unconfirmed records: 3 summer roosts, 8 sightings

Counts were made at two of the summer roosts. The results were: 20 bats (Biggleswade) and 30 bats (Riseley).

'Brown' Pipistrelle

Confirmed records: 4 summer roosts, 5 sightings
Unconfirmed records: 2 sightings

Counts were made at three of the summer roosts. The results were: 100+ bats (Willington), 106 bats (Great Barford) and 183 bats (Bromham).

Brown Long-eared Bat *Plecotus auritus* (Linnaeus, 1758)

Confirmed records: 8 summer roosts, 6 winter roosts, 9 sightings
Unconfirmed records: 10 roosts
Earliest active bat: 14 March
Latest active bat: 11 October
Hibernating bats: January, February and December

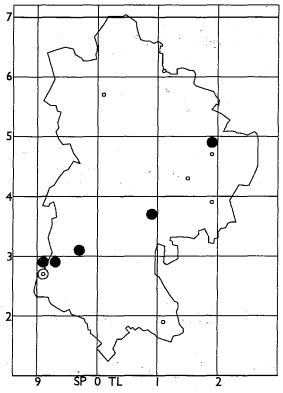
Just one Brown Long-eared Bat was recorded in each of the six hibernation sites: four being regularly checked sites and two being buildings undergoing building work. The summer roosts were in large, old houses (8), churches (5), stables (2), a barn, a priory and a shoot room. The largest roost was a colony of 20 bats in Heath and Reach.

The sightings were all of injured or grounded bats including cat-caught bats and bats trapped in buildings.

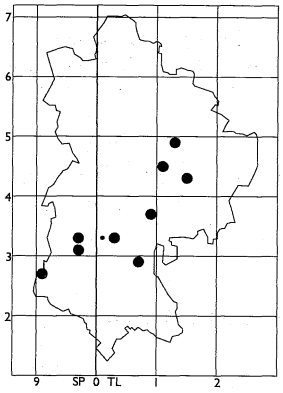
Barbastelle *Barbastella barbastellus* (Schreber, 1774)

Confirmed records: 2 hibernation sites

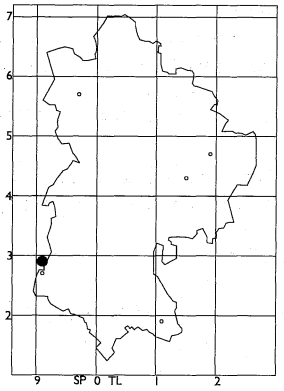
Two hibernating Barbastelles were found in February after a cold, frosty spell. One was in Moggerhanger ice-house and the other was in Woburn rockery tunnel. These bats were only the fourth and fifth County records this century.



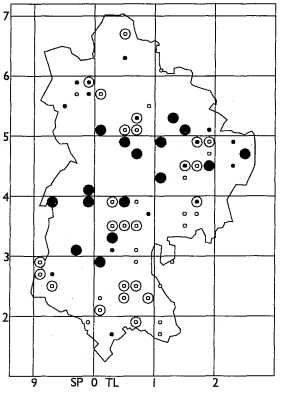
Daubenton's Bat



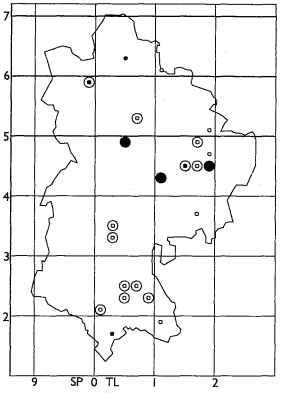
Natterer's Bat



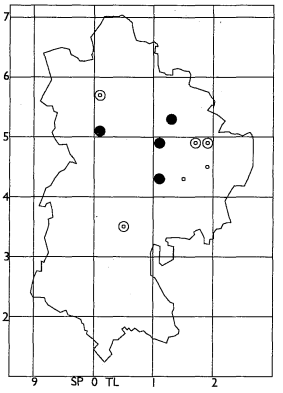
Noctule



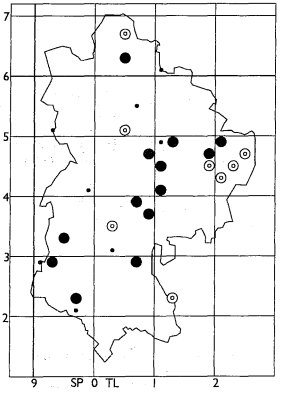
Pipistrelle



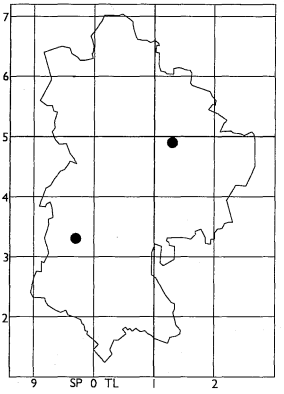
'Bandit' Pipistrelle



'Brown' Pipistrelle



Brown Long-eared Bat



Barbastelle

Key for species distribution maps

- ● Confirmed roost
- ⊙ Confirmed bat and unconfirmed roost
- ◎ Confirmed bat
- · Unconfirmed roost
- ◦ Unconfirmed bat

Unidentified bats

There were 20 records of unidentified bats from around the county. Eight of these were flying bats, four were bats flying in buildings, eight were roosts.

ACKNOWLEDGEMENTS

Many people have contributed to our knowledge of bat distribution over the year. We are greatly indebted to everybody who has submitted records.

REFERENCES

CHILDS, J. (Ed)1994 Stockgrove Country Park Survey, *Bedfordshire Bat Group Annual Report* 10-13

JOAN CHILDS and TONY ALDHOUS

CHEMI-LUMINESCENT MARKING OF DAUBENTON'S BATS

by Joan Childs and Tony Aldhous

Background

In 1988, we found the first known Bedfordshire Daubenton's roost in Stockgrove Country Park. Since then, the Bedfordshire Bat Group has counted out the Daubenton's Bats and monitored the site every week during the bat season. Brown Long-eared Bats and Noctules also roost in the park and Pipistrelles regularly feed there.

Since 1988 we have found three subsidiary Daubenton's roosts in the park. All are in ex-woodpecker holes in oak trees. The number of roosting Daubenton's Bats has been increasing. In July 1993, we counted 98 bats emerge from the main roost – the maximum recorded in the County.

We have devised an index of the number of Daubenton's Bats flying and feeding over Stockgrove Lake. We shine a torch beam across the lake, 15 minutes after observing the first Daubenton's Bat of the evening. We then count the number of Daubenton's Bats crossing the beam in the next five minutes. Although this is not a true count of the number of Daubenton's over the lake, it does allow comparisons to be made between nights.

We found that the number of roosting Daubenton's Bats does not correlate to the index of bats flying over the lake. Our chemi-luminescent marking project aimed to trace the bats to their other feeding sites.

Planning

We received permission from English Nature to catch and mark 30 Daubenton's Bats at Stockgrove during the summer of 1994. Bedfordshire County Council gave us permission to carry out the survey in the park. Phil Richardson trained us in the technique of chemi-luminescent marking. We contacted the police to inform them of our survey, and recruited volunteers from local bat groups and other wildlife societies.

We selected three dates for the survey in advance, based on our knowledge of when the roost is occupied and to ensure as little disturbance as possible to the bats.

Test-run: 21 May 1994

We made a small-scale test-run to iron out any potential problems. Unfortunately, it rained, and we were unable to mark any bats as the gelatin capsules are water-soluble. We did, however, catch two bats, make up some capsules, and allocate volunteers to their positions. It was a very useful exercise and we learned a great deal.

Survey 1: 4 June 1994

The bats deserted the roost for a few days just before our first survey – not unusual for the Stockgrove Daubenton's, but it did have us worried! They returned in time, but then it poured with rain all day on 4 June! Fortunately, the rain stopped at 7.30 pm and the rest of the evening was clear, dry and mild.

As the volunteers arrived and were given their positions in and around the park, we made up the chemi-luminescent capsules. Ten female Daubenton's bats were caught out of the roost and marked with the capsules. The first eight were marked with green capsules, but there was then a few minutes delay before more bats emerged. The last two bats marked were given red capsules to indicate their later emergence from the roost.

As each bat was released, its initial flight heading was noted. Most bats headed along the valley, not out of it. Surprisingly, most headed away from Stockgrove Lake.

Most activity was recorded from Stockgrove Lake – the main lake in the area and adjacent to the roost. Most activity was at the south end of the lake which is closest to the roost, wider and more open. There were fewer sightings at the north end which is narrower and overhung with trees. A maximum of four green-marked bats and two red-marked bats were seen at any one time.

Two green-marked bats were seen flying along the valley from the roost/Stockgrove Lake towards Rushmere Lake. One green-marked bat was seen flying over Rushmere Lake. Rushmere Lake is approximately 1km south of the roost.

Bats were not seen at any of the other lakes where volunteers were positioned, at any of the other Daubenton's roosts, flying in woodland away from the lakes, or at the Grand Union Canal 2km away.

Joan Childs and The Bedfordshire Bat Group preparing bats with chemi-luminescent capsules.
Photo: Richard Revels

Survey 2: 16 July 1994

As the young bats become independent, the number of bats in the roost drops. We caught and marked 13 bats – practically all the bats in the roost. We marked five lactating adult females, and one non-lactating first-year adult female with a chin spot, with green markers. We marked seven juveniles with white markers (three females and four males). We placed lights along the body for females and across the body for males, but this proved impossible to distinguish in the field.

Once again, the initial headings showed that the bats are using the valley as a flightpath.

Most records of marked bats were again from Stockgrove Lake. The timings indicated that some bats were heading straight for the lake. A maximum of three green-marked bats and one white-marked bat were seen at any one time.

A minimum of five marked bats (green and white) were seen flying though the valley from the roost/Stockgrove Lake towards Rushmere Lake. A white-marked bat was seen to circle a hole in an oak tree which has not to our knowledge been used as a roost. Two white-marked bats flew through the valley together. A minimum of four Daubenton's Bats (one white-marked, three green-marked) were recorded over Rushmere Lake.

One green-marked bat was seen over Charcoal Pond, a small pond approximately half a kilometre east of the roost.

One marked bat (white) was seen circling around the trees in a pine wood on the south-west side of Stockgrove Lake close to the lake.

No marked bats were seen at the Grand Union Canal.

Conclusions

The Daubenton's Bats at Stockgrove Country Park:

- use geographic and habitat features as flightpaths
- use their closest water body extensively, but also range away from it
- range at least one kilometre from their roost to feed
- typically fly low over water, but also regularly fly up to three metres over water and high in deciduous and coniferous woodland
- can land on the surface of the water
- rest on the trunks of trees
- give birth to approximately equal numbers of male and female young
- use a summer roost comprising mostly of pregnant females but also with occasional non-breeding females.

Thank you to everybody who assisted with this project.

Address: Myotis, 144 Queens Drive, Bedford, Bedfordshire MK41 9JG.

FISH
Report of the Recorder

INTRODUCTION

This report for 1994 will take the form of a systematic list of all fish species recorded for the County since the formation of the B.N.H.S. with details of present status and distribution together with any additional points of interest. The common names of fish species are well established and so to avoid tiresome repetition of long scientific names these are confined to each species' introduction.

As will be seen the fortunes of some species have changed dramatically over the recent few years, largely resulting indirectly from weather conditions, with some benefiting and some suffering a noticeable decline. This is more pronounced in our rivers as the species most in decline are seldom found in still water, although the Roach which has increased numerically is found in a great diversity of habitats.

Any mention of linear water as a general term in this report does not include the River Lea which the Recorder considers to be insignificant within the County.

The figure in brackets ( ) indicates the total number of tetrads recorded for the species (correct at 31 December 1994).

FAMILY: ANGUILLIDAE

Only one species of Eel occurs in Europe and is unmistakable in appearance with the characteristic elongate body shape. The Eel is catadromous with its complex life history now well known, moving from the sea to fresh water until returning to the sea at maturity to breed.

Eel *Anguilla anguilla*

In Bedfordshire the Eel is only recorded from the north of the County, almost exclusively from the Great Ouse and its backwaters, together with the Elstow Brook and the Ivel and its tributary the minor River Hiz.

Generally numbers are low and possibly much reduced from former times since the flow of the Great Ouse is now obstructed by water controls which restrict access, although the Eel has the ability to travel across land to regain the river if necessary.

(28 tetrads)

FAMILY: COBITIDAE

The loaches occur only in Europe and Asia where there are many species but only two occur naturally in the British Isles. They are small fish of unusual form, elongate and eel-like, with the distinguishing feature of a fringe of barbels around the mouth (six in the British species). The more common Stone Loach is present in many small streams and is frequently caught by children from which source reports of 'catfish' are often received due to what appear to be whiskers (the barbels on the fish).

Stone Loach *Noemacheilus barbatulus*

The more common of the two loach species but probably much under-recorded being of no angling interest and, as it is bottom dwelling and secretive, otherwise rarely

seen. Principally recorded from small stream sites in the south of the County, which may be due to failure to observe the species in the deeper water conditions of the Great Ouse and Ivel. New tetrad records SP95L, TL13D, TL13I (18 tetrads)

Spined Loach *Cobitis taenia*

Very similar in overall appearance to the preceding species, the Spined Loach has the distinguishing feature of a moveable double spine below each eye. Apparently a rare species in the County, it is probably very much under-recorded, although interestingly it does not generally appear to be present in the small stream sites which have been examined and the Stone Loach found. (4 tetrads)

Weather Loach *Misgurnis fossilis*

Native to central and northern Europe, the Weather Loach is not found in the British Isles and is mentioned here only as a curiosity. One specimen was taken from Finger Lake in Priory Country Park, Bedford during the course of clearing aquatic plant growth. This would have been an unwanted aquarium fish and there may well be more specimens present, but the species' long-term survival is doubtful.

FAMILY: COTTIDAE

A family of small fish with only one species occurring in the British Isles.

Bullhead *Cottus gobio*

The Bullhead is widely distributed throughout the County at a variety of sites but most commonly found in small streams. This is another small species of little interest to anglers and otherwise rarely seen unless searched for and so probably under-recorded. It appears strange that the species does not occur in the River Lea until it reaches the confines of the Luton Hoo estate but presumably it cannot tolerate the disturbance to the river through Luton itself. (19 tetrads)

FAMILY: CYPRINIDAE

This family embraces the largest number of species worldwide and is also the dominant family in Britain and Europe in terms of freshwater species. The notable feature of the Cyprinidae is that the mouth contains no teeth but these are replaced functionally by pharyngeal bones in the throat which are also important in positive identification to species level.

Dace *Leuciscus leuciscus*

The Dace is an active surface feeding species associated with flowing water conditions, sometimes in quite small streams, and not normally recorded from still water sites. In Bedfordshire the Dace is present in suitable stretches of the Great Ouse, and in the Ivel and its tributaries with the exception of the Hiz. It is also recorded from the Ouzel.

The generally low water flow conditions of recent years, as a result of comparatively dry summers, have allowed poor aeration and siltation of the clean spawning beds required by this species. In addition the Dace is short-lived and cannot survive a period of poor recruitment due to unsuccessful spawning activity. This has resulted in

a dramatic reduction in numbers at all sites with the virtual loss of the species at some. Where this has occurred the Roach, which has increased in numbers over the same period, has filled the vacant habitat. A restocking programme is under way to re-establish the species but it remains to be seen if the weather conditions of subsequent years allow this to be successful. (32 tetrads)

Roach *Rutilus rutilus*

The Roach is the most common and widely distributed species in the County, being found in virtually all habitats; lakes, ponds and all our linear waters with the exception of the minor River Hit, and it is also present at some small stream sites. At many sites the Roach is the dominant species numerically, often exceeding 50% relative abundance and reaching 95% in the Hiz.

The ability of this species to take advantage of vacant habitat is well illustrated in the Hiz where only a few years ago the Rainbow Trout was dominant, but this has now been completely replaced by the Roach. A number of cyprinid fish are liable to produce natural hybrids where species occur together, most commonly the Roach/Rudd and Roach/Common Bream. As characteristics of both parents are evident these are often difficult to identify positively from external features. (72 tetrads)

Orfe *Leuciscus idus*

The Orfe is native to most areas of Europe and Asia east of the River Rhine, and has been introduced to Britain largely as a decorative species in its golden form and also as a minor angling species of specialist interest. The Orfe was recorded from the County for the first time in 1993 from two still water locations as detailed in the report for that year. Both the normal and golden forms of the Orfe are widely available and popular as garden pond fish but under these conditions would not normally be recorded. (2 tetrads)

Chub *Leuciscus cephalus*

The Chub is normally associated with flowing water although occasionally recorded from still water sites as the result of introduction as an angling species. It is well represented in the Great Ouse, more so upstream from Bedford, and in the Ivel, and is the dominant species by biomass in the Elstow Brook, the Bedford New Cut and Cardington canoe stream. It is perhaps surprising that the species is not present in the Ouzel and also unknown in the Ivel tributaries with the exception of the Navigation.

Generally the Chub has maintained its overall position and numbers with little apparent effect from the conditions which have influenced some of the other Cyprinid species.

New tetrad record TL03J (35 tetrads)

Minnow *Phoxinus phoxinus*

Although often reported, the true species is frequently found to be Three-spined Stickleback as any 'tiddlers' fished for and caught by children seem to be labelled 'minnows'. In Bedfordshire the Minnow is not widely distributed but is generally associated with the Great Ouse, as can be seen on the tetrad map. Where the species does occur it is often prolific but in the Recorder's experience is not present at all sites which are apparently favourable, even on the Great Ouse. (19 tetrads)

Rudd *Scardinius erythrophthalmus*

In overall appearance the Rudd is similar to the Roach although generally more highly coloured (a golden form exists) and favours still water conditions although not exclusively so, being also found in slow flowing stretches of rivers. The species is recorded from many widely distributed sites of standing water and also the Grand Union Canal. It occurs at a low density at a few locations on the rivers Great Ouse, Ivel and Ouzel. In some ponds and pools of small area stunted specimens proliferate, and where the species is in association with the Roach hybrids are commonly produced. (48 tetrads)

Tench *Tinca tinca*

A large handsome species usually preferring well weeded still water or slow flowing rivers where it can sometimes be seen rolling in the marginal plant growth within a metre of the bank. The Tench is also notable as one of our few species easily identifiable to sex by outward appearance. There is a golden form which is increasingly introduced as an angling species but not yet reported from the County.

The Tench is recorded from a variety of still water sites and also suitable locations on the Ivel and Great Ouse, but as might be expected it is more numerous downstream from Bedford where the river is deeper and slower flowing, although numbers are still insignificant.

There are no records for the species from the Bedfordshire stretch of the Grand Union Canal, although this appears to be a suitable site at some points. (52 tetrads)

Gudgeon *Gobio gobio*

The Gudgeon is a small species found throughout temperate Europe and Asia, and in Bedfordshire is recorded from all our linear water and some enclosed standing water sites. The species has declined appreciably numerically at many river sites probably due to siltation of favoured spawning grounds, as has been recorded for the previously mentioned Dace but to a lesser degree.

It may appear contradictory that the Gudgeon is a prolific species at many locations along the Grand Union Canal, where continual boat traffic churns the shallow water and it is hardly possible any clean conditions exist; presumably the species has adapted to or manages to tolerate this state. (42 tetrads)

Barbel *Barbus barbus*

The Barbel is native to Britain but was introduced successfully into the Bedfordshire Great Ouse and more recently the Ivel as an angling sport species after several unsuccessful attempts.

Although the habitat provided by the Great Ouse upstream from Bedford may not be considered entirely suitable, the species has prospered since the favourable warm weather of 1989 allowing high water temperatures at the time of spawning activity which is an essential requirement for success. With young fish resulting from that year density and biomass figures are the highest ever recorded for the Barbel in the stretch of river from Turvey to the area of Harrold.

The species has also been introduced in recent years to the Ivel where it has survived at a low density as several medium size specimens were recorded near Biggleswade this year.

During this year a large number of fish of fingerling size have been introduced into the Great Ouse and New Cut in the area close to Priory Country Park but the mortality rate is expected to be high with only a small percentage of fish reaching maturity. It will be interesting to see if future years reveal successful spawning at this site which will be necessary before the species can be considered established.

New tetrad records TL04U, TL14X (10 tetrads)

Bleak *Alburnus alburnus*

A small active surface feeding species usually associated with slow flowing water and often prolific in favoured locations. Although several isolated records exist from sites such as the Ivel, the Bleak is otherwise confined to the Great Ouse and there it is an important species numerically, second only to the Roach upstream from Bedford at some locations and recently increasing downstream.

Though very rarely recorded from still water it is interesting to note that this year several specimens were taken from the main lake at Priory Country Park, one of which was of unusually large size, measured as 17.5cm in length and thought to be close to the record recorded for the species from this country. (29 tetrads)

Silver Bream *Blicca bjoerkna*

This is a relatively uncommon species and in this country occurs principally in the Great Ouse river system including the Bedfordshire stretch of the river, providing an interesting comparison to the Common Bream.

Although recorded both upstream and downstream from Bedford, it is more numerous downstream where the deeper, slower flowing water conditions are more favourable, but everywhere numbers are too low to allow a relative abundance figure to be assessed. (10 tetrads)

Common Bream *Abramis brama*

By far the more common of the two bream species and attaining a much larger size and weight, the Common Bream is recorded from both river and standing water sites throughout the County.

As regards the river Great Ouse and possibly elsewhere, the species has suffered a noticeable decline in numbers throughout this century, but a slow recovery has recently begun and the species is now well distributed along the river downstream from Bedford, a most welcome development although not fully explained. (51 tetrads)

Crucian Carp *Carassius carassius*

A very much smaller species than the Common Carp and also introduced to this country but established over many centuries, the Crucian Carp is generally confined to well weeded still water sites although several odd records exist for the River Ivel.

The species is frequently present in the confined area of small ponds and in such situations stunted specimens often proliferate. New tetrad record TL03J (15 tetrads)

Common Carp *Cyprinus carpio*

Like the previously mentioned species the Common Carp, though not native, has been long established in this country and now widely distributed being, possibly, the most sought after sport species. A weight in excess of 30lb is not uncommon and although found in suitable river locations is primarily a still water species.

The Common Carp is present at practically all large areas of still water throughout the County and also the Grand Union Canal, together with a number of favourable river sites. In apparent contradiction of stated habitat preference there are several records of the species from the River Hit and a few small streams. (42 tetrads)

Grass Carp *Ctenopharyngodon idella*

This species of Chinese origin is only recorded from a lake site within the Woburn Abbey estate where it was introduced to control the growth of aquatic plants. This record has not recently been confirmed but there is no reason to consider the species as lost. There is no other known location for the Grass Carp in the County but the species is being increasingly introduced in the country for angling interest and so may possibly appear at some suitable site with us in the future. (1 tetrad)

FAMILY: ESOCIDAE

Although widespread throughout Europe, Asia and North America there is only one genus with five species, one of which occurs in Europe.

Pike *Esox lucius*

Easily recognisable by its massive mouth and teeth and frequently large size, the Pike is our most important predator species with a preference for well weeded still or slow flowing water.

The species is widely distributed throughout the County at still water sites and all our linear waters except the River Flit. It is particularly successful in the Great Ouse where it is the dominant species in terms of biomass, though not numerically, at some locations. (57 tetrads)

FAMILY: GASTEROSTEIDAE

This family with the popular name of Stickleback is represented in this country by two species. They are small but aggressive fish and both have the characteristic and interesting behaviour of constructing a nest for spawning with the resulting eggs and fry guarded and defended by the male which at this time adopts heightened colouration, red in the case of the Three-spined species.

Three-spined Stickleback *Gasterosteus aculeatus*

The more common of the two species, the Three-spined Stickleback is widely distributed in the County but also under recorded. The majority of small streams are populated by this species in addition to larger areas of still water and rivers.

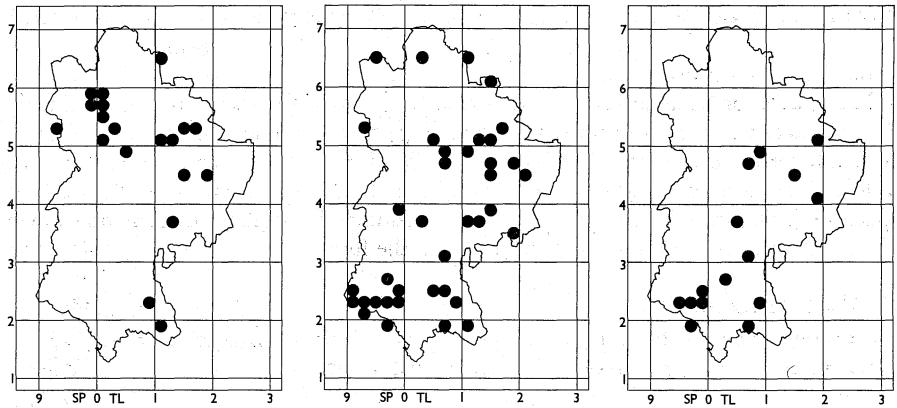
Close inspection is necessary but in some built-up areas with a flowing stream it is incredible how the species survives intensive fishing by children seeking 'tiddlers'. This is particularly remarkable in Luton where the Three-spined Stickleback is the only

species found in the infant River Lea and present at almost every accessible point into the town centre.

New tetrad records SP92B, SP92C, TL02M, TL02S, TL13D, TL13I (38 tetrads)

Ten-spined Stickleback *Pungitius pungitius*

Slightly smaller than the preceding species and not so widely found, it is probably under-recorded. (15 tetrads)



Minnow *Phoxinus phoxinus*

Three-spined Stickleback *Gasterosteus aculeatus*

Ten-spined Stickleback *Pungitius pungitius*

The above tetrad maps show the comparative distribution of the three small species requiring similar habitat type and all thought to be under-recorded.

FAMILY: PERCIDAE

This family is restricted in distribution to the northern hemisphere; all are carnivorous species and include the Zander which has been too successfully introduced to Britain from central and northern Europe and attained pest proportions some years ago in parts of East Anglia.

Perch *Perca fluviatilis*

A colourful, handsome species, the Perch is recorded from many diverse sites throughout the County. It is present in all our linear water with the exception of the minor River Hit and the Flit, and in many pools, lakes and flooded pits.

Considering the Great Ouse as an example of a site where the Perch flourishes, it is there an important predator species second only to the Pike, and during routine N.R.A. fish surveys was found at all sites sampled along the upstream stretch of the river (from Bedford) and in recent years has increased numerically.

The picture is similar for the downstream stretch of the river, recent reports showing no decline in the success of this species. As a point of interest, in the Recorder's experience, Perch found in flowing water with an abundance of healthy plant and other life exhibit a noticeably greater degree of colouration than fish from still water. (68 tetrads)

Zander *Stizostedion lucioperca*

The Zander is a native of Europe and widely distributed from the Netherlands to the Caspian Sea and with a preference for slow rivers and large areas of still water.

Although present in the Great Ouse river system, the species had not reached Bedfordshire until this year with the exception of a single known instance. During 1994 one specimen was taken from the main lake in Priory Country Park which is accessible from the nearby river, and two were taken from the River Ivel near to the Navigation channel, also accessible from the Great Ouse.

It appears that the species has now succeeded in spreading well upstream from the nearest previously known location at Offord near St. Neots in Cambridgeshire.

The character of the river upstream from Bedford is widely different to the normally preferred conditions and it remains to be seen whether the Zander extends its range still further. The other County records are for still-water sites.

New tetrad records TL04U, TL14V (11 tetrads)

Ruffe *Gymnocephalus cernua*

A smaller species similar in appearance to the Perch but not usually deliberately angled for and otherwise rarely seen. The Ruffe is much more restricted in distribution with the majority of records from the Great Ouse, the Ivel and the Ivel Navigation but none of the Ivel tributaries. It is also well represented at some locations on the Grand Union Canal to the extent of being numerically the most important species at one site. (24 tetrads)

FAMILY: SALMONIDAE

This family includes several species of commercial and sporting importance and although some spend part of their life at sea none are entirely marine, all being either anadromous or purely freshwater.

Brown Trout *Salmo trutta*

There are numerous colour forms of this species dependent upon habitat type and the Sea Trout is in fact the migratory form of the same.

Although native to the British Isles it is doubtful if the species has occurred naturally in our County and there remain only two records in modern times from widely differing sites. An old record exists for a lake site in the north of the County, not recently confirmed, but during 1992 several specimens were seen in the Bedford New Cut which it was thought may succeed, at least in the short term. However, there is no record of the species from the Great Ouse or its backwaters in our County since that time, the nearest location known being in Buckinghamshire. (2 tetrads)

Rainbow Trout *Salmo gairdneri*

The Rainbow Trout is native to western North America but has been widely introduced throughout Europe as a commercial fish farm species and for sporting purposes.

There are few records for the County but at one time the species was dominant in the minor River Hiz but has since been lost from this site. Self-sustaining populations

are rare and the failure of the species to establish in the Hiz in the long term was not unexpected. (10 tetrads)

FAMILY: SILURIDAE

The catfish are represented by numerous species worldwide but the Siluridae is a major family of Old World fish containing the two species which occur in Europe, one of which has been successfully introduced into Britain.

Wels *Silurus glanis*

The Wels was first introduced to this country via lakes within Woburn Abbey estate but is now quite widely distributed by virtue of its angling value.

The species prefers rich still water and has been reported this year from several locations including a small pond near Ampthill and Tiddenfoot Pit near Leighton Buzzard. New tetrad records SP92B, TL03J (7 tetrads)

FAMILY: THYMALLIDAE

Found only in the northern hemisphere this family contains six species in one genera; only one species is native to Europe.

Grayling *Thymallus thymallus*

The Grayling is normally associated with clean, swiftly flowing water but was introduced as a sport species to the River Ivel many years ago where it survived for several years before fading away. This was possibly to be expected but some greater success has been achieved well upstream on the Great Ouse in Buckinghamshire where a population exists in small numbers, now the nearest known location of the species. (1 tetrad)

CONCLUSION

With 29 species now recorded this includes most that can be expected from an inland county such as ours, other species being estuarine or requiring some specific conditions in the main. The most likely possibility of acquiring a further species lies with the introduction of another alien for sport purposes as has happened in the past. Otherwise, one of the lampreys (Petromyzonidae) may yet be found as the Lampern *(Lampetra fluviatilis)*, now known as the River Lamprey, was stated to be present in several of our rivers in previous centuries (mentioned in the Victoria History of the Counties of England [A History of the County of Bedford] first published 1904, and by earlier writers).

As the River Lamprey is often associated with rivers accessible from the sea, though not exclusively so, it may well be that these early references should apply to the Brook Lamprey (*L. planeri*) which is a purely freshwater species. A report of the Brook Lamprey was recently received by the Recorder but despite thorough investigation this could not be satisfactorily confirmed.

Salmon have also been recorded from the Great Ouse last century, on several occasions (as far upstream as Kempston Mill) but the possibility of this occurring now is unlikely owing to the proliferation of obstructions to access along the river.

The principal work of the Recorder now lies in compiling much more comprehensive details of distribution particularly of the smaller species, the loaches especially requiring attention.

Overall the condition of linear and other water in the County remains good and, with the continuing angling interest providing a motive for stocking and conservation, the future of our fish species should be assured.

ACKNOWLEDGEMENTS

My thanks to the following individuals for their help and information, all of which is most helpful and appreciated: V. Arnold, C. Baker, R. Bates, B. Jones, A. Martin, Brother John Mayhead, R. Revels, R. Saint, Mrs M. Sheridan, A. Taylor.

HARVEY R. WINTER

FRESHWATER CRAYFISH
Report of the Recorder

This report for the year 1994 is again unable to record any positive sightings of the native White-clawed Crayfish (*Austropotamobius pallipes*) although two reports of Astidae sp. were received which will receive further investigation during the course of 1995.

Several small stream sites in the south of the County, in an area where old records exist of the native species, were examined during the year but without success.

In the course of drainage work on a small stream running close to Barton it is reported that many crayfish were seen. Unfortunately the Recorder did not see these and no positive identification to species level can be made. It is probable that any of the native crayfish (*A. pallipes*) remaining in the County will be found as isolated communities at similar small stream locations.

There was also a report of a dead crayfish found beside the River Rhee on the County boundary in the Biggleswade area. Unfortunately, again, the species was not positively identified at the time and shortly after the river, really only a stream at this point, was very effectively dredged as shown in the photograph below.

There were no reports of Astidae species found in Bedfordshire during 1994 from the National Rivers Authority (N.R.A.) although taking the Anglia region as a whole the alien Signal Crayfish (*Pacifastacus leniusculus*) is now widely established and is the principal factor contributing to the decline of *A. pallipes*.

ACKNOWLEDGEMENTS

Thanks to the following individuals for their information and help in contributing to this report: T. Clough, J. Comont, R. Revels, R. Spendlove, A. Taylor.

CORRECTION

Reference was made in the 1993 Crayfish Report of a stream to the *west* of Barton. This should read to the *east* of Barton.

HARVEY R. WINTER

River Rhee, at the end of Ashwell Green Lane, March 1994, showing the effect of dredging work.
Photo: Richard Revels

GRASSHOPPERS AND CRICKETS
(Orthoptera)
Report of the Recorder

My first year as recorder, and a very good year it has been for records. I have used the maps and records of D. Rands as my base for a complete new survey of grasshoppers and crickets in the County although there are only records for 50 plus squares out of 384 for this year. There seems to have been a large expansion in the range of some species, e.g. Dark Bush-cricket, Common Green and Meadow Grasshoppers in the last four years.

I have also updated the species list for the county which was last done in 1976. The names as are listed in Grasshoppers and Allied Insects of Great Britain and Ireland by J.A. Marshall and E.C.M. Haes (Harley Books 1988).

Order	**ORTHOPTERA**		
Suborder	**ENSIFERA**		
Superfamily	**TETTIGONIOIDEA**		
Family	TETTIGONIIDAE		
Subfamily	MECONEMATINAE		
	Oak Bush-cricket	*Meconema thalassinum*	(De Geer 1773)
Subfamily	DECTICINAE		
	Wart-biter ★	*Decticus verrucivorus verrucivorus*	(Linnaeus 1758)
	Dark Bush-cricket	*Pholidoptera griseoaptera*	(De Geer 1773)
	Bog Bush-cricket ★	*Metrioptera (Metrioptera) brachyptera*	(Linnaeus 1761)
	Roesel's Bush-cricket	*Metrioptera (Roeseliana) roeselii*	(Hagenbach 1822)
Subfamily	CONOCEPHANLINAE		
	Short-winged Cone-head	*Conocephalus (Xiphidion) dorsalis dorsalis*	(Latreille 1804)
Subfamily	PHANEROPTERINAE		
	Speckled Bush-cricket	*Leptophyes punctatissima*	(Bosc 1792)
Superfamily	**GRYLLOIDAE**		
Family	GRYLLIDAE		
Subfamily	GRYLLINAE		
	House-cricket	*Acheta domesticus*	(Linnaeus 1758)
Family	GRYLLOTALPIDAE		
	Mole-cricket ★	*Gryllotalpa gryllotalpa*	(Linnaeus 1758)
Suborder	**CAELIFERA**		
Superfamily	**ACRIDOIDEA**		

Family	TETRIGIDAE		
	Slender Ground-hopper	*Tetrix (Tetrix) subulata*	(Linnaeus 1758)
	Common Ground-hopper	*Tetrix (Tetratettix) undulata undulata*	(Sowerby 1806)
Family	ACRIDIDAE		
Subfamily	CYRTACANTHACRIDINAE		
	Egyptian Grasshopper	*Anacridum aegyptium*	(Linnaeus 1764)
Subfamily	GOMPHOCERINAE		
	Stripe-winged Grasshopper	*Stenobothrus (Stenobothrus) lineatus lineatus*	(Panzer 1796)
	Woodland Grasshopper ★	*Omocestus rufipes*	(Zetterstedt 1821)
	Common Green Grasshopper	*Omocestus viridulus*	(Linnaeus 1758)
	Field Grasshopper	*Chorthippus (Glyptobothrus) brunneus brunneus*	(Thunberg 1815)
	Meadow Grasshopper	*Chorthippus (Chorthippus) parallelus parallelus*	(Zetterstedt 1821)
	Lesser Marsh Grasshopper	*Chorthippus (Chorthippus) albomarginatus albomarginatus*	(De Geer 1773)
	Mottled Grasshopper	*Myrmeleotettix maculatus maculatus*	(Thunberg 1815)

★ Bog Bush-cricket was last recorded in the County at Aspley Heath in October 1944, while Wart-biter was found at Electrolux Ltd., Luton, in early August 1979. Woodland Grasshopper was found "near Luton" at some point and there is also evidence that Mole-cricket was once found in the County at some point before 1947. Stripe-winged Grasshopper was on the Downs near Whipsnade up to 1953 and at Barton Hills in the early 1990s.

Oak Bush-cricket *Meconema thalassinum*

Recorded in 15 tetrads from the 18th June to 2nd September, at TL03M, TL03U, TL04Z, TL05F, TL12E, TL12J, TL13F, TL14E, TL14Y, TL14Z, TL15W, TL15V and with 3 previous unrecorded tetrads, which are:

TL11D and TL11E – Luton Hoo Estates
TL13A – Pegsdon Hills

Dark Bush-cricket *Pholidoptera griseoaptera*

Recorded in 34 tetrads from the 20th June to 19th October, at TL02J, TL02N, TL03F, TL03G, TL03K, TL03L, TL03M, TL03N, TL03U, TL03V, TL04A, TL04B, TL04C, TL04G, TL12J, TL13A, TL13B, TL13E, TL13F, TL13G, TL13H, TL13I, TL14E, TL15V and with ten previous unrecorded tetrads, which are:

TL01Z, TL11D and TL11E – Luton Hoo Estates
TL02P – Sundon Hills Country Park
TL03I – Coopers Hill and Ampthill bypass road verge
TL04Z – A603 Bedford to Willington road verges
TL04Y – The Lodge, Sandy
TL15Q – Waterloo Thorns
TL12E – Pegsdon Hills
TL03H – Steppingley Road out of Flitwick

Roesel's Bush-cricket *Metrioptera roeselii*

After only four years, this species appears to have a reasonably strong foothold in the south and has now started to spread into the middle of the County, with records from

12 tetrads for this year from 31st July to 5th October.

TL01D – Whipsnade Zoo, Dunstable – singing short-winged males

TL02F and TL02K – Cottage Bottom, Dunstable – with a total of 8 short-winged males

TL02X, TL02Y and TL12D – Warden Hills, Luton – with a total of 5 singing males of both forms

TL02T – with many singing males in the grass, along the field edge

TL02N – Sundon Quarry, near Luton – with at least 7 singing males of both forms

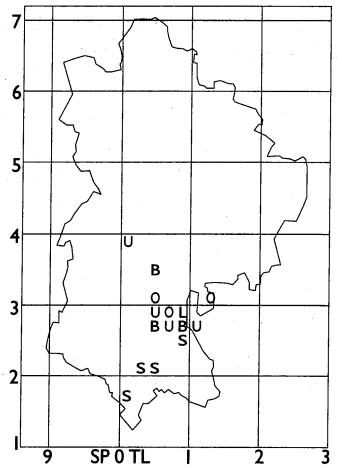
TL02P – Dyers Hill Farm, near Harlington – one singing male by edge of track

TL02Z – Barton Hills, Barton – with 2 long-winged singing males

TL03M – Flitwick Moor, Flitwick – with at least 3 singing males, one of which was a short-winged form

TL04E – Millbrook Test Track – one singing male in grass by field/road verge edge

With records for over 35 singing males of either long or short-winged form, there are still no records of females found this year, although there must be, as short-winged forms are the new generation and they only produce one generation a year. The species appears to prefer areas of dry, rough grass habitat.



Distribution of Roesel's Bush-cricket *Metrioptera roeselii* in Bedfordshire

KEY

S – Short-winged form
L – Long-winged form
U – Unknown
O – Old records
B – Both long and short-winged form

Short-winged Cone-head *Conocephalus dorsalis*

Still only found in one tetrad within the county, TL03M at Flitwick Moor from 17th July to 29th September, with reasonable numbers found there, while some were found outside the nature reserve.

Speckled Bush-cricket *Leptophyes punctatissima*

Recorded in 14 tetrads from 20th June to 7th October at TL02P, TL03M, TL03U, TL04Z, TL12J, TL13A, TL13F, TL14Y, TL14Z, TL15Q, TL15W and with three previous unrecorded tetrads, which are:

TL11D – Luton Hoo Estate

TL04B – Stewartby Lake Country Park

TL04G – Coronation Pit, Stewartby

House Cricket *Acheta domesticus*

Recorded in two tetrads from July to September at TL01D and one unrecorded tetrad of TL04B at the Vicarage or 'L' Field landfill site.

Slender Ground-hopper *Tetrix subulata*

Recorded in seven tetrads from 3rd July to 3rd September, at SP92B, TL04A, TL04B, TL14E and with three previous unrecorded tetrads, which are:

TL04C – Vicarage or 'L' Field landfill site
TL04G – Coronation Pit, Stewartby
TL15V – Waterloo Thorns

Common Ground-hopper *Tetrix undulata*

Recorded in eight tetrads from 20th June to 19th October, at TL03M, TL03U, TL04B, TL14Y, TL14Z and with three previous unrecorded tetrads, of:

TL04A – Rookery Pit, Stewartby
TL04C – Vicarage or 'L' Field landfill site
TL04G – Coronation Pit, Stewartby

Egyptian Grasshopper *Anacridum aegyptium*

Second record for the County, found at Rookery Pit (TL04B) on the 23rd July. Large, brown grasshopper with dark patches on its hindwings, indented pronotal keel, striped eyes and about 40mm long, male. The first record was found at a house in Arlesey in February 1952.

Common Green Grasshopper *Omocestus viridulus*

Recorded in 19 tetrads from 3rd July to 18th September, at TL01E, TL02A, TL02P, TL02X, TL02Y, TL03I, TL03M, TL12E, TL12J, TL14Y and with ten previous unrecorded tetrads, of:

TL03U – Maulden Woods
TL04G – Coronation Pit, Stewartby
TL05F – Blunham Lake
TL13A, TL13B and TL13F – Pegsdon Hills
TL14E – Cople Pits
TL14Z – The Lodge, Sandy
TL15V – Waterloo Thorns

Field Grasshopper *Chorthippus brunneus*

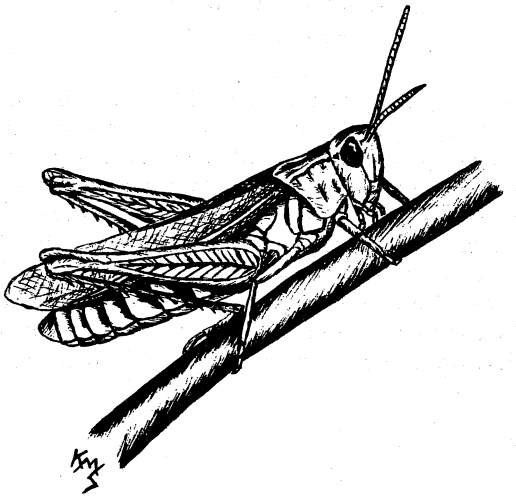
Recorded in 26 tetrads from 18th June to 19th October, at TL01Y, TL01Z, TL02D, TL02X, TL02Y, TL02N, TL02S, TL03M, TL03U, TL04A, TL04B, TL04G, TL05F, TL11E, TL12E, TL12J, TL14E, TL14Y, TL14Z, TL15Q, TL15V, TL15W and with three previous unrecorded tetrads, of:

TL02M – SKF industrial estate, Luton
TL11D – Luton Hoo Estate
TL13A – Pegsdon Hills

Meadow Grasshopper *Chorthippus parallelus*

Recorded in 27 tetrads from 18th June to 19th October, at SP91Z, TL01Y, TL01Z, TL02N, TL02X, TL03M, TL03U, TL04A, TL04B, TL04G, TL05F, TL12E, TL12J, TL13F, TL14E and with 12 previous unrecorded tetrads of:

SP92B – Tiddenfoot, Leighton Buzzard
TL02P – Sundon Hill Country Park
TL02Y – Warden and Galley Hill
TL03I – Coopers Hill and road verge of Ampthill bypass
TL11D and TL11E – Luton Hoo Estate
TL13A and TL13B – Pegsdon Hills
TL14Z and TL14Y – The Lodge, Sandy
TL15V and TL15W – Waterloo Thorns



Lesser Marsh Grasshopper *Kevin Sharpe*

Lesser Marsh Grasshopper *Chorthippus albomarginatus*
Recorded in 14 tetrads from 2nd July to 5th October at TL03I, TL03M, TL04A, TL04B, TL04C, TL04G, TL04Z, TL05F, TL14E, TL14Y, TL14Z, TL15W, TL15V and with one new tetrad record of TL03U – Maulden Woods.

Mottled Grasshopper
Recorded in three tetrads from 3rd July to 18th September at TL03I and TL14Y and with one new previous unrecorded tetrad of TL14Z – The Lodge Sandy.

ACKNOWLEDGEMENTS

I would like to thank the following for their records: P. Almond, D. Anderson, R. Brind, S. Cham, J. Comont, E. Newman, M. Sheridan, C. Tack and M. Williams.

REFERENCES

CHAM, S. 1993 Roesel's Bush Cricket *Metrioptera roeselii* in Bedfordshire *Bedf. Nat.* **47** 92
MARSHALL, U. A. and HAES, E. C. M. *Grasshoppers and Allied Insects of Great Britain and Ireland*, Harley Books.
PALMER, R. 1953 Bedfordshire Orthoptera *Bedf. Nat.* **8** 22-24
RANDS, D. 1976 Grasshoppers and Crickets – Report of the Recorder *Bedf. Nat.* **31** 49-50
RANDS, D. 1977 Grasshoppers and Crickets – Report of the Recorder *Bedf. Nat.* **32** 24
RANDS, D. 1977 The Distribution of the Common Bush-crickets and Grasshoppers in Bedfordshire *Bedf. Nat.* **32** 24-30
RANDS, D. 1991 Grasshoppers and Crickets – Report of the Recorder *Bedf. Nat.* **45** 31
RANDS, D. 1991 Lesser Marsh Grasshopper *Chorthippus albomarginatus Bedf. Nat.* **45** 31-33
RANDS, D. 1991 House Cricket *Acheta domesticus Bedf. Nat.* **45** 33

K. M. SHARPE

DRAGONFLIES (Odonata)
Report of the Recorder

The weather in April was cold and showery and May was rather unsettled. This resulted in poor conditions for early species which failed to materialise in the numbers normally expected in May. June saw improved temperatures which produced a later than average emergence for most species. One of the warmest Julys this century, with a succession of hot and sunny days, provided ideal conditions for dragonfly activity.

The Society's recording day at Luton Hoo produced some of the first records for the estate for some years but due to the generally poor water quality feeding in from the River Lea as it passes through Luton the number of species is limited. In the poorly recorded north of the county Tony Smith has added a number of new tetrad records. Peter Almond's work at Bromham lake has shown a steady increase in species recorded from this site.

SYSTEMATIC LIST

Zygoptera (Damselflies)
Banded Demoiselle *Calopteryx splendens*
New tetrad records TL04A, TL24G
Emerald Damselfly *Lestes sponsa*
New tetrad record TL04V
Large Red Damselfly *Pyrrhosoma nymphula*
New tetrad records SP93Q, SP95J, U,V,Y, SP96Q, TL04V
Blue-tailed Damselfly *Ischnura elegans*
New tetrad record TL24C
Common Blue Damselfly *Enallagma cyathigerum*
New tetrad records SP94R,Z, SP96Q,W, TL02P, TL04S, TL15Q, TL24C
Azure Damselfly *Coenagrion puella*
New tetrad records TL04A,B,V, TL11E, TL14X, TL24C,G

Anisoptera (Dragonflies)
Brown Hawker *Aeshna grandis*
New tetrad records SP94R, SP95J, SP96L,R, TL03T, TL04S, TL14X, TL24G
Southern Hawker *Aeshna cyanea*
New tetrad records SP94R, SP95R, SP96Q, TL03T, TL14X, TL24C,G
Migrant Hawker *Aeshna mixta*
New tetrad records SP95F,R,X, SP96Q, TL04V, TL05F, TL14X, TL24C
Emperor Dragonfly *Anax imperator*
New tetrad records SP93Q, SP95V
Broad-bodied Chaser *Libellula depressa*
New tetrad records SP95M,T, TL03Z, TL04V
Four-spotted Chaser *Libellula quadrimaculata*
New tetrad records TL04B,V, TL05F
Black-tailed Skimmer *Orthetrum cancellatum*
New tetrad records SP94Z, TL04Q, TL24C★

Common Darter *Sympetrum striolatum*
New tetrad records SP94R, SP95X,Y, SP96L,Q, TL03T, TL04S, TL14X, TL24C
Ruddy Darter *Sympetrum sanguineum*
New tetrad records SP95X, SP96Q*, TL04G,V, TL05A,F
*New 10km record

ACKNOWLEDGEMENTS

J. Adams, P. Almond, V. Arnold, B. Anderson, D. Anderson, J. Childs, D. Parsons, S. Pittman, R. Revels, K. Sharpe, A. Smith, C. Tack, M. Watson, C. Watts, K. and M. Weeden.

STEPHEN CHAM

SOCIAL WASPS – ANOTHER NEW COUNTY RECORD
by Nancy Dawson

The number of species of social wasps (Hymenoptera, Vespidae) resident in Great Britain has recently increased by 33%, from six to eight. The two newcomers *Dolichovespula media* (Retzius) and *D. saxonica* (Fabricius) are both types of tree wasp which make paper nests suspended in trees and bushes. They probably arrived on the south coast as mated queens in produce from the continent. They soon established themselves and have been increasing their range ever since.

D. media was first recorded in Sussex in 1980 and had arrived in Bedfordshire by the summer of 1990 when a nest was found in a Shefford garden (Brind 1990). Since then many more nests have been identified in the County. A proportion of individuals of this species are almost pure black and so are very distinctive.

D. saxonica was first recorded in Dorking, Surrey in 1987 with the first nest being found at Crawley, Sussex in 1991. It is good to report that it has now reached our County. Workers and queens were observed in late July and August 1994 nectaring on a *Berberis wilsoniae* bush at The Old House, Ickwell Green, near Biggleswade OS grid ref. TL152455. They were also visiting the flowers of Globe-thistle *Echinops ritro* and Canadian Goldenrod *Solidago canadensis*. Identification was confirmed by Dr George Else, Natural History Museum. Richard Revels subsequently recorded a queen feeding on Ivy flowers on September 8th 1994 in Old Warden OS grid ref. TL138439. It is possible that this wasp is commoner than records of it indicate as it is hard to separate from the related *D. norvegica* (Fabricius).

Photographs of *D. saxonica* can be seen in Plate 5.

REFERENCES

BRIND, R. 1990 *Dolichovespula media* (Retzius) (Hymenoptera, Vespidae) in Bedfordshire *Bedf. Nat.* **45** 34.

BRIND, R. A. 1994 Changes in Social Wasps (Vespidae) in Bedfordshire *Bedf. Nat.* **48** 97-101.

Address: 2 The Old House, Ickwell Green, Biggleswade SG18 9EE.

BUGS (Hemiptera-Heteroptera)
Report of the Recorder

A new species was added to the County List in 1994, the grass-bug *Trigonotylus caelestialium*. It has not long been on the British List as previously it was confused with a very similar species, *T. ruficornis*. I recorded it from five sites in the County in August.

Three shield-bug species hitherto uncommon in the County were exceptionally frequent in 1994:

Palomena prasina: a 4th-instar nymph at Whipsnade Heath, 16th July. Nymphs in August as follows: a 5th-instar in Maulden Wood on the 3rd and another on the14th; a 4th-instar and two 5th-instar at Chicksands Wood and a 5th at Palmers Wood, Old Warden, on the18th; a 4th and a 5th-instar near Simpsonhill Quarry, Silsoe, on the 21st.

Dolycoris baccarum: a 4th and a 5th-instar nymph beside Aspley Wood on 31st July; two adults on the embankment of the newly diverted road across Wavenden Heath on 29th August; two adults on the sandy road-verge at Fox Corner, Heath & Reach, on 7th September.

Troilus luridus: apart from a Sandy record (below), a 5th-instar nymph and an adult in Maulden Wood on 14th August; a 5th-instar and three adults in Chicksands Wood on 8th August (one with its rostrum piercing a 7-spot Ladybird, *Coccinella 7-punctata*); a 5th-instar and five adults in a hedgerow between Sharnbrook and Souldrop, on 25th September.

Records of bugs obtained during a BNHS Recorders Meeting at The Lodge, Sandy on 2nd July included:

Dictyla convergens: a local lace-bug, nymphs were found on Water Forget-me-not (*Myosotis scorpioides*), its usual host plant, at the margin of an artificial pool. It is understood that the plants had been brought from the Ouse Washes. The common bug of Reed Sweet-grass (*Glyceria maxima*), *Ischnodema sabuleti*, was nearby on this host-plant and may have had a similar origin.

Picromerus bidens: 3rd-instar to 5th-instar nymphs of this shield-bug on Heather (*Calluna vulgaris*), also an adult of another shield-bug, *Troilus luridus*.

Chorosoma schillingi: three 5th-instar and an adult on Wavy Hair-grass (*Deschampsia flexuosa*). There are two previous Bedfordshire sites for this local bug of dry grassland, one being nearby on the former railway track below The Lodge. Subsequently, on 29th August, two males were found at Wavenden Heath on the embankment of the new road.

Other interesting records from the County this year include:

Reduvius personatus: a dead adult of this infrequently recorded assassin-bug was found by R. Brind, in Bedford Museum in a storeroom, 10th April.

Xylocoris galactinus: at last found in the County in its natural habitat, several adults in straw and horse dung near Coppice Wood, Riseley, 17th July.

Orthops basalis: a second record for the County, on Hogweed in a field between

Sharnbrook and Souldrop. A relatively recent addition to the British list but frequent on Umbellifers in much of Britain.

Placochilus seladonicus: a new site was found for this very local bug of Field Scabious, Sharpenhoe Clappers on 30th July.

Orius laticollis: a second site for the County, Priory Country Park on 13th August on riverside *Salix* spp., it was fairly frequent here.

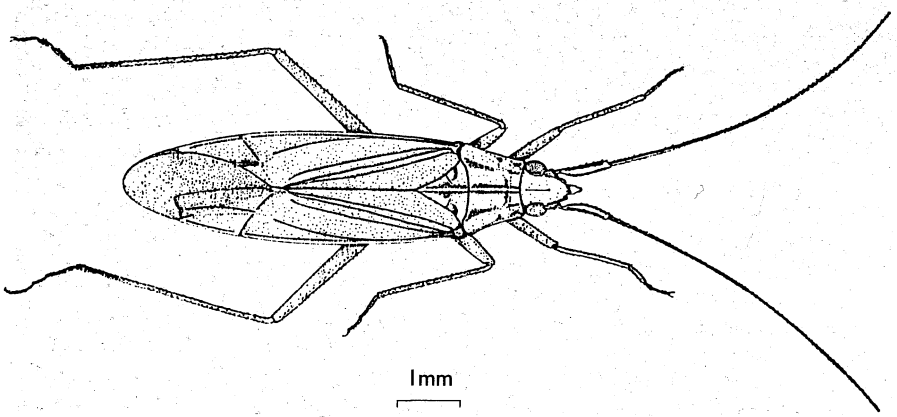
Zicrona caerulea: a secretive metallic blue shield-bug, one on 25th September in grass etc. at a field margin between Sharnbrook and Souldrop.

ADDITION TO THE COUNTY LIST

Miridae

Trigonotylus caelestialium (Kirkaldy) recorded from five sites, all during August. It seems from these that this species has a later season than *T. ruficornis*, also the habitat is typically disturbed ground with arable weeds such as Black Grass (*Alopecurus myosuroides*), Knotgrass (*Polygonum aviculare agg.*) and 'mayweeds' (*Matricaria* etc.). Records are as follows:

6th August – at Pegsdon Hills Nature Reserve, 5th-instars and adults common on 'set-aside' fallow; 13th – a male swept from short grass in the car-park of Priory Country Park, Bedford; 18th – a teneral adult and 5 adults on disturbed ground in a field entrance near Old Warden; 21st – a female in rough grass on a stream-bank at Gravenhurst; 29th – a female at Wavendon Heath on the embankment of the new road.



Trigonotylus caelestialium (Kirkaldy) An adult female. *(with acknowledgements to B. Aukema)*

[As in previous years, unattributed records are the Recorder's. Records are for 1994 unless stated otherwise.]

B. S. NAU

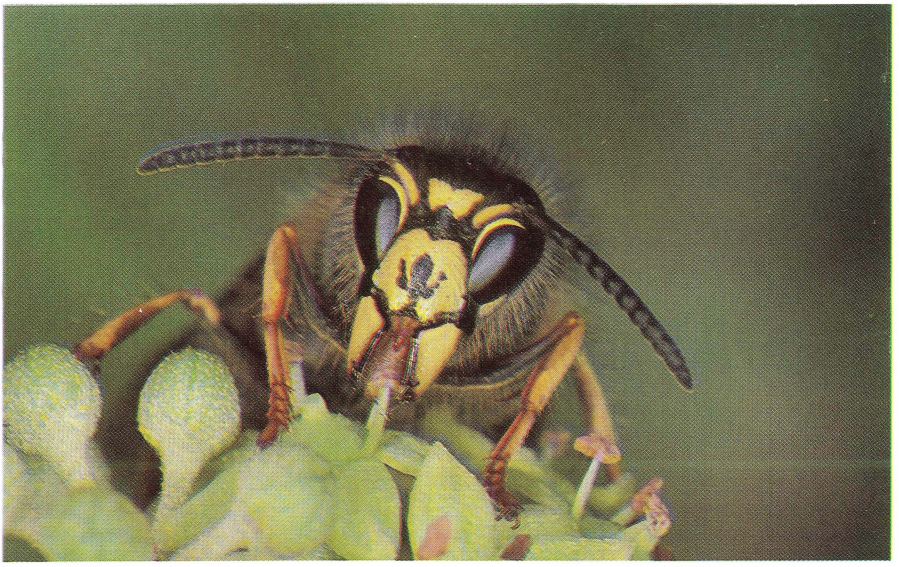


Plate 5: The Saxon Wasp *Dolichovespula saxonica* was first recorded in the County in 1994. (p. 50) *Richard Revels*
Top: the face of a queen showing distinctive facial markings.
Bottom: a queen feeding on ivy at Old Warden (TL137438) 8th September 1994.

Plate 6: Graham Bellamy recording butterflies along the Barton Hills transect, 31st July 1994. Twenty-five species were recorded during the year (p. 55)

Richard Revels

Plate 7: Ian Woiwod carrying out butterfly monitoring on part of the Potton Wood transect, 5th August 1994. Twenty species were recorded during the year (p. 55)

Richard Revels

LACEWINGS
Report of the Recorder

The event of the year in this field was the publication at last of Colin Plant's *Provisional Atlas of the Lacewings and Allied Insects (Neuroptera, Megaloptera, Raphidioptera and Mecoptera) of Britain and Ireland,* Biological Records Centre, 1994. This is far more than just an atlas and gives much information on habitats, seasonality, collecting, naming and recent nomenclatural changes (unfortunately numerous). What few lacewings have been recorded during the year are listed below.

Conwentzia psociformis (Curtis)
Sandy Lodge (R.S.P.B.), on oak near lodge and on main drive, 2.vii.1994, B.Verdcourt; Luton Hoo on holly near old greenhouse (also many females taken but not nameable), 19.vi.1994, B.Verdcourt.

Coniopteryx sp.
Luton Hoo, near farm (female, not nameable), 19.vi.1994, R. Brind.

Hemerobius humulinus (L.)
Luton, TL092234, on wall of house, 30.iv.1994, B. Rands.

Chrysopa perla (L.)
Luton Hoo, Birch Wood, open glades, 19.vi.1994, B.Verdcourt.

Chrysoperla carnea (Steph.)
Linslade, SP 92C, SP 915246, 18.ix.1994, P. Madgett; Luton, TL 092234, 29.iii.1994, B. Rands.

Chrysopidia ciliata (Wesmael)
Luton Hoo, Birch Wood, open glades, 19.vi.1994, B.Verdcourt.

Mallada prasina (Burm.)
Sandy Lodge (R.S.P.B.), near Natterjack Toad pond, on oak, 2.vii.1994, B.Verdcourt.

M.ventralis (Curtis)
Sandy Lodge (R.S.P.B.), near lodge, on sycamore and oak, 2.vii.1994, B.Verdcourt.

Nineta flava (Scop.)
Luton Hoo, Birch Wood, open glade, 19.vi.1994, B.Verdcourt.

N. vittata
(Wesmael) Luton Hoo, Birch Wood, open glade, 19.vii.1994, B.Verdcourt.

Sialis lutaria (L.) (an alder-fly)
Luton Hoo, on tree near lake, by scout hut, 19.iv.1994, B.Verdcourt.

The following Psocoptera may also be recorded:

Graphopsocus cruciatus (L.)
Sandy Lodge (R.S.P.B.), near lodge, on oak, 2.vii.1994, B.Verdcourt; Luton Hoo, on holly near old greenhouse, 19.vi.1994, B.Verdcourt (glabrous wing margins).

Caecilius flavidus (Steph.)
Luton Hoo, on holly near old greenhouse, 19.vi.1994, B.Verdcourt.

Mesopsocus unipunctatus (Mueller)
Luton Hoo, on holly, near old greenhouse, 19.vi.1994, B.Verdcourt.

B. VERDCOURT

BUTTERFLIES (Lepidoptera)
Report of the Recorder

General

The 1994 butterfly season began slowly with rather few being seen, but with the onset of hot sunny weather during July and August numbers increased rapidly. Several observers ended 1994 with the impression that it was a poor year for butterflies but this view seems to have been greatly influenced by the weather when they were able to go out. Perhaps this rather variable year is best summed up by Tony Smith's comment: "All in all a very good year, the poor months being outweighed by the incredibly good July and August." Some idea of the numbers of butterflies in August is given by the count of 1010 butterflies seen on one transect walk on Whipsnade Downs on 7 August. At the other end of the County in West Wood on 15 August at around 4.30 pm Tony Smith counted 27 Brown Argus roosting on tall grasses along a wide ride among "many Common Blues, 6 Brimstones, 1 Painted Lady, 9 Peacocks, 8 Large Whites, Small White, 2 Large Skippers and 1 Essex Skipper, 7 Speckled Woods, 4 Wall Browns, 15 Gatekeepers, 2 Meadow Browns and 35 Silver Y moths." These are the sort of numbers of individuals and variety of species that one should see in a good season. Hopefully the strenuous efforts that have been made in recent years to improve habitats may have had some effect but the numbers are still well below the thousands reported on some sites during the first half of the century. Evidence that such numbers can still occur in England in the 1990s is provided by a report by Greg Herbert (1994) of a visit to Old Winchester Hill, Hampshire on 13 August 1994 when he estimated the population of Chalkhill Blues to be more than 25,000. He describes the hillside as alive with butterflies. "Clumps of marjoram about two foot square would have several butterflies on each flower, perhaps one – two hundred per plant. Beachball sized groups (balls) of these butterflies were flying across the hillside, about eight feet from the ground, presumably a courting or mating pair surrounded by dozens of hopeful males."

However in the dry conditions the flowering period of many plants was short and the nectar sources for butterflies became depleted during the latter half of August. Together with a deterioration in the weather in September, this lead to a reduction in late summer sightings though a few individual butterflies remained active on warm days until early December.

The most notable events of the season were: the great numbers of Small Whites almost everywhere in the county; a remarkable increase in records for the Brown Argus; the arrival of many migrant butterflies, including good numbers of the Painted Lady and more Clouded Yellows than for several years, and widely scattered sightings of large Fritillaries including the Dark Green Fritillary and Silver-washed Fritillary.

Both the Bedfordshire Chalk Grasslands Butterfly Survey and the various transect walks continued to yield valuable information on the local distribution and numbers of many of the species found in the county. Brian Anderson's initiative in setting up a transect walk and recording 18 species on the small Hill Rise nature reserve in Bedford showed what can be achieved in what to many would appear to be a rather un-

promising patch of waste ground in an urban area. There remains a great need for more such monitoring in other sites around the county. (Sections of transects at Barton Hills and Potton Wood are shown in Plates 6 and 7)

Searching for butterflies in the areas of the County dominated by intensive agriculture is a rather depressing experience. Most footpaths and bridleways along field edges have probably been subjected over the years to drift from agricultural pesticides and yield few records, although some surprising exceptions, mostly broader tracks, were found. By contrast, some of the "green lanes" with hedges on both sides were very productive with 10 or more species visible on a short visit. For example, there are some excellent sites of this type in the north-east of the County around Upper and Lower Dean and Swineshead. It is most important that owners should be encouraged to look after such places so that they can remain as refuges in the agricultural landscape. Rather less productive but nevertheless important as butterfly habitats are road verges, especially the wider ones, and the small corners of rough ground where road lines have been altered. An example is the verge of the Millbrook to Millbrook Station road. It was good to note verges designated as nature reserves at various points.

All references to the Survey and to the Whipsnade Downs transect in the paragraphs that follow relate to the report by Herbert (1994) in which the results were set out in some detail.

The totals of sightings and number of species ( ) for the various transects were:

	1993		**1994**		
Barton Hills	1825	(22)	1903	(25)	(GB).
Dunstable Downs	3682	(24)	2219	(28)	(EJM)
Hill Rise	226	(14)	443	(18)	(B&YA)
Potton Wood	3769	(19)	3865	(20)	(IW)
Priory Park	1229	(20)	2162	(21)	(RB & EN) (years are not comparable)
Totternhoe Quarry	1162	(24)	2206	(25)	(GH and others)
Whipsnade Downs	3059	(26)	5128	(25)	(GH and others)

To save repetition, comments by named observers on individual species refer in general to areas as follows unless specific localities are mentioned: JA and DP – Chicksands Wood; AD – Westoning and AS – north-west Bedfordshire.

Skippers

Small Skipper *Thymelicus sylvestris*

"numbers normal" (JA); "not quite as abundant as usual." (AD); the fourth highest total since 1976 on the Potton Wood transect, but fewer than 1990 and 1991 (IW); not distinguished from Essex Skipper in The Chalk Grasslands Survey.

Essex Skipper *Thymelicus lineola*

"numbers normal" (JA); in some sites it was difficult to find an Essex Skipper amongst quite large numbers of Small Skippers while in others, particularly in the north of the county the reverse was true (CB); only a single specimen was positively identified on the Potton Wood transect (IW); not distinguished from Small Skipper in The Chalk Grasslands Survey.

Large Skipper *Ochlodes venata*

"numbers normal" (JA); "had a very good year." (AS); "common. The number I see becomes greater each year." (AD); back to the 1991 and above the 18-year average for Potton Wood (IW); seen at 14 out of 18 sites in The Chalk Grasslands Survey and more than 1993 on the Whipsnade transect with about the same numbers on the Barton Hills transect.

Dingy Skipper *Erynnis tages*

This species seems to have had a poor year possibly due to the cool and dull weather in the early part of the year. It was seen at only 7 out of 18 sites in the Chalk Grasslands Survey, including Bradger's Hill (as in 1992 and 1993) but not on Galley or Warden Hills (TT); not at all on the Whipsnade transect and only two on the Barton Hills transect.

Grizzled Skipper *Pyrgus malvae*

Although there have been a few scattered sightings, such as those from Marston Thrift (DP) and Wymington Meadow reserve (AS, P & GH) and on another site in the north-west of the county (AS), the Grizzled Skipper appears to have declined drastically in the county. There have been very few sightings so far during the 1990s. It was reported as seen at only 3 out of 18 sites in the Chalk Grasslands Survey, namely Little Galley Hill, Bradger's Hill (TT) and Dunstable Downs. None were seen on the Whipsnade transect in contrast to Dunstable Downs where 30 sightings were recorded. This may well be the strongest colony in the county but some of the apparent reduction in numbers elsewhere in 1994 may also have been related to the weather.

Whites

Wood White *Leptidea sinapis*

Singles seen in Odell Great Wood and surprisingly at Felmersham where one had been reported in 1993 (AS). Despite visits by several people during the flight period, none were seen in Maulden Woods. Hopefully a possible sighting in Flitwick Wood (VP) will be confirmed in 1995.

Clouded Yellow *Colias croceus*

Seen on 7 occasions; singles at Totternhoe (TD), Sewell Cutting (RD), Sundon Quarry (PG), Luton airport (CB), in a garden in Luton (LF), near Northill (CB) and three beside West Wood on 15 August. (AS).

Brimstone *Gonepteryx rhamni*

Numbers of Brimstones were reported by some observers as below average, eg "particularly few." (AS), though not by others; "numbers well up this year" (JA); "many more seen than last year throughout the season." (AD). Eggs could easily be found on some sites. A male and female were flying in the early winter sunshine on 6 December at Bromham (PA). About average numbers in spring and summer on the Potton Wood transect (IW); seen at all 18 sites in the Chalk Grasslands Survey and about the same number as in 1993 on the Barton Hills transect but down in numbers on the Whipsnade transect.

Large White *Pieris brassicae*

"usual numbers" (JA,DP); "a remarkable lack of records" in two tetrads visited regularly (JM); "down on average" (AS); "average numbers seen. A notable increase on last year." (AD); spring numbers were about average but the smallest numbers of the summer brood since 1987 were seen on the Potton Wood transect (IW); seen at 17 out of 18 sites in The Chalk Grasslands Survey with more than twice the 1993 sightings on the Whipsnade transect but rather fewer than in 1993 on the Barton Hills transect.

Small White *Pieris rapae*

This species was exceptionally abundant in the latter part of the season and could be seen almost everywhere. "There was an explosion of Small Whites in north Beds for a couple of weeks in August/September when they were just about everywhere on the country roads" (HW); "easily up to average numbers this year." (AD). However other localities yielded fewer sightings – "usual numbers" (JA, DP); "never numerous" in the north-west of the county (AS). Similar to 1992 levels and the third highest total in Potton Wood since 1976. However in 1986 and 1989 the species was about twice as abundant there as in 1994 (IW). Seen at 15 out of 18 sites in the Chalk Grasslands Survey and numbers were up on 1993 by 8-times on the Whipsnade transect and 4-times on the Barton Hills transect.

Green-veined White *Pieris napi*

"usual numbers" (JA,DP); "about the same numbers seen as last year." (AD); "never numerous" (AS); very similar to 1993 level on the Potton Wood transect and above average for the wood in the second generation (IW); seen at only 8 out of 18 sites in the Chalk Grasslands Survey but slightly more than in 1993 on the Whipsnade transect though only 2 were recorded on the Barton Hills transect.

Orange Tip *Anthocharis cardamines*

"perhaps Orange Tips were the most successful" of the "whites". (AS); "Good numbers around this year, probably about average." (AD); average numbers on the Luton downlands (TT); similar to the 1993 numbers and below the 18-year average for the Potton Wood transect, (IW); seen at 10 out of 18 sites in the Chalk Grasslands Survey with slightly more than in 1993 on the Whipsnade transect but only 2 on the Barton Hills transect.

Hairstreaks

Green Hairstreak *Callophrys rubi*

More than 100 were seen on Bison Hill on 31 May (JA); seen at 10 out of 18 sites in the Chalk Grasslands Survey and appears to be increasing on Bradger's Hill though not recorded in the last 3 years on Galley and Warden Hills (TT); the same number as in 1993 were recorded on the Whipsnade transect but three times as many as in 1993 on the Barton Hills transect.

Purple Hairstreak *Quercusia quercus*

"numbers at normal levels" (JA); "probably up to average numbers" (AS); several new localities were added including Penn Wood, Fox Covert and Kingshoe and Poorshill Woods (CB).

White-letter Hairstreak *Satyrium w-album*

"numbers down this year at Chicksands Wood. Possibly due to disturbance caused by timber harvesting, which began in winter and lasted throughout spring and summer. Army cadet manoeuvres at weekends for nine weeks caused flattening of a great deal of Creeping Thistle in prime White-letter Hairstreak areas. The fall in numbers could be caused by predation, weather or other factors in the normal cyclical pattern."(JA); eggs and a larva were found there by JA and DP. None were found in the north-west despite much searching (AS) but singles were seen in Box End (PA) and Ampthill Park (TI) and 4 around Coppice Wood, Melchbourne (RAB,BN), all new localities.

Black Hairstreak *Satyrium pruni*

A few were reported from Marston Thrift (AB, JA, DP, LC); none found in the north-west despite much searching (AS).

Coppers, Blues and Metalmarks

Small Copper *Lycaena phlaeas*

"few" seen (JA); "usual small numbers" (DP); more than 15 were flying on Wavendon Heath on 18 August (CB); only 2 recorded on the Potton Wood transect, this has always been a relatively uncommon species in the wood, apart from 1989 and 1990 (IW); seen at 6 out of 18 sites in the Chalk Grasslands Survey but present in small numbers on the Whipsnade transect but more than in 1993; only 3 seen on the Barton Hills transect which is an improvement on the 1993 nil return.

Small Blue *Cupido minimus*

Over 200 were reported (TD) as flying along a chalk cliff near Totternhoe and over 40 could easily be counted a few days later (CB); seen at 9 out of 18 sites in the Chalk Grasslands Survey occurring in good numbers on Bradger's Hill and in scattered colonies on Galley and Warden Hills (TT); none on the Whipsnade and Barton Hills transects and only small numbers on Sharpenhoe, Totternhoe Quarry, Blows and Dunstable downs transects.

Brown Argus *Aricia agestis*

One of the highlights of 1994 was the number of reports of Brown Argus from new localities. These were mostly in woodland rides and on road verges and included: Bromham, Carlton, Centenary Wood, Chiltern Green, Clophill, Felmersham, Flitwick Moor, Holcot Wood, Lidlington, Lower Dean, Marston Thrift, Millbrook, Mount Pleasant, Odell Great Wood, Studham Common, Swineshead, Tiddenfoot, Wavendon Heath, West Wood, Wood End (Cranfield), Wootton Meadow and Yelnow Lane. The form with white scales surrounding the discal spot on the forewing was seen by several observers. "More Brown Argus seen, especially in Chicksands Wood." (JA); 8 counted on a large patch of thistle in Chicksands Wood (DP); seen at 7 out of 18 sites in the Chalk Grasslands Survey, though not this year on Galley Hill; the largest number yet, 143, nearly three times as many as in 1993, were seen on the Whipsnade transect but slightly less than in 1993 on the Barton Hills transect. (Plate 4)

Common Blue *Polyommatus icarus*

Good numbers of Common Blue were present on most sites and over 100 were seen on 2 August in Firbanks Pit near Leighton Buzzard (PM); "normal levels" (JA); "up to or above average in their colonies" (AS); "had its best year for ages" (DP); second highest numbers on the Potton Wood transects, only 1990 and 1992 having equivalent numbers (IW); a good year on all sites in the north-east Luton area (TT), including Cowslip Meadow (MM) and seen at 15 out of 18 sites in the Chalk Grasslands Survey; at 259 the most yet seen on the Whipsnade transect but rather less than in 1993 on the Barton Hills transect.

Chalkhill Blue *Lysandra coridon*

This butterfly had a good year and was particularly abundant on Whipsnade Downs where 311 sightings were recorded, the highest yearly total on the transect to date. A female was flying there as late as 24 September; seen at 11 out of 18 sites in the Chalk Grasslands Survey with good numbers on Warden and Galley Hills and one on Bradger's Hill (TT); numbers were also well up on 1993 on the Barton Hills transect.

Holly Blue *Celastrina argiolus*

Four sightings of Holly Blue were reported from the Bedford area (B & YA, A & GW) and singles from Biggleswade (RR) and Barton (BS); seen at Sharpenhoe, Moleskin and Sewell Cutting in the Chalk Grasslands Survey; other observers were less fortunate – "no Holly Blue seen all year." (JA); "none seen" (AS, AD, TT); again none recorded in Potton Wood (IW).

Duke of Burgundy *Hamearis lucina*

Did quite well on Whipsnade Downs but, although it was seen at 4 out of 18 sites in the Chalk Grasslands Survey, numbers were mostly low. A mating pair was seen during a BNHS meeting on Totternhoe Knolls and a sighting on Warden Hill (K & MW) will be of great interest as a new site if confirmed in future years.

Nymphalids

White Admiral *Ladoga camilla*

"continued to do well in local woodlands, especially in Chicksands Wood." Also seen in a garden in Haynes (JA); found in several woods in the north-west of the County, "the numbers seemingly related to the size of the wood more than anything else." (AS); seen in King's Wood, Heath and Reach (CB and others), in Marston Thrift (AB and others), Aspley Woods (JB) and at Woburn Sands (CB).

Red Admiral *Vanessa atalanta*

"Increased numbers." (JA); "perhaps fewer" (AS); "Not so many about this year." (AD); very similar to the 1993 numbers and above the 18-year average on the Potton Wood transect (IW); seen at 8 out of 18 sites in the Chalk Grasslands Survey but fewer than in 1993 on the Whipsnade transect and same as in 1993 on the Barton Hills transect.

Painted Lady *Cynthia cardui*

"increased numbers." (JA); 13 seen on one visit to Marston Thrift (GW), "more numerous" (AS); "had a very good year"; seen "for days on end" on Buddleia in Haynes and up to seven together (DP); 17 recorded in Potton Wood, well above the 18-year average (IW). A different picture is given by the results from the Chalk Grasslands Survey where it was seen at only 6 out of the 18 sites and only 4 seen on the Whipsnade transect and 1 on Barton Hills transect.

Small Tortoiseshell *Aglais urticae*

"numbers slowly increasing from the low levels of the last two years. Appeared to have a good breeding season with larger numbers in late summer/autumn." (JA); "numbers still very low" (DP); "had a terrible time. Only in September were a few flying" (AS); "rarely seen" (AD); still well below average numbers on the Potton Wood transect but slowly recovering from the 1993 crash (IW); seen at 10 out of 18 sites in the Chalk Grasslands Survey but still less than 9% of 1992 numbers on the Whipsnade transect and similarly scarce on the Barton Hills transect.

Peacock *Inachis io*

"numbers down from last two years." (JA); "well down in numbers" (AS); "seen more often but still not as many as usual" (AD); hibernating Peacocks were again found during surveys of ice-houses for bats (AA, JC); Peacock larvae found in Studham were heavily parasitised by tachinid flies and ichneumon wasps (CB). Successful over-wintering following the record 1993 numbers gave the 4th highest spring numbers since 1976 on the Potton Wood transect; summer numbers were good though down from the previous 3 years (IW). Seen at 12 out of 18 sites in the Chalk Grasslands Survey but many fewer than in 1993 on the Whipsnade transect though less so on the Barton Hills transect.

Comma *Polygonia c-album*

"numbers normal." (JA); "elusive but four in a small group on burdock were seen on one occasion" (AS); "below average numbers but more than last year" (AD); "I have not seen a Comma in my garden (in Wootton) this year. They have certainly appeared regularly over the last five years" (DMA); similarly absent from a Luton garden after being seen for the last 3 years (TT); only 9 were seen on the Potton Wood transect,

well below average (IW); seen at 4 out of 18 sites in the Chalk Grasslands Survey and seen in only small numbers on the Whipsnade and Barton Hills transects but rather more than in 1993.

Fritillaries

"Large fritillaries", not identified to species, were reported from Wavendon Heath (CB), Totternhoe (TD), Flitwick Moor (A & GW) and near Cranfield (ID & PI). These may have been Dark Green Fritillaries but the possibility of Silver-washed cannot be ruled out – see below.

Dark Green Fritillary *Argynnis aglaja*

Seen twice on Barton Hills (GB & DW), 2 or more on Dunstable Downs (GH & EJM) and one at Someries Castle, Luton (CB). Not seen on Bradger's Hill this year (TT).

Silver-washed Fritillary *Argynnis paphia*

A male and a female and possibly a third individual were seen on buddleia in a garden in Pavenham (P & RP) and a male near Elstow (SP & MW). This species has returned to Ashton Wold in recent years and one can but hope that the individuals sighted in Bedfordshire were potential colonisers. However, the nearest known colonies are in Oxfordshire which seem unlikely sources, so release is the more probable explanation although the sightings were on 17, 20 and 30 July which would be rather late for bred specimens. Odd individuals were also seen in Hertfordshire during 1994 but with no clear evidence as to their origin (B. Sawford, pers. comm.).

Browns

Speckled Wood *Pararge aegeria*

"numbers appeared normal." (JA); "widespread and in the cool months of May, June and September sometimes the only species flying but not as numerous as in recent years" (AS); "average numbers seen" (AD). The Speckled Wood is still doing well in Potton Wood with numbers up since 1993 and only slightly down on the record 1992 levels. It is still the only species that can be seen on all sections of the transect in a single census (IW). Seen at 15 out of 18 sites in the Chalk Grasslands Survey; slightly fewer than in 1993 on the Whipsnade transect but about the same as in 1993 on the Barton Hills transect.

Wall Brown *Lasiommata megera*

"seen in small numbers this year." (JA); "had a very good year" (AS); "only seen on one occasion so well down on previous years" (AD); similar to the previous 2 years in Potton Wood but generally in low numbers (IW); seen at 11 out of 18 sites in the Chalk Grasslands Survey slightly fewer than in 1993 on the Whipsnade transect; numbers seen on the Barton Hills and Dunstable Downs transects have declined substantially since 1990.

Marbled White *Melanargia galathea*

"small numbers appearing again in suitable habitat", including at Warden Abbey. (JA); "again very numerous at the two known sites. A third good site was found and odd insects found at three further sites, one in a woodland ride." (AS); "flourishing again" at Old Warden Tunnel (ND) and over 100 seen there on 9 July (JA); seen at 12 out of 18 sites in the Chalk Grasslands Survey but many fewer than in 1993 on the Whipsnade transect.

Gatekeeper *Pyronia tithonus*

"numbers appeared normal." (JA); "exceptionally numerous" on occasions (AS); "average numbers present and many more than last year" (AD); at least 24 Gatekeepers were seen flitting around a small clump of ragwort at Tiddenfoot on 24 July (MS); numbers slightly lower than in 1993 on the Potton Wood transect and still well down on the 18-year average (IW); seen at 13 out of 18 sites in the Chalk Grasslands Survey but fewer than in 1993 on the Whipsnade and Barton Hills transects.

Meadow Brown *Maniola jurtina*

"numbers appeared normal." (JA); "exceptionally numerous" (AS); "up to average" (AD); good numbers in Potton Wood, up from 1993 levels and well above the 18-year average (IW); seen at 16 out of 18 sites in the Chalk Grasslands Survey and at 1334 the highest numbers yet on the Whipsnade transect but slightly down on the 1993 numbers on the Barton Hills transect.

Small Heath *Coenonympha pamphilus*

"had a very good year. At one site only a few single isolated plants of ragwort were flowering. On each one was a Small Heath, presumably males defending territory" (AS); absent from the Potton Wood transect for a second year (IW); seen at 16 out of 18 sites in the Chalk Grasslands Survey and well up on 1993 on the Whipsnade and Barton Hills transects.

Ringlet *Aphantopus hyperantus*

"Ringlet did exceptionally well, perhaps due to the warm but wet conditions in May/ June". More than 500 seen at Old Warden Tunnel on 9 July. (JA); "exceptionally numerous" on occasions (AS); "average numbers seen" (AD); numbers were down on previous years on the Potton Wood transect, close to the long-term average for the wood (IW); seen at 14 out of 18 sites in the Chalk Grasslands Survey and more than twice the 1993 numbers on the Whipsnade transect; slightly up on the Barton Hills transect.

ACKNOWLEDGEMENTS

I am grateful to T. Tween and I. Woiwod for reading and adding to this report in draft and to the following for providing the records without which this report could not have been compiled: J. Adams, A. Aldhous, D.M. Allen, P.A. lmond, B. and Y. Anderson, D. Anderson, V. Arnold, D. Askew, P. Baker, D. Ball, J. Barnwell, R.I. Bashford, R. Bates, G. Bellamy, R.J. Bowerbank, E. and B. Bowskill, R.A. Brind, L. Brown, A. Bucknall, L. Carman, D. Chandler, J. Childs, B. Clutten, A. Davies, N. Dawson, R. Dazley, T. Donnelly, R. and I. Dunn, L. Field, P. Glenister, D. Goddard, M. Green, S. Harris, G. Herbert, P. and G. Hooper, C. Horton, A. Hurst, T. Ilott, P. Irving, M. Izzard. L. Jarrett, M. McCarrick, R.,A. and P. Madgett, E.J. Makinen, D. Manning, J. Mayhead, E. Milne, H. Muir-Howie, J. Murray, B. Nau, E. Newman, R. Parsonage, D. Parsons, P. and R. Passley, V. Peck, S. Pittman, A. Proud, A. Pyke, A. Randall, R. Revels, C. Selby, K. Sharpe, M. Sheridan, A. Smith, D. Smith, B. Squires, C. Tomalin, T. Tween, D. Tyler, A. and G. Warne, M. Watson, K. and M. Weeden, D. Whitfield, M.C. Williams, V. Williams, H. Winter, I. Woiwod and to all those who contributed to the Chalk Grassland Butterfly Survey and to members of the Beds and Northants Branch of Butterfly Conservation and others who helped with the transect walks.

REFERENCES

HERBERT, G. 1994 *South Bedfordshire Butterfly Transects Annual Report 1994 incorporating Bedfordshire Chalk Grasslands Butterfly Survey 1994.* Beds and Northants Branch of Butterfly Conservation. 28pp.

CHARLES BAKER

MICRO-MOTHS (Lepidoptera)
Report of the Recorder

My report for 1994 includes the recording of sixteen species new to the County list. One existing record is also corrected.

ADDITIONS TO THE BEDFORDSHIRE LIST

Tineidae

Monopis crocicapitella (Clem.) – Cockayne Hatley, TL 24P (24-30 September).

Lyonetiidae

Leucoptera wailesella (Stt.) – Cockayne Hatley, TL 24P (16-22 July).

Gracillariidae

Phyllonorycter dubitella (H.-S.) – Cockayne Hatley, TL 24P (July 1992)

Yponomeutidae

Argyresthia dilectella Zell. – Studham, TL 01I (13 July)

Coleophoridae

Coleophora albidella (D. & S.) – Deleted from the County list (mis-identification).

Elachistidae

Elachista biatomella (Stt.) – Cockayne Hatley, TL 24P (13-19 August).
Cosmiotes consortella (Stt.) – Cockayne Hatley, TL 24P (September 1993)

Oecophoridae

Ethmia funerella (Fabr.) – Biggleswade, TL 14X (1994).

Gelechiidae

Caryocolum proximum (Haw.) – Cockayne Hatley, TL 24P (16-22 July)

Tortricidae

Argyrotaenia ljungiana (Thunb.) – Bedford, TL 05Q (5 August)
Epiphyas postvittana (Walk.) – Biggleswade, TL 14X (1994)
Eudemis profundana (D. & S.) – Biggleswade, TL 14X (1994)
Ephestia parasitella Stdgr. – Biggleswade, TL 14X (1994)

Pyralidae

Agriphila latistria (Haw.) – Ampthill Park, TL 03J (18 August)
Pediasia contaminella (Hb.) – Cockayne Hatley, TL 24P (16-22 July)
Scoparia ancipitella (La Harpe) – Cockayne Hatley, TL 24P (2-8 July)

Pterophoridae

Stenoptilia zophodactylus (Dup.) – Stewartby Country Park, TL 04B (21 July 1993).

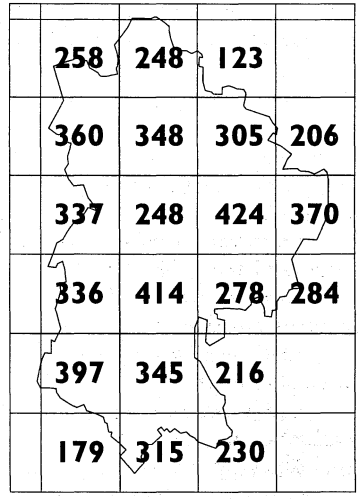
ACKNOWLEDGEMENTS

I would like to thank the following for records and assistance: C. Baker, Mr & Mrs E.G. Bowskill, J.E. Childs, G.E. Higgs, R. Revels, I. Woiwod.

D.V. MANNING

MACRO-MOTHS (Lepidoptera)
Report of the Recorder

During 1994 field work was undertaken at most of the usual sites in the County, plus a few that had not been worked for a number of years. C. Baker ran a moth trap at Whipsnade Wild Animal Park (SP91), and recorded a number of new species for this location, as well as continuing his moth trapping in his garden in Studham. Bushmead Priory, Little Staughton, was visited on 17th June 1994. Despite the weather being rather cold, members of the Society were rewarded by seeing a good selection of moths from this under recorded part of the County. The Society organized an open day for recorders at Luton Hoo on 19th June 1994. Once again the evening was cold, but a number of new species were recorded at two light traps.



Number of species recorded in each 10km square – as at 31/12/94

A lot of my spare time in 1994 was spent working on material for the forthcoming book on the Butterflies and Moths of Bedfordshire. Due to the hard investigative work of Charles Baker, records were received from a number of new recorders, and an enormous amount of historical information has also been obtained. The major find was discovering that the collection of the late Colonel S.H. Kershaw D.S.O. of Aspley Heath was with S. Humphries of Roade, Northamptonshire.

SPECIES LIST

The following list contains new species, comments on species of particular interest, and an update of the current status of some of the County records. All numbers and English names are as per *A Recorder's Log Book or Label List of British Butterflies and Moths* by J.D.Bradley & D.S. Fletcher (Curwen, London 1979). Species with an ★ are new County records.

1702 **Small Fan-footed Wave**
This species has now been recorded from all of the 10km squares in Bedfordshire.

1716 **The Vestal**
Beaten from grass in Ampthill Park by C.Baker and D.V. Manning 18/08/94.

1777 **July Highflyer**
This species has now been recorded from all of the 10km squares in Bedfordshire.

1807 **Grass Rivulet**
Recorded from Pegsdon Hills by D.V. Manning 31/05/94 & 14/06/94.

1834 **Common Pug**
This species has now been recorded from all of the 10km squares in Bedfordshire.

1837 **Grey Pug**

This species has now been recorded from all of the 10km squares in Bedfordshire.

1840 **Shaded Pug**

An uncommon species, recorded from a Rothamsted trap at Houghton Regis 29/05/92, 27/06/92, 08/06/93, 02/07/93.

1842 **Plain Pug**

An uncommon species, recorded from Mr and Mrs E. Bowskill's garden in Stotfold 07/94.

1853 **Oak-tree Pug**

At light, Bison Hill car park, Whipsnade, by the Recorder 13/05/94.

1911 **Large Thorn**

One, to light, at I. Dawson's moth trap Tempsford 23/09/94. This species has been recorded from a Rothamsted trap at Cockayne Hatley every year since 1982.

1984 **Humming-bird Hawk-moth**

A good year for this migratory moth. Both J. Adams and D. Parsons reported that this species was present in Haynes between 09/07/94 and 18/09/94. D. Parsons had up to four moths in his garden flying between 8am and late afternoon. They were even reported flying in light rain.

1998 **Poplar Kitten**

One to light, Luton Hoo, by the Recorder 19/06/94.

2029 **Brown Tail**

Miss R.A. Brind supplied me with newspaper cuttings from the Bedford area, dated May 1993, relating to sightings of caterpillars of this species. The reports, in fact, referred to caterpillars of the Lackey Moth. There was one genuine sighting of this species in the Brickhill area of Bedford in 1993. R.J. Bowerbank reported a dead moth on a deserted web of this species near the John O' Gaunt golf course, Sutton 10/08/94.

2037 **Rosy Footman**

C.Baker and D.V. Manning reported over 30 to light, The Lodge, Sandy 02/07/94.

2302 **Brown Rustic**

This species has now been recorded from all of the 10km squares in Bedfordshire.

2318 **Dun-Bar**

This species has now been recorded from all of the 10km squares in Bedfordshire.

2379 **Small Rufous**

One at I. Dawson's light trap in Tempsford 15/07/94.

2403 **Bordered Straw**

One from a Rothamsted trap at Cockayne Hatley 03/08/94. A further specimen came to I. Dawson's trap in Tempsford 23/09/94.

2441 **Silver Y**

During 1994, this migratory species was recorded from over 75 tetrads in the County, flying both during the night and day. Although this moth is recorded every year, it has never been reported in such numbers before.

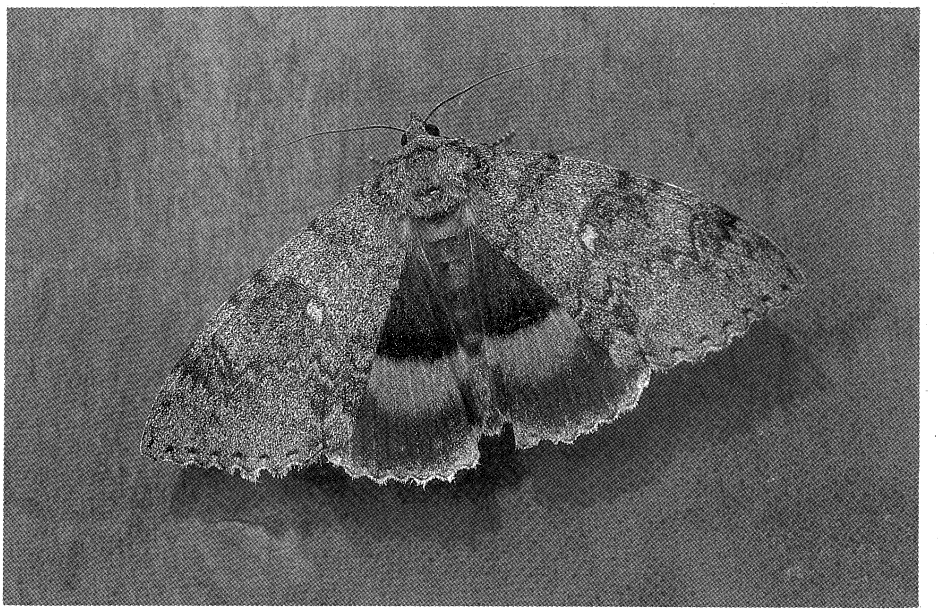
*2451 **Clifden Nonpareil**

During 1994 I was shown a specimen of this moth in A.M. Riley's collection. This moth was found in the late K.F. Webb's house after his death in 1984. It was in a container with a label marked "larvae, Brogborough (dated either 1983 or 1984)." It was well known that K.F. Webb collected in the Brogborough area during these years, but we will never be sure if this was a genuine Bedfordshire record, or whether this was a moth from another source and K.F. Webb had put it in a container with an old label in error.

ACKNOWLEDGEMENTS

My sincere thanks go to the following for help and assistance: J. Adams, T. Aldhous, P. Almond, D. Anderson, C. Baker, J.B. Barnwell, R. Bashford, R.J. Bowerbank, E. & B. Bowskill, Mrs L. Brightman, Miss R.A. Brind, Mrs N. Browne, R.S.K. Buisson, Mrs E. Chambers, Ms J.E. Childs, I. Dawson, Dr N. Dawson, A. Hurst, Miss J.E. Kemp-Gee, J. Knowles, P. Madgett, D.V. Manning, D. Parsons, R.C. Revels, A.M. Riley, A. Smith, N. Smith, K & M. Weeden, H. Winter and I.P. Woiwod.

V.W. ARNOLD



Clifden Nonpareil *Photo: Richard Revels*

SOME HISTORICAL MOTH RECORDS FOR BEDFORDSHIRE PART 3

by V.W. Arnold

In the Bedfordshire Naturalist for 1980 (*Bedf. Nat.* **35** 41-42) and the Bedfordshire Naturalist for 1984 (*Bedf. Nat.* **39** 50) I listed a total of 32 species of moths that had not been recorded for a number of years. This article is intended to highlight some of the new discoveries that have been made by C.Baker and myself over the last 18 months, while doing research for the forthcoming book on the Lepidoptera of the County.

Naturalists of the Past

Little information on some of the most important entomologists dealing with the lepidoptera of Bedfordshire was readily available. The following precis of what has now been found will hopefully be added to in the future.The species list that follows has been obtained from the records of the following entomologists.

Rev. T. Orlebar Marsh F.L.S. 1749-1831

Vicar of Stevington, he recorded moths from Clapham and Biddenham in 1798 and 1799.

Rev. C. Abbot D.D. F.L.S. 1761-1817

Vicar of Oakley Reynes and of Goldington. Curate at two Bedford churches as well as being usher or under-master at Bedford Grammar School. He collected and recorded moths from Clapham, Stagsden and Bedford in 1798 and 1799 and possibly later (see *Bedf. Nat.* **3** 38-42).

J.C. Dale F.L.S. 1792-1872

A wealthy country squire, from Glanvilles Wooton in Dorset, collected and recorded moths in Bromham and Clapham in 1818, 1819 and 1820, and bought Abbot's collection from a Mr Bucklow who had himself acquired it after Abbot's death.

W. Gifford Nash 1862-1935

Senior surgeon at Bedford Hospital. Nash was a major collector of lepidoptera, both in and out of the County. There is an obituary in the Bedfordshire Times (09/08/35.) complete with a photograph of Nash. His collection was sold, at auction, in 1936.

W.S. Brocklehurst J.P. 1873-1953

Chairman of Bedford Divisional Bench and founder of Bedford Special Constabulary. Collected with Nash, but so far none of his specimens have been identified with certainty. His collection was sold at auction in 1938. There is an obituary in the Bedfordshire Times (08/05/53) complete with a photograph of Brocklehurst.

Colonel S.H.Kershaw D.S.O. 1881-1964

After a long career in the Army, Kershaw retired in 1932 and settled at Alderman's Lodge, Aspley Heath, where he spent the rest of his life. Kershaw collected both locally and throughout the British Isles. Kershaw's collection has proved to be of great importance, both for new records for the County, and for the confirmation of some old records.

Robert Craske

Thanks to R.C.Revels, I was invited to meet Robert Craske, at his home in Brighton, in 1994. He lived in Bedford between 1918 and 1927, and during that time he collected moths in and around Bedford. He claims that compared to modern methods of capturing moths in M.V. traps he was using "bow and arrow" entomology by searching, beating and sugaring; he also knew Nash, Brocklehurst and Kershaw.

Species List

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

14 **Ghost Moth**
02/06/1798 (Abbot's notebook).

★ 165 **Scarce Forester**
A specimen in Kershaw's collection, labelled "Pegsdon 15/06/1917. Nash."

374 **Yellow-legged Clearwing**
Clapham Park Wood. Recorded in Dale's notebook and calendar, 31/05/1820, 01 and 02/06/1820, on the stumps of oak.

1643 **Emperor Moth**
Caterpillars found at Grubb's Wood, near Stagsden, 08/07/1799 (Abbot's notebook).

1646 **Oak Hook-tip**
Clapham Park Wood. Recorded in Dale's notebook and calendar 31/05/1820.

1648 **Pebble Hook-tip**
R.Craske stated that this species was common in the Bedford area (1918-27).

1655 **Poplar Lutestring**
A specimen in Kershaw's collection labelled "Aspley Heath, 1946". This is the first County record for this moth.

1660 **Frosted Green**
A specimen in Kershaw's collection labelled "Aspley Heath 1936". This is the first County record for this moth.

1666 **Large Emerald**
1799 Clapham, between Twin Woods (natural history notebooks of Rev. T. Orlebar Marsh).

1676 **The Mocha**
Recorded in Dale's notebook and calendar for Clapham Park Wood, 31/05/1820, 01 and 02/06/1820, "in plenty".

1687 **Lace Border**
Recorded in Dale's notebook for Mouses Pasture, Bromham, 14,15,17/07/1819, and from his calendar, from the same location, 14/07/1818.

*1701 **Dotted Border Wave**
Specimens in Kershaw's collection labelled "Aspley Heath 12/07/1946".

1711 **Treble Brown Spot**
Specimens in Kershaw's collection labelled "Aspley Heath 15/07 1945 and 12/07/1946". These are the first County records for this moth.

1722 **Flame Carpet**
A specimen in Kershaw's collection labelled "Aspley Heath 1938". This is the first County record for this moth.

1739 **Wood Carpet**
Recorded in Dale's notebook, as being in Abbot's collection, "from Bedford".

1749 **Dark Spinach**
Recorded in Dale's notebook, as being in Abbot's collection, "from Bedford".

1773 **Broken-barred Carpet**
Recorded in Dale's calendar for Clapham Park Wood, 01/06/1820.

*1775 **Mottled Grey**
Specimens in Kershaw's collection labelled "Aspley Heath 21/03/1938 and 11/04/1939".

1791 **Brown Scallop**
Recorded in Dale's calendar for Mouses Pasture, Bromham, 14/07/1819.

1870 **Chimney Sweeper**
R. Craske stated that this species was considered to be "local at Sharpenhoe" between 1918-1927.

*1878 **Drab Looper**
Recorded in Dale's calendar from Clapham Park Wood, 01/06/1820.

*1899 **Frosted Yellow**
Recorded in Dale's notebook as being in Abbot's collection, but no date or location is quoted. This diurnal moth would have been confined to areas where its larval food plant, Broom, occurred.

1904 **Scorched Wing**
Recorded in Dale's calendar from Clapham Park Wood, 01/06/1820.

1915 **September Thorn**
Specimens in Kershaw's collection labelled "Aspley Heath, 1937". This is the first County record for this moth.

1924 **Orange Moth**
Recorded in Dale's notebook from Clapham Park Wood, 19/06/1818, and from his calendar for the same site, 13/07/1819.

1940 **Satin Beauty**
Specimens in Kershaw's collection labelled "Aspley Heath 1935" make these the first County records for this moth.

1944 **Pale Oak Beauty**
Recorded in Dale's calendar for Clapham Park Wood, 19/06/1818.

1949 **Square Spot**
Specimens in Kershaw's collection labelled "Aspley Heath 1955".

1950 **Brindled White Spot**
Specimens in Kershaw's collection labelled "Aspley Heath 1929" make these the first County records.

*1966 **Black-veined Moth**
Recorded in Dale's notebook as being in Abbot's collection. No date, or location is given.

2005 **Great Prominent**
Specimens in Kershaw's collection labelled "Aspley Heath 1936" make these the first County records.

2009 **Maple Prominent**
Specimens in Kershaw's collection labelled "Aspley Heath 1936" make these the first County records.

2010 **Scarce Prominent**
Specimens in Kershaw's collection labelled "Aspley Heath May 1937" make these the first County records.

*2017 **Small Chocolate-tip**
Recorded in Dale's notebook from Clapham Park Wood, 30/05/1820.

2019 **Chocolate-tip**
Recorded in Dale's calendar on 30/05/1820. No location is given.

*2039 **Red-necked Footman**
Recorded in Dale's calendar from Clapham Park Wood, 01/06/1820.

2049 **Buff Footman**
Specimens in Kershaw's collection labelled "Aspley Heath 1934" make these the first County records.

2056 **Wood Tiger**
Recorded in Dale's calendar from Clapham Park Wood, 30 and 31/05/1820.

*2059 **Clouded Buff**
Recorded in the Natural History notebooks of Rev.T. Orlebar Marsh F.L.S. "1798 Clapham". R.Craske recorded this moth from the Sharpenhoe area between 1920-1925.

2078 **Least Black Arches**
Specimens in Kershaw's collection labelled "Aspley Heath 1947" make these the first County records.

2121 **Barred Chestnut**
Specimens in Kershaw's collection labelled "Aspley Heath 12/06/1953" make these the first County records.

2135 **Heath Rustic**
Specimens in Kershaw's collection labelled "Aspley Heath 25/08/1938 and 21/08/1949" are confirmation of old records for this moth.

2142 **Beautiful Yellow Underwing**
R. Craske stated that between 1918-1927, this species was "local, on the greensand". There are specimens in Kershaw's collection labelled "Aspley Heath 24/05/1945 and 28/05/1954".

2153 **Bordered Gothic**
Specimens in Kershaw's collection labelled "Aspley Heath 25/06/1935" make these the first County records.

2179 **Pine Beauty**
Specimens in Kershaw's collection labelled "Aspley Heath 1938" make these the first County records.

*2183 **Blossom Underwing**
There is a specimen in Kershaw's collection labelled "Aspley Heath 11/04/1934".

2254 **Grey Chi**
R. Craske stated that between 1918-1927 "this species was very common every year at Salem Thrift, Bromham".

*2257 **Orange Upperwing**
Recorded in Dale's notebook from "near Bedford" but no date is given. It is possible that this was a record from Abbot's collection.

2281 **Alder Moth**
There is a specimen in Kershaw's collection labelled "Aspley Heath 1937". This makes this the first County record for this moth.

*2315 **Heart Moth**
Recorded in the natural history notebooks of Rev. T. Orlebar Marsh F.L.S. "1798, Clapham and Biddenham". Dale's notebook shows it as "Bedford Dr Abbot". No date or further information is given.

2336 **Double Lobed**
There is a specimen in Kershaw's collection labelled "Aspley Heath 1939". This makes this the first County record for this moth.

2370 **Twin-spotted Wainscot**
There is a specimen in Kershaw's collection labelled "Aspley Heath 08/08/1957". This makes this the first County record for this moth.

2379 **Small Rufous**
There is a specimen in Kershaw's collection labelled "Aspley Heath 08/08/1935". This makes this the first County Record for this moth.

2437 **Golden Plusia**
The first record for this species comes from a specimen in the Oxford Museums' Services Collections in Standlake, Oxford. The specimen is labelled "Bedford District, bred, July 1910". No collector's name is shown, but as some of Nash's specimens are also here, it is possible that this was one of Brocklehurst's specimens. R. Craske confirmed that between 1918-1927 this species was "in gardens in Bedford, available and quite common".

2439 **Gold Spot**
Recorded in the notebook of Rev. C. Abbot, on page 98, "Clapham Lane, 12/09/1799". Dale's notebook states "Bedford Dr Abbott, Dom. Bucklow". No date is given.

2470 **Small Purple-barred**
A specimen in Kershaw's collection labelled "Totternhoe 1947" is the first County record for this moth.

2476 **Beautiful Snout**
Specimens in Kershaw's collection labelled "Aspley Heath, 19/06/1939 and 28/05/1947" make these the first County records for this moth.

This list is not complete. I have included all of the new County records, apart from a few that are awaiting confirmation. Where I have stated "this makes this the first County record for this moth", this could change if further material from Abbot or Dale is discovered, or if the collection of Brocklehurst can be found and identified.

I would like to thank the following for their help and assistance: C. Baker, R. Craske, S.W. Humphrey and R.C. Revels.

Address: 96 St. Augustine's Avenue, Luton, Beds LU3 1QE.

THE FUNGUS FORAY 1994
FLITWICK MOOR

The fungus foray, held on 25th September 1994 at Flitwick Moor, was led by Dr D.A. Reid, with 15 members in attendance. This site, virtually unique in the County, was last searched for fungi in 1991 (*Bedfordshire Naturalist* **46**, 109, 1992) when a mere 79 species were collected, although 11 of these were new to Bedfordshire. In contrast the current year produced a total of 151 species of which 15 were new additions for the County.

Flitwick Moor is a damp marshy alder carr, with water-filled ditches, swampy areas with tall sedges, sphagnum bog and mossy areas, with a dominant tree cover comprising species of *Salix*, Birch and of course Alder. In the drier parts Oak and other trees occur. This combines to produce a variety of habitats for fungi, and explains the large numbers of species listed below.

One of the surprises of the day was the finding of such species as *Coprinus impatiens*, *Marasmius wynnei* and *Mycena crocata* – all typical of beech woods on chalk, and totally unexpected in acid, boggy conditions. *Coprinus impatiens* is recognised by having a tall, fragile, white stem bearing a pallid buff, acorn shaped cap, which is already closely radially fissured or sulcate almost to the centre before expanding to become slightly campanulate; it has elliptical black spores, 9-12 x 5-6µm, with a truncate germ-pore. *Marasmius wynnei* is a new addition to the County, occurring as tufted fruitbodies, with the pale greyish-lilac, hygrophanous caps, to 3.5cm in diameter, borne on stems shading from whitish to red brown in the lower half; it has a smell said to be of cyanide. *Mycena crocata*, also new to Bedfordshire, is a dull, inconspicuous fungus, but one which is easily recognised since the species exudes a saffron juice when bruised from cap, stem or gills. The small campanulate grey-brown or olive tinted cap, 1-2cm in diameter, is carried on a yellowish, often rather tall stem, which may be up to 8cm high. This fungus is often found attached to fallen twigs.

In contrast a number of species characteristic of acid conditions such as peat or sphagnum bogs were collected. The finding of the dark purple-brown *Laccaria purpureo-badia* in its type locality was particularly pleasing. This fungus, now known from a number of localities in Britain, was originally described from material collected at Flitwick Moor in 1959 and it is satisfying to know that it is still there 35 years later. The common *L.proxima* with its bright red-brown, striate cap closely resembles *L.laccata* except for its much larger size, taller stem and elliptic spiny spores.

Several species of *Russula* characteristic of this type of habitat were found; *R. claroflava* with bright yellow cap, cream coloured gills and mild tasting flesh which becomes slowly grey when broken; *R. nitida* with shiny reddish cap, and a translucent pectinate margin, pale yellowish gills and mild flesh. Both of the foregoing species occur in damp acid situations in association with Birch.

R. pumila, a small species with dark purplish or violaceous cap seldom exceeding 4cm in diameter, is a speciality of Flitwick Moor, and was described and illustrated from this locality by Alan Outen in *The Mycologist*, October 1984, p.174. It is a rare and poorly known species in Britain, but is no doubt often confused with the very similar *R. fragilis*. It is characterised by its small size, dark vinaceous cap with grooved margin, widely spaced gills of a pale cream colour (not pure white!), a white stem

yellowing below before becoming blackish grey, coarsely verrucose spores with fine connectives, and finally by its restriction to alder bogs.

Another addition to the fungus flora of Bedfordshire was *Lactarius lilacinus*, a species which is also restricted to Alders, with a cap varying from pale lilac pink or flesh pink to ochraceous with a pinkish tint when old, a minutely pubescent or felty surface, dingy ochraceous gills with a flesh tint, and a mild watery milk.

Two species of *Hypholoma* characteristic of this type of habitat were found viz. *H. elongatum* scattered over bare peat and *H. myosotis* in *Sphagnum*. Both species have a tall thin stem, bearing a relatively small, shallowly convex to flattened cap. *H. elongatum* is a pale yellowish or ochraceous fungus with the cap about 1.5cm across, while *H. myosotis* is a more robust olive tinted species, with the cap reaching 4cm diameter and having very large brown spores 14-17(22) x 7-9(10)µm. Like the previous fungus *Tephrocybe palustris* frequently grows in *Sphagnum*. It is new to the County and is recognised by its Mycenoid appearance, having a thin, flattened, greyish-fuscous cap, which is striate to the centre, and about 2cm across, a concolorous fragile stem, dirty whitish gills, and a mealy smell when crushed.

With the exception of a few universally common species, members of the genus *Agaricus* are not often encountered on forays within the County, so it is interesting to record two new additions to the mycological flora viz. *A. semotus* and *A. variegans*. The former is a small species with a distinct tendency to yellow when handled; the cap, to about 3cm in diameter, is whitish, ornamented with fine purplish fibrils which radiate from the centre, but these are often rather inconspicuous. The spores are dark brown, elliptic and measure 4-5 x 3µm. *A. variegans* is a rather robust species with the cap to 12cm across, characterised by having dark blackish scales concentrically arranged on a white background; the stem is white and bears a well-developed ring; the flesh is white but shows a slight pink tinge in the apex of the stem when cut. Microscopically it is characterised by balloon-shaped cystida on the gill edge, and elliptic fuscous-brown spores 5.0-6.0 x 3.0µm.

Small Lepiotoid fungi are also uncommon in Bedfordshire, so the addition of two such species to the County list is noteworthy. *Leucoagaricus sericatellus* is an entirely white or whitish species with a tall stem, 6-7cm high, 3-3.5mm wide, although often enlarged below, bearing a well developed apical ring. The cap, at first ovoid, becomes shallowly campanulate, up to 2.5cm diameter, has a white radially silky texture, and may develop a pale ochraceous tint at the centre. Microscopically it is characterised by having 2-spored basidia; hyaline, amygdaliform spores, 9.5-10.5(11.0)x4.8-5.6(5.8)µm; and thin-walled, hyaline, fusoid or lageniform cheilocystidia, 35-40x8-16µm. *Lepiota josserandii* is a small squat species with the cap flat to slightly umbonate, reaching 3.5cm or more across, bearing concentrically arranged pinkish-ochraceous scales on a whitish ground; the whitish stem, about equal in height to the size of the cap, and 5-9mm wide, becomes rosy pink from the base and bears a poorly defined ring. Microscopically the present collection showed surface hairs of the cap to have thin but distinct walls, to be up to 250(330)µm in length, 10.0-16.5µm wide, a few obtuse with transverse septa, but most fusoid and aseptate; there was no hymeniform layer at the base of the hairs. The spores, 5.5-7.0x3.5-3.7µm, were elliptical; the cheilocystidia inconspicuous, thin-walled, hyaline and basidiiform 15-20x6-8µm; the basidia 4-spored.

The following agarics are all new to the County; *Marasmius torquescens* has a pallid creamy-ochraceous cap, up to 1cm across, often with a dirty ochraceous disc, a tall velvety-pruinose, date brown stem up to 4cm in length and 1mm in width; the gills are pallid cream and distant; under the microscope the stem surface is seen to bear brown setulose thick-walled hairs, which are often bifid or trifid at the apex, and the cap cuticle to comprise small globose cells interspersed with brown pointed setoid elements; cheilocystidia are lacking. *Psathyrella olympiana* is similar to *P. spadicea* and like this common species has both cheilo- and pleurocystidia, which are thick-walled and apically encrusted. However, while these are fusoid, with a narrow thick-walled neck in *P. spadicea*, by contrast in *P. olympiana* they are more conic with a broadly rounded often more or less thin-walled apex. In the Flitwick Moor material these cystidia measured 43-52x10-18µm at the broadest parts, and (4)7-10µm at the apex. The elliptic brown spores, with a small germ pore, measured 8.0-9.5x5.2-6.0µm, and were much darker than those of *P. spadicea*. *Russula raoultii* is a rare species recognised by its small uniformly bright citron yellow cap, 3.5cm in diameter, whitish gills, hot tasting flesh, white spore print, and subglobose spores with a strongly reticulate amyloid ornament.

Melanotus proteus, another new addition, is an interesting species, which would seem to be a recent introduction to the British Fungus Flora. It was first reported in this country, growing on a conifer stump in Glamorgan, 17 Sept. 1973 by Kits van Waveren (*Trans. Brit. Mycol. Soc* **73** 176-179, 1979). It occurs in swarms; the fruitbodies, to about 1.5cm across, have a very short to rudimentary, excentric to almost lateral whitish stem expanding into a pale brown, minutely velutinous orbicular cap; the brown gills radiate from the insertion of the stem. Under the microscope the Flitwick material showed ovate to ovate-amygdaliform, lenticular, slightly thick-walled, brown spores with a germ pore, and measured 5.5-6.5x4.2-4.5x3.2-3.5µm; also cheilocystidia which were thin-walled, hyaline, elongate-fusoid 22-33x4-5.5µm. This fungus, which could easily be mistaken for a brownish *Crepidotus*, is now known from a number of localities such as Glamorgan, Shropshire, Isle of Wight, West Sussex, as well as from South East England.

Boletus versicolor resembles the common Pink Cracking Bolete (*B. chrysenteron*) from which it is distinguished by having a striking red to scarlet cap.

The two remaining novelties belong to the Aphyllophorales or non-gill-bearing fungi. *Clavariadelphus fistulosus* is an easily recognised Fairy Club since it produces tall, unbranched yellow-brown cylindrical fruitbodies, to about 10cm high and about 3mm wide. These occur on fallen twigs, often of birch – an unusual habitat for any Clavarioid fungus. *Radulomyces molaris* is a buff coloured resupinate species, densely covered with conspicuous hydnoid spines to about 3mm in length. It produces broadly elongate-elliptic, thin-walled spores, which have a small lateral apiculus, and are non-cyanophilous. This species needs to be carefully distinguished from the very similar *Hypochnicium bombycinum* in which the spores have much the same size and shape, but are thick walled, cyanophilous and have a barely discernible apiculus.

In all a highly successful meeting during which 151 species were collected, of which 15 were new to the County.

The list of species follows:

**Agaricus semotus; *A.variegans; Amanita fulva; A.muscaria; A.rubescens; Armillaria mellea; Bolbitius vitellinus; Boletus badius; B.chrysenteron; B.edulis; *B.versicolor; Clitocybe clavipes; C.ditopa; Collybia butyracea; C.cookei; C.dryophila; C.maculata; Coprinus atramentarius; C.comatus; C.impatiens; C.micaceus; Cortinarius hinnuleus; C. paleaceus; Crepidotus variabilis; Entoloma rhodopolium; E.sphagneti; Galerina mutabilis; Gymnopilus penetrans; Hebeloma crustuliniforme; H.mesophaeum; H.sacchariolens; Hygrophoropsis aurantiaca; Hypholoma elongatum; H.fasciculare; H.myosotis; Inocybe geophylla var. lilacina; I.lacera; Laccaria amethystea; L.laccata; L.proxima; L.purpureobadia; Lactarius cyathula; L.glyciosmus; *L.lilacinus; L.rufus; L.tabidus; L.torminosus; L.turpis; Leccinum scabrum; Lepiota cristata; *L.josserandii; Lepista nuda; *Leucoagaricus sericatellus; Marasmiellus ramealis; *Marasmius torquescens; *M.wynnei; *Melanotus proteus; Mycena acicula; M.bulbosa; *M.crocata; M.epipterygia; M.galericulata; M.galopus; M.galopus v. candida; M.haematopus; M.inclinata; M.leptocephala; M.leucogala; M.oortiana; M.pura; M.sanguinolenta; M.speirea; M.vitilis; Naucoria escharoides; Nolanea cetrata; Oudemansiella radicata; Paxillus involutus; Pholiota alnicola; Pluteus cervinus; P.salicinus; Psathyrella candolleana; P.hydrophila; *Polympiana; Psilocybe inquilina; Rickenella (=Mycena) fibula; Russula betularum; R.claroflava; R.fragilis; R.nitida; R.ochroleuca; R.pumila; *R.raoultii; R.sororia; Stropharia aeruginosa; *Tephrocybe palustris; Tricholoma fulvum; Tubaria autochthona; T.conspersa; T.furfuracea.*

*Bjerkandera adusta; Chondrostereum purpureum; *Clavariadelphus fistulosus; Clavulina cinerea; Coniophora puteana; Coriolus versicolor; Daedaleopsis confragosa; Epithele typhae; Ganoderma adspersum; Heteroporus biennis; Hyphoderma praetermissum; Inonotus radiatus; Meripilus giganteus; Merulius tremellosus; Phlebia merismoides; P.(Merulius) rufa; Piptoporus betulinus; Pistillaria setipes; *Radulomyces molaris; Schizopora paradoxa; Stereum gausapatum; S.hirsutum; S.rameale; Thelephora terrestris; Typhula quisquiliaris; Vuilleminia comedens.*

Lycoperdon foetidum; L.perlatum; L.pyriforme; Scleroderma citrinum.

Auricularia auricula-judae; Calocera cornea; C.pallidospathulata; C.viscosa; Dacrymyces stillatus; Tremella mesenterica.

Coleosporium tussilaginis; Melampsoridium betulinum.

Ascocoryne sarcoides; Chlorosplenium aeruginascens; Dasyscyphus sulfureus; Hymenoscyphus fructigenus; Trochila ilicina.

Claviceps purpurea; Diatrype disciformis; Erysiphe asperifoliorum on *Symphytum peregrinum; Hypoxylon multiforme; Nectria cinnabarina; Rhopographus filicinus; Xylaria hypoxylon.*

Aegerita candida.

Tubifera ferruginosa.

Total 151 species

* Species new to the County (15)

DEREK A. REID

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

Progress in collecting data for the flora of the County has been steady, with the members of the Bedfordshire Flora Group working throughout the County. Records are collected on both a site and tetrad basis. The records collected will also be used for the Botanical Society of the British Isles "Atlas 2000" project for which only the 10km grid square is required.

Many interesting records were made during the year. Dwarf Gorse *Ulex minor* was recorded in the Heath and Reach area by Philip Irvine. This species was first recorded only about 10 years ago and almost immediately the site was destroyed, so it is good that it is still present. Soft Shield-fern *Polystichum setiferum* was reported by Mark Powell from West Wood – an extension north of its known Bedfordshire range.

At the end of April a visit was made to Chicksands Wood with the specific objective of locating Toothwort *Lathraea squamaria*. Thanks to John Adams, this was a successful venture. (Plate 1) Other known sites were visited during this period and it can be reported that there are still healthy populations at the known locations. During May the Wootton Wood and the adjacent fields were visited. The lower part, including a pond, of Kiln Field was of particular interest. A good aquatic flora was recorded with a notable record of Horned Pondweed *Zanichellia palustris*. There are 39 tetrad records post 1970 but it appears to have disappeared from many sites in the last 10 years.

Biggleswade Common yielded some interesting records in June with Opposite-leaved Pondweed *Groenlandia densa* being a new 10km record. Ivy-leaved Water-crowfoot *Ranunculus hederaceus* was only known in this region of the County from this site so it was good to refind it in some quantity. One of the rarer ragworts Marsh Ragwort *Senecio aquaticus* was seen in profusion at Fenlake Meadows in August.

The Studham area of Bedfordshire is of interest also to Hertfordshire botanists. Although in the administrative County of Bedfordshire it is also in the Botanical Watsonian Vice-county (No. 20) of Hertfordshire. In September a joint meeting with the Hertfordshire botanists yielded several interesting records. Two plants were seen of the arable weed Green Field-speedwell *Veronica agrestis*, another species that appears to have declined significantly in recent years. Various-leaved Fescue *Festuca heterophylla* was noted – its second county site. However, being close to a plant nursery, one must question the status. Reflexed Saltmarsh-grass *Puccinellia distans*, which normally occurs inland on major roads where extensive salting has occurred, was noted along the verge of a somewhat minor road – a new tetrad record.

ACKNOWLEDGEMENTS

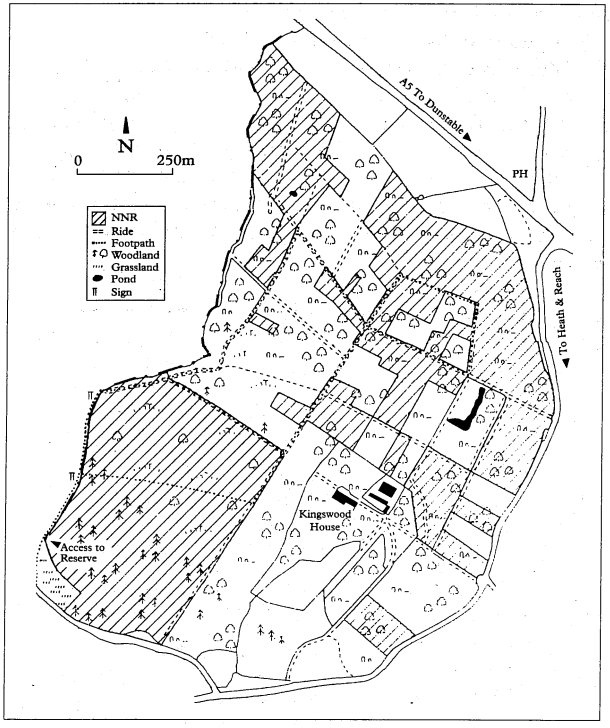
I would like to thank all who have sent in records and especially those who are participating in the new Flora Project.

J. Adams, C. Baker, P. Baker, G. Bellamy, C. Boon, R. Brind, J. Comont, N. Dawson, C. Dony, D. George, D. Gowing, K. Hall, S. Hawkins, P. Irving, T. James, V. Johnston, J. Johnston, P. and K. Kavanagh, A. Leach, P. Madgett, A. Outen, P. Phillips, M. Powell, B. Rands, R. Revels, T. Smith, J. Wakeley.

CHRIS BOON

SITES
Report of the Recorder

Following the designation of Kings Wood, Heath and Reach as a National Nature Reserve in late 1993, no new NNR's have been declared. However, the area within the Kings Wood NNR has already been extended to include land owned by Redland Aggregates in addition to that owned by Bedfordshire County Council and The Wildlife Trust for Bedfordshire. Redland Aggregates is the first industrial company in the UK that has been approved by English Nature to run a National Nature Reserve. This extends the area of the NNR to 62.7 hectares, approximately half the woodland area. An active management programme is now being carried out which includes reinstatement of coppicing of the Small-leaved Lime. Public access is allowed to the areas of NNR, but other areas are private.



Kings Wood, Heath and Reach NNR

No new Sites of Special Scientific Interest have been designated, but we have recently lost Sandy Meadows SSSI which no longer meets the SSSI criteria. This has not suffered any particular damage but the quality of the site has simply declined due to lack of appropriate management.

Last year I reported that there were seven Local Nature Reserves (LNRs), sites owned or managed by local authorities. Mowsbury Hill (TL0653) and Putnoe Wood (TL0652) in Bedford have now been added to that list. They are owned by Bedford Borough Council and management agreements have now been approved with English Nature.

ACKNOWLEDGEMENTS

I would like to thank everyone who has given me information about sites during the course of the year.

ROSEMARY BRIND

RECORDERS 1995

Meteorology: Mr M.C. Williams, 2 Ivel Close, Barton-le-Clay, Bedford MK45 4NT
Geology and Palaeontology: Mr P. Smart, 46 Brecon Way, Bedford MK41 8DD
Mammals: Mr C. Tack, 1 Gate Cottage, Whipsnade Wild Animal Park, Dunstable LU6 2LR
Mammals (Bats): Ms J. Childs, "Myotis", 144 Queens Drive, Bedford MK41 9JG
Dr A. Aldhous, "Myotis", 144 Queens Drive, Bedford MK41 9JG
Birds: Mr D. Odell, 74 The Links, Kempston, Bedford MK42 7LT
Mr M. Palmer, 48 Gilbert Close, Kempston, Bedford MK42 8RN
Bird Ringing Co-ordinator: Mr D.S. Woodhead, 26 Batcheldor Gardens, Bromham, Bedford MK43 8SP
Reptiles and Amphibians: Mrs H. M. Muir-Howie, "Vivarium", 19 Molivers Lane, Bromham, Bedford, MK43 8JT
Fish and Crayfish: Mr H. Winter, 34 The Silver Birches, Kempston, Bedford MK42 7TS
Grasshoppers and Crickets: Mr K. Sharpe, 22 Russett Close, Stewartby, MK43 9LG
Dragonflies: Mr S. Cham, 45 Weltmore Road, Luton LU3 2TN
Bugs (Heteroptera): Dr B.S. Nau, 15 Park Hill, Toddington, Dunstable, Beds LU5 6AW
Bugs (Homoptera): Dr C. Malumphy, 3 Winsdon Road, Luton LU1 5JT
Lacewing Flies: Dr B. Verdcourt, The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB
Butterflies: Mr C. Baker, 3 Holywell Close, Studham, Dunstable LU6 2PB
Moths (macro): Mr V.W. Arnold, 96 St. Augustines Avenue, Luton LU3 1QE
Moths (micro): Mr D.V. Manning, 27 Glebe Rise, Sharnbrook, Bedford MK44 1JB
Hoverflies: Miss L. Smart, 273 Park Street, Luton LU1 3HH
Social wasps: Mr R. Revels, 73 London Road, Biggleswade SG18 8EE
Flowering Plants, Ferns and Fern Allies: Mr C. R. Boon, 68 Mill Lane, Greenfield, Bedford MK45 5DF
Lichens: Mrs F.B.M. Davies, "Rose Cottage", 69 The Hill, Wheathampstead, St. Albans AL4 8PR
Fungi: Dr D. A. Reid, 38 Norfolk Way, Elmer Sands, Middleton-on-Sea, West Sussex PO22 6JF
Sites: Miss R. Brind, 46 Mallard Hill, Bedford MK41 7QS

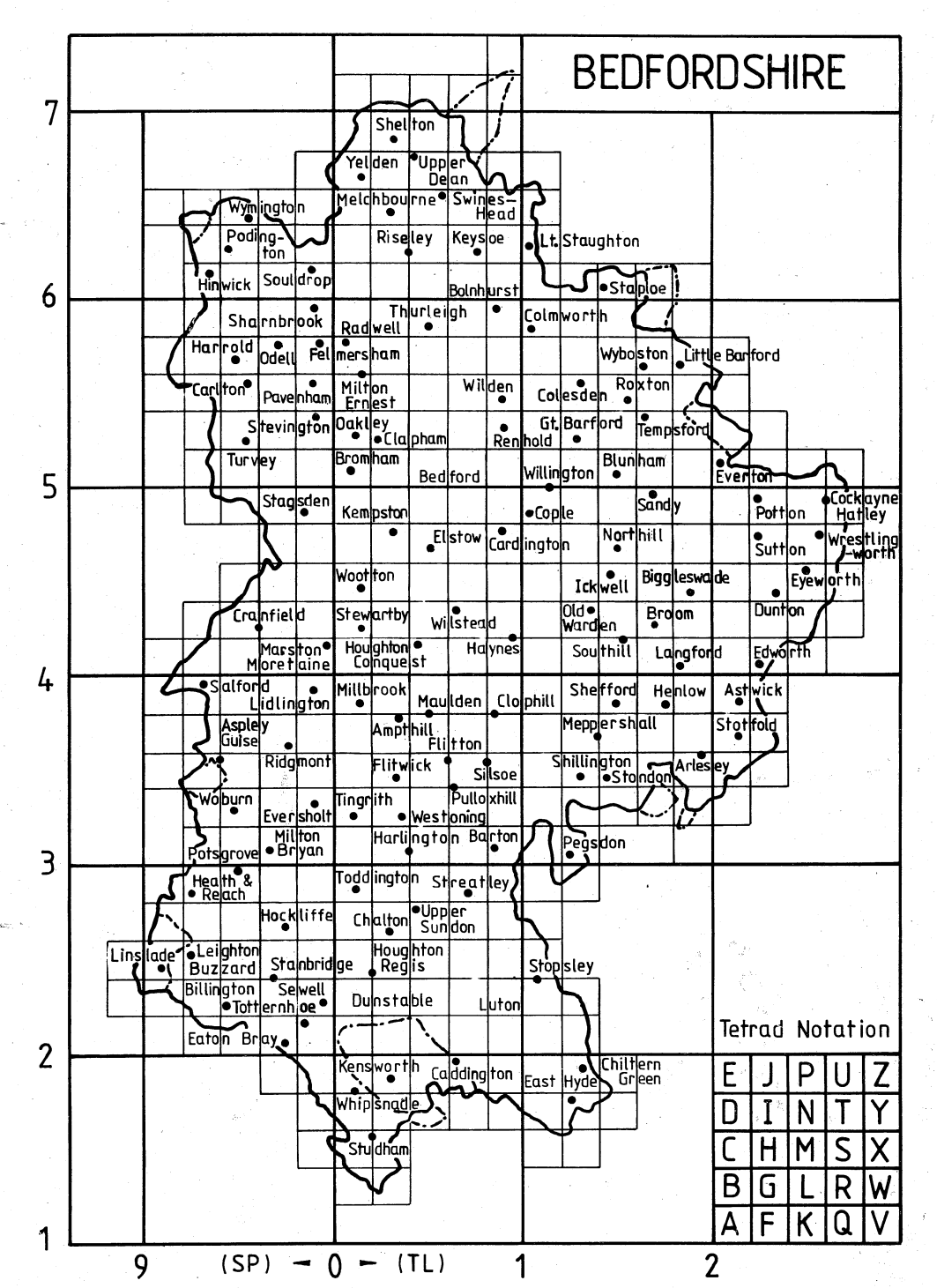
Where a species is not covered by one of the Society's Recorders please pass the record on to Miss R. Brind, Bedford Museum, Castle Lane, Bedford MK40 3XD.

THE SOCIETY

The Bedfordshire Natural History Society was formed in 1946 when a group of local naturalists joined together with the aim of giving the recording of natural history within the county borders a focal point. The Society now has over 20 Recorders who gather information on different disciplines of natural history and publish annual reports in the Journal of the Society, *The Bedfordshire Naturalist*. Other publications include *Bedfordshire Wildlife*, which gives a broad overview of our wildlife habitats, flora and fauna, the *Bedfordshire Bird Atlas*, mapping the distribution of breeding birds within the county from 1968 to 1977, and the more recent *Atlas of the Breeding Birds of Bedfordshire 1988–92*. Members of the Society also receive a quarterly newsletter, *The Muntjac*, and a programme of field meetings both locally and further afield. Throughout the winter a series of illustrated talks are arranged in different locations around the county; these are usually free to members and cover a wide variety of natural history related topics.

As a respected authority the advice of the BNHS is often sought when planned work may be detrimental to the local environment and its members regularly contribute to nationally organised surveys. Membership is open to all, whether resident in the county or not and whether novice or expert. Further information may be sought from:

The Bedfordshire Natural History Society,
c/o Bedford Museum, Castle Lane, Bedford MK40 3XD



Typesetting and production by Akalat Publishing
Tel/Fax 01582 881614