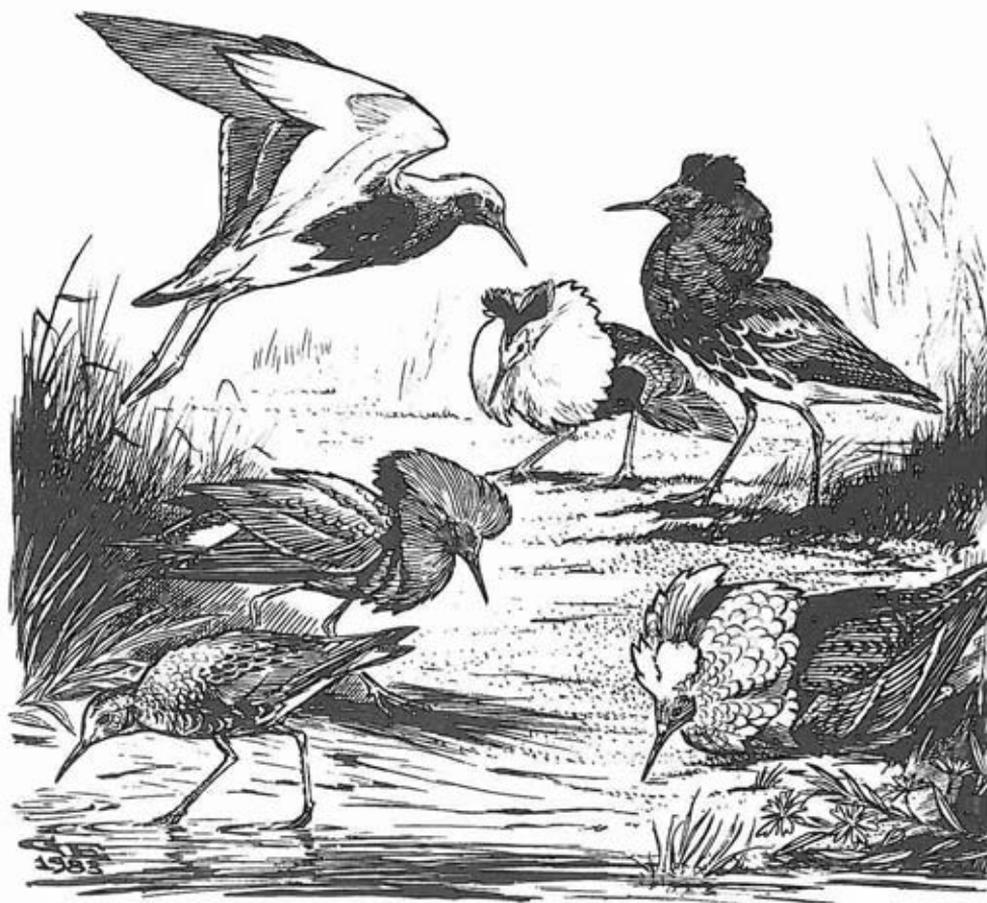


Nature in Cambridgeshire

No. 26 1983



*Published by the Cambridgeshire and Isle of Ely
Naturalists' Trust Ltd*

CAMBRIDGESHIRE AND ISLE OF ELY
NATURALISTS' TRUST LIMITED

Registered Charity No: 202123
Company Registration No: 580787

Registered Office: 1 Brookside, Cambridge CB2 1JF
Telephone: 358144

Patron:

The Lord Walston (till June 1983)
M R L Astor (from June 1983)

Vice-President: J S L Gilmour

Secretary/Conservation Officer:
Miss V J Greenall

Assistant Secretary:
Mrs J M Morley

Field Officer:
J K McNaught

Membership Secretary:
K G Hudson

COUNCIL 1982-83

President:

*Dr S M Walters

Deputy President:

*W H Palmer

Hon. Treasurer:

*Miss E Erskine

Hon. Editor:

P H Oswald, 33 Panton Street, Cambridge CB2 1HL

Chairman of the Executive Committee:

*Dr R Connan

Secretary of the Scientific Advisory Committee:

J K McNaught

Hon. Secretary of the Education Committee:

*Mrs P Aarseth

M R L Astor

A F Bird

A C Clay

P J Conder

P J Evans

J C Faulkner

Dr H J Harvey

D W January

Mrs R Johnson

G Loasby

*B S Martin

*Mrs M C Moore

P E Newbery

R N Papworth

Mrs G Pilbeam

Dr O Rackham

Mrs K Regan

*Dr M E Smith

P Soar

R J Symonds

R Thain

Auditors:

Price, Bailey & Partners

CONTENTS

Page

Editorial	3
CAMBIENT Twenty-sixth Annual Report (1982)	3
Executive Committee	7
Scientific Advisory Committee	8
Education Committee	9
CAMBIENT Watch Club	10
Field meetings in 1982	11
Meetings of farmers and naturalists	13
Cambridge Natural History Society	14
Cambridgeshire plant tetrad recording scheme in 1982	15
<i>Charles Turner and M E Smith</i>	
Water-blooms in Cambridgeshire	17
<i>Hilary Belcher and Erica Swale</i>	
CAMBIENT ecological survey : a second report	19
<i>Sarah Douglas, Peter Seccombe and M E Smith</i>	
Book review: <i>A Checklist of the Flora of Cambridgeshire</i>	24
<i>S M Walters</i>	
The breeding birds of Chippenham Fen National Nature Reserve in 1981 and 1982 : some effects of the 1981/82 winter	25
<i>Derek R Langslow</i>	
New plant records from the Devil's Ditch	38
<i>A C Leslie</i>	
Ruffs and black-tailed godwits in Cambridgeshire	46
<i>Graham Easy</i>	
Birds of the Cambridge University Botanic Garden	49
<i>David Harper</i>	
A survey of the distribution of deer in Cambridgeshire (vice-county 29)	52
<i>R J Symonds</i>	
Live-trapping of small mammals in Hayley Wood	60
<i>W E Jones</i>	
The fen violet at Wicken Fen	62
<i>T A Rowell</i>	
Ivy broomrape in the University Botanic Garden, Cambridge	66
<i>Philip Oswald</i>	
Vascular plant records	70
<i>G Crompton</i>	
Weather notes for Cambridgeshire 1982	71
<i>J W Clarke</i>	

Cover drawing:

Ruffs and a reeve on the Ouse Washes in spring (see pp. 46-48)

Graham Easy

EDITORIAL

Each year it becomes more difficult to fit in everything that I want to publish in *Nature in Cambridgeshire*. This year, despite a further increase in size to 72 pages, I still have two papers that must wait for the 1984 issue.

While I have been Editor, botanical contributions have predominated among the material submitted for publication, but this year the balance is perhaps redressed, with three articles on birds and two on mammals. Derek Langslow, a colleague of mine in the Nature Conservancy Council, provides a fascinating account of the effects of the severe winter of 1981/82 on the bird populations of Chippenham Fen, our only National Nature Reserve in "old" Cambridgeshire (CAMBIENT's "territory"). The Botanic Garden, on the doorstep of the Trust office, is the subject of two articles, one ornithological and one botanical. David Harper has spent "several thousand hours" studying its bird life for his PhD thesis and is the author of *Birds of the University Botanic Garden, Cambridge* (30p from the Trust office), published in December 1982 with illustrations by Graham Easy (who has again supplied the cover picture for *Nature in Cambridgeshire* and is the author of our third ornithological article, another "success story" as a sequel to his piece last year on the gadwall). The botanical papers this year include the results of Alan Leslie's meticulous searching both of the ground of the Devil's Ditch and of its previous plant records (compare "Gamlingay revisited" in the 1979 issue) and Terry Rowell's remarkable account of the reappearance of the fen violet from long-buried seed at Wicken Fen.

A new feature of this issue is a book review - by our President and of a work principally by Gigi Crompton (who, as usual, has compiled "Vascular plant records" for this issue). I too commend her Checklist to all those interested in the wild plants of our county - or rather vice-county! - and also suggest that no Cambridgeshire naturalist should be without at least one or two of the University Press's excellent new Handbooks advertised on the back cover of this journal.

Philip Oswald
September 1983

CAMBIENT

TWENTY-SIXTH ANNUAL REPORT (1982)

It has to be said that 1982 was probably the most difficult year the Trust has had financially since its formation 26 years ago. This has inevitably meant that activities, particularly of internal committees, have been dominated by efforts to increase income and the work has been difficult and sometimes very much an uphill climb. However, the year has not been without its high spots and we have again been very much encouraged by the generosity of our members; the support for our Christmas sales was excellent in a year when money has been short generally, and individuals have helped us enormously by offering the Trust several substantial interest-free loans. As a result of these loans and appeal payments that are still being received, repayment of all but one of our reserve purchase loans has been possible. Only £7,500 was outstanding at the end of the year and it has been possible

to meet all general expenditure from normal income, although our funds have fallen very low at times. A membership increase of around 250 during the year has helped, although the figure at the end of the year, after deletion of those failing to renew subscriptions, remained fairly constant. The increase in banker's orders and covenants was also valuable, and a continual effort was made to try and promote these fairly painless ways of increasing the Trust's regular income. The *Natural World* magazine continues to be well received and our support from members remains strong; a very significant contribution to keeping running costs down was the large number of people who helped to deliver newsletters throughout the county. Our strength is in our membership, and in 1983 we intend to put more emphasis on recruitment in the hope that membership will show an upturn again.

Many different sources of income and sponsorship have been investigated during the year and we have been very grateful for the loan support from the World Wildlife Fund-UK and the Royal Society for Nature Conservation as well as from our members. An unexpected donation of £1,000 was received from the Edward Suckling Trust as well as a special grant of £2,000 from Cambridge City Council. Small grants from the County and District Councils increased a little, and local members helped a great deal in raising their own funds for equipment for use by reserve working parties. Our donated oil shares continued to pay good dividends. The *ad hoc* fundraising working party that met throughout the year is still continuing its work, and we hope that its main task, the production of a special fundraising leaflet, will pay off in 1983 by the attraction of legacies and increased support from industry.

General publicity for the Trust's work increased with the launch of BBC Radio Cambridgeshire in May; our activities were featured during the first week of broadcasting and since then there have been regular wildlife spots and nature trails, as well as advertisements for our meetings. Our two Press Officers have continued to supply *Nature Notes* for *Cambridge Evening News*. *Town Crier* has also given us useful publicity, and special co-operation with the Cambridge Building Society has allowed us to mount displays on our work in the windows of all their branches. This co-operation is to continue with sponsorship of a special schools promotion by the Society as well as help with advertisements and displays for our open days and garden days. The East of England Show was again a valuable promotion site for our work and here a separate joint Watch exhibition was mounted with our neighbouring Trusts. Watch membership continued to expand through affiliation for schools and clubs, and the end of the year total was 189. The Show also allowed welcome contact with farmers, as did the *Cambridge Evening News* farming supplement; a close discussion between landowners and conservationists continued through informal meetings within CAMBIENT instigated by our President (see p. 13). These have proved to be of great value, and meetings and farm tours have led to much greater understanding of the problems of modern farming and the real needs of wildlife in this county. The work of these meetings has also spread through our involvement with Cambridgeshire FWAG, which held farm open days and tours during the year and is considering ways of extending its advisory service to farmers.

The Trust's liaison work is extensive, and this year much of it has concerned the extremely onerous task of renotification of Sites of Special Scientific Interest (SSSIs) that the Nature Conservancy Council has had to undertake under the new



Carol-singers raise funds for the Trust at Christmas.

Jeremy Pembrey

Wildlife and Countryside Act. As well as providing information on these sites, the Trust has continued to follow up the results of its own survey of sites of natural history interest and to try to obtain co-operation over their management with their owners. A summary of this very important survey work is included in this year's journal (see pp. 19-23), and information on sites is being supplied to statutory bodies so that they can co-operate in their protection. Liaison with the Anglian Water Authority and also with the local planning authorities is important here. On general issues we have been involved in comments on plans for green belts and clay workings, and on local plans for the Newnham, Romsey and City areas of Cambridge, as well as submitting lengthy written evidence to the Stansted airport public inquiry.

On our own reserves, management has been the key, following our acquisitions as a result of the appeal. Our Hayley Wood work party has gone from strength to strength, and an offshoot group has begun work in Overhall Grove, where there is much preparation to be done for the nature trail. A small area of dead elm is soon to be felled, but we still hope that at least some of the trees will survive. Vehicle access has been negotiated for timber removal and a small reserve leaflet produced.

At Fulbourn the County Council has helped with provision of new fences and gates to facilitate grazing, but unfortunately an increased reserve rent has had to be paid. Replanting of a dead elm area in Knapwell Wood is taking place, using native species, and acorns have been collected from Knapwell Wood and Overhall Grove to grow on for replanting.

The annual deer count took place in Hayley Wood as usual and also some small mammal survey work (see pp. 60-61). Rabbits were again a problem at Hayley and on the Devil's Ditch, and a more serious threat was the theft of rare orchid plants

from the Ditch. Motor bicycles were the source of concern in the Beechwood, and we had to keep a careful check on the route of the Ely bypass, which is passing perilously close to Chettisham Meadow. Purchase of this site has still not been possible, but a management agreement on Guilden Morden Parish Pit was finalised and further Ouse Washes purchases pursued. Unfortunately the agreement over Haddenham Pond ended because of the owner putting the property on the market. March members have been working on demolition of the railway cottages at the Norwood Road reserve and are planning a new nature trail there.

New members of the Trust rely heavily on our *Reserves Handbook* for information but it is now somewhat out-of-date. The Winifred Parsons Memorial Fund is enabling a complete revision and reprint of the book to take place in 1983, and income from its sales will be reserved for provision of schools facilities, as would have been Mrs Parsons' wish. Part of the Fund has already been used to purchase a high quality, easy-to-use projector and tape-recorder, and Mr Palmer and Mr Tomkins have been working on production of a series of slide-tape presentations for use in schools and at public meetings. These will be a great asset in promoting the work of the Trust and a better understanding of nature conservation.

Another great aid to the whole conservation movement was the production of the RSNC *Reserves Handbook* covering numerous reserves of Trusts throughout the country. This publication, along with *Natural World*, has been much welcomed, so it is of great concern to us all that our parent body is experiencing extreme financial difficulties, and there is a risk of cuts having to be made in many services received by the Trusts. The Society's Executive Chairman and Treasurer have unfortunately resigned. Our Executive Committee Chairman has continued to represent us, alternatively with Mr Palmer, at RSNC Council meetings. The new Sales Director has improved RSNC sales income after a disastrous year in 1981, but there are still large debts to be paid off. We very much need the Society as a national voice for our Trust and we are giving all the support that we can. One positive development instigated through the Society in 1982 was the conclusion of an agreement with Peterborough Development Corporation for appointment of an Interpretative Officer at Ferry Meadows Country Park. This post should do much to promote the work of the three Trusts in Cambridgeshire and we were very pleased that the position was given to Miss Sarah Douglas, a former member of our own survey team.

The Nature Conservancy Council is also experiencing difficulties, with an enormously increased work-load as a result of the Wildlife and Countryside Act, and the threat of staff cuts following the Rayner Review instigated by the Government at the end of 1982. The year has, therefore, been a difficult one for all conservation bodies, but we have at least been fortunate in the Trust in retaining the same staff and still having the very welcome support of Ken Hudson through the National Westminster Enterprises scheme. His cheerful and enthusiastic help has been invaluable, and Keith McNaught, Joyce Morley and I have also been grateful for the extra assistance provided by our placement student, Denise Tapley, who came to the Trust in October from Middlesex Polytechnic. A Merrist Wood Agricultural College student also did valuable work as our Ouse Washes Warden from April to December, grant-aided by the Countryside Commission, and this extra help was doubly welcome as our attempts to obtain extra staff through the

Manpower Services Commission again failed.

We were, however, fortunate in finding excellent volunteer help in the appointment of our new Treasurer and Company Secretary. Our Treasurer, Mr Brian Routledge, felt it necessary to resign after ten years working for the Trust. We are most grateful for all the hard work he put in and for the help he gave to our new Treasurer, Miss Elizabeth Erskine, whilst she was taking over the reins. She has coped admirably with what is becoming an increasingly complex job, and the Trust was extremely lucky to find her. The involvement of the Trust in legal matters is also often complex, and we were therefore very much pleased to welcome Mr Peter Soar as Company Secretary; his expert advice is of great value to us. Our Education Secretary, Mrs Patricia Aarseth, is also a new recruit, taking over from Mr Stephen Tomkins, another very long-serving member of the Trust.

In all, 11 new members joined Council during the year as a result of our revised constitution, and Mr Bruce Martin and Mrs Patricia Aarseth joined the Executive Committee. We have welcomed all the new members who have given time to become more involved, but are pleased that retiring members are keeping in touch with the Trust. With this in mind the appointment of Mr John Gilmour as the Trust's first Vice-President was most welcome. Our contacts with other organisations are also being retained through representation on our Council and on other committees such as the Countryside Advisory Working Party and the Cambridgeshire Farming and Wildlife Advisory Group, and we have kept in touch with national and international issues through attendance at conservation conferences in Holland and Dorset and special seminars on the Wildlife and Countryside Act and the World Conservation Strategy. Liaison with bodies such as the water authorities and the local councils continues to be a vital part of our work, but one that is time-consuming and therefore expensive. This commitment, coupled with our financial problems, adds up to an urgent need for greater support from statutory authorities for the vital work that we do and the continued support of our faithful membership.

Much important conservation work was undertaken in 1982 in spite of lack of funds; probably the most valuable contribution our members could make in 1983, aside from the numerous ways in which they already help, would be for them each to recruit a new member to the Trust.

Joy Greenall
Secretary/Conservation Officer

EXECUTIVE COMMITTEE

This has been a busy year for the Executive Committee, dominated by the difficult financial position of the Trust.

In April Mr Brian Routledge resigned as Honorary Treasurer. He had served with distinction for a long period and deserves our thanks. The role of Treasurer has been accepted by Miss Elizabeth Erskine.

Because of the national situation, the growth of Trust resources has not kept pace with the increasing need for its work. The very success of our recent appeal, enabling the acquisition of three very valuable sites, did nothing to ease the

problem: indeed, loans from the WWF and RSNC to facilitate these purchases, *pending covenanted funds becoming available*, began to attract interest during 1982. We are grateful to a number of members for short-term interest-free loans which have enabled these to be repaid. During the year a working party of the Executive Committee has examined the means by which to secure our financial position. It is clear that our sales operation, though small, is effective and it is hoped to expand it. There is a great need for a voluntary Sales Manager to relieve our officers of a challenging responsibility.

The membership of 2,409, representing roughly 1% of the available population, bears comparison with most other Trusts. However there is room for expansion. It is the aim of the Executive Committee to encourage all existing members to bring in at least one new covenanted member in 1983: open days at Hayley Wood (15 May) and Fulbourn Meadow (12 June) are geared to this end.

Sources for sponsorship have been examined, and very useful discussions have taken place with the Cambridge Building Society. The outcome is a programme of mutual advertising with a series of printed posters for use in schools and elsewhere and as window displays in the Society's offices and the announcement of our coming events in the local press.

In February the Chairman took over from Dr Mike Smith as alternate with Mr William Palmer on the Council of RSNC. Later in the year Dr John Harvey was proposed by CAMBIENT and elected to the Council as an individual member.

Roger Connan

SCIENTIFIC ADVISORY COMMITTEE

The Committee met three times in 1982, during which its main task was the revision of the list of sites of natural history interest (NHI) for the county. The final report of the county-wide survey of potential NHIs was received (see pp. 19-23); of the 285 listed sites, 168 had been visited by Peter Secombe and Sarah Douglas, Trust officers or others within the last three years, and the survey provided new information on a further 271 sites. It was the role of the Committee to review the criteria by which NHIs are judged, to incorporate the survey results and to assess the importance of other sites in order to produce an up-to-date NHI list for circulation to the County and District Planning Departments and other statutory bodies.

Management plans for Overhall Grove and Fordham Wood were approved. At Overhall Grove the experimental felling of a small area of dead elm will take place, and the effects on ground flora and the earthworks will be carefully monitored. At Fordham Wood a programme of work for 1982-1987 was accepted, including the introduction of coppicing in certain areas and the monitoring of the water-table before attempting to control water movement on the reserve.

It was agreed to follow up an invitation by the Eastern Electricity Board to take an interest in a lake and surrounding woodland belts to the rear of Milton Hall. The possibility of a management agreement with the owner of Snailwell Meadows was discussed, and the owner of Melbourn Bury Meadows has agreed to such an arrangement.

A report was received of a meeting held by representatives of seven Trust grassland reserves at which present and future management and mutual problems were discussed. Further meetings are planned for other habitat types.

Advice was sought on the management of Carlton Lane and on the nature conservation interest of sites within the area covered by the Romsey District Plan. Reports were received on the revision of the Cambridgeshire Rare Plant Schedule, the mapping of the boundary of vice-county 29 (see p. 24) and the BSBI graveyard survey. The disturbing theft of lizard orchids from the Devil's Ditch posed the problem of how to prevent a recurrence. Renewal of the Mink and Coypu (Keeping) Orders and the wider provisions for nature conservation in the Wildlife and Countryside Act 1981 were also discussed.

Mr Graham Easy was welcomed as a new member of the Committee.

J K McNaught
Secretary

EDUCATION COMMITTEE

During the year the Education Committee purchased audio-visual equipment which will be used for educational purposes and to promote the work of the Trust. The tape-recorder and slide projector were financed by the Winifred Parsons Memorial Fund. This equipment acts as a fitting memorial to the late Mrs Parsons, as well as fulfilling a particular need in extending the Trust's resources.

Several members of the Education Committee were invited to Cory Lodge by Dr and Mrs Walters to meet Lady Nora David. Lady David, Chairman of the Environmental Education Review Group of the Conservation and Development Programme for the UK, discussed the work of the groups, which have now drawn up guidelines for a national response to the principles of the World Conservation Strategy.

In June 1982 Mr Stephen Tomkins resigned as Secretary to the Education Committee, a position he has held since 1976. The Education Committee and the Trust owe a great deal to Mr Tomkins for the diversity of tasks he has diligently performed on their behalf. He has been a guiding force for all the Trust's educational work, organising courses for teachers, lecturing and conducting parties around reserves. We are also indebted to him for his inspired conservation work at the Fulbourn Reserve. At a joint meeting with the Cambridge Natural History Society in October, he represented the Trust in a lively debate on the Wildlife and Countryside Act 1981 (see p. 15). Mr Tomkins remains as a member of the Education Committee.

July 1983 is to see Homerton College acting as host to CAMBIENT and the Cambridgeshire Education Authority, who will jointly promote an Environmental Studies Exhibition. It is hoped that this will cover as wide an area of environmental education as possible. All Cambridgeshire Schools are invited to participate.

Mr S Pomeroy, Head of the Biology Department at Impington Village College, joined the Committee in 1982.

Patricia Aarseth
Hon. Secretary

CAMBIENT WATCH CLUB

Membership of the junior branch of the Trust has grown slowly throughout the year to 182. The value of our activities can be seen in the obvious enjoyment and enthusiasm of those who take part, but there is still a need both to encourage more young people with an interest in the environment to join and to obtain more voluntary help; only by doing this will the Club continue to grow and spread the important conservation message to the county's youngsters.

The Mayfield Primary School Watch Group, under the leadership of Mrs Patricia Aarseth, has met regularly throughout the year both indoors and out, and I hope that the broadcast of one of their meetings by Radio Cambridgeshire will encourage others to form their own small groups.

The Trust's inserts in the triannual magazine *Watchword* have carried information about CAMBIENT's activities and encouraged members to watch winter wildfowl, to spot winter visitors, to do project work on autumn colours or hibernation, to report breeding sites of frogs, toads and newts and to take part in the national projects organised by Watch.

The major projects this year have included "King Fisher Watch" - an imaginative survey with the help of the National Anglers' Council to find the best sites for dragonflies, damselflies and their predators, including the kingfisher. Watch's interest in butterflies has continued with a sponsored butterfly count - the money raised to be shared between Watch and a Butterfly Conservation Fund administered by the World Wildlife Fund-UK. During the winter months members are encouraged to enter the Watch Tree Race, a scheme to grow trees from seed, part of the worldwide United Nations project "For Every Child a Tree".

Our own activities have been a full programme of events throughout the year - a floodlit visit to the Welney Wildfowl Refuge, a members' slide show, a visit to Hayley Wood in the spring, to which members of the Beds & Hunts Trust Watch Club were invited, a tour of the buildings and gardens at Peckover House, the annual family outing by boat to the Upware Field Studies Centre (see p. 11), visits to Wicken Fen and Fordham Wood, an afternoon activity learning about plants, birds and moths, the now traditional barbecue in Hayley Wood including a torchlit walk in the wood and this year a pumpkin lamp competition, and a visit to the RSPB headquarters at the invitation of the Beds & Hunts Trust, with fun and games at the Christmas Party closing the year's activities.

In order to publicise the work of CAMBIENT's Watch, a display was mounted in Gamlingay Library and a joint stand organised with the Beds & Hunts and Northants Trusts at the East of England Show.

So that as many children as possible come into contact with Watch, the Trust has now agreed to allow the affiliation of youth groups and other organisations. Promotion of the Club in schools and villages is planned for 1983, and it is hoped that a small group of interested people might come together to discuss the future of the Watch Club and the possible development of the Trust's own club for 12-18 year olds.

If you would like to help with any aspect of the junior branch of the Trust, please contact me at the Trust office.

Keith McNaught
County Watch Organiser

FIELD MEETINGS IN 1982

Saturday, 13 March: Ouse Washes

The score of members who assembled at Welches Dam enjoyed about the only fine day in a long spell of unsettled weather. We were blessed with bright sunshine and a wind which, though blustery, did not interfere too much with our viewing. Unfortunately the recent rain had raised the water-level above the "ideal" for producing a wide range of species, as the Warden, Cliff Carson, explained as he greeted us. He also apologised for being unable to join us in person, but the Assistant Warden, Dave Johnson, took charge of us very ably.

First, we had a look at the Visitors' Centre, then proceeded by ferry (an extra excitement made necessary by the flooding) across the river to the hides. We found that indeed the birds were mostly on the far side of the Washes in the shallower water. Some 300 or more duck were visible from each of the hides we went to – mostly wigeon, but some teal and mallard also. It was difficult to pick out the species from such a distance, however. Close by, a few tufted duck were diving, and there were also plenty of coot, an odd moorhen or two, a lone cormorant and a scatter of black-headed gulls. We had a magnificent close-up view of a great crested grebe in full spring glory. Sunlit Ely Cathedral made a fine back-drop. Unfortunately, the only swans visible were a few small parties of mute swans. These included a courting couple on the river beside us; they were accompanied by a disconsolate youngster voicing his feelings in a way that demonstrated that mute swans are not always so! Our guide, Dave, good-humouredly answered a barrage of questions about the reserve, flooding and drainage, management of livestock on the summer grazings, wild mammals, poachers, etc., etc.

On our return walk beside the river, one member picked up a stone and a mussel shell encrusted with barnacles, which aroused much interest and discussion as to how they got there. The fields beside the approach road had their interest too, with the usual skylarks and lapwings and also good glimpses of a kestrel as we arrived and a short-eared owl as we left.

Margaret Howe

Sunday, 13 June: To Upware on board *The Duchess* (Watch family outing)

We set off fairly early for Upware on *The Duchess*. It took quite a long time to ensure that all of us were there, but finally we were off. On the way we had to go through two locks, named Baitsbite and Bottisham Locks. On the journey we saw a vast array of riverside birds, including a heron and two pairs of swans with their cygnets; we also saw a moorhen with her babies. When we got to Upware we were met by a man named Alan Revill. He led us to the old schoolroom, and we had lunch. We also looked round the old schoolroom, where there were fascinating stuffed models of foxes, stoats, weasels, hawks and many other animals and birds. We went across some fields and came to a thickly wooded copse. We went down some roughly cut earthen steps and reached the fossil-finding section. Using the pointed hammers and the goggles that Alan Revill had so kindly provided for us, we spent a happy time chipping fossils out of the rock. Those who were not interested in chipping could either do some pond-dipping in one of the two ponds or delve in the nettles with butterfly nets, looking for butterflies, moths and other

insects. Then, tired but happy, we all trooped back to *The Duchess*. It had been a lovely and exciting day.

Charles Smith

Sunday, 11 July: Boat trip to Dimmock's Cote and Upware North Pit

This outing down the Cam was a thoroughly enjoyable one, not least because the weather was perfect – sunny with a light breeze – a special bonus after so much cold and wet. The passage down the river was enhanced by the information given us by our captain, Mr Kelly, on the history of the river and its villages. Because of his knowledge of the bird life he was able to call our attention to several pairs of great crested grebes with their chicks, moorhens and a kestrel being mobbed by swallows, as he saw them ahead of the boat. There were a great many damselflies out in the sunshine and also large brown hawkeye dragonflies *Aeshna grandis*, which are a Fenland species and on the wing at this time.

The flowering plants were particularly pleasing – large areas of the yellow water-lily *Nuphar lutea*, arrowhead *Sagittaria sagittifolia* in flower, and against the banks bright patches of marsh woundwort *Stachys palustris*, gipsywort *Lycopus europaeus*, skullcap *Scutellaria galericulata*, amphibious bistort *Polygonum amphibium* and the handsome reed sweet-grass *Glyceria maxima*.

We arrived at our destination after about a two-hour cruise and, after a little hunting for a suitable landing, were put ashore for a picnic, after which about twenty of the party walked a short distance to the lime-pits at Upware. The South Pit is still being worked, but in a wet patch a pair of ringed plovers were seen, which probably nested thereabouts.

We continued our way down an old lane, on one side of which was a wide belt of thistles – mostly welted *Carduus crispus* but including spear *Cirsium vulgare*. A great many goldfinches were feeding on these but were rather disturbed by our passing. On the other side of the lane were varied herbs such as upright hedge-parsley *Torilis japonica* and black horehound *Ballota nigra*, and these were hosts to many varieties of butterflies – various browns, skippers and the brimstone – and moths.

We crossed a very steep-banked stream in which monkeyflower *Mimulus guttatus* was growing (an introduced species not previously recorded in Cambridgeshire!) and then reached the North Pit, which has not been worked for very many years and was very overgrown with small and larger trees, including two buckthorns *Rhamnus cathartica* and *Frangula alnus*, guelder-rose *Viburnum opulus*, wild privet *Ligustrum vulgare* and varied willows.

We scrambled along a narrow path between two flooded pits, one of which was full of many different water-weeds and over whose surface many insects were flying. It was not possible to get near enough to examine the vegetation. The other pond was more marshy and Dr Mike Smith was able to hunt about for the water germander *Teucrium scordium*, which was one of the main objects of the outing as it is now very rare and this is one of only three sites for it in Great Britain. He was able to find some plants, though none was in flower. The water germander needs moderately open conditions, and management is periodically necessary to control invasion by salallows; it will soon be time for another bout of this. On the way back to the river a plant of vervain *Verbena officinalis* was found.

We were glad to be back in the cool of the boat and again enjoyed the sights and sounds of the water, arriving back at Victoria Bridge by 6 p.m. after a most successful and happy day. Thanks are due to Mr Andrew Green for allowing us to visit North Pit and to picnic in his field.

Merville Bateman

Sunday, 10 October: Fungus foray in the Bradfield Woods, Suffolk

On a glorious afternoon 61 members and guests foregathered in the celebrated ancient Felsham Hall Wood, now belonging to the Royal Society for Nature Conservation. We found 86 species of fungi and could have discovered many more had there been time. Bradfield is noted for unusual and difficult fungi and on this occasion produced examples of the magnificent golden *Cortinarius triumphans*, the spectacular blood-red *Boletus erythropus*, which turns instantly blue at a touch, the giant heavy *B. impolitus* and the stately *Leucopaxillus giganteus*, as well as many *Mycena* species and other commoner fungi.

The fungus list for the Bradfield Woods contains 424 species but is far from complete: 23 species were added on this day. Hayley Wood has a similar number of species for a similar area, but the lists are very different. Bradfield is rich in mycorrhizal fungi (especially species of *Lactarius*, *Russula* and *Cortinarius*), which are less well represented at Hayley; the converse is true of wood-rotters. *Paxillus involutus*, probably the commonest agaric at Bradfield, has only once been seen at Hayley; *Flammulina velutipes*, common at Hayley, was not recorded at Bradfield until this occasion. Bradfield has an extensive and uninterrupted history of coppicing, and the experience of this and previous visits suggests that this may influence the fruiting of many fungi as it does that of flowering plants. Newly coppiced areas appear to be specially rich in toadstools despite these being more difficult to find because of dense herbaceous vegetation. Such fungi are not limited to the obvious species of bonfire sites (e.g. *Myxomphalia maura*) and of sawdust (e.g. *Tubaria furfuracea*). The root-rotting *Armillaria tabescens* regularly fruits in the first autumn after felling, both at Bradfield and Hayley; and even mycorrhizal fungi (e.g. *Lactarius piperatus*) appear to fruit more freely in newly-coppiced areas.

Oliver Rackham

MEETINGS OF FARMERS AND NATURALISTS

An article of mine on "The Future of the Countryside", published in *Cambridge Review* on 7 February 1981, might be said to have sparked off the series of discussion meetings between "farmer" and "non-farmer" members of the Trust on which Michael Astor reports below. I have personally found these meetings very helpful and have reason to think this is true for all of us who have been taking part. There is no doubt that "both sides" (if that is not too simplistic a view of a complex controversy!) have much to learn from each other, and it is clearly CAMBIENT's role to help to encourage such mutual understanding.

S M Walters

For many years the British farmer has been urged to increase his productivity, and there is no doubt that in achieving this goal scant attention has been paid to the dramatic effects that this has had on the environment. It was to try to improve the situation in the county that the CAMBIENT naturalist/farmer discussion group was started.

Initially the point of discussion was the pamphlet *Towards 2000*, which was produced by the Royal Society for Nature Conservation. We then had two meetings on two different farms, one of which was in the Fens and both of which incorporated SSSIs. From these meetings and the ensuing discussions, it became apparent just how differently the naturalists and the farmers saw the problems. It also became plain that much of the difference could be made up by increased knowledge and experience of the other side's view.

Inevitably the first topic that arose was what exactly is meant by conservation. The working answer became: to enable the greatest variety of habitat to flourish.

As all participants were members of CAMBIENT we faced the problem of how to reach beyond the "converted" to other farmers, who are not famed for reading pamphlets, and to the various authorities who look after road verges, waterways etc. However, before this task could be seriously undertaken it was felt that we should have a clear message to give to those who tend the land, and it is to this end that some simple and workable guidelines are being produced by the group. This in itself is a formidable task and we propose to limit the scope of such advice to the types of environment found within our county. The idea is then to expand our on-site meetings to include neighbouring farmers etc., in an attempt to draw them into the dialogue.

The idyllic summer evenings and the bountiful hospitality of the two hosts painted a perhaps too rosy picture of the realities of farming. To counterbalance this, the subsequent three meetings will take place in three different seasons on the same farm, no doubt in driving rain and deep mud!

Michael Astor

CAMBRIDGE NATURAL HISTORY SOCIETY

President: Mr J A Hammond

Three General Meetings were held during the Lent Term and three more in the Michaelmas Term. On 22 January and 5 February 1982 we heard talks on "The development of the landscape" by Mr John Phibbs of the National Trust and on "Plants, animals and time - the story of a love-hate relationship" by Professor W G Chaloner of Bedford College, University of London. The last lecture of that term, on 19 February, was devoted to "Lundy Island - a place for family holidays and expeditions", in which our President and Mr R Campey recounted their experiences there.

The first General Meeting of the Michaelmas Term, on 29 October, was devoted to a debate, organised jointly with CAMBIENT, on the Wildlife and Countryside Act 1981, posing the question "Has it gone far enough?". The principal speakers were to have been Lord (Peter) Melchett, Opposition spokesman in the debates on

the Bill in the House of Lords, and Mr John Hooson, Chairman of the Parliamentary Committee of the National Farmers' Union; unfortunately the former was unable to be present owing to illness, though the President read an article on the Act published by Lord Melchett in the Spring 1982 issue of *The Countryman*. The other speakers were Mr Philip Oswald of the Nature Conservancy Council and Mr Stephen Tomkins of Hills Road Sixth Form College, Cambridge, and of CAMBIENT; they were joined by Dr Derek Nicholls of the University's Department of Land Economy, who gallantly agreed to take part in place of Lord Melchett on the very day of the debate. This attracted a large audience, who admired all the speakers even if they did not agree with every view expressed.

On 12 November we held a joint meeting with the Fauna and Flora Preservation Society which began with a buffet supper before we listened to Sir Peter Scott on "Conservation - where do we go from here?". Over 350 people attended this talk, which was illustrated by beautiful slides, all taken by Lady Scott. The last talk of the season, on 26 November, was entitled "In search of orchids" and was given by two skilful amateur naturalists/photographers, Messrs Peter Walker and Barry Dickerson, who have succeeded in finding all species of orchids to be found on the mainland of Great Britain.

The several sections of the Society held some six meetings each during the year. A successful conversation on 14 May was followed by the Annual General Meeting.

Members of the Trust are reminded that they are entitled to attend all General Meetings free of charge.

Subscriptions: Life Membership - £15; 1 year - £2; 2 years - £3.50; 5 years - £5.

The City Secretary from May 1983 is Dr Beti Evans of Parkside College, Cambridge, to whom applications for membership should be made.

E J Wiseman
Retired City Secretary

CAMBRIDGESHIRE PLANT TETRAD RECORDING SCHEME IN 1982

Charles Turner and M E Smith

The object of the recording scheme is to produce a distribution atlas of the flora of the "old" county of Cambridgeshire and the Isle of Ely. 1982 saw the appearance of Eric Philp's *Atlas of the Kent Flora*, published by the Kent Field Club, and this admirable work is the kind of effort we wish to emulate. Our scheme has now amassed about 50,000 recent plant records. Particularly in the last three years, our recorders have established a considerable number of new 10 km square records, and last year's success was the rediscovery of large bitter-cress *Cardamine amara* in Cambridgeshire, the first record for 103 years.

The coverage of tetrads in the southern part of Cambridgeshire is reasonably good except in the extreme south-west. However, there are a number of scattered tetrads which have not been recorded at all. Most tetrads still have a number of relatively common species that need searching for. In the Isle of Ely the picture is very different, with relatively few tetrads recorded, and a major effort is to be made this year to expand our coverage there.

Our first recorders' excursion of 1982 was held at Isleham on 22 May. Although it was early in the year, 156 species were recorded, including eight new 10 km square records. The churchyard, roadsides and front gardens yielded a good list of weeds and ruderals. The shrubs *Prunus cerasifera* and *Lycium chinense* both occur in hedges in the village, and it was remarked how widespread these species, and likewise *Lycium halimifolium*, are in Cambridgeshire villages, and yet they are virtually never planted, or even obtainable, today. Later the party progressed along East Fen and Ferry Drovers to the River Lark, but the river bank was too overgrown to proceed further. After the main party dispersed, a late visit was paid to a small patch of willow carr beside the river to the north of the village. Here were found large tussocks of *Carex paniculata*, deadly nightshade *Atropa belladonna* growing luxuriantly on the embankment, and also *Cardamine amara*, the first Cambridgeshire record since 1879, as mentioned earlier.

The visit to March on 6 June was virtually washed out by almost continuous thunderstorms throughout the day. The two recorders who braved the weather made an updated list for the Norwood Road reserve and another for the riverside in March itself, including a fine colony of white stonecrop *Sedum album* on an ancient roof.

At Barrington cement works on 27 June, a large colony of bee orchids *Ophrys apifera* was much admired. Here it was possible to examine closely a number of species that often cause identification problems. *Poa compressa* was growing abundantly on waste ground near the processing plant. Two club-rushes, *Scirpus lacustris* and *S. tabernaemontani*, contrasting in colour, were seen in the flooded pits, around which also occurred *Vicia tenuissima*, *Melilotus officinalis* and *M. altissima*. Some recorders were introduced to great horsetail *Equisetum telmateia* for the first time. 169 species were recorded for the tetrad and a further 112 species for the adjacent tetrad containing Barrington village.

At Whittlesford on 10 July it was not possible to visit the new CAMBIENT reserve at Whittlesford Mill, so we investigated a previously unrecorded tetrad on the south-west side of the village (44J). A road verge within the village yielded lesser swine-cress *Coronopus didymus* and the grassy margins of a track across open fields near the motorway provided wild liquorice *Astragalus glycyphyllos* (not seen in this 10 km square since before 1930) and two broomrapes, *Orobanche elatior* and *O. minor*. A reminder of the continuing loss of wetland habitats in the county was provided on our way home when a local enthusiast kindly showed us growing in her garden a very large specimen of marsh-orchid *Dactylorhiza* (probably a hybrid; we could not agree on a specific name!) which had been rescued from a marshy meadow that was being drained and is now completely obliterated by ploughing.

Chippenham Park, which was visited on 21 August, has received quite a lot of botanical attention in the recent past. Nevertheless, it provided an example of how even well-recorded areas can provide surprises. Earlier searches had concentrated on the park walls and small remnants of acid grassland. It became clear that the lake had not been previously examined. More than a dozen new 10 km square records were established, including a variety of aquatic plants such as *Scirpus tabernaemontani*, which was again seen growing (and contrasting) with *S. lacustris*.

Our final excursion of the year was to Coveney on 4 September, and three tetrads in the area were recorded. We were fortunate in being joined by Cambridgeshire County Council's New Agricultural Landscapes Project Officer, Mr Chris Brown,

who was able to direct us to some good "weedy" fields at Little Hill to the south of the village. These yielded not only the three spurges *Euphorbia exigua*, *E. peplus* and *E. helioscopia*, but also the rare *E. platyphyllos*. A nearby pond contained *Juncus subnodulosus* and would probably repay study earlier in the year. The fields also contained field woundwort *Stachys arvensis*, and later this plant was also found in great abundance on Dams Head Drove together with *Galeopsis speciosa*. Nearby grew *Fumaria muralis* subsp. *boraei*, almost exclusively a Fenland weed in Cambridgeshire, but now very rarely seen. Characteristically the day ended with two members lingering to trawl for pondweeds with a grappling hook until bad light stopped play!

Arrangements for tetrad recording excursions are published in CAMBIENT newsletters. Anyone wishing to help with recording is welcome and should contact either Charles Turner at the Botany School or Keith McNaught at the Trust office.

WATER-BLOOMS IN CAMBRIDGESHIRE

Hilary Belcher and Erica Swale

"In the summer of 1640 (on the eve of the Civil War) the River Cam became as red as blood, and the water being taken up in basins retained the same colour, and many strange sights were seen in the air, as armed men fighting" (Gunther, 1937). Such a metamorphosis, which must have reminded the townsfolk ominously of the plagues of Egypt (*Exodus* 7: 17-18), does not happen to the river these days, owing, no doubt, to more sophisticated methods of sewage disposal. However, "water-blooms" of various, though less alarming, types still develop in Cambridgeshire, caused by "population explosions" of freshwater algae of a variety of species.

Bolton's Pit is an old gravel-working near the Barton Road, Cambridge, now an ornamental lake surrounded by houses and not easily visible from the road. In September 1979 the surface was covered by a thick scum looking exactly like green paint. This was a typical water-bloom of the type common in the meres of Cheshire and Shropshire and mentioned in Mary Webb's novel *Precious Bane*, where its onset presages the climax of the story - "As soon as the mist lifted, I saw that the mere had broken in the night, and the water was thick and troubled, simmering all over, so that the lilies were stirred as they lay anchored." The green layer on Bolton's Pit was entirely composed of the microscopic blue-green alga *Anabaena flos-aquae*, the beaded filaments of which are coiled like springs. (The specific name means "flower of the water" or "water-bloom".) The pool had probably become very eutrophic (rich in plant nutrients) owing to the high population of waterfowl. The *Anabaena* multiplied in the plankton (i.e. in suspension in the water), and when a period of calm weather came it all rose to the surface, buoyed up by the tiny bubbles (gas vacuoles) in the cells. The sudden appearance of an algal layer at the surface is known as "breaking" of the water, a term borrowed from brewing.

Similar blooms can be caused by other blue-green algae with different types of colony. In the autumn of 1981 a bay in a gravel-pit at St Ives was seen to be covered with a characteristic bright bluish-green layer, this time of *Microcystis aeruginosa* (the specific name of which means "like corroded copper"); this alga forms irregular lumpy colonies often perforated with holes, like the popular conception

of modern sculpture. Another alga which forms blooms is *Aphanizomenon flos-aquae* ("Fanny" to waterworks engineers), whose straight filaments cling together in large bundles up to one millimetre long and wide. In May 1981 noticeable quantities of this alga were present along the lee shore of Grafham Water, though, because of wind action, it did not accumulate sufficiently to be spectacular. We have seen Duddingston Loch, Edinburgh, completely covered with this species.

Micro-organisms belonging to other groups of plants than the blue-green algae can also cause blooms. A scum developed on the surface of a pond in Monks Wood NNR near Huntingdon in the spring of 1981, and again in 1982, which was green in the morning and evening but red at midday in the sunshine. This was caused by the swimming unicellular alga *Euglena haematodes* ("blood-red"), and this may also have been the origin of the red colour of the Cam in 1640. However, other organisms can also cause red colorations, as in our neighbouring county of Essex, where red blooms have been traced to purple sulphur bacteria.

Over the county border again, in parts of the Norfolk Broads where the sea occasionally breaks in, blooms of the poisonous flagellate *Prymnesium* have occurred, an alga which causes great havoc in the slightly saline fish-ponds of Israel. So far, no cases have been reported from Cambridgeshire.

"For fountains, they are a great beauty and refreshment; ... but the main matter is ... that the water be never by rest discoloured, green or red, or the like, or gather any mossiness or putrefaction." The algal turbidity and coloration which upset Francis Bacon in 1625 still trouble owners of garden ponds today. The green is likely to be caused by species of *Chlorella* and *Scenedesmus*, while the red colour, particularly common in bird baths and cattle-troughs, is due to the swimming unicellular alga *Haematococcus pluvialis* (the generic name of which means "blood-berry").

Though not strictly blooms, spectacular occurrences of two larger algae should be mentioned. In 1975 great masses of the green filamentous alga *Cladophora glomerata* (blanket weed) developed in the Cam by Grantchester Meadows, forming loops and swirls up to 20 metres long, which must have grown in a few weeks. In the same year the surface of the Bourne Brook above Byron's Pool was covered by a floating tangled mass of *Enteromorpha* (probably *E. flexuosa*, but commonly known as *E. intestinalis*), a pale green tubular plant about as thick as a pencil and related to the sea lettuce *Ulva*. Recipes have been published for cooking *Enteromorpha* (Mabey, 1972), but our investigations did not extend into the culinary field.

Although known at least since Shakespeare wrote
"There are a sort of men whose visages
Do cream and mantle like a standing pond"

(*Merchant of Venice*, Act I, Scene 1, 88-90),

water-blooms have attracted widespread attention only during the last few decades. This is due to the enrichment of many natural and artificial waters by sewage pollution or the run-off of agricultural fertilisers, which has created suitable conditions for the massive development of bloom-forming algae. Blooms usually last for only a few days, until the weather or some other ecological factor alters, but sometimes they may persist for a season. Every one is different. They may be commoner than we think in this county, for the above meagre records owe their existence to the fact that an observer who could recognise a bloom happened to be

on hand. We should be grateful if anyone seeing a bloom could let us know.

Lastly, a good but now slightly out-of-date popular article on blooms has been published by Brook (1957), while Reynolds (1979) can be recommended as giving an exhaustive account and review of blue-green water-blooms, especially those of the Shropshire and Cheshire meres. All the genera of algae mentioned above, except *Prymnesium*, are depicted by Belcher and Swale (1976).

Acknowledgements

We should like to thank Mrs Sylvia Stern for allowing us to examine Bolton's Pit from her garden and Mr Henry Arnold for colour transparencies and samples of the bloom on the pond in Monks Wood.

References

- Bacon, Francis, Lord Verulam. (1625). *Essays*. 46. *Of Gardens*. London.
Belcher, Hilary, and Swale, Erica. (1976). *A Beginner's Guide to Freshwater Algae*. HMSO, London.
Brook, A J. (1957). Water-blooms. *New Biology*, 23: 86-101.
Gunther, R T. (1937). *Early Science in Cambridge*. Oxford.
Mabey, Richard. (1972). *Food for Free*. Collins, London.
Reynolds, C S. (1979). The limnology of the eutrophic meres of the Shropshire-Cheshire Plain - a review. *Field Studies*, 5: 93-173.
Webb, Mary. (1924). *Precious Bane*. Jonathan Cape, London.

CAMBIENT ECOLOGICAL SURVEY : A SECOND REPORT

Sarah Douglas, Peter Seccombe and M E Smith

Most CAMBIENT members will know of the ecological survey recently completed for the Trust by Sarah Douglas and Peter Seccombe. The survey was funded by a "capacity grant" from the Nature Conservancy Council and was carried out between May 1979 and October 1981. The survey area was CAMBIENT's "territory", the pre-1974 County of Cambridgeshire and the Isle of Ely.

A preliminary report by the recorders was published after the first season's work (Douglas and Seccombe, 1980). The present account supplements that paper, incorporating some later refinements in method and summarising the final results. Special emphasis is placed here on the more interesting sites recorded and on the implications of the survey's results for CAMBIENT.

The main aim of the survey was to collect detailed ecological information for sites in the county known to be of actual or potential natural history interest (NHI) but lacking adequate records. It was intended that the results should be used to help update CAMBIENT's "NHI list" - a non-statutory list of sites regarded by the Trust as of sufficient interest to be notified to local authorities and other public bodies concerned with land management.

439 sites were visited and recorded. These included all the sites of "high potential interest" noted by Mr Robert Payne (whose extremely valuable preliminary survey is referred to in the earlier report), all sites of interest known to be under threat, and as many as possible of the sites on the existing NHI list. The sites were divided into

five types according to the predominant habitat, as follows:

Aquatic (58 sites): sites with open water, including springs, streams, rivers, ditches, moats, ponds and pits;

Grassland (146 sites): including meadow, pasture, wash and areas such as disused pits where grassland is the major interest;

Linear (88 sites): sites such as roadside verges, green lanes and disused railway lines, most of them "artificial", though a few may be relics of adjacent areas of interest, now destroyed;

Scrub (40 sites): all sites dominated by shrub species such as hawthorn, elder, bramble, rose and willow;

Woodland (107 sites): including rides, ponds and clearings within the boundaries.

Four criteria were used to evaluate the natural history interest of each site – habitat diversity, species diversity (measured by the number of higher plant species recorded), size, and the presence of "indicator species" (plants which tend to be found only at sites of high natural history interest, including species associated with such long-established habitats as ancient woodland, old hedgerows and unimproved meadows, and those intolerant of pollution). An extra "weighting" was occasionally made for communities or species of particular local importance, such as a diverse chalk, Breckland or greensand flora and plants like the locally (and nationally) uncommon perennial flax *Linum perenne* subsp. *anglicum*.

Within each habitat type, these criteria were applied and each site graded "A", "B", "C" or "D" according to its value for nature conservation. 49 sites were graded "A", 154 "B", 185 "C", and 51 "D". Thus almost half the total number of sites were placed in the two highest grades – a result both heartening and dismaying (see below).

A short account follows of the most interesting areas visited (the 49 "A" sites). It should not, however, be assumed that the remainder of the sites are unimportant. A representative flora and fauna cannot survive in a few isolated pockets, and a county whose "best" sites represented the sum of its natural history interest would be impoverished indeed.

Since most of the sites are on private land, precise locations are not given here. Full records are kept at the CAMBIENT office, and members with a genuine need for further information should contact the Field Officer. Here we try to indicate the range of communities and species and the broad geographical distribution of the sites.

Aquatic habitats

Not surprisingly, all but one of the eight grade "A" sites in this group are north of Cambridge. These range from the traditionally rich fenland waterways to worked-out clay- and gravel-pits of the fen edge. The latter scored high on habitat diversity, several having interesting grassland and scrub communities as well as open water, with a corresponding increase in the diversity of birds and insects as well as plants. The remaining sites were a former reservoir, now managed as a trout farm and private nature reserve, and a series of ponds in a meadowland setting. One of the

locally rare bladderworts, a species of *Utricularia*, was found in two sites and the nationally scarce greater water-parsnip *Sium latifolium* in one.

Grassland

This habitat group was by far the most diverse and included perhaps the most interesting and important of all the sites surveyed. The 14 best areas ranged from washland to dry chalk grassland, and from acid flushes to estuary wall. Two types are particularly notable. The first is old, unimproved pasture and meadow on neutral soils – a habitat which is rapidly declining nationally. Seven sites were recorded, of which one has already been lost to the plough; another, probably of equal status, was destroyed before it could be surveyed. Of the survivors, one contains a remarkable collection of local rarities and a national rarity, Cambridge milk-parsley *Selinum carvifolia*, which in Britain is confined to Cambridgeshire (Perring and Farrell, 1983); two more are examples of a very scarce habitat in the county – damp grassland on alluvial soil.

The second type includes the two largest continuous areas of species-rich chalk grassland in Cambridgeshire, both of which have survived by being in non-agricultural uses and which between them can boast such plants as perennial flax *Linum perenne* subsp. *anglicum*, spring cinquefoil *Potentilla tabernaemontani*, moon carrot *Seseli libanotis* and spiked speedwell *Veronica spicata* subsp. *spicata*, the last two being national rarities (Perring and Farrell, 1983). Another extensive area in non-agricultural use, this time on marl and clay, has developed a rich and varied turf on a site subject to extensive recent disturbance. It includes adder's-tongue fern *Ophioglossum vulgatum*, green-winged orchid *Orchis morio* and the largest colony of bee orchid *Ophrys apifera* known in the county (Warner, 1982). The highest quality grassland sites are well distributed over the county, but only two lie north of Ely.

Linear habitats

These sites were grouped together as a habitat type distinct from grassland or scrub because of their characteristic combination of particular features of both – short turf, taller herbs and hedgerow or dense scrub. Of the 11 grade "A" sites (all of them in the southern half of the county), five were stretches of disused railway, five were old green lanes, and one was the verge of a second-class road. The greatest diversity of species occurred on the old railways, but the green lanes often had rich, ancient hedges. Many of these sites are at risk from excessive scrub encroachment, tipping and ploughing, and one green lane was partly ploughed out in 1981 (though the ploughing of highways, which many green lanes technically are, has been made illegal in most circumstances by section 61 of the Wildlife and Countryside Act 1981). Interesting plants found included dwarf elder *Sambucus ebulus*, wild liquorice *Astragalus glycyphyllos* and an East Anglian speciality, sulphur clover *Trifolium ochroleucon*.

Scrub

The six grade "A" scrub sites were all in and around disused sand-, gravel- or clay-pits in the northern half of the county. Whilst scrub is the major habitat in all these sites, many of them include areas of grassland and open water; indeed some of the most interesting wetland communities recorded were in these sites, including

such local species as brookweed *Samolus valerandi* and marsh pennywort *Hydrocotyle vulgaris*. The majority of these sites are in the Whittlesey area; one of them is unfortunately scheduled for clearance to form a new brickpit, though interesting communities may invade that in their turn.

Woodland

All the sites of highest grade are, or originally were, examples of the characteristic oak-ash ancient woodland of the Cambridgeshire boulder clay. Several have been partially replanted with conifers. All but one of the sites are on the less well-known southern and eastern boulder clay, and they include elements uncommon in the county, such as hornbeam coppice and ground-flora species including wood-sorrel *Oxalis acetosella*, red campion *Silene dioica*, ramsons *Allium ursinum* and water avens *Geum rivale*. All these plants are common in woodland over most of Britain, but rare in Cambridgeshire with its "continental" climate; however, the last three grow together, along with the spectacular hybrid between water avens and the common wood avens *Geum urbanum*, in one privately owned wood in the east of the county where traditional coppicing is being revived.

This is an impressively rich and diverse collection of sites and habitats. Although a significant number were already known, they had not been properly recorded, and we now have a more realistic estimate of their interest. Some are of course new discoveries.

Conclusions

Apart from the sheer wealth it represents, a number of interesting conclusions can be drawn from the list. First, as has long been suspected, the north of "old" Cambridgeshire contains much more of natural history interest than earlier records showed. It is hardly necessary to draw the moral here. Secondly, in Cambridgeshire as elsewhere, a remarkable range of species and habitats can be found in "artificial", often recently created, sites such as old pits and railway lines. In the survey some of these places scored very highly on species diversity and habitat diversity, and it is salutary to be reminded of their importance, for birds and insects as well as plants, and of the potential interest of sites in the process of creation now. Future descriptions of the wildlife of Cambridgeshire will have to be adjusted to take account of such areas.

On the other hand, the "traditional" wildlife habitats of the county – the fens, the chalk grassland and the boulder-clay woods – are probably more important scientifically than the more recent sites: they are scarcer and more specific to the East Anglian region, and hence more important nationally. The more recent "artificial" habitats are by their nature easier to create and are comparable with similar sites elsewhere. It is significant that no wholly "new" examples of these older-established communities were found. Nor were many good examples found of that other traditionally important Cambridgeshire habitat, the Fenland waterway, though in this case the vast mileage of potentially interesting habitat, its frequent inaccessibility and its fluctuating interest with different phases of management mean that interesting examples may have been overlooked.

The survey has provided an enormous amount of information. Apart from the voluminous survey material, the Trust has details of ownership for almost all sites, and in many cases the recorders made personal contact with owners. The site

surveys contain much interesting information about plant distribution, which has been incorporated in the Botanical Society of the British Isles' national records and will also be used in the proposed new Flora of Cambridgeshire. Most importantly, of course, CAMBIENT now has more information than ever before about sites of natural history interest in its area and is thus better equipped to conserve them and to help others to do so.

However, amassing the information is not enough: it must be acted on. The Trust's Scientific Advisory Committee is collating the survey material with information from other sources on the NHIs not visited by the recorders, and the revision of the NHI schedule – the major objective of the survey – will soon be complete. This will enable the Trust to respond adequately with advice or reasoned objection when sites of natural history interest are threatened, and it will also enable the authorities to co-operate in their conservation. However, the best of the sites recorded during the ecological survey are of such quality that more positive and immediate action is justified. On the recommendation of the Scientific Advisory Committee, the Executive Committee has decided to advise all owners of the interest of the land under their control. This was not an automatic decision, since cases have been known where the response to such information was to destroy the habitat in question; but experience suggests that such reactions are rare and that most landowners are, at least, not actively unsympathetic and may be positively helpful. Besides (apart from the matter of simple courtesy) it seems hardly fair to expect them to conserve sites of interest if they do not know of them.

In the case of the 49 grade "A" sites, it was decided to go further and to approach the owners concerned for their active co-operation in conserving these areas. The results of such an approach may include the granting of a lease (which will mean direct expenditure) or a management agreement (which may entail direct expenditure or labour paid for by the Trust and will certainly involve the provision of advice). These activities all mean extra work for the Trust's staff, whose capacity is already strained. If sites of this quality come under immediate threat, the Trust will have to consider the possibility of purchase. To be properly prepared for this eventuality, some kind of list of priorities will need to be drawn up. The recorders deliberately refrained from drawing up such a list in the survey itself, since they felt that on purely ecological grounds different habitats could not be compared. But decisions must be made and other criteria invoked. These might include fragility of the habitat, the time needed for similar habitats to evolve elsewhere, its regional or national rarity, how well it is represented on other reserves, the ease with which a particular site could be managed and its suitability for educational purposes and for recreation. Decisions are not easy; ancient woodlands and old meadows score highly on the grounds of regional and national importance, but the diverse habitats of a worked-out pit might make an excellent teaching site, and an old railway provide a splendid opportunity for "educational recreation". Clearly the ecological survey is a beginning rather than a task complete in itself.

References

- Douglas, S. and Seccombe, P. (1980). CAMBIENT ecological survey. *Nature in Cambridgeshire*, No. 23: 40–42.
- Perring, F H. and Farrell, L. (1983). *British Red Data Books: 1. Vascular Plants. 2nd Edition.* RSNL, Lincoln.
- Warner, N. (1982). A tale of bee orchids. *Nature in Cambridgeshire*, No. 25: 50–58.

BOOK REVIEW

Crompton, G, and Whitehouse, H L K. (1983). *A Checklist of the Flora of Cambridgeshire*. 95 pages, with line-drawings and maps. Privately published by the authors, and available from the CAMBIENT office and the University Botany School. £5.

It is nearly twenty years since the publication of *A Flora of Cambridgeshire*, which I wrote with my colleagues Frank Perring, Peter Sell and Harold Whitehouse, and our book is out of print. The new Checklist assumes that the reader has a copy of the 1964 Flora; it declares the modest aim of "making readily available information on the rapid changes which affect the knowledge of our local flora", and it aims "to serve as a working document for use by recorders until a new County Flora can be produced".

Nomenclatural changes have been made, mainly those now used in *Flora Europaea* (1964-1980), and there is an appendix detailing the exact boundary of vice-county 29 (Cambridgeshire), a boundary which corresponds poorly with the new administrative County of Cambridgeshire.

Comparing the new Checklist with the 1964 Flora, some substantial changes can be seen. One of these, namely the number of new records for non-native plants, must surely to some extent reflect the care and attention to detail of Gigi Crompton and her fellow-recorders. For example, the common garden *Buddleja*, given in the 1964 Flora for five 10 km squares only and said to be "not freely self-sown", is recorded in 20 squares as "now not infrequently self-sown".

Wholly new plants for Cambridgeshire are few, but include the new hybrid *Solanum x procurrens* first described by Alan Leslie from Gamlingay in 1975 and illustrated by Graham Easy on p. 10 of the Checklist. In contrast, what of extinctions? Here the Checklist is oddly reticent; there is no indication, such as the 1964 Flora made, of plants "presumed extinct" to distinguish them from those still found in the county, though the last recorded date, if more than 50 years ago, is usually sufficient to decide the question. (A good example is provided by the sundews *Drosera*, all three species of which are presumed extinct in the county.)

One of the special features of the 1964 Flora was the inclusion of bryophyte records, and it is particularly pleasing that Dr Harold Whitehouse, who contributed the Flora bryophyte records, has been able to bring them up to date in the Checklist. His introduction (p. 65) records the remarkable change since 1964 in the colonisation of calcifuge bryophytes at Wicken Fen. These new records are partly responsible for the increase in the bryophyte list from 271 to 310 species and varieties, though it is obvious that critical bryologists are also continuing to study the local Cambridgeshire flora with increasing effect.

It is a pleasure to welcome this inexpensive aid to Cambridgeshire botany and to commend it to all local botanists who enjoy their hobby in the field. They are part of a distinguished tradition: may it long survive!

S M Walters

THE BREEDING BIRDS OF CHIPPENHAM FEN NATIONAL NATURE RESERVE IN 1981 AND 1982: SOME EFFECTS OF THE 1981/82 WINTER

Derek R Langslow

Chippenham Fen lies on the eastern extremity of Cambridgeshire. The Fen is managed by the Nature Conservancy Council as a National Nature Reserve and is noted for its rich flora and invertebrate fauna. Whilst much of the botanical interest of the Fen resides in the areas of sedge fen and *Molinia* grassland, the ornithological interest is more closely allied to the carr and mature woodland. Despite its name, the reserve has a variety of habitats including eutrophic sedge fen with local scrub encroachment, damp meadow grassland, alder, birch and willow carr woodland, and more mature woodland with oak, ash, sycamore, elm, birch, poplar, hawthorn, hazel, Scots pine and yew amongst the wide variety of tree species. The mature woodland (especially in compartments 7 and 12 and parts of compartments 5, 8 and 9: see Figure 1) is the result of planting in the late eighteenth century when attempts were first made to drain the Fen. These drainage attempts produced the many kilometres of straight dykes which are fed by a series of springs. No doubt this abundant water supply helped to reduce the effectiveness of the drainage schemes. At its western end, the reserve crosses the parish boundary to include the former

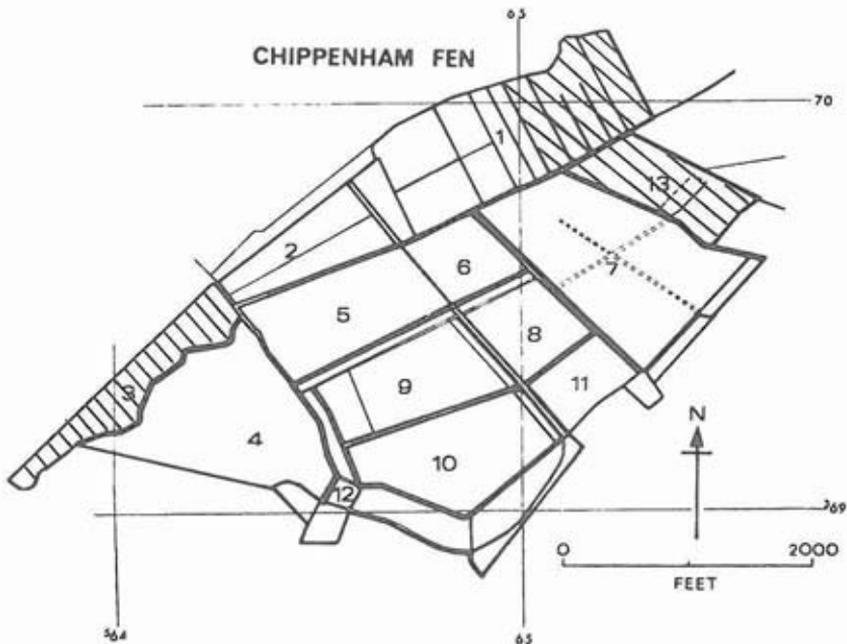


Figure 1:
A map of Chippenham Fen NNR showing the census area (unshaded area) and the compartment numbers

Snailwell Poor's Fen (compartment 4): like the two blocks of the Chippenham Poor's Fen (compartments 5 and 6), this has a history of peat-digging and is lower and even wetter than the rest of the reserve.

As part of a study on methods for bird census in woodland and scrub habitats, a census was made of the breeding birds of Chippenham Fen between 15 March and 28 June 1981 (Figure 1). The following winter, 1981/82, broke many records for its severity (Clarke, 1982 and 1983; Cawthorne, 1982). Temperatures were especially low in December 1981 and January 1982, and there were two periods of snow cover which were prolonged by Cambridgeshire standards. A feature of the winter was that the severe weather began relatively early, at the end of the first week in December, but did not persist much beyond the middle of January. "Normal" winter weather prevailed thereafter. The severity of the winter suggested that a repeat census of the Fen in 1982 would provide some interesting insights into the effects of the winter on resident birds. Hence the breeding bird census was repeated between 17 March and 28 June 1982.

How the breeding birds were counted

The spot map census technique was used; it is very similar to the method used for the Common Bird Census (CBC) organised by the British Trust for Ornithology (BTO). The method requires a minimum of ten visits to the census area during the breeding season, including both morning and evening visits. All records of birds seen and heard are noted on 1:2500 maps using standardised codes for each species and its recorded behaviour. At the end of the season composite summary maps are prepared for each species, and the number of territories is determined according to standard rules (see for example Marchant and Hyde, 1980). The number of territories was assessed independently by R J Fuller (BTO) and myself. A total of 75 hours fieldwork was carried out in 1981 and 74 hours in 1982. This census method is most appropriate for passerines that sing regularly and frequently and are territorial. The method can however be adapted for use with other territory-holding species. Amongst the species recorded at Chippenham Fen, the method is least appropriate for mallard, teal, tufted duck, moorhen, snipe, woodcock, kestrel, kingfisher, turtle dove and jay. Quiet unobtrusive species like treecreeper, bullfinch and lesser spotted woodpecker are also difficult to count, as are semi-colonial species like redpoll. The relative abundance of these species between 1981 and 1982 was also assessed by comparing the total number of March-June records for each species. This gives a cruder assessment of abundance than the mapping method, which takes account of behaviour and of spatial and temporal distribution in addition to the number of records.

Changes in the numbers and distribution of breeding birds between 1981 and 1982

The variety of habitats on the Fen means that there is a diverse breeding bird community: 53 species held territories in 1981 and 51 in 1982, with 50 species common to both years. The overall density of birds within the census area was 852 territories per 100 hectares in 1981 and 672 in 1982 (Table 1). Both densities exclude starling, woodpigeon and woodcock. Much of the reduction in density between 1981 and 1982 was due to a massive decline in wren and robin numbers. Bird density is greatest within the most structurally diverse mature woodland, and the lowest density is in the mown sedge fields and grasslands.

The full list of species holding territories on the Fen in 1981 and 1982 is given in Table 2. The main list includes all species with more than ten territories in at least one of the two years, ranked in order of their percentage population change between 1981 and 1982. The proportion that the population of each species represents of the total bird community is illustrated in Figure 2. More species declined between 1981 and 1982 than increased, with decreases especially pronounced amongst some of the resident passerines. The numbers of wren, reed bunting, robin and dunnock territories all declined by more than 40%; those of song thrush decreased by 23% and of yellowhammer by 16% (Table 2). By contrast, goldcrest, blue tit, nuthatch and great tit territories all increased by more than 13% (Table 2). The lesser redpoll, chaffinch and blackbird populations changed little (Table 2). Amongst the uncommon resident species, the total number of records for kestrel, green woodpecker, kingfisher and bullfinch fell by 40% or more (Table 3). Several uncommon resident species also became more numerous; the total number of records for teal, moorhen, treecreeper and long-tailed tit increased by more than 25%, and there were five times as many lesser spotted woodpecker records in 1982 as in 1981 (Table 3). The numbers of records of snipe and woodcock were very similar in the two years.

The extent of the population changes also varied amongst summer visitors (Table 2). Cuckoo, turtle dove and willow warbler numbers were unchanged, while sedge warblers increased slightly. Blackcaps declined slightly, but chiffchaffs, spotted flycatchers and garden warblers fell by between 31% and 50% and reed warblers decreased by a massive 74%. Amongst the uncommon summer visitors, grasshopper warblers and nightingales showed little or no change. A singing wood warbler was a surprise addition in 1982, but, although it remained on the Fen for several weeks, no proof of breeding was obtained.

The most surprising record during the breeding season was of a gannet flying over the reserve on 27 April 1981, a day when several others were seen inland after a gale. Cetti's warblers were heard singing very infrequently in both years but there was no evidence that they bred. Both redshank and lapwing bred on the Fen but outside the census area in 1981. Redshank bred on a damp field to the north-east of the reserve until 1980, but this field was drained and ploughed by the spring of 1981;

Table 1: Numbers of species and numbers of territories recorded in the census area on Chippenham Fen NNR in 1981 and 1982

	1981	1982
Number of species holding territory	53*	51†
Total number of territories (excluding starling, woodpigeon and woodcock)	875	690
Density in pairs per 100 hectares	852	672
Number of territories of the five most abundant species	412	300
Number of territories of the ten most abundant species	604	473

* In addition, redshank and lapwing bred on the Fen outside the census area.

† In addition, lapwing bred on the Fen outside the census area.

Table 2: Breeding bird populations within the census area at Chippenham Fen NNR in 1981 and 1982

The main list includes all species with more than ten territories in at least one year, the order of abundance in each year being given in brackets.

	Number of territories in		% change from
	1981	1982	1981 to 1982
Reed warbler	23 (14)	6 (22=)	-74
Wren	129 (1)	46 (5)	-64
Reed bunting	20 (15)	8 (18=)	-60
Robin	87 (3)	36 (7)	-59
Garden warbler	12 (17)	6 (22=)	-50
Spotted flycatcher	15 (16)	8 (18=)	-47
Duncock	38 (8)	23 (11)	-41
Chiffchaff	29 (12)	20 (13)	-31
Song thrush	48 (5=)	37 (6)	-23
Yellowhammer	25 (13)	21 (12)	-16
Blackcap	35 (9)	31 (10)	-11
Willow warbler	91 (2)	90 (1)	-1
Snipe	10 (19)	10 (16=)	0
Lesser redpoll	11 (18)	11 (15)	0
Chaffinch	57 (4)	60 (2)	+5
Blackbird	32 (10)	35 (8)	+9
Sedge warbler	48 (5=)	53 (3)	+10
Great tit	30 (11)	34 (9)	+13
Nuthatch	8 (21=)	10 (16=)	+25
Blue tit	39 (7)	51 (4)	+31
Goldcrest	9 (20)	15 (14)	+67

The following species also held territories (with numbers of territories in 1981 and 1982 shown in brackets):

Mallard (7, 8); Teal (1, 2); Tufted duck (1, 0); Kestrel (2, 1); Moorhen (6, 7); Turtle dove (5, 5); Stock dove (1, 3); Cuckoo (4, 4); Kingfisher (2, 1); Green woodpecker (4, 2); Great spotted woodpecker (4, 4); Lesser spotted woodpecker (1, 3); Tawny owl (1, 1); Mistle thrush (2, 3); Nightingale (2, 2); Grasshopper warbler (5, 4); Wood warbler (0, 1); Lesser whitethroat (1, 0); Whitethroat (1, 3); Long-tailed tit (4, 6); Marsh tit (2, 1); Willow tit (2, 1); Coal tit (2, 3); Treecreeper (2, 5); Jay (2, 2); Greenfinch (4, 1); Goldfinch (1, 0); Bullfinch (8, 4); Tree sparrow (1, 1); Swallow (1, 1). Woodpigeon, starling and woodcock all bred in both years but territories were not determined.

The following species were also recorded during the breeding season:

Gannet (27.4.81); Long-eared owl (13.3.82); Collared dove; Jackdaw; Carrion crow; Cetti's warbler; Hobby (1981 only); Meadow pipit; Corn bunting; Siskin; Lapwing; Redshank. The last two species bred in compartment 13 in 1981, and lapwing bred again in 1982.

Facing page:

One of the dykes in Chippenham Fen NNR fed by chalk springs, showing a sluice used to control the water-table

Nicholas Warner



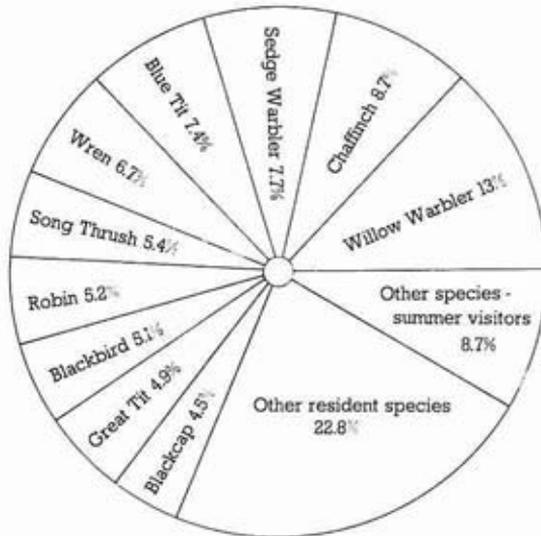
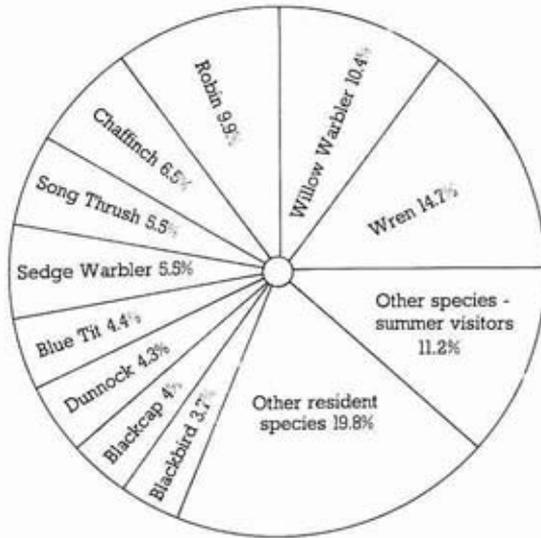


Figure 2:

The breeding bird community at Chippenham Fen NNR in 1981 and 1982 with the ten most abundant species in each year treated individually

the pair in compartment 13 in 1981 were new to the reserve and may have been displaced from the drained area. Redshank did not breed in 1982 although a pair appeared briefly in early April.

The change in population density of some of the resident passerines produced a marked redistribution of the population among the major habitats (Table 4). The proportion of robin and wren territories in the mature woodland increased between 1981 and 1982, but the proportion in carr and immature damp woodland decreased. By contrast, the number of dunnock territories in mature woodland decreased by more than 50% whilst remaining virtually unchanged in the other habitats. The number of blue tits breeding in the mature woodland hardly altered but the population in wetter carr and less mature woodland doubled. The decrease in the population density of song thrushes occurred evenly through all the habitats. Reed buntings were almost confined to the areas of open fen with occasional shrubs and they held territory nowhere else in 1982. Yellowhammers also preferred the open fen areas, but a greater proportion bred in other habitats.

Table 3: Total numbers of records of selected species during census visits from March to June 1981 and 1982

I consider that the territorial behaviour of the second group is more easily recorded than that of the first group.

	1981	1982	% change from 1981 to 1982
<i>Group 1</i>			
Kestrel	27	10	-63
Reed warbler	81	32	-60
Green woodpecker	32	15	-53
Kingfisher	10	5	-50
Bullfinch	57	34	-40
Great spotted woodpecker	38	27	-29
Jay	16	13	-19
Turtle dove	30	27	-10
Woodcock	27	26	-4
Snipe	79	80	+1
Cuckoo	30	36	+20
Mallard	57	70	+23
Lesser redpoll	44	55	+25
Moorhen	26	38	+46
Teal	6	17	+183
Lesser spotted woodpecker	4	20	+400
<i>Group 2</i>			
Spotted flycatcher	76	25	-67
Garden warbler	63	25	-60
Blackcap	172	139	-21
Great tit	203	244	+20
Goldcrest	70	90	+29
Blue tit	303	419	+38
Long-tailed tit	34	50	+47
Nuthatch	49	75	+53
Treecreeper	16	35	+119

What happened during the 1981/82 winter?

The most likely cause of the declines in breeding populations of resident passerines was that winter mortality was much greater than usual. During the 1981/82 and 1982/83 winters I walked along a standard route through the Fen (six kilometres in length) and recorded all birds seen or heard. The route included visits to all the major habitat types on the Fen and took about 2½ hours. It provided a measure of the species present and their relative abundance (Figure 3).

During the 1981/82 winter a dramatic fall was recorded in the numbers of some species on the Fen which was not observed in the milder 1982/83 winter (Figure 3). An average of 28 species per visit was recorded between mid-November 1982 and early February 1983. Whilst 28 species were seen on 6 December 1981, the average during January 1982 was only 19; the decline followed the severe December 1981 weather. In the 1981/82 winter the numbers of wrens, robins and blackbirds fell sharply after early December; no such changes occurred during the 1982/83 winter (Figure 3). By contrast, the number of blue tits and long-tailed tits remained similar during both winters. Hence wrens and robins presumably perished during the cold weather, although they may have left the Fen before dying; blackbirds left the Fen but survived the winter well. Both blue tits and long-tailed tits were unaffected by the weather conditions.

Table 4: Numbers and percentages of territories in each major habitat group in 1981 and 1982

		Number of territories in each habitat group (% of total)			
		W	F	FS/FW	OW
Wren	1981	71 (55)	6.5 (5)	35 (27)	16.5 (13)
	1982	34 (74)	0	8 (17)	4 (9)
Robin	1981	56.5 (65)	1 (1)	16.5 (19)	13 (15)
	1982	30 (83)	0	2 (6)	4 (11)
Dunnock	1981	23.5 (62)	2.5 (7)	8.5 (22)	3.5 (9)
	1982	9.5 (41)	1.5 (6)	7.5 (33)	4.5 (20)
Song thrush	1981	29 (60)	2 (4)	10 (21)	7 (15)
	1982	24 (65)	1.5 (4)	8.5 (23)	3 (8)
Blue tit	1981	30 (77)	0	6 (15)	3 (8)
	1982	31 (61)	1 (2)	13.5 (26)	5.5 (11)
Reed bunting	1981	1 (5)	17 (85)	2 (10)	0
	1982	0	8 (100)	0	0
Yellowhammer	1981	1 (4)	18.5 (74)	4.5 (18)	1 (4)
	1982	2 (10)	14 (67)	4 (19)	1 (5)
Area in hectares		37	32.3	22.4	11.1

W Mature closed canopy woodland often with developed understorey

F *Cladium*- or *Phragmites*-dominated fen and mown sedge field

FS/FW Scrub and carr woodland as a secondary growth usually with *Cladium* or *Phragmites* understorey

OW Woodland with very few mature trees – usually secondary growth over wet ground with little *Phragmites*

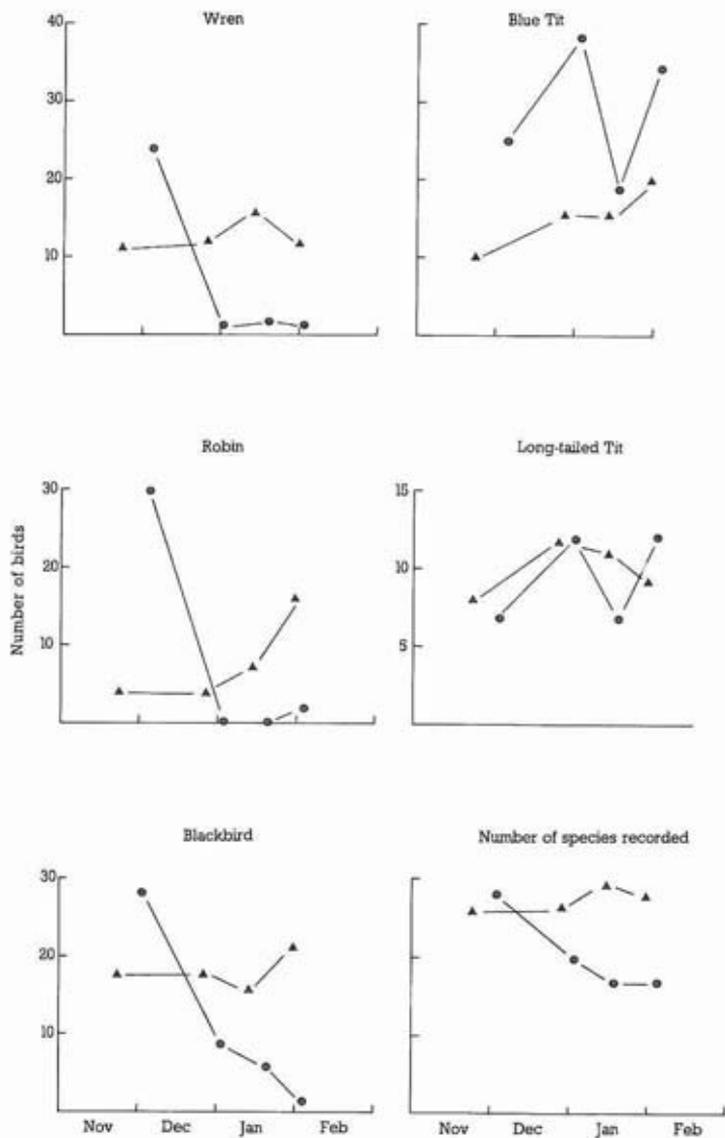


Figure 3:
The numbers of birds of selected species and the total number of species recorded on transects in the winters of 1981/82 (●) and 1982/83 (▲) at Chippenham Fen NNR

Why did these population changes occur between 1981 and 1982?

The winter affected different species in different ways. The resident species can be grouped as to whether they usually feed on seeds and fruit or on insects or are omnivorous in winter and as to whether they usually feed on the ground or not. There were large decreases in the populations of the ground-feeding insectivores, especially wrens and robins (Table 5 and Figure 4). An increased mortality rate for these two species was found nationally; the number of ringing recoveries reported of wrens and robins in December 1981 and January 1982 was nearly double the usual (Cawthorne, 1982). In addition, the provisional Common Bird Census indices for these two species fell significantly (Figure 4; Marchant, 1983a).

Whilst the ground-feeding omnivores fared well, the response among the ground-feeding seed-eaters was mixed: chaffinches showed little change and yellowhammers a small decline, but both reed buntings and greenfinches (with a very small sample) showed large decreases. Nationally the number of ringing recoveries of reed buntings was more than three times greater than usual during the winter (Cawthorne, 1982) and the provisional CBC index fell by 37%, the largest decline recorded for any species nationally (Figure 4; Marchant, 1983a). The CBC index for chaffinch fell slightly, as did those for yellowhammer and blackbird (Figure 4). The difference in response between yellowhammers and reed buntings is intriguing and mysterious. The two species breed in similar areas on the Fen and both are usually absent from it during the day in midwinter, although both roost on the Fen in winter. Both are seed-eaters and sometimes associate in the winter to feed. They are of similar body size, yellowhammer being very slightly heavier on average. Presumably the difference reflects different winter feeding and migratory habits.

Fen, with common reed Phragmites australis and hemp-agrimony Eupatorium cannabinum, in the foreground and carr woodland in the background

Nicholas Warner



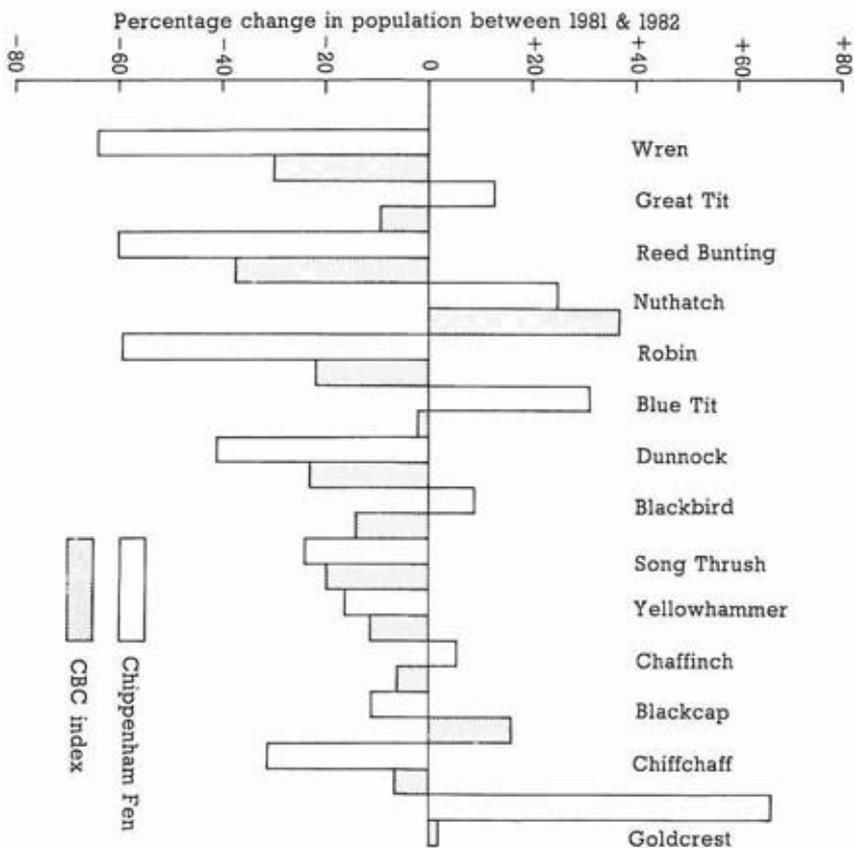


Figure 4:
 The percentage change in population of some species at Chippenham Fen compared to the percentage change in Common Bird Census (CBC) indices between 1981 and 1982

The 1982 CBC indices are provisional and were kindly provided by the British Trust for Ornithology. Since this paper was prepared revised indices have been published (Marchant, 1983b).

Most of the tree-feeding species increased in number; the one exception was bullfinch (Table 5). Even some of the smallest species such as long-tailed tit, treecreeper and goldcrest evidently survived well at Chippenham Fen; this was also reflected in the provisional CBC indices, which only fell between 1% and 6% for the three species (Figure 4). Both blue tits and great tits increased at Chippenham, though the CBC indices fell slightly for both species (Figure 4). Bullfinches declined sharply both on the Fen and nationally (Marchant, 1983a).

The lack of effect of the 1981/82 winter on the small tree-feeding passerines contrasts with that of the 1978/79 winter. Then there was a significant correlation between body weight and change in CBC index between 1978 and 1979 for species weighing under 11 grams (Cawthorne and Marchant, 1980). After the 1978/79 winter the greatest decreases in the woodland CBC index were for wren (-47%), goldcrest (-43%), long-tailed tit (-42%), treecreeper (-18%) and the *Parus* tits (-7% to -17%) (Marchant and Hyde, 1980). The prolonged glazing of trees in 1978/79 prevented the tree-feeding insectivores from feeding. Another contrast with the 1978/79 winter was the effect on song thrush and blackbird populations; the

Table 5: Changes in populations of resident species grouped according to major feeding locations

		% change from 1981 to 1982
1.	Ground-feeding	
(a)	mainly on insects	
	Wren	-64
	Robin	-59
	Green woodpecker	(-50)
	Dunnock	-41
	Song thrush	-23
(b)	mainly on seeds	
	Greenfinch	(-75)
	Reed bunting	-60
	Yellowhammer	-16
	Chaffinch	+5
(c)	omnivore	
	Blackbird	+9
	Moorhen	(+16)
	Mistle thrush	(+50)
2.	Tree-feeding	
(a)	mainly on insects	
	Great tit	+13
	Blue tit	+31
	Coal tit	(+50)
	Long-tailed tit	(+50)
	Goldcrest	+67
	Treecreeper	(+150)
	Lesser spotted woodpecker	(+200)
(b)	mainly on seeds	
	Bullfinch	(-50)
	Nuthatch	+25
(c)	omnivore	
	Great spotted woodpecker	(0)

The figures in brackets are based on a sample of less than eight territories in at least one of the two years.

decline in CBC index for blackbird was nearly as great as in song thrush in 1978/79, but, whereas song thrushes declined both on the Fen and nationally between 1981 and 1982, blackbirds increased at Chippenham while declining slightly nationally (Figure 4). It might be added that most of the small passerines increased their CBC indices between 1979 and 1980. The CBC index for wren increased by 57% in woodland, robin by 14%, goldcrest by 60%, long-tailed tit by 44%, blue tit by 10% and great tit by 7% (Marchant and Taylor, 1981).

The changes amongst the summer visitors are more mysterious, especially the large decreases in reed warblers and spotted flycatchers (Table 2). Was this phenomenon restricted to Chippenham Fen or was it more widespread? No CBC index is available for reed warbler; it is worth noting, however, that the Wicken Fen Ringing Group trapped as many reed warblers during 1982 as in 1981. The provisional CBC 1982 index for spotted flycatcher showed no change from 1981. That for blackcap increased by 16%, though the Chippenham population fell by 11%. The trends for chiffchaff were similar on the Fen and nationally (Figure 4).

Acknowledgements

I should like to thank Chris Galey and Tim Reed for help with the summer fieldwork, Jane Slinn for help with the preparation of species maps, Rob Fuller for analysing the species maps and Stephen Edge for drawing the figures. Finally I should thank my wife for tolerating my early risings with good humour and my young son, Ian, for his company in the field in both summer and winter.

Access to Chippenham Fen National Nature Reserve

The main ride through Chippenham Fen NNR is a public footpath (see OS 1:50 000 Sheet 154) and most of the major habitat types can readily be seen from this path. The reserve is leased by the Nature Conservancy Council from the Chippenham Park Estate, and access to other parts of the reserve requires a permit. Please note that the Estate requires that the reserve is closed to visitors in April, May and June and on certain days in the shooting season. Applications for permits should be made to Nature Conservancy Council (East Anglia Region), 60 Bracondale, Norwich NR1 2BE (Telephone: Norwich (0603) 20558).

References

- Cawthorne, A. (1982). Hard facts about cold weather. *BTO News*, No. 119.
- Cawthorne, A., and Marchant, J H. (1980). The effects of the 1978/79 winter on British bird populations. *Bird Study*, 27: 163-172.
- Clarke, J W. (1982). Weather notes for Cambridgeshire 1981. *Nature in Cambridgeshire*, No. 25: 63-64.
- Clarke, J W. (1983). Weather notes for Cambridgeshire 1982. *Nature in Cambridgeshire*, No. 26: 71-72.
- Marchant, J H. (1983a). CBC comes of age. *BTO News*, No. 124.
- Marchant, J H. (1983b). Bird population changes for the years 1981-82. *Bird Study*, 30: 127-133.
- Marchant, J H., and Hyde, P A. (1980). Bird population changes for the years 1978-79. *Bird Study*, 27: 173-178.
- Marchant, J H., and Taylor K. (1981). Bird population changes for the years 1979-80. *Bird Study*, 28: 147-152.

NEW PLANT RECORDS FROM THE DEVIL'S DITCH

A C Leslie

The linear earthwork that is variously known as the Devil's Ditch or Devil's Dyke runs for seven miles from what, at the time of its construction, would have been thick, wet, boulder-clay woodland at the south-eastern end near Ditton Green, across the dry ground of the chalk to the Fens at Reach in the north-west. Its deep ditch and high bank would have been an impressive and formidable barrier to movement from the south-west along the chalk and as such served to protect the local inhabitants of East Anglia from unruly elements in that direction. John Ray knew the Ditch as a good site for rare and interesting plants in the seventeenth century, and three hundred years later it is still a botanical honeypot. Indeed it is now more valuable than ever, as much of the adjoining countryside is under intensive arable farming, though the stretch alongside the race course at Newmarket is surrounded by grassland. Chalk grassland is, of course, the prime habitat on the Ditch, but there are also extensive areas of scrub and much of the Ditch south-east of the Dullingham Road is woodland. The variable factors involved in aspect, exposure and soil type and depth combine to provide a fascinating mosaic of communities from the short, species-rich turf by the open path, with its *Thesium humifusum* and *Asperula cynanchica*, to the lush ditch bottoms with their huge plants of *Thalictrum minus* and *Deschampsia cespitosa*. Access to the area is afforded by the public footpath which runs along the whole length of the bank, which in this account is referred to as the dyke, the excavated portion being called the ditch. When Ditch is spelt with an initial capital it refers to the whole structure.

Over the years the Devil's Ditch has been breached by five roads, two railways and five other assorted tracks and paths, and several sections of the ditch have been filled in. Although both continuity and a considerable area have been lost, there is some gain in that these breaks are sometimes themselves the source of interesting plant records.

Some sections of the Ditch on either side of the Burwell Road are designated nature reserves and are managed by the Trust on a lease from Cambridgeshire County Council. There is a small management committee, whose members advise on the conservation of all aspects of natural history on the Ditch, and since 1972 they have undertaken an annual perambulation, usually of its whole length, at varying times of the year. Mrs Gigi Crompton has combined the plant records made on these walks with all other known records from the area to produce a fascinating, but unpublished, historical checklist. It was at her suggestion that the writer made repeated visits to the Ditch in the period 1980-1982 with the object of trying to add new records and to attempt to re-find items on a *desiderata* list of plants which had not been seen recently. The following account will thus not deal primarily with the well-known rarities of the area, but will concentrate on the new records made in the last two years. Unless otherwise stated, all of these have been made by the writer (several times in company with Major General J M Spencer-Smith) and if plants were new to the Ditch records they are preceded by an asterisk(*), whilst refinds are given with the date of the last recording in brackets. For the purpose of description the Ditch has been divided into seven sections.

1. Camois Hall to the Stetchworth Road

With the exception of the clearing at Dane Bottom, which has a fine show of *Geranium sanguineum* (especially on the *field* side of the ditch hedgerow), this section is entirely wooded. The influence of the boulder clay is especially evident at the south-eastern end, the woodland being dominated by oak, ash and field maple and the herb layer by *Mercurialis perennis*, but with a scattering of more interesting species, of which *Campanula trachelium* is especially abundant and attractive. A small colony of oxlips *Primula elatior*, first recorded by B D Jones in 1973, was found to have considerably increased on the committee walk in April 1982, and on the same outing Dr P J Grubb was able to add **Anemone nemorosa* to the Ditch list, just a few stems right by the path. The ditch alongside this first part looks rather uninviting, often full of nettles and fallen wood and very gloomy, but it has some surprises, notably the half dozen or so crowns of *Dryopteris filix-mas*, some of great size, and the first record for this species on the Ditch since Babington's in 1860. There are small colonies here too of **Viola reichenbachiana* and **Epilobium hirsutum* as well as a large patch of *Lysimachia nummularia*, previously only recorded at the Reach end and not seen there recently. Further new violet records also came to light here in the shape of the two white-flowered varieties of *Viola odorata* known as *var. *dumetorum* (with bearded lateral petals and a deep violet spur) and *var. *imberbis* (with hairless petals and a paler pinkish-purple spur); it would be interesting to know the detailed distribution and relative abundance of this pair over the rest of the county. That **Carex sylvatica* has remained unrecorded for so long on this stretch must surely be because it was literally underfoot in several places along the footpath; it grows accompanied by **Veronica serpyllifolia* in one of these. A lone plant of **Dipsacus fullonum* was another new record here in 1981, but it could not be refound a year later.

There are still prizes to be sought at this end and there is a formidable list of good plants "not seen recently". So keep an eye out when you visit the Ditch for *Lamiastrum galeobdolon* (*Galeobdolon luteum*) (1860), *Euphorbia amygdaloides* (1860), *Geum rivale* (1932), *Melampyrum cristatum* (1823), *Orchis mascula* (1860), *Oxalis acetosella* (1820) and *Stellaria holostea* (1860).

Box, garden privet and cherry laurel have all been planted here on the Ditch, but none of them appears to be regenerating and the cherry laurel in particular always looks very sickly and chlorotic. Nearer the Stetchworth end many of the existing trees were also probably planted, although maybe a few like the solitary hornbeam are self-sown. Many old beeches, damaged in storms a few years ago, have now been felled, and the greatly increased amount of light and water reaching the north-east facing bank has resulted both in *Moehringia trinervia* extending its range right along this partly cleared section and also in the appearance of a solitary plant of a rare Cambridgeshire calcicole, *Inula conyza*. This is the first Ditch record of the latter since Babington's in 1852; it is to be found just above the Stetchworth Road in company with **Epilobium tetragonum*. Another interesting feature at this end is the persistent occurrence of the biennial garden escape **Lunaria annua*; this honesty was first noted here in 1973 and still occurs as a few scattered individuals along the first hundred yards from the road. This species is more capable of maintaining itself than it is generally given credit for. A number of other garden escapes are clustered at this end and some, like the **Alcea rosea* and **Digitalis purpurea*, will no doubt only be transient, originating in this instance with garden rubbish, but the

**Doronicum pardalianches* is a spill-over from the very large and long-established colony just along the road bordering the Stetchworth estate. It will be interesting to see if it can expand its tenuous hold on the Ditch.

2. The Stetchworth Road to the Dullingham Road

A few years ago this section was much less inviting, dominated for the most part by colonies of elm, but *Ceratocystis ulmi*, the fungus responsible for Dutch elm disease, has now wrought quite a change and for a few years at least the ditch banks are going to see more light than they have for a long time. In hurrying through this section to the good plants awaiting you in the grassland ahead do not go too fast, or come too late, or you will miss the very fine show of **Myosotis sylvatica* on the south-west facing bank of the dyke a little over half way along. It is not visible from the path, which no doubt accounts for its having gone unnoticed until now, and is quite overgrown by midsummer; but in April the display of this large-flowered, perennial forget-me-not is worth seeing. Could it be native here? It is reckoned so in some East Anglian woods (very rarely in Cambridgeshire), but it is frequently established from gardens, the dead stems deposited with garden rubbish shedding seeds onto many a roadside and waste patch.

Pause for a moment too to acknowledge the presence of the lowly **Cerastium fontanum* subsp. *triviale* on the path; in fact it occurs in odd places all along the Ditch. And do not ignore the grasses either side of the descent to the Dullingham Road, for in amongst the *Festuca gigantea* and *Brachypodium sylvaticum* is the woodland grass **Elymus caninus* (*Agropyron caninum*), which is local in Cambridgeshire. Unlike its pestilential relative couch-grass *E. repens*, this species is tufted and the spikelets always have long awns.

3. The Dullingham Road to the A11

After crossing the railway one comes to the first good stretch of chalk grassland, well known not only for its national rarities such as *Pulsatilla vulgaris* and *Carex ericetorum* but also for locally rare plants such as *Geranium sanguineum* and *Origanum vulgare*. At one time, if the records are to be believed, this part was also the home of *Thymus serpyllum*, *Phleum phleoides* and a number of exciting orchids. Alas, no more, or at least not as far as is known, but the Ditch is full of surprises and the discovery of almost a dozen small plants of **Quercus cerris* between the railway and the pine plantation is an example of this. They are all of about the same age and height (1–2 ft) and usually just a few feet down from the path (on both sides). Has someone been out planting here, as they have up at the Burwell end? Jays and other corvids can, of course, carry acorns over some distance, but there is no immediately apparent source and, if there were, why should all the young plants be concentrated over this particular stretch?

Another surprising and overlooked source of new records came to light after a hands-and-knees search of the two golf tees which have been built on the top of the dyke. Evidently turf has been imported to provide players with an even surface and in that turf lurk **Cerastium semidecandrum*, *Trifolium dubium* (1957), **T. micranthum* (a scarce Cambridgeshire plant, but notably abundant on lawns in Cambridge), **Luzula campestris*, **Crepis capillaris*, **Veronica arvensis* and more *V. serpyllifolia*. There seems no reason to suppose that most of these will not persist and, as the path crosses over the tees, visitors' feet may soon be spreading these

plants along the Ditch, which is why their occurrence is worth noting now.

On the north-east facing bank of the dyke, between the tees and the railway, the colony of *Serratula tinctoria* has increased well, and this species is obviously successful in regenerating by seed in the dense turf. Nearby there is a small bush of *Frangula alnus*, previously only known from a single plant on the race course stretch; this habitat is in striking contrast to the damp and peaty commons it usually prefers. On the path just above are plants of a neglected weed, **Rumex obtusifolius*, which can also be seen near the disused railway. Further on towards the A11, near the pines on the south-west facing dyke bank in a small rabbit-infested clearing in the scrub, there are many fine plants of *Geranium pyrenaicum* and a venerable bird-sown *Asparagus officinalis* which sported no less than 18 stems in 1981! *Linum perenne* subsp. *anglicum* and *Sagina nodosa* have been seen in the open ditch near here but have not been reported recently.

Between the pines and the A11 a handful of new records have come to light, the least noteworthy of which was of a few *Narcissus* bulbs established on the south-west facing bank just below the pines; they do not seem to flower here, so it has not been possible to determine them further. However, if one ventures to push through the scrub towards the road, there is a more interesting reward in the shape of yet another new violet record, this time the hybrid between *Viola odorata* and *V. hirta*, known as **V. x permixta*. This is a relatively common but overlooked hybrid in southern England. This plant retained the stoloniferous habit of *V. odorata* and tended to have a more elongated leaf outline derived from *V. hirta*. Further critical characters separating it from the parents lie in the petiole hairs – long and spreading in *V. hirta* but very short and deflexed in *V. odorata*: in the hybrid the hairs are deflexed, but of intermediate length. A few feet away, in the open again, the little bare areas near the top of the dyke where sods of turf have slipped down the slope provide a congenial home for *Desmazeria rigida* (*Catapodium rigidum*) (1957), which probably occurs in similar situations all along the Ditch, whilst on disturbed ground in the partially filled ditch nearer the road another annual weed, **Veronica hederifolia*, was recorded for the first time in 1981. Finally, if one glances up when emerging from the scrub onto the road, the continued presence of *Prunus cerasifera* (1970) on the Ditch is readily confirmed.

4. The A11 to the Newmarket Bypass

Having crossed the road, with care, you should pause to admire the flowering stems of *Bunias orientalis*, or its mown remains if you are too late in the year, before climbing up onto the dyke again at the start of the best known section, which runs alongside the race course. This is increasingly used by dog-walkers and casual ramblers, and the wear and tear on the path are becoming very apparent. Nevertheless the list of rare species still includes several orchids, breathtaking patches of *Pulsatilla vulgaris* and a flourishing population of *Senecio integrifolius*. The display of some commoner species is particularly good as well, and the numbers of *Euphrasia pseudokernereri* can be so great along the path in September as to form two solid white ribbons – something one could never guess at on a midsummer visit.

A visit at the latter end of the season is also a good opportunity to study the fruiting rose bushes that are frequent on this section. This group has been neglected here and in the county as a whole in recent years and the difficulty in obtaining

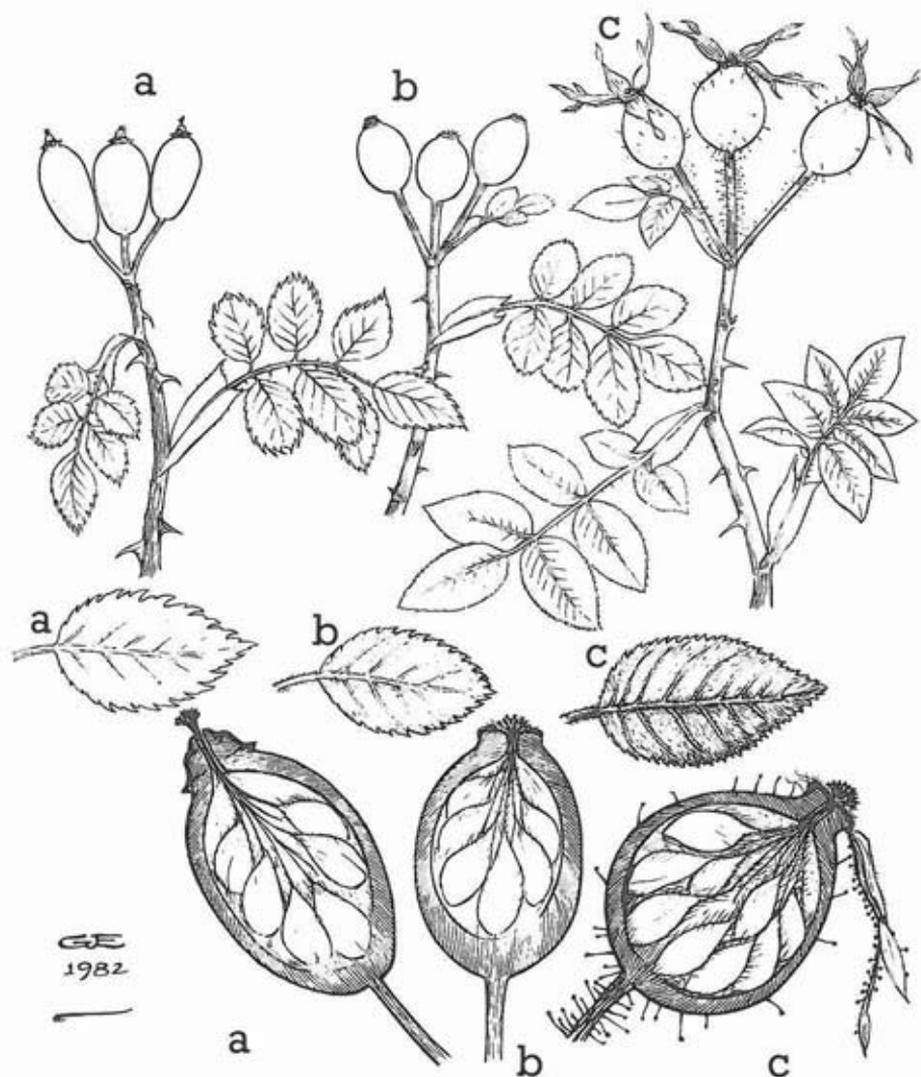
reliable determinations of even the most widely accepted species is probably the reason why. At least five quite distinct taxa occur on the stretch between the A11 and the Cambridge Gap alone; two of these are clearly variations on the theme of *Rosa canina*, differing in the presence and distribution of glands and hairs on the petioles, in fruit shape and in stylar characters. The third, illustrated in the accompanying figure (a), appears to be *R. stylosa*; it certainly has the very conical disc at the top of the fruit, through which the styles protrude in a short column, but some doubt has recently been cast on this determination and there are certainly many less well marked plants on the Ditch, especially on the part north-west of the bypass. Further investigation is required. The fourth rose here (b in the figure) is an unusual form of **R. corymbifera* (*R. dumetorum*) in which the sepals become erect, not spreading or deflexed, in fruit. This was determined as var. *erecta* by Mrs I M Vaughan, the BSBI referee for this thorny group; the sepals are deciduous, so had gone by the time the specimen was collected for illustration. The fifth and final rose is the small pink-flowered *R. rubiginosa* and it at least seems to be relatively straightforward, the delicate apple-like scent from its leaves being a great delight as it wafts along the Ditch on a warm day.

The woody flora has still more to offer here in the shape of a new site for *Laburnum anagyroides* in the Cambridge Gap and **Acer platanoides* near the Bomber Gap. Both of these were almost certainly planted, but the *Sorbus intermedia* is more likely to be bird-sown; there were several large saplings at one time, but only one tiny seedling remains at the moment. Do not neglect the numerous (too numerous!) birch trees and saplings either; they are not all *Betula pendula* as one is apt to assume. Both this species and *B. pubescens* (1967) occur and there are several trees with intermediate characters which have been passed by Dr S M Walters as the hybrid, **B. x aurata*, which is of rare occurrence in the county, although no doubt overlooked. In addition, near the commentary boxes one young bushy plant seemed to approach the taxon Clapham, Tutin and Warburg refer to as *B. pubescens* subsp. *odorata*, the young stems and leaves being so resinous that they were sticky to the touch and could be smelt downwind!

Three herbaceous *desiderata* have been refound on this stretch – *Arabis hirsuta* (1953), which the writer and Mrs Crompton found independently in different stations; *Hieracium strumosum* (1951), which still flourishes on the north-east facing bank of the dyke between the Stable and the Running Gaps; and *Melilotus altissima* (1907), which must surely have been overlooked, as it is abundant all along the dyke and ditch banks both here and in other areas to the north-west.

5. The Bypass to the Burwell Road

Starting from the south-east, the first part of this section is densely covered by scrub, the ditch long ago having been filled in. There is *Trifolium campestre* (1954) by the footbridge over the road and a solitary yew to look out for on the long trek to the first clearing, where the rewards may include *Hypochoeris maculata* and *Thesium humifusum*. Further on, in a smaller clearing on the south-west facing bank of the dyke, there is a puzzling clump of *Calamagrostis*, which from its hairy upper leaf-surfaces and rather loose inflorescences would seem to be *C. canescens*, a long way from its normal haunts in fens and wet boulder-clay woods. However, by the autumn all the hairs have disappeared from the leaves and the latter are rather wide for that species; this is another problem that remains to be solved, as also is the



Roses from the Devil's Ditch

- a *Rosa stylosa*(?) (see p. 42)
 b *Rosa corymbifera* var. *erecta* (see p. 42)
 c *Rosa sherardii* x *canina* (see pp. 44-45)

Graham Easy

identity of the shrubby, small-leaved elm on the path just above.

The only other records worth mentioning here are the crop of weeds and aliens that appeared in yet another clearing a bit further back. These included hundreds of plants of *Desmazeria rigida*, a scattering of **Hordeum distichon*, a species of **Triticum* and rather surprisingly a few rosettes of **Onopordon acanthium*.

6. The Burwell Road to the Old Railway

From the highest point at Gallows Hill one descends to the Burwell Road and crosses over to what is only a short stretch, but one that is full of incident, not least the results of attempts by an inhabitant of Burwell to establish a number of garden plants on the Ditch. *Lilium candidum* proved to be only transient, but others like *Geranium x magnificum* and *Muscari armeniacum* have become well established, and the recently discovered **Leucanthemum maximum* will no doubt follow suit. Another alien, **Rubus procerus*, is to be found in a couple of places in the ditch bottom, but this species with its very large white-backed leaves and panicles of big, pale pink, cup-shaped flowers is more likely to be bird-sown from gardens where it is commonly grown and usually referred to under the cultivar name 'Himalayan Giant'. Also rooted in the ditch, but rising up above the attendant scrub, is a solitary pear tree **Pyrus communis*, which is conspicuous in the spring for a short period when it is in bloom but later merges into the background and so is not noticed.

The cornfield margins of the ditch along this stretch have proved rewarding, several weeds being established from the neighbouring field populations, including *Papaver rhoeas*, *Lamium amplexicaule*, **Alopecurus myosuroides*, *Legousia hybrida* (1954) and *Sherardia arvensis* (1957). These are hardly typical plants of the Ditch, but two other new records by the path just above the old railway cutting could prove of more lasting significance. The first of these, **Salvia verbenaca* (*S. horminoides*), is locally abundant actually in the cutting but has not been seen on the Ditch itself before; the other, **Calamintha sylvatica* subsp. *ascendens*, of which a tiny plant was discovered in September 1981, is also a local plant in the county, and one hopes that both will establish themselves.

7. The Old Railway to Reach

In this final section the dyke banks are covered by dense scrub apart from a short length nearest the old railway cutting. The ditch too, where it has not been filled in, is an impenetrable thicket where both *Acer campestre* and *Brachypodium sylvaticum* were found lurking, thus extending their range on the Ditch, since previously both had been thought to be confined to the wooded south-east end. In that short open stretch there is a remarkable concentration of interesting species including one plant of *Pulsatilla vulgaris* and one of *Hypochoeris maculata*, a clump of *Berberis vulgaris* and several bushes of another slightly problematical rose (c in the figure). A specimen from one of these (in fact from a bush by the path just in the scrubby part) was at first determined as *R. sherardii* var. *typica* (see *N. in C.*, No. 25 (1982): 62). Unfortunately this plant was cut down when the path was being cleared, but the remainder, which were identical with it, showed on further examination a few characters which did not tally with the original determination. They certainly all had rather rounded fruit on glandular-hispid pedicels and persistent sepals, many of which, but significantly not all, were more or less erect in fruit; however, *some*

sepals were spreading or even reflexed, the orifice of the fruiting disc (the hole through which the styles protrude) was too narrow and the prickles were all rather stout and often curved. Mr R Melville of Kew has decided that these plants are best treated as derivatives of **R. sherardii* crossed with one of the *canina* group of roses. Clearly one must proceed with great caution when tackling this genus!

It now only remains to detail two new records from this end and to report three refinds. The novelties were **Atriplex patula*, which was a pathside weed in the scrub near Reach, and **Lolium x hybridum* on the rabbit-scratched lower bank of the dyke on the south-west facing side. This hybrid ryegrass (*L. perenne* x *L. multiflorum*) is nowadays frequently sown in leys and is usually a short-lived perennial, with awns as in *L. multiflorum* but with fewer florets in each spikelet and a relatively longer upper glume. The distribution of the three *desiderata* spans the length of this section, beginning with the remarkable little plant of *Lithospermum purpurocaeruleum* (*Buglossoides purpurocaerulea*) (1960) which after 22 years is still looking out over the old railway cutting, where it is likely that it was originally planted. One must go just past the middle of the section in order to find several patches of the under-recorded *Poa compressa* (1960), whose small compact panicles, greyish-green foliage and compressed stems are so distinctive, and then finally on to where one leaves the Ditch at Reach; here there is a small population of *Verbascum thapsus* (1950) on the north-east facing bank, where no doubt it has been all the time!

Conclusion

To the casual reader some of the above records may seem trivial, but, apart from the satisfaction that any recorder might gain from making them, there are good reasons for keeping tabs on every plant that occurs on the Ditch. In the first place, if one is going to attempt to conserve any area, one must know what is there, where it is and how much there is of it. Further, since no area is going to remain entirely static, changes in the flora can be expected to take place and it is obviously valuable to monitor these changes and to be able to trace where and when they started. In addition, taking the trouble to record every occurrence of what elsewhere would be regarded as common weeds is essential to deciding what their status is on the Ditch; are they permanent or transient at any one site, if they are transient do they keep cropping up in new places, and so on?

This account makes no claim to have said the last word on the composition of the flora of the Devil's Ditch and there is a great deal more that could be achieved, especially as regards the distribution of the commoner plants. One might also ask such questions as whether there really are no hybrids between the thousands of plants of *Galium verum* and *G. mollugo* which grow intermingled over large stretches. Are there more roses to be deciphered? How many more of the *desiderata* can be found? Why not go and have a look, and if you do find something do not forget to report it!

Acknowledgements

I should like to thank Mrs Gigi Crompton for her initial prompting and continued encouragement, Mr Graham Easy for his excellent illustrations and helpful comments concerning the roses of the Devil's Ditch and finally Major General J M Spencer-Smith for his company and hospitality during many of my visits to the Ditch.

RUFFS AND BLACK-TAILED GODWITS IN CAMBRIDGESHIRE

Graham Easy

The most publicised local ornithological success story of recent times has been the reappearance of ruff *Philomachus pugnax* and black-tailed godwit *Limosa limosa* as nesting species. We must be especially proud that these two exciting waders have chosen Cambridgeshire as their centre of colonisation.

This article is, I hope, a somewhat different summary of events from any presented previously. Both birds have a remarkably similar early history, yet I hope to show that their nesting results from quite different methods of colonisation.

The present situation

The ruff is an opportunist, the black-tailed godwit a creature of habit; nevertheless the success rates of both species fluctuate according to conditions of flooding along the Ouse Washes, their major nesting site in this country.

As a passage bird the ruff is likely to be found anywhere inland in East Anglia where mud and fresh water abound. Sewage farms and beet factories are especially preferred feeding areas. Numbers are rarely large; a hundred or more together is unusual. Once a regular feeding base has been found, the flocks frequently flight to arable land to feast upon the abundance of larvae etc. where earth has been moved. Occasionally overwintering occurs if such feeding routines provide adequate sustenance. Along the Ouse Washes conditions are often such that hundreds remain into winter while flood levels permit and until a freeze-up occurs.

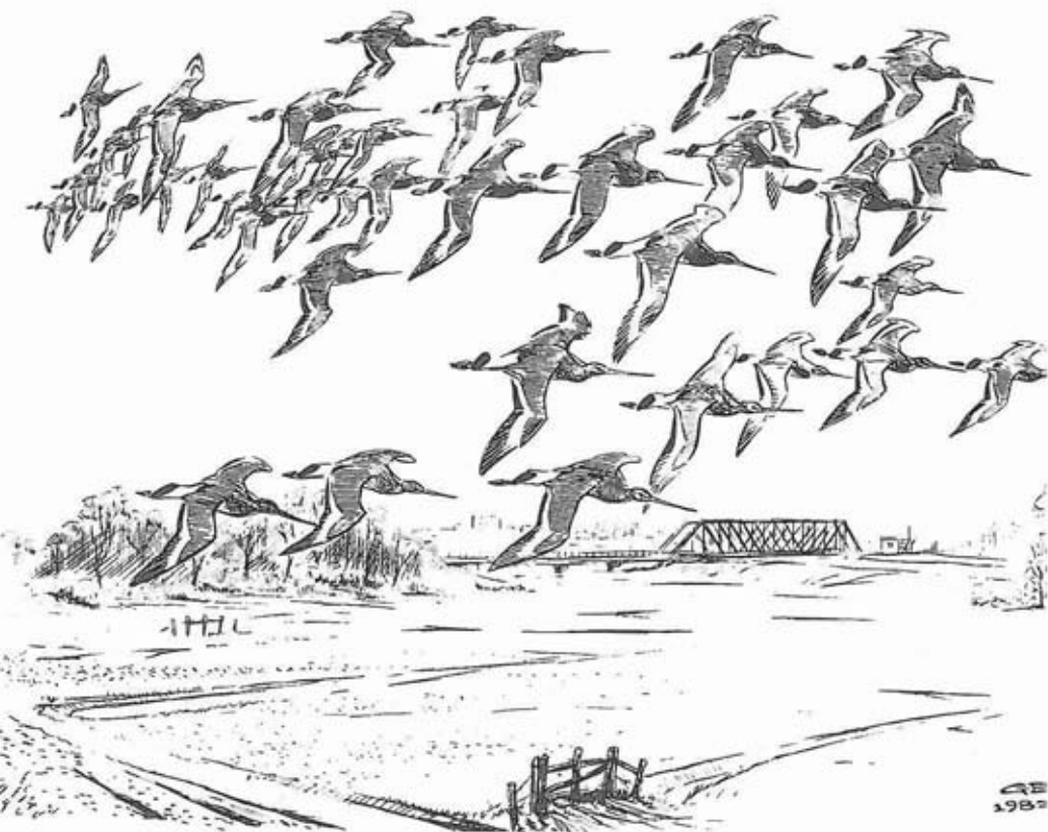
Nesting relies on many factors being just right; so often by May, when the species usually nests, the Washes have dried out completely and spring passage birds and any residual overwintering populations have moved on to pastures new. In contrast, late flooding combined with a heavy spring passage of ruff brought in by easterly winds transforms the whole length of the Washes into 20 miles of lekking territory, with that marvellous spectacle of outrageously plumaged males cavorting before those apparently unconcerned reeves. Conservation techniques have recently assured the presence of suitable feeding conditions to retain at least a few lekking birds every year; even so the breeding results are very erratic and one suspects that a sequence of dry springs would result in the loss of this bird as a breeding species.

The black-tailed godwit is a much more dependable creature. It has a predictable procedure that rarely alters, one suspects, throughout its lifetime. This does mean that the species is more at risk than its congener. If a number of the traditional wintering grounds around the south and east coasts of Britain were lost or if its post-breeding gathering site on the Wash were reclaimed for agriculture or freshwater reservoirs, we could well see the demise of the Ouse Washes' population. Our birds usually start to arrive at the north end of the system by mid-March. When flood-water recedes, territories are quickly sought after, and during April much of the Washland from Mepal to Welney resounds to their "wickering" display flights and noisy territorial disputes. Disturbance and the threat from the corvid population usually restricts the nesting area to the stretch from Witcham Gravel to the Welney reserve, with a mile gap at Welney where the road crosses. Post-breeding departure is rapid; most birds have gone by August.

Thus we have, with ruff and godwit, two contrasting waders breeding side by side along the Washes, one something of a gipsy, with the males leaving females to fend for nest and young, the other a highly organised and predictable species. Both are in special need of protection for their survival.

A short history and discussion of events leading to the discovery of the breeding colonies

Both birds were common nesting species in Fenland up to the mid-eighteenth century, but they were increasingly over-hunted and there was an apparent cessation of nesting before 1850 mainly due to the drainage of the last of the meres. The well-documented discovery of what has proved to be a regular godwit colony



Black-tailed godwits flying over the Ouse Washes

Graham Easby

on the Ouse Washes by E Cottier and P North in 1952 (*Cambridge Bird Club Report*, 1968, p. 27) raises a very interesting question concerning the hundred years when the species apparently failed to breed. If godwits were nesting in the period 1850–1950, surely shooters and fenmen would have been aware of the fact? Why then have all the spring and summer records during the decade prior to the 1952 event come from birdwatchers, who rarely visited the Washes in the summer period, while the ubiquitous fenmen and shooters knew nothing of black-tailed godwits? Questioning some of the old punt-gunners and shepherds has revealed that some did know the bird as a rarity or occasional visitor, but called it “greenshank” or “curlew”. It is surely significant that wildfowlers on the Nene Washes reported a breeding colony of curlew there from 1940 to 1947. This information was never checked by an ornithologist; nevertheless it was readily accepted, since it fitted well with the colonisation by curlew *Numenius arquata* of the Breckland heaths at approximately the same period. The fact is that on the few occasions that birdwatchers examined the Ouse Washes in summer – in 1939, 1946, during the 1947 floods and from the early 1950s – small numbers of godwits were found breeding or acting as though nesting. Surely the Nene “curlews” were also nesting black-tails.

Godwits were not infrequent visitors to the Cambridge sewage farm in spring and early autumn between 1925 and 1945; some family groups were noted in the post-breeding period. These early records correspond with more recent observations at Ely beet factory and Wisbech sewage farm and give credence to the possibility that a breeding colony was present in Cambridgeshire at least some of that time.

While it is certain that the black-tailed godwit ceased to nest at its traditional wetland and mere sites by the middle of the nineteenth century, it does seem possible that small groups could have survived along more remote parts of the washlands. The present population has shown a steady build-up to 35–50 pairs; there have been no sudden upsurges in numbers as one might expect if the colony were influenced by Dutch or Icelandic birds. Our population could well stem from indigenous stock!

Likewise, the ruff was overlooked owing to a similar lack of observation coupled with a misunderstanding of the species’ behaviour on the breeding grounds. In 1962 I myself was lucky enough to be the first to observe the unprotective attitude of the adults towards their young on the Ouse Washes. With a fresh mind on this characteristic behaviour, observers have since noted nesting attempts or successful breeding in most years since that date. Watchers involved in the early coverage of the Washes in the 1950s have admitted that the species could have been nesting prior to the first detected breeding. Females in summer were certainly not uncommon, but, since these showed no sort of nest-protecting activities, breeding was never suspected. In Cambridgeshire wetland areas there were several instances during the period 1930–1950 when spring gatherings were noted and lekking behaviour was recorded; thus there seems a strong probability that nesting did occur, at least on occasions, during the second half of the nineteenth and first half of the twentieth century. More to the point, it is worrying that, despite the ideal conditions now prevailing, which should encourage a build-up in numbers, the status of the species still remains precariously balanced, with little more than a handful of birds even suspected of nesting.

BIRDS OF THE CAMBRIDGE UNIVERSITY BOTANIC GARDEN

David Harper

Cambridge University Botanic Garden, which covers an area of 16 hectares (40 acres), is situated within a few minutes' walk of the city centre. It is therefore surprising that very little information about the bird life of the garden is available; indeed its one claim to fame seems to be the serin recorded there in 1965! Since October 1980 I have been fortunate enough to spend several thousand hours bird-watching in the Garden, and the following general description of its bird life is based largely upon these observations.

During the last two and a half years over 80 species have been recorded either in or flying over the Garden. Although the sightings of unusual species (ranging from hobby to woodlark) are of some interest, the important species of the Garden are those that occur there regularly and in particular those species which breed there. In 1981 and 1982 a total of 31 species bred in the Garden and an additional four species (kestrel, kingfisher, lesser spotted woodpecker and carrion crow) bred nearby with home ranges which included the Garden. Detailed mapping censuses of the breeding birds of the Garden in these two years were used to calculate the relative abundances of the various species involved and the results have been plotted as a pie diagram (Figure 5).

The pie diagram shows that the five most abundant species (blackbird, dunnoek, linnets, robin and song thrush) make up roughly half of the total breeding population. Approximately one-fifth of the birds breeding in the Garden are blackbirds, and this species occurs at the unusually high density of about five pairs per hectare (two pairs per acre). Another notable feature of the Garden's bird population is the relatively high numbers of colonially nesting finches, such as linnets, redpoll and greenfinch, which nest there and range out over a much larger area to forage. On the other hand starlings and house sparrows, which feed in the Garden in large numbers throughout the year, do not feature very prominently in the species list, since they seem to prefer to nest in the surrounding built-up areas.

Summer visitors make up only a small proportion (about 5%) of the birds breeding in the Garden. Of the various species of summer migrant known to have bred there, the spotted flycatcher is by far the most common, with up to ten pairs (1981). Three species which have bred in the Garden in the past are house martin, sedge warbler and whitethroat.

Spring passage migrants occur in the Garden in some numbers, with various warblers being particularly frequent. Some of these passage birds remain in the Garden for several days and temporarily establish territories. In 1981 ten willow warblers were in song in the Garden, although only two pairs stayed to breed. Two interesting records of migrants singing in the Garden for brief periods were those of a redstart and a nightingale. (A F R Wollaston recorded a nightingale nesting "in stump of elder" in the Garden on 2 May 1895; see *N. in C.*, No. 22 (1979): 30, note 19. Ed.) One summer migrant which has attempted to breed in 1981 and 1982 is the lesser whitethroat, and it is to be hoped that its efforts will be successful in the future.

Autumn passage through the Garden is much less noticeable than is the spring

passage, but it is interesting that pied flycatchers have been recorded in both 1981 and 1982, suggesting that their autumn passage might be regular. Green and great spotted woodpeckers also show a marked tendency to be most frequently observed in the autumn, though the latter is occasionally heard drumming in the spring.

Winter visitors to the Garden include siskins, which are regularly observed in the birches and alders in company with redpolls, and flock sizes are sometimes as high as 20 individuals. In 1981 one male siskin remained in song in the Garden well into April, and this raises the possibility that this could become a new breeding species in the years to come. Redwings and fieldfares are also regular winter visitors, being most commonly observed during cold weather, when they feed voraciously upon the great variety of berries in the Garden. Another notable winter visitor is the blackcap; detailed study has revealed that the individuals which winter in the Garden are not the same as those breeding there. At least three blackcaps attempted to overwinter in the Garden in the winter of 1981/82 and despite the severe weather one was still alive in early February. Severe winter weather (as in 1981/82) can lead to spectacular movements of birds over the Garden, particularly of lapwings and skylarks, and during periods of snow several unusual species such as woodcock and snipe have turned up for brief periods.

During the winter months several species of birds form communal roosts in the Garden. The most notable are those formed by greenfinches in a variety of dense vegetation ranging from clumps of bamboo to *Prunus* bushes, and most of these roost sites are used in successive years. Peak numbers occur in January, when well over a thousand greenfinches are present each night. There are more greenfinches in the Garden on such a winter's night than there are adults of all bird species during the summer! Clearly the roosts are used by birds from a large area around the Garden, but quite how large is not clear. The greenfinches are joined at their roosts by a variety of other small birds, including solitary species such as the robin, and by wintering blackcaps. Interestingly, when small flocks of siskins roost in the Garden they only rarely join the greenfinches and instead usually roost high in conifers.

Observations of gulls flying over the Garden reveal that, although black-headed gulls have been recorded in all months of the year, they are mainly winter visitors, as are the (inappropriately named) common gulls. Herring gulls and lesser black-backed gulls are seen occasionally during the winter, with records seeming to cluster into periods of spring and autumn passage, whereas great black-backed gulls are unusual winter visitors.

The only regularly occurring birds of prey in the Garden are kestrels (one pair) and tawny owls (three pairs of which breed in the area). Both species have been demonstrated by pellet analyses to be important predators of other bird species in the area. The fact that they do not prey heavily upon small mammals, as do most kestrels and tawny owls, is probably related to the sparse population of rodents locally. Tawny owls seem to be particularly catholic in diet, and 28 bird species have been recorded in their diet ranging in size from goldcrests to full-grown moorhens and pigeons. During the winter the greenfinch roosts are heavily hunted by the tawny owls, and several hundred greenfinches are killed every winter. Another species which is heavily preyed upon is the blackbird. In view of the very high population density of blackbirds it seems most unlikely that tawny owls are doing any more than culling the local bird populations.

Acknowledgements

I should like to thank Dr S M Walters and Mr P Orriss for permission to watch birds in the Garden, Dr N B Davies, Messrs D W Gibbons and A Offley and Dr P F Yeo for their observations, and Mrs P Michie for typing the first draft of this paper.

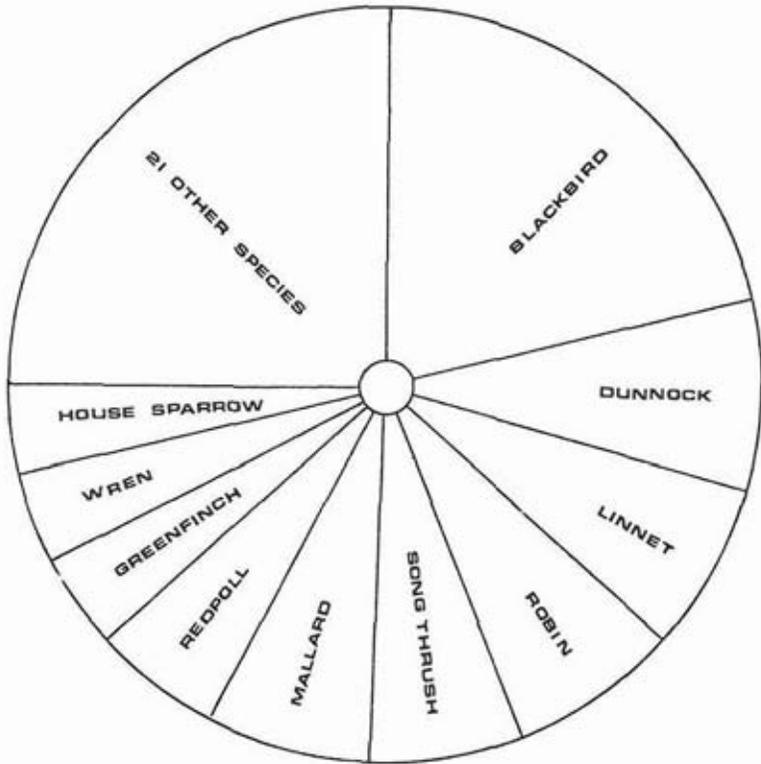


Figure 5: Pie diagram to show relative abundances of breeding species of birds in the University Botanic Garden, Cambridge

The total numbers of individual birds in 1981 and 1982 were estimated to be 734 and 747 respectively.

The 21 other species were little grebe (1981 only), moorhen, woodpigeon, collared dove, tawny owl, swallow, great tit, blue tit, coal tit, long-tailed tit, treecreeper, mistle thrush, reed warbler (1981 only), blackcap, willow warbler, goldcrest, spotted flycatcher, starling, chaffinch, bullfinch and goldfinch.

A SURVEY OF THE DISTRIBUTION OF DEER IN CAMBRIDGESHIRE (VICE-COUNTY 29)

R J Symonds

During the last hundred years or so numbers of deer in Britain have been steadily increasing, and they are now thought to be more abundant than at any time for a thousand years. New species, notably muntjac, sika and Chinese water deer, have been introduced, either deliberately or as escapees from deer parks, and have established themselves in the wild. These species, together with fallow and our two truly native species red and roe, have all shown a remarkable ability to adapt to different environments, enabling them to increase their range and to spread into new areas.

Deer are traditionally woodland creatures: Cambridgeshire, being the least wooded county in England, can hardly be considered ideal deer habitat. The woodland that does exist is almost entirely confined to the higher ground in the southern half of the county. A considerable proportion of the total area is made up of small isolated woods of less than ten hectares. The agricultural Fenland in the north of the county provides little cover or shelter for deer; although individuals may wander into the area, they are unlikely to remain for any length of time.

Organisation of the survey

The survey was organised to study the present-day distribution of deer in old Cambridgeshire (vice-county 29). It covers the three-year period of 1980–1982, and only records obtained during that period appear in the results plotted as distribution maps. By omitting all previous records it is hoped that the results will act as a concise reference from which to judge future changes in the status of deer within the county.

During the period of the survey the aim was to gather as many confirmed reports of deer sightings as possible and to arrange visits by experienced observers to the most likely sites within the county. Articles and advertisements appealing for readers to report any deer sightings were published in a number of newspapers and magazines, as well as the newsletters of CAMBIENT and the British Deer Society. All sight records from areas where a species was known to exist have been accepted at face value. Unusual or doubtful records were checked by an experienced observer and, if not confirmed, have been disregarded.

Wild deer are extremely shy and elusive creatures: often it is finding tracks or droppings that indicates their presence in a particular area. At certain times of the year it is not possible, with any degree of certainty, to identify a species of deer from its tracks or droppings. For example, in the summer months it is very easy to confuse the tracks of a fallow fawn with those of an adult muntjac. Therefore, before accepting records based on the evidence of tracks or droppings, allowance has been made for the time of year and the known habits of the deer.

It is to be expected that a survey of this type will underestimate the presence of deer. As already mentioned, deer are very elusive and easily overlooked. Furthermore, they are very mobile and move about the countryside a good deal. A "negative" record for a site means very little – simply that no evidence of the presence of deer was found on the day of the visit. Evidence may have been

overlooked, or deer may have arrived the next day. For example, Fulbourn Fen was visited in February 1981 and no evidence of deer was found, but in June 1982 a muntjac was seen on the Fen. Had this not been a nature reserve with regular visitors, Fulbourn Fen would almost certainly have remained "negative". All that can be said for "negative" records is that they give some indication of population density, as a large population of deer is unlikely to be overlooked. "Positive" records, on the other hand, at least tell us that deer have been present in the area at some time during the period covered by the survey. However, they do not necessarily prove that deer are resident or breeding in the area or provide details of population density.

Results

At the present time there are seven species of deer living wild in Britain, namely:

Chinese muntjac deer	<i>Muntiacus reevesi</i>
Fallow deer	<i>Dama dama</i>
Roe deer	<i>Capreolus capreolus</i>
Red deer	<i>Cervus elaphus</i>
Chinese water deer	<i>Hydropotes inermis</i>
Sika deer	<i>Cervus nippon</i>
Reindeer	<i>Rangifer tarandus</i>

Surprisingly, all but the last two have been recorded in Cambridgeshire during the survey – a result not envisaged when the survey began.

The results are plotted as distribution maps for each species. The symbols refer to 1 km grid squares. Where a record exists for a wood that covers more than one 1 km grid square, deer have been assumed to occur in all squares occupied by that wood. All persons mentioned in the text are CAMBIENT members unless otherwise stated.

Chinese muntjac deer

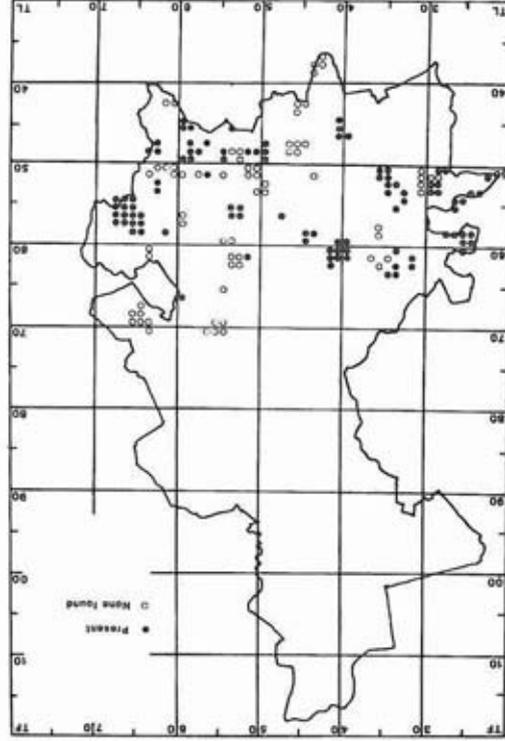
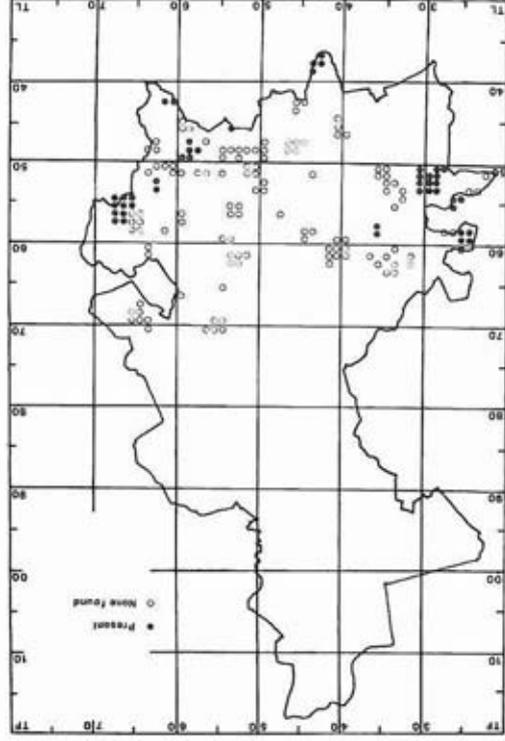
The records for muntjac deer are plotted on Map 1.

The Chinese or Reeves' muntjac is a small Asian deer introduced into this country by the eleventh Duke of Bedford around the turn of the century. The present-day feral population originated from animals that escaped from his Woburn estate.

The first reported sightings of muntjac in Cambridgeshire were in the early 1960s. One was flushed in Hayley Wood in 1961 (Vine and Sell, 1975). Chapman (1977) records a deer which from its description appears to have been a muntjac as being seen for a few weeks in 1963 in the grounds of Pampisford Hall and also an animal killed in May 1967 on the A505 road at Fowlmere.

Muntjac are now widely distributed throughout the southern half of the county. They were recorded at 66% of the woods larger than ten hectares for which data were obtained. In some areas they are showing signs of being well established. In Hayley Wood, in November 1982, 12 were seen by beaters during the fallow deer count. The local Forestry Commission Forester for Ditton Park and Widgham Woods reported that during the Commission's deer census of these woods, in February 1982, 26 muntjac deer were seen (Tony Wilson, pers. comm.).

Several reports of muntjac were within the Cambridge City boundary. In April



1980 a single muntjac was seen outside the supermarket at the junction of Perne Road and Cherry Hinton Road. In June 1980 a young male was caught in the Botanic Garden, having entered one of the laboratory buildings. In November 1982, in a much publicised event, a muntjac was trapped in a basement in Trumpington Street. There have also been a number of reports of muntjac in gardens: records were received from Grange Road, St Edmund's House, Histon and Burwell.

The only confirmed report of muntjac breeding in the county is from CAMBIENT's reserve at Hayley Wood, where fawns are now reported most years.

Fallow deer

The records for fallow deer are shown on Map 2.

For convenience the fallow records can be grouped into three areas. In the west there is the group centred on Hayley Wood; in the extreme south, on the Cambridgeshire/Essex border, is found a small group based on the Chishill and Chrishall Woods; and in the south-east a group ranges over the area between Linton and Newmarket.

The majority of the sightings for the Hayley group are west of the A14 trunk road and within five kilometres of Hayley Wood. Only three records were received of fallow outside this area. The shooting tenant at Croxton Park recalled seeing on the estate a group of five does and fawns for a few weeks in 1980 and found tracks believed to be of a fallow buck in 1982. The other record was from Hardwick Wood, where Jean Benfield reported a fallow doe in the wood for a short period in December 1980.

Along the Cambridgeshire/Essex border, fallow were reported in the woods between Little Chishill and Chrishall, west of Saffron Walden. In the south-east, fallow were regularly seen in the area of Balsham and Borley Woods. The Forestry Commission deer census of Borley Wood, carried out in February 1982, recorded five does and one buck. In July 1982 a doe was seen, by Ken Hudson, crossing the Roman Road at Worsted Lodge. Fallow have also been reported from Great Coven's Wood, Weston Colville. Slightly further north, they are seen regularly in the Forestry Commission plantations at Ditton Park and Widgham Woods, where seven does and three bucks were counted during the February 1982 deer census.

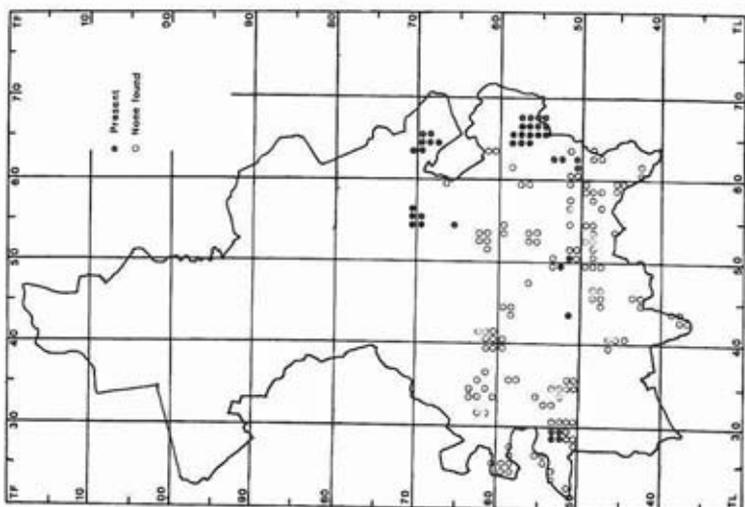
Fallow are known to breed in the Hayley area; rutting takes place each year in Hayley Wood and fawns are regularly seen. Although no rutting activity has been reported for the group on the Cambridgeshire/Essex border or for the group in the south-east, the writer saw three fallow does together with two fawns in a field adjacent to Borley Wood in August 1982.

Roe deer

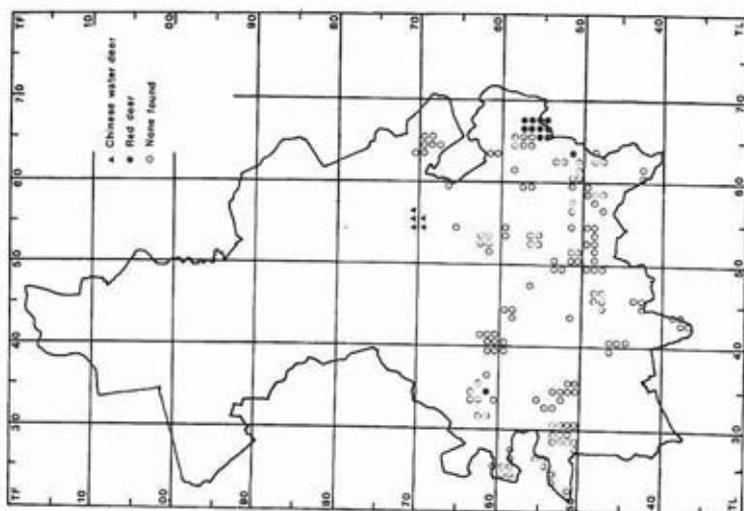
The records for roe deer are shown on Map 3.

The majority of roe deer records are from the east of the county and along the Suffolk border. Two main areas where roe deer have been seen regularly are in the area around Chippenham Fen NNR, including the CAMBIENT reserve at Fordham Wood, and in a number of woods between Horseheath and Newmarket. In Ditton Park and Widgham Woods, just south of Newmarket, six does and four bucks were counted during the Forestry Commission deer census in February 1982.

The National Trust Warden at Wicken Fen reported seeing a roe deer on the Fen



Map 3: Distribution of roe deer *Capreolus capreolus* in "old" Cambridgeshire: positive and negative 1 km grid square records obtained in 1980-1982



Map 4: Distribution of red deer *Cervus elaphus* and Chinese water deer *Hydropotes inermis* in "old" Cambridgeshire: positive and negative 1 km grid square records obtained in 1980-1982

from April to December 1981. Other isolated records are from the Babraham estate, where the farm manager reported a roe being flushed during harvesting in August 1980, and on the same estate in December 1982 two roe were flushed by beaters during a shoot. A single roe buck was seen at Slade Farm, Burwell, in June 1981. Roe have been reported, by Peter Elliot, in the Hauxton area in June 1981 and again in October 1982. The same observer flushed a roe deer in Hayley Wood during the fallow deer count in November 1981.

The populations of roe centred on Ditton Park Wood and Chippenham Fen are believed to be resident. Moreover, breeding almost certainly occurs in the Chippenham Fen area, as fawns are regularly seen on the Fen and in nearby Fordham Wood.

Red deer

The red deer records are shown on Map 4.

A number of records of red deer have been obtained for the area of woodland that lies just south of Newmarket, between Burrough Green, Stetchworth and Kirtling. In March 1980 tracks were found entering and leaving Ten Wood. A year later, in January 1981, the area was revisited and tracks were found on the edge of Basefield Wood and Ditton Park Wood. On that occasion a forest worker reported seeing red deer in the area from time to time. In January 1982 three red deer, at least one a stag, were seen by Stephen Cham, a British Deer Society member, standing in a field to the west of Out Wood. He also reported a stag seen just south of the area at Weston Green in October 1981. In the Forestry Commission's census of deer in Ditton Park and Widgham Woods, carried out in February 1982, no sightings of red deer were made, but tracks believed to be those of red deer were found. The only other record is for an isolated stag sighted with a herd of cattle near Knapwell in June 1982 by John Bell.

No evidence to suggest that red deer breed in the county has been obtained. However, a breeding population of red deer does exist in Great Bendysh Wood (Chapman, 1977), and the northern edge of this wood lies on the Cambridgeshire/Essex border.

Chinese water deer

The Chinese water deer records are shown on Map 4.

The only record, indeed the first confirmed record for old Cambridgeshire, was of a single deer seen by the National Trust Warden, Tim Bennett, at Wicken Fen in April 1982. Although the Warden has only once seen the deer himself, subsequently local people have reported, on a number of occasions, seeing an unusual animal described as "a strange fox-like animal with big ears and long legs".

Discussion

Chinese muntjac deer

Very little is known about muntjac living in the wild in this country. It has been suggested that they are less gregarious than fallow and red, being mainly seen either singly or in small family groups. This, together with their small size, would appear to make them ideally suited to our relatively small Cambridgeshire woodlands.

The early records for the county, at Hayley Wood, Pampisford and Fowlmere, are all in the south and west of Cambridgeshire, suggesting that the deer spread into

the county from Bedfordshire and north Hertfordshire. This is to be expected when one remembers that muntjac deer originally escaped from the Woburn estate in Bedfordshire.

Harris and Duff (1970) attribute the rapid spread of muntjac deer to their territorial organisation, which is likely to bring about the expulsion of young animals. There is at the present time a considerable weight of opinion that young males are driven out of the family group during the second year by the adult male. These young males are forced to go in search of their own territories. This behaviour might help explain the occurrence of individual muntjac within the Cambridge City boundary.

Although the only confirmed report of a breeding population is from Hayley Wood, in view of the rapid spread of the species within the county breeding almost certainly occurs elsewhere. In areas where muntjac are well established the general impression is that numbers are steadily increasing.

Notwithstanding the difficulties of counting muntjac accurately, the number reported by beaters during the annual Hayley Wood deer count increases each year, a maximum of 12 being seen in November 1982. In Ditton Park and Widgham Woods the local Forestry Commission Forester considers muntjac numbers to be almost doubling each year, the maximum number so far recorded being 26 in February 1982. A study of muntjac at present being conducted in the King's Forest, Breckland, has revealed population densities in one particularly favoured area approaching one deer per hectare (D Chapman, pers. comm.).

The present indication is that the spread of muntjac and the increase in numbers are continuing. Before very long one will be likely to encounter muntjac in almost any of the county's woodlands.

Fallow deer

The results suggest that the fallow deer in the Hayley Wood area form a completely separate group from those found in the south-east of the county and on the Cambridgeshire/Essex border. This view is shared by Rackham (1976). The Hayley group of fallow deer are almost certainly descendants of animals that escaped from Waresley Park in the old county of Huntingdonshire (Vine and Sell, 1975). According to Vine and Sell occasional animals escaped over a long period, but rather more when the owner, Mr Duncombe, died in the 1930s and more still in the 1939-1945 war, when fences were neglected. Since 1975 CAMBIENT has held regular counts of the fallow deer within this area (Rackham, 1976; Symonds, 1979). Numbers have ranged from a maximum of 70 in 1975 (Rackham, 1976) to a minimum of 23 in 1981.

There is little doubt that the fallow deer found on the Cambridgeshire/Essex border near Chrishall have come from Essex. Chapman (1977) describes fallow deer as common in the extreme north-west of Essex, west of Saffron Walden. There is not much evidence of these deer roaming very far from the Chishill and Chrishall Woods: a farmer at Thriplow reported seeing fallow from time to time on his land but had not seen them since the M11 motorway was opened.

The origins of the group of fallow in the south-east of the county are not quite so clear. Fallow are known to occur in north Essex, to the north and east of Saffron Walden (Brian Eastcott of British Deer Society, pers. comm.). It is possible that they have spread into south-east Cambridgeshire from north Essex.

At the present time fallow deer numbers and distribution in Cambridgeshire would appear to be relatively stable. These deer have been known to occur in their present areas for a number of years and populations do not seem to have changed markedly.

Roe deer

Roe deer are extremely numerous in the Breckland forest of Thetford Chase. Numbers have been steadily increasing since roe deer from Germany were released near Thetford in the late nineteenth century. It would seem very likely that the roe found in the east of the county have spread over the border from Suffolk.

Although roe deer numbers are not very high, the regular sightings spread over a long period would suggest that they are well established in the Chippenham Fen and Ditton Park areas. The local Forestry Commission Forester for Ditton Park and Widgham Woods informs me that roe numbers have remained steady, at around ten individuals, since Commission records began in 1977.

The general impression is that the number of reports of isolated individuals in the county is on the increase. The individuals seen at Hayley Wood, Hauxton and Burwell and on the Babraham Estate indicate how mobile the species is within the county.

Red deer

Breeding populations of red deer are known to occur in Thetford Chase, Suffolk, and in Hempstead and Bendysh Woods in north Essex. The red deer found in the Stetchworth area, just south of Newmarket, could have come either from Suffolk or from north Essex. At the present time the numbers of red deer in the area are probably quite low. However, evidence of their presence, either as tracks or as actual sightings, has been reported at regular intervals throughout the period of this survey. Therefore, it is possible that a small group of red deer are resident in the area, and we look forward to the first indications that they are forming a breeding population.

Chinese water deer

The first, and indeed the only, confirmed record of this species in old Cambridgeshire was the single deer seen at Wicken Fen in April 1982. One of the largest known wild populations of this species in the country occurs in Woodwalton Fen NNR some 37 kilometres to the west of Wicken Fen. The habitat at Wicken is similar in many ways to that at Woodwalton, and it should therefore be very suitable for Chinese water deer. Now that these deer have demonstrated their ability to cross the open farmland that lies between the two areas, it would seem only a matter of time before Wicken Fen has its own breeding population.

Conclusion

It is paradoxical that, at a time when much of Britain's wildlife is under increasing pressure owing to the loss of suitable habitats, our largest land mammals are enjoying a period of almost unprecedented success. At the turn of the century one would have been hard-pressed to find even a single species of wild deer in Cambridgeshire. The present survey has revealed not only that deer are widespread in the southern half of Cambridgeshire but also that no less than five species can be found in the county at the present time.

The rapid increase of muntjac sightings within the county that occurred during the late 1970s provided the main stimulus to carry out the survey. The results have shown that the spread of this species throughout the southern half of the county is already well advanced, despite its being less than 25 years since it was first recorded in the county. It was fortunate that the survey was able to record the arrival of Chinese water deer in old Cambridgeshire. The survey was too late to record the arrival of fallow deer within the county that must have occurred at some time after the disbandment of the deer parks at Waresley and in north Essex. However, their descendants have been found to be well established in the areas where they occur. In view of this increase in foreign competition, it is gratifying that our two native species, red deer and roe deer, are showing signs of becoming established within the county.

The reasons for this success story are not clearly understood. Modern farming practices leave the countryside undisturbed for long periods of the year and this is clearly of benefit to the deer. In recent years there has been a dramatic increase in the acreage of overwintering crops, and these provide the deer with a ready supply of food at a crucial time of the year. The fact that deer are so well represented in Cambridgeshire is surely a measure of their ability to succeed in a modern agricultural landscape.

Acknowledgements

A survey of this type cannot be carried out without the help of many people. In particular I should like to thank Dick Roberts, who accompanied me on the majority of the site visits; his enthusiastic support and keen eyesight were much appreciated. Also, I should like to thank all the CAMBIENT members who supplied records and the staff at the office for advertising the survey and passing on information. My thanks are due also to the officers and members of the East Anglian Branch of the British Deer Society for advertising the survey and supplying records. Finally, I record my thanks to all the landowners and their agents who supplied records and granted permission to visit their property.

References

- Chapman, D I. (1977). *Deer of Essex. Essex Naturalist* (new series), No. 1. Essex Field Club.
Harris, R A, and Duff, K R. (1970). *Wild Deer in Britain*. David and Charles.
Rackham, O. (1976). The Hayley Wood deer count. *Nature in Cambridgeshire*, No. 19: 32-34.
Symonds, R J. (1979). The Fallow Deer of Hayley Wood. *Nature in Cambridgeshire*, No. 22: 15-20.
Vine, A E, and Sell, P D. (1975). Mammals and Reptiles. In: Rackham, O. *Hayley Wood: its history and ecology*. CAMBIENT.

LIVE-TRAPPING OF SMALL MAMMALS IN HAYLEY WOOD

W E Jones

Two trapping sessions have now taken place: the first in June 1982 was a trial run, and the second in December was in accordance with guidelines provided by the

Mammal Society, which instigated the study work. Hayley Wood is one of several sites in the country supplying information for a long-term investigation being carried out into fluctuations of small mammal populations and trying to discover the reason for these. The two species principally being studied are the wood mouse *Apodemus sylvaticus* and the bank vole *Clethrionomys glareolus*, but field voles *Microtus agrestis* and yellow-necked mice *Apodemus flavicollis* have also been captured. The last of these is the first record for the species in Hayley Wood.

The trial run in June was to discover a suitable area in the wood for a permanent trapping grid to be established for all future sessions. It also enabled participants, often for the first time, to handle mice and voles, learn how to identify the four species, mark each capture using a fur clip and sex each capture. The actual trapping was carried out using three lines of traps, one in the Triangle, one in the coppice plots and one in the south-west corner of the wood. Each line had two traps at each point, with points 15 metres apart, and the total number of traps used for the three lines was 98. The traps were left in position for two days and visited twice daily for details of the captures to be recorded and the animals released. In addition, details of the vegetation for each area and the weather over the two days were recorded. During the two days 26 bank voles, four wood mice, four field voles and two yellow-necked mice were captured, with 13 bank voles, two field voles and one yellow-necked mouse being recaptured. The numbers of recaptures could include animals which have been recaptured more than once. The majority of the animals were caught in the south-west corner of the wood, and the failure of the other two areas is possibly due to the virtual absence of ground vegetation in the Triangle and the very wet ground surface in the coppice plots. Using the information gained and with the advice of the Mammal Society experts assisting us, we were able to establish a permanent grid in a part of the wood which has adequate ground vegetation and is not too wet and where the type and quantity of vegetation are expected to remain unaltered for a number of years.

The trapping session in December, using the guidelines provided for the national survey, differed from the summer session in that it lasted for three days instead of two and that the grid was used for the first time. The grid is in the form of a square of 90-metre sides, consisting of 49 trapping points in a 7x7 configuration with each trapping point 15 metres from the nearest adjacent points. The total capture was 25 wood mice, 61 bank voles and five field voles. Although the grid included the area where one yellow-necked mouse was caught in the summer session, none were caught in the winter session. Recaptures were five wood mice, 39 bank voles and two field voles.

The work is principally being carried out by the Hayley Wood work party and the Trust office with additional help from volunteers, all under the expert guidance of members of the Mammal Society. They have supplied the Longworth traps and all the other equipment which was required. The only information being collected is that which the Mammal Society requires, and no attempts have been made to extend or alter the guidelines it provided. Even so, the trapping should provide some insight into the species and population levels within Hayley Wood over a long period of time. The nationwide survey is anticipated to last for 20 years and so far there has been no lack of help or assistance, even though most participants have discovered to their cost that, although mice and voles are small, they do have sharp teeth!

THE FEN VIOLET AT WICKEN FEN

T A Rowell

In 1982 the fen violet *Viola persicifolia* Schreber (*V. stagnina* Kit.) was discovered growing in two locations at Wicken Fen. The discovery was exciting for two reasons. First, the fen violet had not been seen at Wicken since 1916, although in 1980 a greenhouse experiment had indicated that viable seed of the species was still present in the peat (Rowell, Walters and Harvey, 1981). Secondly, the fen violet is an endangered species in Great Britain, though it has "not declined so rapidly in Ireland" (Perring and Farrell, 1983, p. 8) and it is widespread in Europe (Tutin *et al.*, 1968). In Great Britain the species has disappeared from about 18 previously known localities, all in England, and by 1982 it was known only at Woodwalton Fen (vice-county 31) (Perring and Farrell, 1983, p. 8). Its discovery at a new station is therefore an important event.

Fen violet *Viola persicifolia*

Peter Wakely
(Nature Conservancy Council)



The discovery of the population at Wicken raises the problem of how it should be managed for conservation. Some autecological research has already been carried out on the species (Perring and Farrell, 1983, p. viii), and observations on its response to soil disturbance have been reported (Duffey, 1971), but no firm conclusions are available. In addition, there is a body of evidence that links the plant with peat extraction, which has occurred at both Wicken and Woodwalton Fens in the past. In an effort to clarify this relationship, this paper will review and compare the histories of the fen violet at both reserves and will examine the land-use and management of the sites at Wicken where the species has been recently discovered.

The history of the fen violet at Wicken Fen

During the first half of the nineteenth century, according to the localities of specimens housed in the herbarium of the Botany School at Cambridge, Cambridgeshire naturalists tended to collect the fen violet from Bottisham Fen. By 1852, however, they had begun to collect from Wicken. Babington saw the species at Wicken on 23 June 1857 (Babington, 1897, p. 185) and considered it to be one of the 12 species "which most abound there" (Babington, 1860, p. 312). Apparently, the fen violet then suffered a decline, though not a permanent one, for on 6 June 1876 Babington wrote: "*V. stagnina*, which we feared was lost, has been seen abundantly about twelve miles from here [Cambridge] lately" (Babington, 1897, p. 375). Babington did not name the site where the violet had reappeared but the distance from Cambridge makes it likely that it was Wicken. Collection of the species from Wicken appears to have resumed in the 1870s, a period when there was still a small area of active peat workings on the Fen.* A H Evans first visited the Fen in about 1875 and observed the fen violet, but considered that the species began to decline again soon after that date (Evans, 1925, p. 91). One of its final locations at Wicken was Sedge Fen Drove, from where it was thought lost by 1900, although it was seen again "up to 1910" (Evans, 1939, p. 49). The last record of the violet at Wicken seems to have been that of William Farren, who saw it "near Drainers' Dyke" in June 1916 (communicated verbally to Dr S M Walters in 1951).

The fen violet made a brief, assisted appearance at Wicken in 1950 and 1951 (Rowell, Walters and Harvey, 1982), when three plants from Woodwalton Fen were experimentally transplanted at the eastern end of the Fen. They either made poor growth and died or were removed from the Fen within a few days. It is unlikely that they have any connection with the recent discoveries.

Recent discoveries of the fen violet at Wicken Fen

In 1980 samples of peat were collected from beneath fen carr at Wicken in order to study the composition of the buried seed community. The samples were placed in an unheated greenhouse, and any seedlings that emerged were identified. One of these proved to be a specimen of fen violet. The sample from which it emerged had been taken from beneath carr that was at least 50 years old, suggesting survival as buried seed. Searches of the area at the time of sampling and subsequently did not reveal any growing plants. Old peat trenches of unknown date are visible close to the sampling station.

* Any unreferenced historical material in this paper is derived from unpublished research by the writer.

In May 1982, while recording was being done on some experimental plots at Wicken, two small specimens of the fen violet were found. One plant was growing in the bare peat of a weathered molehill, the other was about 25 cm away. It seems probable that these plants had recently established themselves from buried seed brought to the surface during the excavation of a mole-run. Old peat trenches run across the site; it is likely that peat was dug there during the eighteenth century, but production had ceased by the nineteenth century when the area was owned by a sedge merchant.

An extremely large population of the fen violet was found at another location in June 1982, about 1,500 metres from the two plants located in May, and about 450 m from the area where buried seed had been found. The new site had been cleared of scrub in about 1966 and cut regularly (every 3-4 years) for sedge until the late 1970s. The area then became very overgrown with bushes, which were burnt and uprooted in April 1981. The surface peat was much disturbed by this activity. In the spring of 1982 the vegetation was cut close to the ground with a swipe, which caused further disturbance. When discovered, the population was producing both chasmogamous and cleistogamous flowers; capsules and seedlings were frequent. Occasionally *Viola canina* subsp. *montana*, which has also not been seen at Wicken Fen for many decades, was found growing in association with the fen violet (S M Walters, pers. comm.). *V. persicifolia* and *V. canina* appeared to be confined to the ridges of old peat trenches, which are evident over the whole of this area. Peat-digging at this site almost certainly occurred during the eighteenth century but had ceased by the early 1800s. Thereafter, the area was managed for production of sedge until the early twentieth century, when invasion by bushes began.

The fen violet at Woodwalton Fen

Peat-digging at Woodwalton Fen began (in recent times at least) between the 1830s and 1880s and ceased just before or just after the 1914-1918 war (Sheail, 1976, p. 20). In the early years of the twentieth century the fen violet flourished on the remains of the recently abandoned peat workings (Sheail, 1976, pp. 20-21), but it became scarce once extraction had ceased completely, surviving only in rabbit-grazed areas and on mown footpaths (Duffey, 1971, p. 592). In 1954, when extensive clearance of scrub and digging of dykes restored open conditions on the Fen, the plant once more became locally common (Duffey, 1971, p. 592). However, numbers still fluctuated; in 1972 only about 50 plants were observed, but in 1975 there were thousands, mainly on newly disturbed peat (Perring and Farrell, 1983, p. 8). At Woodwalton, the fen violet is restricted to those parts of the Fen where peat-digging is known to have occurred (Duffey, 1971, p. 592), that is the northern two-thirds of the reserve (Poore, 1956, p. 469; Duffey, 1971, p. 586).

Implications for management

At its two remaining sites in England the fen violet only occurs where vegetation is destroyed and/or the soil is disturbed, in areas where peat extraction is known to have occurred in the past 200 years or so. Fluctuations in abundance are characteristic of the species at both Wicken and Woodwalton Fens, increase following some major disturbance and decline occurring during periods when the soil remains undisturbed and dense vegetation develops.

It must be concluded that the fen violet is well adapted to exploit the habitat created by traditional methods of peat extraction. It is, however, too poor a competitor to withstand competition from taller species. Mowing, grazing or trampling allows the violet to persist at relatively low densities. Unfavourable periods are survived as dormant seed. In having a persistent seed-bank, the fen violet is typical of many species of disturbed marshes where vegetation change is cyclical rather than successional (Grime, 1979, p. 114).

At Wicken further populations of the fen violet may appear if scrub is cleared from other areas that have been formerly dug for peat. The persistence of the present populations could be prolonged by mowing (since grazing would be inappropriate at Wicken for historical reasons), but to maintain large populations and genetic diversity more drastic action, such as periodic destruction of the vegetation and disturbance of the peat surface, may be necessary.

The apparent loss of the fen violet from Wicken Fen for a period of more than 60 years was a case of latency rather than extinction. The species may have been present at the third site after the clearances made in the mid-1960s, though it was not apparent in 1971 (S M Walters, pers. comm.). This site is in a relatively remote area of the Fen and is not frequently visited, so that any violets that did appear could easily have been overlooked. The recent discoveries highlight the importance of regular surveys of nature reserves and other sites of scientific and conservation value.

Acknowledgements

I am indebted to Dr S M Walters, who identified or confirmed my identification of the fen violet each time it was found at Wicken between 1980 and 1982, and to Dr H J Harvey and Dr D E Coombe for help and advice in the preparation of this paper.

References

- Babington, C C. (1860). *Flora of Cambridgeshire*. John van Voorst, London.
- Babington, C C. (1897). *Memorial Journals and Botanical Correspondence of Charles Cardale Babington*. Macmillan and Bowes, Cambridge.
- Duffey, E. (1971). The management of Woodwalton Fen: a multidisciplinary approach. In: *The Scientific Management of Animal and Plant Communities* (ed. E Duffey and A S Watt), pp. 581-597. Blackwell, Oxford.
- Evans, A H. (1925). Wicken and Burwell Fens fifty years ago and now. In: *The Natural History of Wicken Fen* (ed. J S Gardiner), pp. 87-91. Bowes and Bowes, Cambridge.
- Evans, A H. (1939). *A Flora of Cambridgeshire*. Gurney and Jackson, London and Edinburgh.
- Grime, J P. (1979). *Plant Strategies and Vegetation Processes*. Wiley, Chichester.
- Perring, F H, and Farrell, L. (1983). *British Red Data Books: 1. Vascular Plants. 2nd Edition*. RSNL, Lincoln.
- Poore, M E D. (1956). The ecology of Woodwalton Fen. *Journal of Ecology*, **44**: 454-492.
- Rowell, T A, Walters, S M, and Harvey, H J. (1982). The rediscovery of the fen violet, *Viola persicifolia* Schreber, at Wicken Fen, Cambridgeshire. *Watsonia*, **14**: 183-184.
- Sheail, J. (1976, unpub.). *The land use history of the Huntingdonshire Fenland, with special reference to the Holme Fen and Woodwalton Fen National Nature Reserves*. Institute of Terrestrial Ecology, project 287.
- Tutin, T G, Heywood, V H, Burges, N A, Moore, D M, Valentine, D H, Walters, S M, and Webb, D A. (1968). *Flora Europaea*, Vol. 2. Cambridge University Press.

IVY BROOMRAPE IN THE UNIVERSITY BOTANIC GARDEN, CAMBRIDGE

Philip Oswald

Ivy broomrape *Orobanche hederæ* is one of a genus of about a hundred species of flowering plants that parasitise other plants by means of underground tubers attached to the host plant's roots. They contain no chlorophyll for photosynthesising food for themselves, depending instead on the sap of the parasitised plant, and thus no part of them is green, some species being brightly coloured and others pallid. *O. crenata* is a pest of bean-fields in the Mediterranean and this may account for the generic name, which dates back to Ancient Greek times and means "vetch-strangler". The English name "broomrape", which is at least 400 years old, is a translation of "rapum genistæ", which means "broom knob or tuber" (Murray *et al.*, 1933), though both "rapum" and "rape" originally meant "turnip". This Mediaeval Latin name is still applied botanically to the greater broomrape, which parasitises broom and gorse and was well known to the old herbalists, though now everywhere rare and decreasing and last recorded in Cambridgeshire in 1913 (Perring *et al.*, 1964; Crompton and Whitehouse, 1983).

Ivy broomrape itself is a plant of southern England, Wales, Ireland, continental Europe northwards to Belgium but mainly in the west and south, Asia Minor and North Africa (Clapham *et al.*, 1962). In England and Wales it occurs mainly in coastal areas and it is not considered to be native in Cambridgeshire, though it was recorded from Girton College between 1930 and 1940 (Perring *et al.*, 1964) and there was an unconfirmed report of its growing in one of the chalk-pits at Cherry Hinton in 1981. Clapham *et al.* (1962) state simply that this species is parasitic on



Ivy broomrape
Orobanche hederæ

William Palmer

Hedera helix, and certainly the common ivy is its normal host plant; Chater and Webb (1972) say "*On Hedera spp.*". Like most British broomrapes, it is a perennial, overwintering underground as a tuber. The stems are unbranched and often grow singly, but sometimes in a clump. They are purplish with a few brownish scales – an apology for leaves – below, and the individual flowers are cream, strongly veined with purple, and have yellow stigmas when fresh. More will be said of distinguishing features later.

I have been aware of ivy broomrape in the Botanic Garden since soon after I came to Cambridge in the summer of 1976, initially as growing on the Irish ivy *Hedera helix* 'Hibernica' under the yews between the rock garden and the path from the Brookside gate to the glasshouses (T4 on the Garden plan). Evans (1939) reported the plant growing "well from seed" in the Garden, but it now seems to be spontaneous. I was therefore surprised to receive Mrs Gigi Crompton's text on this species for her "Vascular plant records" for publication in the 1982 issue of *Nature in Cambridgeshire* and to read that "since 1939 there has been only one other stand recorded" in the Garden besides Mr Richard Ward's new record for 1981 of "one large plant in July and three smaller ones in Sept.–Oct.", on an ornamental ivy, *Hedera colchica* 'Paddy's Pride', climbing a wall in the research area that is not open to the public (L4). My surprise turned to shame when, on my telling her I had seen this species in at least two other areas of the Garden, she pointed out that such observations needed to be put on record. I was in fact able to date my latest discovery of several spikes "on an ornamental ivy in the new Winter Garden" (G8) to 20 September 1981 and obtained Mrs Crompton's permission to supplement and amend her text (Crompton, 1982).

I determined to do better in future! In 1982 and 1983 I have faithfully recorded my observations, and some interesting facts have emerged. In both years ivy broomrape appeared in all the three locations already mentioned in this article (T4, L4 and G8), in the first two at any rate in increased quantity; but the decline forecast for the other properly "recorded" stand has occurred, though not, I believe, for the expected reason. Mrs Crompton reported (1982) that this was "most interestingly not on ivy but on another member of the Araliaceae [the ivy family], the shrub *Acanthopanax wardii*", and that "unfortunately the host plants may not survive much longer". There is in fact only a single plant of this deciduous spiny shrub, which looks nothing like ivy, among various species of *Berberis*, which it superficially resembles, in a bed adjoining the research area (M6). In recent years there has been a healthy clump of ivy broomrape growing here out of bare soil, several metres from the nearest patch of ivy (M5), and this has been awarded an official label. Presumably the minute windborne broomrape seed "recognised" some chemical common to araliaceous plants in the soil and successfully parasitised the *Acanthopanax* roots, thus proving itself a better botanist than most human beings! (Perhaps ivy broomrape may yet appear also under the *Fatsia japonica* in front of the glasshouses (Q4).) However, when the first spike of the broomrape appeared in 1982 above the soil near the *Acanthopanax*, between 13 and 20 June, it was a very small one which ultimately produced only 14 flowers, half of which were over by 4 July. On 5 September 1982 the dead spike was still there and I noticed another, even smaller, almost underneath the log edging the bed. Up to the same date the following year no further spike has appeared here; yet, after pruning, the host plant seems to be flourishing.

The flowering period of *Orobanche hederæ* is given by Clapham *et al.* (1962) as June to July, but it has become clear that some spikes appear much later in the year. New spikes were noted in September 1982 at all four sites, and in the Winter Garden (G8), where five spikes were seen on ground cover of *Hedera helix* 'Meagheri' and a clump of five and one single spike on nearby *H. colchica* 'Dentato-variegata' in July, five new spikes appeared from the end of August onwards on the former, the last being withered by a frost while still in flower, probably during the night of 15–16 November. In 1983 there were 70 spikes on the *H. helix* cultivar (seven of them still in flower and one in bud) and 19 on the *H. colchica* one by 6 August; many of these had been broken off by the beginning of September, but three and two new ones respectively were in flower. Some but not all later stems apparently arise from tubers (or groups of tubers?) that have produced stems earlier in the year. Up to 5 September 1983 there was no sign of a second flush of flowers in the experimental area (L4) or under the yew (T4).

Clapham *et al.* (1962) give the height of ivy broomrape as 10–60 cm, but some other floras give only the lower end of this range and Rose (1981) in his key divides this species from two others (described as "Robust plants, 50–80 cm") with the words "Smaller plants, 10–40 cm". Plants in the Botanic Garden vary greatly in height and also in the number, spacing and size of the flowers. In 1982 the first flush of flowering stems in the experimental area (L4) consisted of two groups of six spikes each, one much taller than the other. In 1983 I counted 64 spikes here in July, including clumps of 25 and 21. The shortest plants were only about 15 cm (6 inches) tall, but two very robust stems growing together measured 61 cm (2 ft) and 56 cm and carried over 95 and about 70 flowers respectively, close-packed in much of the spike; yet Clapham *et al.* (1962) say "*Fls* rather few, in a long lax spike". More reliable diagnostic characters, apart from the yellow stigmas, seem to be the attachment of the stamens 3–4 mm from the base of the corolla-tube, the gradual narrowing of this tube from an inflated base and the relative straightness of its back (except at the base). Floras vary in their description of the hairiness or otherwise of the stamen filaments, but Rose's (1981) figure (p. 333, 1b) is certainly misleading: the plants in the Botanic Garden have hairs only on the lower part of the filaments. The brief description given by Polunin (1969, p. 395) seems accurate in all respects.

Any observations of broomrapes growing near ivy or related species in other parts of the Garden – or elsewhere in Cambridgeshire – will be welcome.

References

- Chater, A O, and Webb, D A. (1972). *Orobanche* L. In: Tutin, T G, *et al.* *Flora Europaea*, Vol. 3: 286–293. Cambridge University Press.
- Clapham, A R, Tutin, T G, and Warburg, E F. (1962). *Flora of the British Isles*. 2nd ed. Cambridge University Press.
- Crompton, G. (1982). Vascular plant records. *Nature in Cambridgeshire*, No. 25: 62–63.
- Crompton, G, and Whitehouse, H L K. (1983). *A Checklist of the Flora of Cambridgeshire*.
- Evans, A H. (1939). *A Flora of Cambridgeshire*. Gurney and Jackson, London and Edinburgh.
- Murray, J A H, *et al.* (ed.). (1933). *The Oxford English Dictionary*, Vol. 1 (A–B): 1130. Oxford University Press.
- Perring, F H, Sell, P D, Walters, S M, and Whitehouse, H L K. (1964). *A Flora of Cambridgeshire*. Cambridge University Press.
- Polunin, O. (1969). *Flowers of Europe*. Oxford University Press.
- Rose, F. (1981). *The Wild Flower Key*. Frederick Warne, London.



The new Winter Garden in the University Botanic Garden, planted since 1976
William Palmer

Ivy broomrape Orobanche hederæ parasitising ornamental ivies in the Winter Garden (July 1983)
William Palmer



VASCULAR PLANT RECORDS

G Crompton

A Checklist of the Flora of Cambridgeshire was published in May 1983. It is interesting that the additions to the Flora of 1964 are more striking than the losses. Last year's plant records published below are a good illustration of this – particularly where plants have long been thought extinct in the vice-county, such as *Cardamine amara* and *Viola persicifolia*. The former is probably an instance of a species overlooked in that particular area of the county (see p. 16), while the latter has reappeared in an old site from buried seed (see pp. 62-65).

There have been about 15 additions to our native or quasi-native flora and there have also been about 20 rediscoveries of extinct species, as well as the addition of an uncounted number of new aliens, casuals and garden escapes.

All this illustrates how much there may still be to discover, as well as the need to record the more prosaic but much needed additions to the knowledge of our flora. Please send me corrections and additions to the Checklist so that they can be published in next year's records.

Cardamine amara L. In willow scrub on the bank of the River Lark, Isleham, 52/648756, C Turner, 22.5.1982. Last recorded in the county at Sutton by A Fryer in 1879; it still occurs not far from Isleham in Suffolk, and it is surprising that it had never been found in this part of Cambridgeshire before.

Viola canina L. subsp. *montana* (L.) Hartman Verrall's Fen, 52/54-70-. S M Walters (in CGE), 3.7.1982. The only record on Wicken Fen for this species was by A Wallis (in CGE), 3.6.1900.

Viola canina L. subsp. *montana* (L.) Hartman x *V. persicifolia* Schreber (*V. ritschliana* W Becker) This hybrid has been very common with both parents at Woodwalton Fen (v.c. 31); there is a specimen amongst Wallis's collections from Wicken Fen, 3.6.1900 (in CGE), which may be this hybrid, but it was not found on Verrall's Fen in 1982. The first county record for the hybrid was made by Babington in 1851 in nearby Bottisham Fen.

Viola persicifolia Schreber (*V. stagnina* Kit.) Wicken Fen, near the entrance, 52/56-70-, 2 vegetative plants, T A Rowell, 5. 1982, and Verrall's Fen, hundreds of plants, 52/54-70-, 6. 1982 (in CGE, 27.7.1982); a plant had also germinated and flowered in one of the soil samples Rowell had collected in 1980 from another site on Verrall's Fen (also in 52/54-70-) and is in cultivation in the Botanic Garden. Fen violet was last seen on Wicken Fen in 1916 and was long considered to be extinct in the vice-county.

Prunus cerasus L. Near the Nature Trail in the Cherry Hinton Caravan Club pit, 52/481554, S M Walters (in CGE), 23.10.1982, the first confirmed county record; there are two groups of young trees, with many root suckers, and nearby *P. avium* (L.) L. (with few suckers) is rare.

Epilobium lanceolatum Sebastiani & Mauri Victoria Road, Cambridge, 52/44-59-, M E Smith (in CGE), 13.9.1982, conf. P D Sell, 3rd CR; previously recorded only in 1953 and in 1954.

Oenothera fallax Renner emend. Rostánski (formerly called *O. biennis* L. x *O. erythrosepala* Borbás) River bank near Earith, 52/37, J S L Gilmour, S M Walters & P D Sell (50/148 in CGE), 24.8.1951, NCR. Roadside verge between Hauxton and Trumpington, 52/45, P D Sell (50/147 in CGE), 10.7.1952, 2nd CR. Both specimens were named by Rostánski and he has confirmed them *in litt.*, 6.9.1982, though they do not appear in his list published in *Watsonia*, 44: 1-34 (1982).

Ammi majus L. Garden weed at Lode, 52/586624, G M S Easy, 24.7.1981, NCR. Bullwort is an uncommon casual in Britain, found on tips and in waste places and as a wool alien; its flowering period starts in June, two months before its close relative *A. visnaga* (see p. 71).

Ammi visnaga (L.) Lam. Garden in Barrington, 52/39-49-, Joan L Hopkins (in CGE), 9.1982, det. S M Walters, NCR; a bird-seed alien from the Mediterranean, very similar to *A. majus* but with thickened rays and deflexed bracts after flowering.

Polygonum rurivagum Jordan ex Boreau Abundant in stubble near Shudy Camps, 52/604447, A C Leslie & J M Spencer-Smith (in OXF & herb. A.C.L.), 9.10.1982, conf. B T Styles. Other records since 1955 which have recently been given to CGE are by C Turner - in arable fields by old railway lines near Sawston, 52/497502, with J L Jarvis in 1975; near Toft, 52/352558, in 1976; and in a wheat field near the Fleam Dyke, 52/543549, 7.9.1982. This slender "cornfield knotgrass" is rare and reputedly rapidly decreasing.

Rumex obtusifolius L. x *R. sanguineus* L. (*R. x dufftii* Hausskn.) Coe Fen, with both parents, 52/451572, A C Leslie, 10.7.1982, 2nd CR. This hybrid is listed for v.c.29 on p. 287 of *Hybridization and the Flora of the British Isles* edited by C A Stace (1975), but no voucher specimen has been found in CGE or RNG.

Rhinanthus minor L. Devil's Ditch, north-east facing bank, 52/612621, N Warner, 7.1982; rare in chalk grassland, and a new record for the Ditch.

Galium parisiense L. Gravel drive at base of old wall, West Road, Cambridge, 52/441581, M E Smith, 17.6.1982; one branch of this single large plant was collected for CGE (G Crompton, 18.6.1982) before the plant was sprayed and killed. Last seen in Cambridge in 1946; it is a rare and easily overlooked species found on old walls and sandy soils.

Tragopogon porrifolius L. x *T. pratensis* L. (*T. x mirabilis* Rouy) Meadow at Litlington, 52/315423, Miss Kyle, 16.6.1982, conf. C J King; first confirmed record of the hybrid between the native plant and the rare garden escape, which has long been established at The Diggings in nearby Steeple Morden.

Festuca guesfalica Boenn. ex Reichenb. (*F. longifolia* auct., non Thuill.) Cambridge, 52/45, J S Henslow (in CGE), 14.6.1825 (as *F. duriuscula*), conf. P J O Trist in 1982, NCR. On open sandy soil on top of bank on western Furze Hill, 52/55-48-, G Crompton & J Heap (in CGE), 22.6.1981, 2nd CR, confirmed as native here, and also as occurring on both sides of the track along the top of the pit, P J O Trist, 1982. Disused railway siding at Lords Bridge, 52/395538, K V Cramp (in herb. K.V.C.), 12.6.1982, conf. introduced with soil for sleepers, P J O Trist, 3rd CR.

Desmazeria marina (L.) Druce (*Catapodium marinum* (L.) C E Hubbard) Cambridge, base of wall in Panton Street, 52/453577, A C Leslie (in CGE), 10.7.1982, 3rd CR; a coastal plant probably introduced with gravel from the sea-coast.

Corrections

N. in C., No. 19 (1976): 72 *Bromus tectorum* L. Delete grid reference for Kennett gravel pits and insert 52/695690.

N. in C., No. 25 (1982): 63 *Catapodium rigidum* subsp. *majus* The last sentence should read: "This is a coastal subspecies, which has been introduced with sand or gravel at both Cherry Hinton and Wandlebury."

WEATHER NOTES FOR CAMBRIDGESHIRE 1982

J W Clarke

Heavy rainfall (28.11 inches, making it the wettest year since 1960), a very thundery summer (with 24 thunderstorms at Swaffham Prior) and severe cold in January were the most notable features of the weather in 1982.

After the extreme cold of December 1981 the year began with very mild weather in the first week of January, but within a week severe weather returned and persisted until 16th, temperatures remaining below freezing point from 6th until 16th. Fresh snow fell on 8th onto snow still lying from the December blizzard. On 14th the temperature reached a maximum of only 18°F and fell to 2°F during the night of 14th–15th. In February the weather was mild, open and dry, and this continued throughout March, apart from rainfall which was above average. April had normal temperatures and very low rainfall – the driest month of the year.

May was wet and warm, marking the beginning of a period of heavy rainfall lasting throughout the rest of the year. A short heatwave developed during the last few days of May and persisted until 9th June, when changeable weather set in with frequent thunderstorms. This wet weather continued into July, but after the first week it became warm and dry, but broken by thunderstorms in the middle of the month. The second half of July was fine, but marred in Cambridgeshire by cumulus cloud from the North Sea blotting out the sun almost every day for a week when other parts of the country enjoyed warm sunshine. The last few days of July and the first days of August brought hot weather, soon broken by violent thunderstorms on 3rd and 4th, when 2.85 inches of rain fell in an hour at Burwell. August was an extremely wet month (5.63 inches) with about normal temperatures. The wet tendency continued in September, again with near-normal temperatures. The rest of the autumn was mild and very wet, with more than 9 inches of rain falling in the period from the beginning of October until the end of the year.

Weather records at Swaffham Prior 1982

Temperature °F

<i>Month</i>	<i>Mean max.</i>	<i>Mean min.</i>	<i>Highest</i>	<i>Lowest</i>	<i>Rainfall (ins)</i>
January	38	29	52 on 31st	2 on 15th	1.29
February	43	36	53 on 9th	25 on 23rd	0.71
March	51	37	60 on 26th	30 on 8th	1.77
April	55	40	63 on 28th	30 on 13th	0.46
May	63	47	75 on 31st	34 on 5th	2.43
June	69	57	82 on 5th	49 on 13th	2.68
July	71	56	82 on 9th	51 on 28th	1.53
August	70	57	84 on 3rd	50 on 31st	5.63
September	68	51	78 on 16th	40 on 22nd	2.49
October	56	45	62 on 2nd	36 on 24th	4.31
November	50	41	61 on 1st	23 on 30th	3.02
December	42	33	55 on 15th	22 on 23rd	1.79
Annual means	56.3°	44.0°		Total	28.11

Number of days over 80°F	6
Number of days over 70°F	57
Number of days with a maximum under 32°F	12
Number of days with a minimum under 32°F	46
Last air frost of the spring	19th April
First air frost of the autumn	28th November
Days with snow lying	7

An enterprising new series

NATURALIST'S HANDBOOKS

Edited by **SALLY A. CORBET** and **R. H. L. DISNEY**

Intended to encourage school students and amateurs to make original contributions to biological research, each of these illustrated handbooks deals with a specific taxonomic or habitat group of insects, providing basic information and suggesting rewarding topics for individual investigation. Small enough to fit the pocket, each book contains 68 pages and is illustrated with line drawings and with photographs in both black and white and colour.

The first four volumes are now available:

Grasshoppers

V. K. BROWN

Solitary Wasps

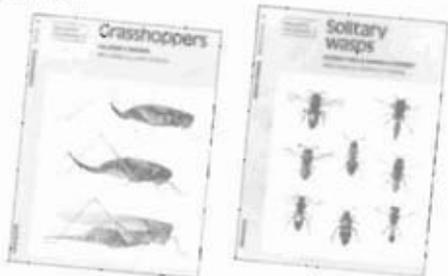
P. F. YEO and S. A. CORBET

Insects and Thistles

MARGARET REDFERN

Insects on Nettles

B. N. K. DAVIS



Each book is published in paperback at £2.95 net and in hard covers at £8.00 net.

Scanning Nature

D. CLAUGHER

This startling and vividly illustrated book reveals the hitherto invisible world opened up over the last twenty years by the scanning electron microscope.



Aspects of familiar organisms like bumble bees, blowflies, aphids and ants, worms and woodlice are shown enlarged to a scale of up to 80,000 times life size. The pithy picture captions provide background biological information and key diagrams help identify the particular part of the specimen under study.

Hard covers £13.50 net

Paperback £5.50 net

A vertical section through the unripe fruiting head of a dandelion. Each floret produces a bottle-shaped, single-seeded fruit or achene which is topped by a tuft of hairs, the pappus. A large number of separate florets packed together on a flat-topped receptacle make up the head of the dandelion.

CAMBRIDGE UNIVERSITY PRESS