

# Orkney Field Club

Founded in 1959

*Aim: To encourage the study and conservation of the natural and cultural heritage of the County*

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BULLETIN 1992

Biological Records Supplement



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## NOTES FOR CONTRIBUTORS.

1) All contributions at present (1992/93) addressed to (and by courtesy of SNH) :-

OFC Biological Records Centre sub-committee,  
Orkney Biological Records Centre,  
c/o Scottish National Heritage,  
54/56 Junction Road,  
Kirkwall, Orkney.

2) Copy date for 1993 Supplement :- 15th February 1993.

3) All contributions giving records of Orkney wild plants or animals welcomed, also all subjects relating to biological recording.

4) Contributions accepted in any of the following forms:-

-on PCW disc, or PC (ASCII) disc with accompanying hard copy or print-out.

-type written

-hand written.

-all graphs, drawings, tables, maps etc. in black line (no pencil please) preferably twice finished size or at least capable of some reduction. Must be able to fit an A5 page; this is especially important for tables and graphs. If on disc, for tables etc. please use tabs, not spaces.

-for style and format, use of references, etc. please see current issue.

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## EDITORIAL

This is the first edition of the Orkney Field Club Bulletin Biological Records Supplement. The intention is to encourage biological recording in Orkney and the use of the Biological Records Centre.

The Supplement will be an annual publication, published and circulated to all Field Club members in future in March/April each year. It will include Orkney biological records on the occurrence, distribution and abundance of plants and animals from land, freshwater and sea, as well as fossil records. All aspects of biological recording, such as field trips, identification methods, etc. will also be included.

An important feature will be the storage of all biological records on computer so that they can be periodically and separately published where they form an up-date or addition to the records published in Berry, R.J. *The Natural History of Orkney*.

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Orcadians are peculiarly privileged. Most people in Britain live in towns, where "nature" is represented by parks or gardens, by roadside or railway verges, by high-flying birds or polluted water. In Orkney

"The solitudes of land and sea assuage  
my quenchless thirst for freedom unconfined"  
(Robert Rendall's sonnet, *Orkney Crofter*).

Not surprisingly Orkney seems to have produced more than its share of naturalists, many of them ministers like Wallace, Brand, Low, Clouston and Berry; others were doctors - Baikie, W.F.Heddle, Traill, Halcro-Johnston; some were teachers, most notably Magnus Spence, author of the *Flora Orcadensis*; some became professionals - George Scarth, Professor of Botany in McGill University, Canada, and James Sinclair, Keeper of the Herbarium in Singapore; but there were many others who were spare-time naturalists - A.R. Fortescue, an Orphir farmer, Robert Rendall, a shopkeeper, Duncan Robertson, a solicitor, the roll-call continues on and on. Is there any other region of Britain so loved and chronicled?

There is no reason to believe that the motives inspiring the Orkney naturalists are in principle different from those from other parts. Richard Mabey has described it as love of place, rather than fauna and flora as such. He began his biography of Gilbert White:

"The British have for a long time regarded their relationship with the countryside as something quite distinctive, a badge of cultural identity. Despite having become a largely urban people, we continue to admire the rural village as the ideal form of community, and have an affection for the native that is probably without parallel in the industrialised world. It is a passion which has sometimes deteriorated into sentimentality and which doesn't always have a clear view of history, but it has left an indelible way of life" (Mabey 1986).

This tradition, badge, affection or passion surfaces repeatedly in British writing: Robert Blyth, John Moore, Norman Nicholson, Edwin Muir, Robert Rendall - the list is long. But there is something which links all these people, something very simple and basic, of which we are all capable - they wrote something down. That is why they are remembered, that is the contribution they make to us.

"Biological Recording" can seem intimidating to a novice with its paraphernalia of identification, verification, required data, computerization, grid squares, correct nomenclature and so on. Reduced to its essentials it is very simple: a biological record is merely a note of the occurrence of a particular animal or plant, preferably with an indication of its location and time of observation. Its value will be greater if it includes data on age or density, or environmental conditions, or historical information. Notwithstanding, the key to the record is that it is written down, and available for reference, to the recorder and also (although not inevitably) to other people. A recorder (who is nothing more

than an observer with a pencil) is part of a community which stretches from the great pioneers of past centuries to the youngest Field Club member.

The British tradition of natural history is almost unique. There are, of course, excellent naturalists in most countries of the world, but nowhere else than in Britain is the tradition so widespread or deep-seated. In his book *Man and the Natural World*, Keith Thomas (1983) has argued that the British tradition is essentially utilitarian - a concern for folk-medicine, husbandry, horticulture and herb-lore, inseparable from life in an evolving agricultural community. Charles Raven (1947, 1953) has traced a more direct succession from the accurate representations of animals and plants carved by British craftsmen in the late mediaeval cathedrals (pre-dating the Renaissance on continental Europe) which prepared and supported the Reformation (since men and women became conditioned to seeing the world as it really was, rather than as the contemporary bestiaries and herbals represented it), and forged from there the development of a scientific movement which thus allowed the rise of an indigenous industrial revolution.

The trends of these early times were punctuated by major contributors, particularly William Turner (1508-68), John Ray (1627-1705), Gilbert White (1720-93), and Robert Jameson (1774-1854). Probably the greatest of these was Ray. He became interested in natural history during convalescence from illness at a time when he was a teacher at the University of Cambridge. He started exploring the countryside, and unable to find anyone to help him with his observations, decided to catalogue the local flora for himself. His first book was a flora of Cambridgeshire. In it he wrote:

"First I was fascinated and then absorbed by the rich spectacle of the meadows in spring-time; then I was filled with wonder and delight by the marvellous shape, colour and structure of the individual plants. While my eyes feasted on these sights, my mind too was stimulated. I became inspired with a passion for Botany, and I conceived a burning desire to become proficient in that study, from which I promised myself much innocent pleasure to soothe my solitude."

It was Ray who realised the importance of biological recording. He wrote "I desire to put forward a complete *Phytologica Britannica*". But for many years biology was in the hands of doctors. A major factor in introducing biology to the University curriculum was the Apothecaries' Act of 1815 which required all medical students to know the British flora, and led to the introduction of field classes in botany. But during the nineteenth century, field natural history became a mass fashion; by the end of the century there were about 500 local natural history and scientific societies with a combined membership approaching 100,000. Allen (1976) has identified as influences that contributed to this enthusiasm: evangelical religion, middle-class earnestness, the absence of the dampening leaven of professional science, increasing mobility and easier publication through the introduction of steam-driven printing-presses, lithography, and a lifting of the paper tax.

However, much of the impetus had gone out of the natural history movement by 1900. On the other hand, professional biology developed, mainly in the universities, changing the allegiance of some of the more able practitioners; and, more significantly, local knowledge became channelled into national surveys, with local societies grouped into regional unions or losing their members to new national societies. The more successful federations of societies were associated with national and metropolitan scientific organisations, especially the research committees of the British Association and, from 1884, the British Association conference of Delegates of Corresponding Societies (in part modelled on the Yorkshire Naturalists Union).

Notwithstanding, the number of people involved in natural history activities continues to rise. The membership of the Royal Society for the Protection of Birds is over half a million and that of the Royal Society for Nature Conservation (representing 48 county or regional naturalists' trusts) is 180,000. A significant proportion of such people are probably not practising naturalists (the Botanical Society of the British Isles, whose members are likely to be involved in fieldwork, has about 2500 members, and the Mammal Society 1000), but nevertheless these memberships represent a considerable number of individuals interested enough in natural history to subscribe to a society.

#### The Organisation of Biological Recording.

A key figure in developing the modern approach to biological recording was a Scottish doctor, Francis Buchanan White (1842-94), who "neither requiring nor caring to practise his profession as a medical man, devoted his life to a close study of animals and plants in their natural environment." He urged the careful study of specific areas. Writing of the River Tay, he wrote "I have thought that much instruction might be derived if a definite space - say fifty yards square - of young shingle were mapped out and a careful census taken of all the plants which sprung up in it in the course of a season." This is not the place to trace all the influences that came together to set up the first formal recording scheme at the end of the nineteenth century (excellent accounts are given in the books of David Allen (1976) and John Sheail (1976), although it is worth noting the influence of Professors D'Arcy Thompson and Patrick Geddes, and their students Robert and William Smith at University College Dundee, and the completion of the Ordnance Survey's series of large scale maps. In his presidential address to the Botanical Society of Edinburgh, Orcadian James W H Traill read out a list of problems in setting up a plan to map vegetation, which was halted by the government of the day refusing to provide financial assistance.

The way forward seemed to be to forge a close working relationship of amateur naturalists with professional biologists to provide scientific leadership. Sir William Foster, President of the Yorkshire Naturalists' Union exhorted the Union in 1899:

"The field is your laboratory, Nature herself is your teacher, and you can roam at will over all the pastures of biology, without the let and hindrance of prescribed study and academic ordinance. You are the complement of the University and of the Special Society,

and it is your privilege, and in the interests of science, your duty, to nurse and cherish that which they, willingly or unwillingly neglect. . . ."

Arthur Tansley, one of the founders of ecology and in 1949, first Chairman of the Nature Conservancy, wrote in 1902:

"Cooperation is necessary if any considerable results are to be obtained. It is much to be desired that the surveying part of the work should be taken up by active members of local natural history societies. A scheme could easily be organised by which they might work under some central direction, and there can be no doubt that, once initiated, the fascinating nature of the work would ensure its continuance and propagation."

In 1904 William Smith established a "Central Committee for the Study of British Vegetation". Tansley wrote of it:

"Scattered up and down the country are scores of men, whose hobby is botany and whose acquaintance with their local floras is absolutely unequalled. Too often they carry with them to their graves knowledge which would be of greatest value in helping to build up a picture of the vegetation of the country as a whole. Convince them of the interest of ecological survey work, and you would secure the cooperation in working out and mapping local floras from that point of view, which with the requisite general knowledge of methods and a certain amount of help and direction, they would do a hundred times better than a visiting botanist, with no knowledge of locality."

The Vegetation Committee became the Council of the British Ecological Society in 1913, thus forming the first ecological society in the world.

Coming closer to the present in 1947 the British Association Conference of Delegates of Corresponding Societies considered a proposal to produce "basic maps of the plotting, classification and correlation of natural history records". No action was taken because "maps of this type were being constructed for certain areas by the Council for the Promotion of Field Studies, and it was thought that the time was hardly appropriate for the Conference to take action until more evidence of the kind of map required was available."

In 1950 the Botanical Society of the British Isles set up a committee to map the British flora which led to the launching of the Distribution Maps Scheme in 1954, with funding from the Nature Conservancy, and the publication of the *Atlas of the British Flora* in 1962. Despite this initiative, the indecision of the BA Conference has been repeated on many occasions. In his Foreword to the BTO *Atlas of Breeding Birds* in Britain and Ireland, (1976), Ferguson-Lees recorded that

"For over two years, the possibility of an Atlas of Breeding Birds was discussed regularly. . . . There was a seemingly irreconcilable division of opinion between the optimists and enthusiasts on the one hand, and the pessimists and diffidents on the other, the

latter believing that such a project was doomed to failure through inadequate coverage. Even the optimists said that, because of the uneven spread of observers, and their scarcity or absence in remoter areas, the best coverage that could be expected was 90% in England, 50% in Wales and a mere 25% in Scotland. . .How wrong we all were."

Some ornithologists also considered that the whole concept lacked sufficient merit to justify it being undertaken at all, but the majority were agreed in regarding it as a potentially invaluable tool for conservation and of considerable importance as a permanent record, for future comparison of bird distributions at a time of great environmental change.

In 1964 the data and mapping machinery used in the preparation of the Botanical Atlas were transferred to Monks Wood Experimental Station in Huntingdonshire and formed the nucleus of the Biological Records Centre (BRC). Its objectives were to set up and operate a computerised data bank of information on the occurrence of plants and animals in the British Isles; to maintain an archive of the original records from which the data bank was compiled; to make these data available in a variety of forms, for research, monitoring, nature conservation, education and general information.

Since then the main emphasis of the BRC has been the coordination of over 60 national Biological Recording Schemes organised by national societies, formal study groups and individuals. BRC's role has been to help establish the recording schemes, to provide record cards, to process and check the records and store them in the BRC data bank and archives, and to assist with the publication of the results. Mapping is carried out on a ten kilometre square basis. A series of Atlases has been published, often in cooperation with national societies.

There have been many attempts to establish general biological recording on a firmer footing. In the 1970's the then director of BRC, Dr. Franklin Perring encouraged the setting up of local record centres and attempted to establish a network of local centres which would be coordinated by BRC. In 1973 BRC and the Department of Museum Studies of the University of Leicester organised a Conference on Environmental Record Centres which provided an opportunity for museums and other organisations to review progress in environmental recording, to exchange experience and to learn more about the requirements of the user community, particularly planners and conservationists. In arranging the conference on the eve of the reorganisation of Local Government, it was hoped to persuade the new local authorities to accept responsibility for biological recording after reorganisation. To this end the conference passed a resolution that

"Environmental Record Centres should be set up and paid for by Local Authorities to cover areas based on the existing Vice County system. They should have the same status as County Record Offices and they should be associated with them."

Although two new centres were set up, only one (West Yorkshire) succeeded in obtaining additional finance and resources for this purpose. There were

parallel moves in Scotland. A conference in Dundee in 1975 led to the ongoing Biological Recording in Scotland Committee, which produces newsletters and co-ordinates some recording schemes in Scotland.

Subsequently, many local Nature Conservation Trusts with the support of the Nature Conservancy Council, World Wildlife Fund, and BP, acquired computers and began to computerise data relating to their reserves and sites of natural history interest. Many national societies embarked on new and expanded recording schemes and coordination between the various schemes soon became a major problem. Much of the initiative as far as local biological record centres were concerned was taken by museums and in particular by the Biology Curators' Group (BCG) consisting of those responsible for biological collections in local and regional museums in cooperation with BRC.

However, a 1984 BCG Seminar on Biological Recording and the Use of the Site Based Biological Information confirmed a widely held view that "the present situation both nationally and locally for biological recording, storage and retrieval of data was unsatisfactory" and drew attention to the problems arising from lack of finance, of central co-ordination and of standards. The seminar led directly to setting up of an *ad hoc* group, to find means of improving the situation. This group requested the Linnean Society (the doyen of biological societies and custodian of Linnaeus's own collections) to investigate the situation and take any appropriate action. I was asked to chair a Working Party to carry out this task.

I must confess that I approached this job with a feeling that we were probably going to waste our time. After all, was not biological recording stronger in Britain than anywhere else in the world? Did we not have hosts of enthusiastic and knowledgeable naturalists feeding their results into their local societies and the Biological Recording Centre at Monks Wood? I was wrong.

The recording situation in Britain is locally excellent, but coordination is poor. Although it may be possible to find out the present distribution of a species, it is extremely difficult to discover if it is declining or spreading, or what factors are affecting it. Data on many invertebrate groups are sparse. The few instances where historical data exists increase the frustration of the general picture. For example, we know something of the recolonization of the London area by lichens because species lists have been preserved by various societies, we know something about the decline of melanic moths as air pollution decreases because of the devoted work of amateur entomologists, coordinated by professionals (exactly as Tansley envisaged almost a century ago). But these are isolated instances. My working party agreed wholly with the Nature Conservancy Council (1984) that

"survey knowledge of wildlife resources is still patchy and inadequate overall, despite increased effort in recent years; slowness in establishing computerised conservation databases must be accounted a failure within the conservation movement as a whole."

## The Present Situation

The "Berry Working Party" produced its report *Biological Survey: Need and Network* in 1988. The following year, the National Environmental Research Council organised a seminar in London to consider the recommendation that a national coordinating committee be set up to encourage and facilitate the handling of records by local Records Centres. The Records Centres themselves would be approved and standards set up by the coordinating committee. The meeting, to which all interested parties were invited, accepted this without reservation. A Government group examined the implications of this, and then invited Sir John Burnet, former Principal of Edinburgh University and Vice-Chairman of the Nature Conservancy Council, to head the Coordinating Committee. Sir John accepted the invitation, and the Burnet Committee is now at work.

That is the situation at the moment. Hopefully there will be a network of centres established soon, and individual centres will be linked to the network. This means that records will be more useful. Orkney records will be directly comparable with ones from Shetland, from Caithness, or the Hebrides, without a lengthy journey through the post or telephone system. It is now up to Sir John to organise the national structures; it is up to Orkney (and 200 or so other places throughout the British Isles) to make sure that its structures are second to none. . . . .

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TURTLE record.

C. J. Booth

### *Dermodochelys coriacea* Leatherback Turtle.

The remains of a turtle were found on the shore near Melsetter, Hoy, on 23/9/91. The length was about 2 metres but unfortunately rough seas washed the body away before further examination could be carried out. Identification was confirmed from a photograph taken by Fiona Ward who reported the turtle.

## RECORDING METHODS.

Elaine R. Bullard.

"Recording" as Professor Berry has said in this *Supplement*, is "merely making a note of the occurrence of a particular animal or plant". This means writing it down. If the record is to be made available to other people, such as through Orkney Field Club's Biological Records Centre, then it is safer to use a standardised method rather than using the telephone, or mentioning it in the course of conversation, or scribbling it on the back of an envelope. (Though even these methods are better than nothing!) The following shows some standardised methods of "making a note", either with a pen or pencil, or with a computer.

### Individual Record Cards.

These are intended to be used for one "special" record, e.g. "new", "unusual", "critical" "special request". It is better not to use them for obviously common species for which no special information is desired.

### Single Species Cards.

These are intended to be used for a number of records of one particular species, e.g. such as the "The Ox-eye Daisy, Brown Hare and Orkney Vole Recording Project". These cards can be used for any one species where information on the distribution, frequency, habitat, etc. of that one species is desirable.

### Field Cards.

These are used primarily where it is desirable to list all the species found in a particular area, such as an island, a 10 km square, a tetrad or a special kind of habitat, a Nature Reserve or a back garden. They are especially important in recording for various kinds of distribution Atlases. (dot-maps). Being pre-printed, they save time in writing out names but to get as many names as possible on the card, abbreviated scientific names are used, the recorder scoring off, in pencil, each species seen. Most Field Cards also include species code numbers, used when the record is entered in a computer database.

The information obtained from each type of card is interchangeable; Single Species can be assigned to a particular area; single records can be extracted from a Field Card.

Individual Record Cards and Single Species Cards can be had from OFC/BRC. Pre-printed Field Cards can usually be had from the County Recorder for that particular group.

In every case, the species and recorder's names, the date, the Grid Reference or other clear indication of locality are necessary, together with other appropriate information. (See note to computer users.)

### Referees.

The whole purpose of recording would be lost if records were not accurate. With distinct species there is little danger of confusion but all groups contain species or subspecies which are "critical" and require expert identification. The National Societies appoint Experts as Referees and,

within Orkney, it is up to the local County Recorder to decide if a record should be determined by a Referee before it can be accepted.

#### NOTES FOR, AND A PLEA TO, ALL OFC COMPUTER USERS.

Before too long it is hoped that OFC will have a fully computerised Local Biological Records Centre in Orkney. It will ease the work of inputting records if copies of records can be entered from computer disc.

Most extant records are still in hard copy form; a lot of help will be required to do this preliminary entering but much of it can be done on most home computers. Volunteers are required, if only for a couple of computing hours a month. PLEASE let OFC/BRC subcommittee know if you are willing to volunteer, and what kind of computer you use. (The Club welcomes computer users' help for other tasks too).

These notes particularly apply to those members who are already using computers for biological records. To be useable in a local BRC some simple conventions must be followed.

Ideally, records should follow, as nearly as possible, the Monks Wood Individual Record Card, the "Pink Card". OFC/BRC cards are based on this. The "Pink Card" is laid out in the following manner.

Order no. (if known) 4; Species no (if known) 5; ssp no (if known) 1; Name of Species 14; Grid Reference 8; Vice-County (not essential for local use) 3; Locality 20; Altitude (if required) 3; Habitat (if possible) 2; Date 5; Recorder 4; Rarity 1; Status 1; Source 4; Stage (code) 1; Expert (where applicable). 4.

The items underlined are ESSENTIAL for all records. The number following the item is the minimum number of characters/digits which are possible if the information can be entered according to accepted codes - e.g. "Rarity" codes would be "D = dominant", "A = abundant", "F = frequent", "O = occasional", "R = rare". "Status" would be "NATive", "INTroduced", "ESCAPE", "MIGrant". "Source" would be "fld" (the living item seen); "mus" - (for Museum) "lit" for published records. For the last two, some indication of their source is advisable. Codes are not essential, but they do save space. It is just possible, using codes, to get all the data on one screen line.

If you are using any kind of fixed-format records, e.g. your own database, they must be MS DOS transferable or, preferably, convertible to ASCII text file format; the latter, of course, applies to all PCW text files which cannot be transferred in fixed-file format, but only as free (ASCII) text.

ASCII format means that any use of characters treated as "commands", e.g. tabs, must be converted to some visible character. (a space is a visible character). Separate data items must have a "separator", e.g. "/", added before converting to ASCII.

OFC/BRC looks forward to your cooperation.

## Introduction.

Born in 1851, James William Helenus Trail was "an active mycologist, particularly in the field of micro fungi, who collected vast quantities of material, much of it still to be worked up" (Watling, 1985). His herbarium is housed in the Plant Science Department, Aberdeen University, where he held the post of Professor of Botany from 1877 until his death in 1919 (Sommerville, 1979).

In 1985, the herbarium was found to be in good condition and comprised nine boxes of manuscripts and specimens, arranged partly taxonomically and partly by substrate, with additional manuscripts and books housed in Kings College Library.

The material has now been sorted and catalogued, and the Orkney fungi have been examined by Watling, who provided me with the following determinations on 21st November 1988. All the species are new to the Orkney List except those marked with a dagger (†), which have been published first by Dennis (1972) and later by Berry (1985), and those marked with an asterisk (\*), which have been published by Eggeling (1985, 1989).

## BASIDIOMYCOTINA

## HYMENOMYCETES

- Lechnella villosa* On *Epilobium hirsutum* at Finstown, Firth  
*Pistillaria micans* On *Cirsium palustre* at Syredale, Harray  
 \**Stereum rugosum* On *Sorbus aucuparia* at Binscarth, Firth

## HEMIBASIDIOMYCETES (SMUTS)

- Entyloma microsporium* On *Ranunculus repens* near Finstown, Firth  
*Tilletia sphaerococca* On *Agrostis pumila*, Harray  
*Urocystis anemones* On *Ranunculus repens*, Orkney  
*Ustilago segetum* On *Hordeum* (Barley) at Costa Head, Evie;  
 and at other unnamed localities, Orkney  
*U. striiformis* On *Holcus lanatus* at Boardhouse, Birsay  
*U. succisiae* As *U. flocculosum* on *Succisa pratensis* at Veness, Orphir

## HEMIBASIDIOMYCETES (RUSTS)

- Chrysomyxa empetri* On *Empetrum nigrum* at the Brough, Birsay  
*Melampsora epitea* On *Salix viminalis* at Binscarth, Firth  
*M. hypericorum* On *Hypericum pulchrum*, Orkney  
*M. lini* On *Linum catharticum* at the Oyce, Finstown, Firth  
*Phragmidium acuminatum* On *Rubus saxatilis*, Orkney  
*Phragmidium* sp. On *Rosa* at Binscarth, Firth  
*Puccinia allii* On *Allium schoenoprasum* at Manse of Firth, Firth  
*P. arenariae* On *Stellaria media* at Finstown, Firth

<i>P. brachypodii</i>	As <i>P. baryii</i> on <i>Brachypodium sylvaticum</i> at Syradale, Harray
<i>P. calcitrapae</i>	On <i>Cirsium palustre</i> at Syradale, Harray
<i>tP. calthae</i>	On <i>Caltha palustris</i> at Swanbister, Orphir
<i>P. caricina</i>	On <i>Carex vulgaris</i> and on <i>Pedicularis palustris</i> (including <i>Aecidia</i> ) at Syradale, Harray and at Hundland, Birsay. Also on <i>C. panicea</i> , Orkney
<i>P. caricina</i> var. <i>urticae-flaccae</i>	On <i>Carex flacca</i> at the Oyce, Finstown, Firth.
<i>P. chaerophyllii</i>	As <i>P. pimpinellae</i> on <i>Anthriscus sylvestris</i> at Bay of Firth, Firth and at another locality in Firth; and as <i>P. pimpinellae</i> on <i>Myrrhis odorata</i> at Binscarth, Firth
<i>P. cnici</i>	On <i>Cirsium vulgare</i> at Ravie Hill, Birsay and at Loch of Banks, Birsay?
<i>tP. dioica</i> var. <i>dioica</i>	On <i>Cirsium palustre</i> at Durkadale, Birsay and at Syradale, Harray
<i>tP. galii-vernii</i>	On <i>Galium saxatile</i> in fields near Kirbuster, Birsay
<i>P. glomerata</i>	As <i>P. senecionis</i> on <i>Senecio aquaticus</i> at Wideford Burn, St Ola
<i>?P. graminis</i>	On <i>Berberis graminis</i> ( <i>aecidia</i> ) at Binscarth, Firth ( <i>Aecidia</i> of <i>P. pose-nemoralis</i> are rare on this host)
<i>tP. hieracii</i>	On <i>Leontodon autumnalis</i> at Kirbuster, Birsay; and at another locality, Birsay
<i>P. obscura</i>	On <i>Luzula pilosa</i> at Syradale, Harray; and on <i>L. campestris</i> at Wideford Hill, St Ola
<i>tP. poarum</i>	<i>Aecidia</i> on <i>Tussilago</i> and <i>Teleutosori</i> on <i>Poa pratensis</i> at Links near Boardhouse Loch, Birsay
<i>P. pulverulenta</i>	On <i>Epilobium montanum</i> at Binscarth, Firth; and possibly on <i>E. palustre</i> at Wideford Burn, St Ola (or host misidentified)
<i>?P. punctata</i>	On <i>Galium saxatile</i> , Birsay; and on <i>G. verum</i> , Firth
<i>P. punctiformis</i>	On <i>Cirsium arvense</i> , Birsay
<i>tP. variabilis</i>	On <i>Taraxacum officinale</i> at Syradale, Harray; and Birsay
<i>P. violae</i>	On <i>Viola reichenbachiana</i> at the Oyce, Finstown, Firth and at another locality in Orkney
<i>Pucciniastrum vaccinii</i>	As <i>Uredo</i> on <i>Vaccinium myrtillus</i> , Orkney
<i>Trachyspora alchemillae</i>	On <i>Alchemilla vulgaris</i> agg., Orkney
<i>Triphragmium ulmariae</i>	On <i>Filipendula ulmaria</i> at Syradale, Harray
<i>Uromyces acetosae</i>	On <i>Rumex acetosa</i> at Finstown, Firth and at Wideford Hill, St Ola
<i>U. armeriae</i>	On <i>Armeria maritima</i> at the Brough, Birsay
<i>U. fallens</i>	On <i>Trifolium pratense</i> at Syradale, Harray
<i>U. rumicis</i>	On <i>Rumex acetosa</i> at Finstown, Firth
<i>?U. trifolii</i>	On <i>Trifolium</i> at Syradale, Harray
<i>U. valerianae</i>	On <i>Valeriana officinalis</i> at Binscarth, Firth

ASCOMYCOTINA

✓ PROTOMYCETES (HEMIASCOMYCETES)

- Protomyces pachydermus* On *Taxacum officinale*, Orkney  
*Taphrina amentorum* As *Exoascus alni* on catkins of *Alnus* at Finstown and Binscarth, Firth  
*T. betulina* On *Betula alba* at Binscarth, Firth  
*T. potentillae* On *Potentilla erecta* at Syradale, Harray; and on the south shore of the Loch of Banks, Birsay  
*T. tosquetii* On *Alnus glutinosa* at Binscarth, Firth  
*Taphridium umbelliferarum* On *Heracleum* at Knowe of Saverough, Birsay

PYRENOMYCETES (EUASCOMYCETES)

- Erysiphe galii* On *Galium verum* at Finstown, Firth.  
*E. ranunculi* As *E. communis* on *Ranunculus acris* at Links nr Boardhouse, Birsay  
*E. sordida* As *E. lamprocarpa* on *Plantago maritima* at Buckquoy Point, Birsay  
*Lasiosphaeria spermoides* On *Fagus?* at Binscarth, Firth  
*Sphaerotheca alchemillae* On *Alchemilla vulgaris* agg., Stenness; and on *Potentilla erecta* near Hundland, Birsay  
*S. ulmariae* As *S. castagnii* on *Filipendula ulmaria* at Boardhouse, Birsay  
*\*Xylaria hypoxylon* At Binscarth, Firth

DISCOMYCETES (EUASCOMYCETES)

- Ascobolus stictoides* On dog dung at Ravie Hill, Birsay  
*Cheilymenia stercorea* On cow dung at Syradale, Harray; and on horse dung, Orkney  
*Claussenomyces atrovirens* As *Patellaria fuscoatra* on *Sorbus alba* at Binscarth, Firth  
*\*Coprobia granulata* On cow dung, Birsay  
*?Crocicreas culnicola* On oat stubble at Howan, Birsay  
*?C. cyathoides* On herbaceous items: at Bay of Firth, Firth (*Rumex acetosa*, *Anthriscus* and *Plantago*); at Kirbuster, Birsay (*Rumex acetosa*, *Senecio aquaticus*); at another locality, Birsay (*Iris pseudoacorus*); at Boardhouse Loch, Birsay (*Urtica* and *Filipendula*); at Binscarth, Firth (*Aegopodium* and *Geum urbanum*); at Marwick, Birsay (*Heracleum*); at Knowe of Saverough near Boardhouse, Birsay (*Cirsium arvense*); at Finstown, Firth (*Valeriana*); at Binscarth, Firth (*Scabiosa*); and at the Oyce, Finstown, Firth (*Heracleum* and *Ranunculus acris*)  
*Desyscyphus bubatus* On *Aconitum napellus* at Binscarth, Firth  
*D. nidulus* On *Chaemanerion angustifolium* at Finstown, Firth  
*D. niveus* On *Ulex europaeus* at Binscarth, Firth  
*D. sulphureus* On *Epilobium angustifolium* at Binscarth, Firth

<i>Helotium symphoriocarpi</i>	On <i>Symphoricarpos racemosa</i> at Finstown, Firth; and possibly some on <i>Hymenoscyphus repandus</i>
<i>Heterosphaeria patella</i>	On <i>Angelica sylvestris</i> at Loch of Banks, Birsay; and on <i>Senecio aquaticus</i> , Orkney
<i>Hymenoscyphus lutescens</i>	On dead <i>Alnus glutinosa</i> at Binscarth, Firth
<i>H. scutula</i>	On <i>Filipendula</i> at the Oyce, Finstown, Firth
<i>Lasiobolus papillatus</i>	On sheep dung at Syradale, Harray and at Finstown, Firth; on horse dung at Syradale, Harray; and as <i>L. pilobus</i> on cow dung at Greeny Hill, Birsay
<i>Leptotrochila ranunculi</i>	As <i>Mollisia</i> on <i>Ranunculus acris</i> at Binscarth, Firth
<i>Mollisia</i> sp	On <i>Alnus glutinosa</i> at Binscarth, Firth
<i>Pezizella chryso stigma</i>	On the petioles of <i>Athyrium felix-femina</i> at Syradale, Harray
<i>Pseudopeziza trifolii</i>	On <i>Trifolium pratense</i> and on <i>T. repens</i> , Firth; and at Links near Boardhouse Loch, Birsay
<i>Pyrenopeziza benesuda</i>	On <i>Alnus glutinosa</i> at Binscarth, Firth
<i>P. carduorum</i>	On <i>Cirsium vulgare</i> at Binscarth, Firth
<i>P. digitalina</i>	On dead stems of <i>Digitalis</i> in fields near Kirbuster and at Boardhouse Loch, Birsay
<i>Rhytisma acerinum</i>	On <i>Acer</i> at Binscarth, Firth
<i>R. salicinum</i>	On <i>Salix cinerea</i> at Kingsdale, Firth
<i>Ryparobius brunneus</i>	Birsay
<i>R. myriosporus</i>	As <i>R. myriadinus</i> Boud. on sheep dung at Braeside, Durkadale, Birsay. As <i>R. myriosporus</i> on sheep dung at Finstown, Firth; and on horse dung at Syradale, Harray
<i>Saccobolus glaber</i>	On sheep dung at Braeside, Durkadale, Birsay
<i>Tapesia fusca</i>	On <i>Calluna vulgaris</i> at Syradale, Harray; and at Greeny Hill, Birsay (as var. <i>callunae</i> )
<i>T. rosae</i>	On <i>Rosa</i> on shore of Oyce, Finstown, Firth
<i>Thelebolus crustaceus</i>	On rabbit dung at Knowe of Severough near Boardhouse, Birsay

LOCULOASCOMYCETES (BITUNICATE ASCOMYCETES)

<i>Asterina veronicae</i>	On <i>Veronica officinalis</i> at the Oyce, Finstown, Firth
<i>Mycosphaerella iridus</i>	As <i>Sphaerella iridus</i> on <i>Iris pseudoacorus</i> , Orphir
<i>Pleospora vagans?</i>	As <i>P. infectoriae</i> on <i>Holcus lanatus</i> at Costa Head, Evie
<i>Schizothyrioma ptarmicae</i>	On <i>Alchemillea ptarmica</i> at Wideford Burn, St Ola
<i>Scirobia agrostidis</i>	On <i>Agrostis?</i> at the Oyce, Finstown, Firth
<i>Venturia rumicis</i>	On <i>Rumex</i> at Wideford Burn, St Ola

## HYPHOMYCETES

<i>Alternaria (Macrosporium)</i>	On <i>Sambucus nigra</i> at Boardhouse Loch, Birsay
sp	As <i>Gonatosporium puccinioides</i> on <i>Carex</i> at Loch of Banks, Birsay
<i>Arthrinium puccinioides</i>	
<i>Cercosporidium depressum</i>	On <i>Angelica sylvestris</i> at the Oyce, Finstown, Firth and at Scapa, St Ola
<i>Isariopsis carnea</i>	On <i>Lathyrus pratensis</i> at Syradale, Harray
<i>Ovularia obliqua</i>	On <i>Rumex ?crispus</i> at Marwick, Birsay
<i>Ramularia ejugae</i>	On <i>Ajuga reptans</i> at Eyradale, Harray
<i>R. epilobiara</i>	On <i>Epilobium</i> sp. at Wideford Burn, St Ola
<i>R. gei</i>	On <i>Geum rivale</i> at Scapa, St Ola
<i>R. lychnicola</i>	On <i>Silene dioica</i> at Binscarth, Firth
<i>R. pratensis</i>	On <i>Rumex acetosa</i> at Binscarth, Firth
<i>R. rhabdospora</i>	On <i>Plantago lanceolata</i> at Finstown, Firth and at one other unnamed locality, Orkney
<i>R. taraxaci</i>	On <i>Taraxacum</i> , Orkney
<i>R. variabilis</i>	On <i>Digitalis purpurea</i> at Wideford Burn, St Ola; at Ward Hill, Orphir; and at Twatt, Birsay

## COELOMYCETES

<i>Actinonema rosae</i>	Rose-black spot, imperfect state of <i>Diplocarpon rosae</i> , on <i>Rosa</i> at Binscarth, Firth
<i>Cylindrosporium niveum</i>	On <i>Caltha</i> at Hunto Burn, Birsay
<i>Leptostroma spiraeinum</i>	On <i>Filipendula ulmaria</i> at Binscarth, Firth
<i>Leptothyrium alneum</i>	On <i>Alnus glutinosa</i> at Binscarth, Firth; and as <i>Melasmia</i> at Finstown, Firth
<i>Phoma polygramma</i>	On <i>Plantago</i> at Binscarth, Firth
<i>Phoma</i> sp.	On <i>Festuca ovina</i> at Costa Head, Evie
<i>Phoma</i> sp.	On <i>Plantago lanceolata</i> , Orkney
<i>Phoma</i> sp.	On <i>Festuca</i> , Orkney
<i>Phyllosticta galeopsis</i>	On <i>Galeopsis tetrahit</i> at Finstown, Firth
<i>P. mali</i>	On <i>Pyrus aucuparia</i> at Binscarth, Firth
<i>P. opuli</i>	On <i>Viburnum opulus</i> at Swanbister, Orphir
<i>P. sambuci</i>	On <i>Sambucus nigra</i> , Orphir
<i>P. sylvatica</i>	On <i>Festuca</i> at the Oyce, Firth
<i>P. ulmariae</i>	On <i>Filipendula ulmaria</i> at Binscarth, Firth
<i>Phyllosticta</i> sp.	On <i>Succisa pratensis</i> at Binscarth, Firth and at Durkadale, Birsay
<i>Phyllosticta</i> sp.	On <i>Tussilago farfara</i> at Binscarth, Firth
<i>Phyllosticta</i> sp.	On <i>Ribes nigrum</i> at Finstown, Firth
? <i>Rhabdospora cirsii</i>	On <i>Rumex obtusifolius</i> at Marwick, Birsay
var. <i>rumicis</i>	<i>R. pleosporoides</i> also grows on <i>Rumex</i> and has spores less acicular)
<i>Septoria gei</i>	On <i>Geum rivale</i> at Syradale, Harray
<i>S. heraclei</i>	On <i>Heraclium sphondylium</i> at the Oyce, Finstown, Firth; and at Marwick, Birsay
<i>S. menyanthis</i>	On <i>Menyanthes trifoliata</i> , Birsay
<i>S. hydrocotyles</i>	On <i>Hydrocotyle vulgaris</i> , Orkney
<i>S. prunellae</i>	On <i>Prunella</i> at Ravie Hill, Birsay
<i>S. tanacetii</i>	On <i>Tanacetum</i> , Orphir
<i>S. tormentillae</i>	On <i>Potentilla erecta</i> at Hundland, Birsay

- Septoria* sp. On *Angelica sylvestris* at Loch of Banks,  
Birsay
- Septoria* sp. On *Aegopodium podagraria* at Binscarth,  
Firth

#### MASTIGOMYCOTINA

#### PHYCOMYCETES (OOMYCETES)

- Cystopus cardidus* On *Rhaphanus raphanistrum*, Harray
- Peronospora affinis* On *Fumaria officinalis* at Boardhouse,  
Birsay
- P. alta* On *Plantago major* at Finstown, Firth; and  
Birsay
- P. calotheca* On *Galium aparine*, Birsay
- P. conferta* On *Cerastium vulgatum* at Finstown, Firth
- P. delbaryi* On *Urtica urens* on Links nr Boardhouse  
Loch, Birsay
- P. lamii* On *Stachys palustris* near Finstown, Firth;  
and on *Lamium purpureum*, Birsay
- P. obovata* On *Spergula arvensis* at Finstown, Firth
- P. parasitica* On *Hesperus matronalis* near Finstown, Firth
- tP. polygona* On *Polygonum aviculare* at Ravie Hill and  
Boardhouse, Birsay; Orphir; Bay of Firth,  
Firth; and Stennes
- tP. radii* On *Chrysanthemum segetum* at Finstown,  
Firth; Sandwick; Orphir; and Marwick,  
Birsay
- tP. ranunculi* On *Ranunculus repens* near Finstown, Firth
- P. tomentosa* On *Cerastium glomeratum* at Finstown, Firth
- P. viciae* On *Vicia sepium* at Ravie Hill, Birsay;  
between Birsay and Harray; and at Kirkwall,  
St Ola
- P. violae* On *Viola tricolor* at Finstown, Firth; and  
Stennes
- Plasmopara crustosa* On *Angelica sylvestris* at Finstown, Firth

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Stackaldbrae, Downie's Lane, Stromness.

- Selaginella selaginoides* Lesser Clubmoss. Green Hammars, Hoy 57/20 B.H.T.
- Phyllitis scolopendrium* Hart's-tongue. Ward Hill, Rousay. Conf. old site. E.M.
- Asplenium marinum* Sea Spleenwort. Fitty Hill, Rousay. Conf. old record. E.M.
- A. trichomanes* Maiden-hair Spleenwort. Green Hammars, Hoy 57/20. B.H.T.
- Cystopteris fragilis* Brittle Bladder-fern, Quoyawa, 29th June. Conf. old site; E. side Ward Hill, Rousay and Keirfea, Rousay. Both new sites, E.M.
- Polypodium vulgare* Polypody. Arwick, Evie 57/32; Burn of Clovigarth, Sandwick 57/21 both H.D.S.
- Botrychium lunaria* Moonwort. Quoyloo 57/22. J.F. Brodgar, 57/21 H.J.
- Ophioglossum azoricum* Small Adder's-tongue. Calf of Flotta, East end. RSPB field trip 15th June. Between Watery Geo and Longi Geo, Hoy 39/28 B.H.T. New 10 km record.
- Juniperus communis* Juniper. Shapinsay 57/51. Conf. old record. K.M.
- Ranunculus bulbosus* Bulbous Buttercup. Links, Bay of Skail. New site. E.M.
- R. trichophyllus* Water Crowfoot. Ditch, Snelsetter, Longhope 39/38 B.H.T.
- Thalictrum alpinum* Alpine Meadow-rue. Green Hammars, Hoy 57/20 B.H.T.
- Papaver dubium* Long-headed Poppy. Maeness, Egilsay 57/43; North Ronaldsay 57/75 E.C. South Ronaldsay 39/49. E.C.
- Draba incana* Hoary Whitlow-grass, W. side Ward Hill, Rousay. Conf. old record. E.M.
- Thlaspi arvense* Field Pennycress. Holm 57/50. several sites. E.C. New 10 km record and first Orkney record for about 30 years.
- Arabidopsis thaliana* Thale Cress. Ley House, Hoy. New 10 km record. E.M.
- Silene acaulis* Moss Campion. Lenders Dale, Hoy 57/20. New site. B.H.T.
- Oxalis acetosella* Wood Sorrel. Calf of Flotta and Rysa Little. Conf. old records. RSPB field meetings.
- \**Impatiens glandulifera* Policeman's Helmet. Westray, waste ground. Introduced but probably now counts as a New County Record. Westray SWRI.
- Alchemilla filicaulis* Lady's Mantle. Evie 57/32 and Hurray 57/31. E.C.
- A. glabra* Lady's Mantle. Lenders Dale, Hoy 57/20 B.H.T.
- Rosa mollis* Waulkmill. Orphir 57/30 "Botany Class" det. H.D.S. Conf. old record.
- Sedum rosea* Roseroot. Stanger Head, Westray 57/54, Westray SWRI. New 10 km record.
- Saxifraga stellaris* Starry Saxifrage. Enegers, Hoy 57/20. (two separate gullies). Conf. old record and additional record. E.M.

<i>S. azoides</i>	Yellow Mountain Saxifrage. Green Hammars, Hoy 57/20 B.H.T.
<i>Drosera anglica</i>	Great Sundew. Burn of Lushan 57/32. Conf. 1990 record. More than 50 plants. I & H.S and E.M.
<i>Epilobium hirsutum</i>	Great Willowherb. Stromness 57/20 J.K.
<i>Conopodium majus</i>	Pignut. Queenamidda, Rendall, 57/31. New 10 km record E.M.
<i>Pimpinella saxifraga</i>	Burnet Saxifrage. St. Ola 57/41. Conf. old record. H.D.S.
<i>Euphorbia helioscopia</i>	Sun Spurge. Dounby 57/21. Westray 57/44. E.C.
<i>Polygonum viviparum</i>	Alpine Bistort. Faraclett Head, Rousay 57/43. E.C.
<i>Oxyria digyna</i>	Mountain Sorrel. Green Hammars, Hoy 57/20 B.H.T.
<i>Rumex longifolius</i>	Long-leaved Dock. Bendigo, St. Ola 57/40. Hobbister, Orphir 57/30. Both A.B. New 10 km records.
<i>Betula pubescens</i>	Downy Birch. One small tree, Veau, Stenness 57/30. E.M. Probably the same tree found by Eddie Balfour and Nick Piccozzi in 1971.
<i>Salix herbacea</i>	Least Willow. Kierfea, Rousay. Conf. old (1921) record. E.M.
<i>Arctostaphylos alpinus</i>	Alpine Bearberry. Keirfea, Rousay. New site E.M.; S of The Berry, Hoy 39/28; Sui Fea to Cuilags, Hoy 57/10 and 57/20; Track to Old Man 57/10; Knap of Trowieglen 39/29, all B.H.T.
<i>Vaccinium uliginosum</i>	Bog Blaeberry. Ingsay, Birsay. New 10 km record. E.C.; Loomachuns, Melsetter 39/28. B.H.T. New 10 km record.
<i>Primula veris</i>	Cowslip. Still at Sanday site, 57/64. E.M. (see separate note)
<i>Primula scotica</i>	North Hill, Papa Westray, J.R. Conf. old records.
<i>Calystegia sepium</i>	Bindweed. Westray 57/44. E.C.
<i>Calystegia soldanella</i>	Sea Bindweed. Still at Newark Bay, South Ronaldsay. H.D.S. and E.M.
<i>Sherardia arvensis</i>	Field Madder. Sandwick, inland from Skail. 57/21 W.R. First record this site since 1919.
<i>Galium sternerii</i>	Limestone Bedstraw. Nout Beild and Quoyawa, Hoy 57/20 conf. 1969 record; Naversdale, Orphir 57/30. New site record. Both E.M.; Between Green Hammars and Lenders Fea 57/20. B.H.T.; Vishie Hill, Evie 57/32. H.D.S.
<i>Anchusa arvensis</i>	Bugloss. Holm 57/50; North Ronaldsay 57/75. E.C.
<i>Mertensia maritima</i>	Oyster Plant. Dingieshowe, and Newark Bay, Deerness 57/50. E.R.B. and S.V.G.; Bay of Kirkbist, Westray 57/44. Westray SWRI. All conf. old records.
* <i>Cymbalaria muralis</i>	Ivy-leaved Toadflax. Outside a garden wall, Finstown 57/31 B.H.T. This alien is often planted in gardens. Confirmation of establishment in natural conditions would be necessary to include in the County Flora.
<i>Melampyrum pratense</i>	Common Cow-wheat. Knap of Trowieglen 39/29 B.H.T.
<i>Stachys x ambigua</i>	Hybrid Woundwort. Longhope 39/39. M.E. & F.S.

<i>Glechoma hederacea</i>	Ground Ivy, Rendall 57/41. E.C. Probably an introduction or garden escape.
<i>Littorella uniflora</i>	Shoreweed. South Walls 39/38. M.J.
* <i>Inula helenium</i>	Elecampane. Westray 57/44. Westray SWRI.
<i>Senecio sylvaticus</i>	Wood Groundsel. Rackwick 39/19. New 10 km record. 1st Orkney record since 1956. B.H.T.
<i>Gnaphelium uliginosum</i>	Marsh Cudweed. Eday 57/52; South Ronaldsay 39/48; Rousay, 57/42. E.C.
<i>Aster tripolium</i>	Sea Aster. Longhope. 39/39. M.E. & F.S. Conf. 1986 record.
<i>Chrysanthemum segetum</i>	Corn Marigold. Dounby 57/21. E.C.
<i>Arctium minus</i>	Burdock, Stronsay 57/62. E.C.
<i>Cirsium heterophyllum</i>	Melancholy Thistle. Roadside, Lyness, probably introduced 39/39. Conf. old record. B.H.T.
<i>Saussurea alpina</i>	Alpine Saw-wort. North of Green Hammars, Hoy 57/20. B.H.T.; Keirfea Rousay 57/43. E.M. Conf. old record.
<i>Centauria nigra</i>	Hardheads. Stronsay 57/62. E.C.
<i>Zostera marina</i>	Eelgrass. Stronsay 57/62 E.C.; Bay of Tuquoy, Westray 57/44 E.M.
<i>Isolepis setacea</i>	Bristle Scirpus. Evie 57/33. E.C.
<i>Listera ovata</i>	Twayblade. Berriedale, Hoy 57/20; Harray, 57/31; Rendall 57/32. E.C.
<i>L. cordata</i>	Lesser Twayblade. Pegal Head to Lyrawa Bay, Hoy 39/29 and 39/39. the latter a new 10 km record. B.H.T.
<i>Coleoglossum viride</i>	Frog Orchid. Near Brough of Deerness 57/50, R.W.
<i>Orchis mascula</i>	Early Purple Orchis. Enegars, Hoy 57/10 B.H.T.
<i>Scirpus fluitans</i>	Floating Club-rush. South Walls 39/38. M.J.
<i>Carex extensa</i>	Long-bracted Sedge. Gloop, Deerness 57/50. New 10 km record. B.H.T.
<i>Carex limosa</i>	Mud Sedge. East side Burn of Durkadale 57/32. (1990) M.T. Conf. old record.
<i>Carex curta</i>	White Sedge. Shore of Swannay Loch 57/32. (1990) New Site M.T.
<i>Festuca arundinacea</i>	Tall Fescue. St. Ola 57/40; Birsay 57/22; Lyness, Hoy, E.C.; Hoy 57/20. E.M.
<i>F. tenuifolia</i>	Fine-leaved Sheep's-fescue. Near Loch of Tankerness 57/50 E.C.
<i>Desmazeria marina</i>	Stiff Sand-grass. Aikerness 57/32. Conf. old site but only two plants seen. E.R.B.
<i>Bromus mollis</i>	Soft Brome. (identification not confirmed) Rousay 57/33 E.C.
<i>Koeleria cristata</i>	Crested Hair-grass. Birsay. Quooyloo 57/22 E.C.
<i>Avenula pubescens</i>	Hairy Oat-grass. Cantick Head 39/38 B.H.T.; South Walls 39/38, R.H.
<i>Arrhenatherum elatius</i> var <i>bulbosus</i>	Swinebeads. South Walls 39/38. M.J. New site record; St. Ola 57/40 A.B.; Toab 57/50 (Mr. Pirie, Comloquoy); Shapinsay 57/51 (Mr. J. Skethaway); Redland, Loch of Stenness 57/21; and Queenamidda, Rendall 57/31, both B.R.; Farafield, Birsay 57/32, (Peter Reynolds); Sanday, near airfield 57/64. E.R.B.

<i>Holcus mollis</i>	Creeping Soft-grass. Queenamidda, Rendall, (in vast quantities) New 10 km record. B.R.; Russadale, Stennes 57/30, new site. J.C.
<i>Aira caryophylla</i>	Silvery Hair-grass. Near Loch of Tankerness 57/50 E.C.; By Museum, Lyness 39/39. B.H.T.; Hoxa Head 39/39. E.M.
<i>Agrostis gigantea</i>	Black Bent. Holm. Graemshall 57/40. In barley. G.F.
<i>Agrostis canina</i>	Velvet Bent with viviparus spikelets. Det. J. Trist. Egilsay 57/33. E.McT.

Records by:

Alan Bremner; Elaine R. Bullard; James Cadbury; Elizabeth Charter; J. Fletcher; Graham Fraser; Sydney V. Gauld; Roy Harris; Mary Jones; Helen Judson; Juliet Kepf; E. McTeague; Eric Meek; Kenneth Michie; J. Rendall; Brian Ribbands; W. Robertson; Hugo D. Shearer; C. Stevenson; M. & F. Strudwick; Bernard H.Thompson; R. Wenby; Westray SWRI.

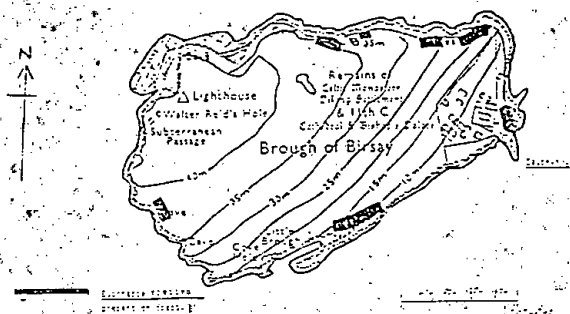
Notes. The results of recording in 1991 have been excellent. Admittedly, the only "finds" which could qualify as New County Records are the rather dubious garden escapes of Ivy-leaved Toadflax and Policeman's Helmet and these should be watched to see if they spread. The latter is now quite common and well naturalised in Caithness. The viviparous Bent caused excitement among grass Referees. It is good to see the Twayblade recovering on roadsides after the vicious verge spraying campaign several years ago but how long will it survive the the now promised four times a year gang mowing? So many field and garden weeds are becoming extinct, so the Thale-cress records and others are good. Don't neglect gardens and fields when recording. The above list includes a number of very valuable British Scarce Species Records, 1992 is the last year for this project.

A small, unusual *Salix* found during a combined NCCS/FFWAG meeting in spring was named by Prof. Meikle as an upright f. of *S. repens*, Creeping Willow.

*Petasites fragrans*, Winter Heliotrope, found originally at roadside near Peerie Sea 1950, seen flowering well in 1971 but now apparently gone from site, has flowered winter 1991/92 in a St.Ola garden.

*Arum maculatum* Lords-and-Ladies, not native in Orkney, but planted in many gardens, Reports from Papa Westray, J.R., and St. Ola, E.R.B. of abundant fruiting.

There has been a special request from Scottish botanists for detailed records of *Listera cordata*, Lesser Twayblade. This tiny, greenish orchid often hides under heather or in clumps of rushes and when not flowering its pair of leaves look like those of a Beech seedling. Information requested includes number in colony, number flowering, and associated species as well as the usual Grid Reference, date, etc. It is probably far more common in Orkney than generally suspected.



## THE COASTAL DISTRIBUTION OF *Euphrasia officinalis* ON THE BROUGH OF BIRSAY.

Clare Croser and Beverley J. Glover.

### Abstract.

Examination of the coastal distribution of *Euphrasia officinalis* revealed that it is commonly found in regions with soils of mildly acidic to neutral pH, protected from excessive exposure to wind and salt spray. This hemiparasitic plant is also associated with suitable host species, such as members of the Graminae, Leguminosae and Plantaginaceae. The result of this survey may have consequences for conservation of endangered plant species.

### Introduction.

The aim of this project was to assess the coastal distribution of *Euphrasia officinalis* Eyebright.

*Euphrasia officinalis* is a small annual member of the Scrophulariaceae, 2 - 3 cms. tall and is commonly found as a hemiparasite on the roots of many species, particularly plants of the Graminae and Leguminosae. *Euphrasia officinalis* is widespread throughout the British Isles, commonly in less fertile habitats in which it adopts a parasitic strategy. There are nineteen subspecies in Britain, seven of which are endemic. However, in mid-June, when this work was undertaken, Eyebright had not yet begun to flower and consequently no attempt was made to distinguish between subspecies.

The field site used was the Brough of Birsay, a small tidal island off the north west coast of mainland Orkney. The island, which is joined to the mainland by a causeway at low tide, consists of tilted flagstone (Bailey, 1971), sloping from cliffs in the west almost to sea level in the east. The north and west of the Brough are exposed to spray from the Atlantic Ocean, while the south and east are protected by the Bay of Birsay.

### Materials and Methods.

Quadrats of area 0.25 square metres were sampled at set intervals (24 strides/approximately 22 metres) around the circumference of the island.

In each quadrat the presence or absence of other species, percentage ground cover, soil pH and occurrence of rabbit pellets were also noted.

### Results.

A Chi Squared analysis was conducted on the results of pH testing, using the ranges shown in Table 1. This was to test for any association between soil acidity and the presence or absence of *Euphrasia officinalis*. Soil pHs ranging from 3 to 7.8 were observed on the island.

Null Hypothesis = pH does not affect distribution of *Euphrasia officinalis*

O = Number of Quadrats Observed Containing *Euphrasia officinalis*

E = Number of Quadrats Expected to Contain *Euphrasia officinalis*

Table 1 : Chi Squared Analysis of pH.

pH Range	Observed	Expected	$\frac{(O - E)^2}{E}$
3 - 3.95	0	2.8	2.80
4 - 4.95	0	2.8	2.80
5 - 5.95	8	2.8	9.66
6 - 6.95	4	2.8	0.51
7 - 7.95	2	2.8	0.23
Total :	14	14	16

For 4 degrees of freedom at the 95% confidence level, the tabulated value of Chi Squared is 9.5. Since 16 is greater than this, the null hypothesis can be rejected, according to this method of analysis. Hence it can be stated that pH does affect the distribution of *Euphrasia officinalis*. It is clear from Table 1 that *Euphrasia officinalis* is adapted to less acidic soil than was usual on the Brough.

Table 2, Column (a), shows the relative percentage frequencies of all the other plant species found in the 84 quadrats composing this study. Column (b) shows the relative frequency of species in the subset of quadrats (n = 14) which contained *Euphrasia officinalis*. Column (c) indicates species with a positive association ( $p < 0.01$ ) with *Euphrasia officinalis*.

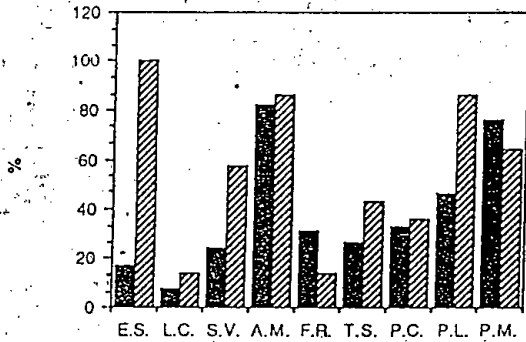
Table 2. Percentage Occurrences of Plants in Quadrats.

Species	(a)	(b)	(c)
	(n = 84)	(n = 14)	
<i>Euphrasia officinalis</i>	17	100	-
<i>Lotus corniculatus</i>	8	14	ns
<i>Scilla verna</i>	24	57	+ve
<i>Armeria maritima</i>	82	86	ns
<i>Festuca rubra</i>	31	14	-ve
<i>Trifolium sp.</i>	27	43	+ve
<i>Plantago coronopus</i>	33	36	ns
<i>P.lanceolata</i>	46	86	+ve
<i>P.maritima</i>	76	64	ns

A bar chart is shown below, labelled Figure 1, which presents this data more clearly.

Figure 1 : Relative Frequency of Plants in Quadrats.

■ : in all quadrats (n = 84)  
 ▨ : in quadrats containing *E. officinalis* (n = 14)



Plant

- E.S. = *Euphrasia officinalis*
- L.C. = *Lotus corniculatus*
- S.V. = *Scilla verna*
- A.M. = *Armeria maritima*
- F.R. = *Festuca rubra*
- T.S. = *Trifolium sp.*
- P.C. = *Plantago coronopus*
- P.L. = *Plantago lanceolata*
- P.M. = *Plantago maritima*

A Chi Squared analysis found, as Figure 1, column (c) suggests, that *Plantago lanceolata*, *Trifolium sp* and *Scilla verna* are significantly positively associated with *Euphrasia officinalis*, while *Festuca rubra* has a significant negative association with *Euphrasia officinalis*.

Percentage ground cover and occurrence of rabbit pellets were not found to affect the distribution of *Euphrasia officinalis*. It was concluded that rabbit pellets were not important because a hemiparasite such as *Euphrasia officinalis* is capable of surviving in nutrient poor soil, provided suitable hosts are available. It is thought that percentage ground cover was found to be insignificant because the category was itself ill-defined. That is to say that there are a number of reasons for reduced ground cover each of which would produce different effects.

The areas in which *Euphrasia officinalis* was found were mainly in the south and east of the island (see map). It was not known whether this was due to altitude or other factors relating to exposure such as soil pH. To

resolve this, exposed and sheltered quadrats were sampled on the coast of mainland Orkney, above and below the highest point of the island. In sheltered, low-lying sites *Euphrasia officinalis* was present in the majority of quadrats, and also in sheltered high level sites. However, in exposed low lying areas, *Euphrasia officinalis* was only present in 20% of the quadrats sampled. This suggests, therefore, that it is not altitude, but exposure related factors which limit the distribution of *Euphrasia officinalis*.

#### Discussion.

The results of the pH analysis indicate that *Euphrasia officinalis* does not occur on very acid soil. It is found on soils of pH 5.3 and above, tending towards neutral, but since no sites were tested with pHs of above 7.8, no conclusions can be drawn in relation to alkaline soils.

It is not known what the relationship might be between *Euphrasia officinalis*, *Scilla verna*, and *Plantago lanceolata*. It is possible that the three species share similar niches. The positive association of *Trifolium sp.*, Leguminosae, with *Euphrasia officinalis* is in agreement with several reports (Fitter, 1987 and Grime, Hodgson & Hunt, 1990) of the parasitic nature of *Euphrasia officinalis* and its "preference" for this family as hosts. *Lotus corniculatus*, although not significantly associated with *Euphrasia officinalis* appears to share a similar pH and exposure band. It is not known why *Festuca rubra* is negatively associated with *Euphrasia officinalis*. It is possible that competitive exclusion is responsible but more research is required on this association.

In conclusion, then, the results of this study suggests that *Euphrasia officinalis* is best adapted to soils of mildly acidic to neutral pH, protected from excessive exposure to wind and salt spray and associated with suitable host species.

It has been observed previously that many rare plants share a similar habitat to *E. officinalis*. Thus the results of this study should be used to determine suitable sites for the introduction of such plants. *E. officinalis* is usually found in sites where *Primula scotica*, an endangered species, occurs (Bullard, pers. comm.) Thus *E. officinalis* could be used as an indicator species when determining sites for the reintroduction of *Primula scotica*. However, very little information is available on this association and further research is required.

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Submitted, 31/1/92.

COWSLIPS AND FALSE OXLIPS AT AIKERNESS, 1991.

Hugo D. Shearer.

*Primula veris*, the Cowslip, is widespread in the south and east of England. It becomes much scarcer in Scotland and in Orkney it is quite rare, confined to four or five sites of which Aikerness is one.

The fortunes of this colony have fluctuated. Being close to the footpath to the Broch of Gurness it has long been vulnerable to acquisitive gardeners and the construction of the new road and parking place destroyed many plants.

Luckily some plants survived and the colony now shows a remarkable recovery. Furthermore, it has hybridised with *P. vulgaris*, the Primrose, and a number of the hybrid, the False Oxlip are also present.

The mixed colonies now extend from the vicinity of the old car park above the mouth of the burn, through to the new car park, on the site managed by the D.O.E. (the plants are avoided during mowing) through to the sea banks on the far side.

The numbers of plants seen at separate points in 1991 were:

- 1) 130 Cowslips, Two clumps of Primroses on the opposite side of the burn.
- 2) 235 Cowslips, 12 False Oxlips, a small patch of Primroses.
- 3) No Cowslips but abundant Primroses.
- 4) 37 Cowslips,
- 5) 10 Cowslips, 17 False Oxlips, 6 clumps of Primroses.
- 6) 29 Cowslips.
- 7) 5 Cowslips, 34 False Oxlips, Plentiful Primroses.
- 8) 3 Cowslips, 7 False Oxlips, Plentiful Primroses.

BOTANY CLASS.

Elaine R. Bullard.

The Class meets on Saturdays between 10.30 and 12.30 and in inclement weather works indoors with text books, dissecting stands etc. 'phone Kirkwall 872792 for further information.

AMPHIBIA records.

C. J. Booth

*Bufo bufo* Common Toad.

Tadpoles were seen in a small pool near Rackwick, Hoy on 19/5/91. A dead adult toad was found on the road into Rackwick on 4/8/91. As this species is becoming rarer in Orkney, all records would be welcome, in order to obtain some idea of its present status.

*Rana temporaria* Common Frog.

Frog spawn was found in a garden pond at Weyland, Kirkwall, 30/3/91. Frogs have been released in this garden over several years (J. R. L. Hogarth).

ODONATA (Dragonflies) 1991.

Apart from the records maintained by myself on Hoy, records were received from Ian Sims, the RSPB Mainland Warden, and from Elizabeth Charter, FFWAG.

*Pyrhosoma nymphula* (Sulzer) Large Red Damselfly.  
Three newly emerged flies were seen near the Sandy Loch, Hoy, on 27/5/91. This was the first date and a relatively early one. As always on Hoy, there were many occupied breeding sites. However, there were four new sites discovered: between the Glifters of Lyrava and Pegal, 39/263988; Vow Randie, 57/2600; Back Saddles, 57/1903; all K.F.; Water of Hoy, 39/281998, E.C. It seems probable that in favourable years, all the hill lochan clusters on Hoy will provide suitable breeding sites. On Mainland, 30/5/91 was the first date for flies on the wing. This species was recorded at nine sites by I.S., four of which were new sites (indicated with \*). None of the records were accompanied with a map reference, the entries are my own. The first seven sites are on the RSPB Birsay Moors Reserve: Muckle Billia Field\*, 57/3523; Starra Field\*, probably 57/3523; Starling Hill\*, probably 57/4322; Burn of Lushan, 57/3323 or 57/3423; Bugar Hill, (probably Lowrie's Water) 57/3425; Glims Moss, probably 57/3123; Burn of Ennisgeo\*, 57/3326 or 57/3325. Breeding was also confirmed at two established sites on the RSPB Hobbister Reserve: Swartabek Burn, 57/3808, and the Lochs of Griffyelt, 57/4006, an excellent damselfly site.

*Enallagma cyathigerum* (Charpentier) Common Blue Damselfly.  
On Hoy, all the established sites were occupied. There are far fewer sites than for the very widespread *Pyrhosoma nymphula*. Three new breeding sites were discovered: Lochs of Grut Fea, 57/199015; Burn of Bailliees reservoir, 39/279962, both K.F.; Water of Hoy, 39/281998, E.C. The continued presence of this species on the Loch of Sockness, Rousay, 57/450330 was confirmed by E.C. Similarly, occupation at the Lochs of Griffyelt, 57/4006, was proved by I.S. who on 4th August counted 159 flies including 100 males, 1 female and 29 pairs in tandem. He also witnessed females ovipositing.

*Ischnura elegans* (van der Linden) Blue-tailed Damselfly.  
As has been the case on Hoy for a number of years, this species was recorded in low numbers at one site only: the Mill Burn pool, 39/2995. The continued presence on the Loch of Watten, Egilsay, 57/4631, was proved by E.C. A new site was found on Mainland by I.S.: the pool below the three-blade windmill, Bugar, 57/3426, where a single male was seen on 4th August.

*Sympetrum danae* (Sulzer) Black Darter.  
Recorded in reasonable numbers at just two sites on Hoy: the pool in Rackwick, 39/2099, and near the Moss of Whitestones, 39/2199.

*Cordulegaster boltonii* (Donovan) Golden-ringed Dragonfly.  
Recorded at just two sites on Hoy but one of these was a new site, Red Glen, 57/252012.

*Aeschna juncea* (L.) Common Hawker.

Recorded only on Hoy between the dates 6/7/91 and 19/9/91. Recorded at seven breeding sites, all of which are long-established.

*Libellula quadrimaculata* (L.) 4-Spot Chaser.

This extremely scarce insect was not seen this year at the single, established breeding site on Hoy.

ORTHOPTERA (Grasshoppers etc.) 1991.

*Chorthippus parallelus* (Zetterstedt) Meadow Grasshopper.

A new colony was discovered by K.F. on 27/7/91 on the grass/heather slopes between the Berriedale and Segal burns, 57/202017. The extent and density of the colony is yet to be determined. This is over 10 km distant from any of the other known colonies and is an exciting find.

*Omocestus viridulus* (L.) Common Green Grasshopper.

There were no records at all this year at the only known Orkney site, Rackwick. I heard no stridulation and did not receive any reports of such from Rackwick residents.

COLEOPTERA (Beetles).

*Coccinella septempunctata* (L.) 7-Spot Ladybird.

First record at Orphir School, c. 1/6/84.

Burst of migrants from 18/3/90, recorded Orphir; Holm; Finstown; Kirkwall. One record without details, 1991.

*Dytiscus marginalis* L. Great Diving Water Beetle.

23/8/89, one at Orphir bounced off the wet roof of a car, R. I. Lorimer; Mid-August, 1991, one at Cleat, South Ronaldsay; 21/10/91, one. Also recorded on Hoy; dates not available.

*Strangalia quadrifasciata* L. A Longhorn Beetle.

17/8/91, one at Sanday Schoolhouse, Tristan Thorne. 1st Orkney record.

*Dermestes maculatus*. DeGeer.

Late July/early August, brought in with timber to Kirkwall.

*Chrysolina helleseini* (L.) One found at Yesnaby. (Further details later).

*Stegobium panicum* (L.) Drug Store Beetle.

October 1982, brought up from N. London accidentally in soup powder, eradicated, R. I. Lorimer.

*Ptinus* sp. (Not *P. fur*). Details next report.

These beetles are all new species for Orkney, and with the exception of *C. septempunctata* and *C. helleseini*, previously known as *C. latecinata* (Donaldson) are not listed in Berry, (1985): *The Natural History of Orkney*.

Please could you send all 1992 records for all species to Keith Fairclough, Viewforth, Swannay, Evie. (Tel, Birsay 210), giving date, numbers present, activity, Grid Reference, etc.

A visitor to the islands cannot hope to produce a complete list of the two-winged flies, or Diptera of Orkney. There are too many species and habitats and this can be done properly only by a resident who knows the islands well. There are particular places which, because of their fauna, stay for long in the visitor's mind. These are habitats that clearly would reward further study. The sea-shore is one such place, famous in the writings and the work of Robert Rendall, but an unusual habitat for flies as well.

One day in June 1986 the beach at Whitemill Bay on Sanday was covered by hundreds of the tiny empid fly *Chersodromia arenaria* Hal., disturbed from the sand and running about in the tyre marks where a tractor had been driven across the beach. These predacious empids have a sharp proboscis pointing downward beneath the head. This little fly was also found in the shell sand beach in the Bay of Otterswick and of Lopness, and on Westray below the airport, on the sands of the Bay of Holland, Stronsay, and running over the rocks on the beach at Linklet Bay on North Ronaldsay. The fly has small wings and its flight muscles can degenerate so that it is incapable of flight. Two other species of these little *Chersodromia* empids have been found in Orkney: *C. hirta* Walk. from a pebbly beach below Otterswick on Sanday and *C. incana* Hal. from amongst marram grass higher up the beach at Westray. Nothing is known about the life history of these species and a study of their ecology could be very rewarding.

On some of the larger rocks within the tideline you might see some of the males of the dolichopodid genus *Aphrosylus* flashing their silver palps in the sunshine "a pair of tiny signal lamps as they run over the wet rocks". One of the larger species *A. raptor* Hal. is found on the rocks at the Point of Buckquoy, north Mainland (July 1981) and several males and females of the smaller species *A. ferox* Hal. were found on the rocks in the sea below Weland on Shapinsay in July 1985. Rock pools also carry other predacious dolichopodid flies which row across the surface film like a pond skater, and *Hydrophorus præcox* Lehm. has been found commonly on the rock pools on the west coast of North Ronaldsay, on pools at the foot of the Red Head on Eday, and stranded by the tide in the Ouse on Westray, all in June.

Another predator of the seashore is a larger empid *Rhamphomyia morio* Zett., which was found unexpectedly on the pebble ridge, in late June 1986, which carries the road out to the lighthouse, at Start Point on Sanday. The fly was found again on a similar pebble ridge running out to the prehistoric house on Quoyness, and on pebbles above the shore below the sheep wall on the easterly side of North Ronaldsay. Almost identical habitats were found the next year in Shetland and the fly is known also from the Outer Hebrides and St. Kilda, as well as by the sea and high on the mountains in Scotland, and more recently from the high ground in the north of England. Most of its relatives (other species in the subgenus *Alpinomyia*) are found on the Alps in central Europe. The maritime and montane distribution of *R. morio* in Britain resembles that of plants such as sea thrift, sea campion and sea plantain, which are also found on mountains, and these plants are believed to be relicts from a wider distribution in the colder conditions of past glaciation. Again, nothing is known about this empid's life history or why it is found in such exposed

places by the sea. The adult fly catches rock pool midges *Halocladius*, the fever fly *Dilophus femoratus* Mg. and the kelp fly *Coelopa frigida* Fab. and, as with other species of *Rhaphomyia*, the prey appears to be presented by the male to the female as a courtship present, but more observations are needed on this on the islands.

Two other predacious flies are found on the shore. These are the ones that as you approach them on the sands, or on the rocks, they fly just a short distance away, and repeat this if you try to capture them, leading a merry dance along the shore. Both flies are related to the yellow dung fly *Scathophaga stercoraria* L. but are much duller in colour. The more common species on Orkney is *Ceratinostoma ostiorum* Curt. This has been taken with a kelp fly *Coelopa* as prey on the sea wall at Otterswick on Sanday but the fly is also found on the beaches of North Ronaldsay, Shapinsay and Westray. *Scathophaga calida* Curt. has been found on the beach on North Ronaldsay and on Stronsay, and both of these scathophagid beach flies travelled on the ferry from Kirkwall to Stronsay in May 1988.

The rock pools around the coast produce the chironomid midges *Halocladus fucicola* Edw. (Birsay, North Ronaldsay) and *H. variabilis* Staeg. (North Ronaldsay, Stronsay, Westray) and the larvae can be seen in pools high above the tideline with the pupal skins floating at the water surface. If you turn over the seaweed swept up by the waves, as well as the kelp flies *Coelopa* (which are also abundant on Umbelliferae growing by the shore), you will disturb many small flies the size of *Chersodromia* but belonging to the lesser dung fly family Sphaeroceridae. This is *Thoracochaeta zosteræ* Hal., a fly that has the anterior bristles on the thorax turned inwards. It breeds in decaying seaweed and has been found widely in Eday (Otter Pool), North Ronaldsay (Links), Sanday (Otterswick, Lopness Bay), Stronsay (St. Catherine's Bay, Holland), Westray (Bay of Cleat). This little fly was also a traveller in the cabin of the Stronsay ferry in 1988. These seaweed flies form much of the prey of the predacious species on the shore and they are also parasitized by the small parasitic wasps *Kleidotoma subspecta* Walk. (Sanday, Shapinsay) and *Platymischus dilatatus* Wstw. (Sanday). The seaweed also attracts a muscid fly with unusually small eyes *Fucellia fucorum* Fall. which was found on North Ronaldsay (June and September) and on Westray (June), and the fly is also attracted to the flowers of Umbelliferae near the shore.

Where sheep or cattle come down to the shore, the yellow dung fly *Scathophaga stercoraria* is conspicuous (Mainland, Eday, North Ronaldsay, Papa Westray, Sanday, Stronsay, Westray) and the less hairy *S. furcata* Sey. (Red Head on Eday, Holland on Stronsay). Many more species of the smaller lesser dung flies can be found, especially where a stream comes down across the beach. The Links on the east bay of North Ronaldsay is maritime grass land grazed by sheep and the following sphaerocerid flies were found there in September, 1989: *Lotophila atra* Mg. (also Eday, Stronsay, Westray), *Sphaerocera curvipes* Latr., *Leptocera lutosa* Stenh., *Minilimosina vitripennis* Zett. (also Eday, Stronsay), *Spelobia clunipes* Mg. (also Eday, Papa Westray, Sanday, Stronsay), *S. rufilabris* Stenh. (also Stronsay), *Telomerina pseudoleucoptera* Duda. Other species from the maritime grassland were fragile Nematocera such as *Dixella martinii* Peus. (also from Stronsay), *Erioptera stictica* Mg. (also from Noup Head, Westray), *Pericoma nubila* Mg. (also from Stronsay), *Smittia praetorum* Goet. (also

from Mainland and Stronsay), and *Bradysia fimbricauda* Tuom. (also from Eday). Other predacious species were present in the maritime grassland near freshwater, such as the empids *Dolichocephala guttata* Hal. and *Clinocera stagnalis* Hal. (also Eday, Stronsay, Shapinsay and Westray), the dolichopodids *Dolichopus brevipennis* Mg. (also Sanday and Westray), *D. plumipes* Scop. (also Mainland, Eday and Westray), *Syntorum pallipes* Fab. (also Mainland, Eday, Stronsay, Westray), and *Campsicnemus armatus* Zett. (also Shapinsay and Westray), and *Sympycnus desouteri* Par., and the muscids *Coenosia pumila* Fall. (also Eday) and *C. tricolor* Zett. (also Stronsay). The meadow around the lighthouse above the cliffs at Noup Head on Westray had a very similar fauna to the Links at sea level on North Ronaldsay (*E. stictica* and *S. pallipes* for instance) indicating the effect of salt spray on the islands.

Lastly the wall or bank to the beach provides protection from the wind, or a sunning place for some of the species, as well as nectar sources, such as the umbelliferae and buttercups. The little grey and black muscid *Dexiopsis lacteipennis* Zett. sits regularly (June 1986, September 1989) on the wall at the old ferry, Bride's Noust, on North Ronaldsay, and the walls around the islands shelter many chironomid midges: *Chironomus aprilius* Mg. (North Ronaldsay, Stronsay), *Tanytarsus gracilentus* Holm. (North Ronaldsay), *Micropectra aristata* Pind. (Eday), *M. fusca* Mg. (Eday), *M. atrofasciata* Keiff. (North Ronaldsay), as well as the difficult genus *Metriocnemus*. The small grey and orange *Xanthempis punctata* Mg. feeds frequently on buttercups, not only on the shore but inland along the road (Mainland, North Ronaldsay, Sanday and Westray). This fly feeds also on the flowers of Umbelliferae, as do many other species. A collection made of the flies feeding at Scarfhall Point, Westray, on 29 June, 1985 contained *X. punctata*, *Scathophaga stercoraria* and *Coelopa frigida* mentioned already, *Scatopse notata* L. (also Eday, North Ronaldsay, Sanday and Stronsay), the hover fly *Eristalis arbustorum* L. (also Mainland, North Ronaldsay, Sanday, Shapinsay, Stronsay and Westray), the muscid flies *Azelia cilipes* Hal., *Fannia similis* Stein, *Hebecnema umbratica* Mg. (also North Ronaldsay and Stronsay), *Hydrotaea dentipes* Fab. (also Mainland, Eday, Stronsay), *Morellia hortorum* Fall. (also Mainland), and *Myiospila medietabunda* Fab. (also Mainland, Eday and Stronsay), and the blowflies *Cynomya mortuorum* L. (also Mainland, Eday, Stronsay and Rousay), *Bellardia pusilla* Mg. (also North Ronaldsay, Sanday and Stronsay), *Calliphora vicina* Rob.-Des. (also Mainland, Eday, North Ronaldsay, Sanday, Stronsay) and *C. uralensis* Vill. (also Eday, North Ronaldsay, Sanday and Stronsay). These last two species are the well-known blowflies or bluebottles familiar to most homes. However, *C. uralensis* is very uncommon south of Orkney, Shetland, the Outer Hebrides and northern Scotland, with a few coastal localities further south in Scotland and Ireland. Its range is from Iceland across through Finland to Russia (as its name suggests) and it is one of the relatively few subarctic species in the British fauna. In the islands, *C. uralensis* tends to outnumber the more widespread *C. vicina* on the shore, sitting on rocks, retaining walls, fish boxes and similar places in the sunshine, and it appears to be associated with rabbit burrows and bird cliffs. But it would be nice to know more about this "rare" northern species which is quite common and almost unique as a domestic blowfly on the islands, in comparison with the situation in the rest of the British Isles.

Some of the species in the last paragraph have come over the wall and onto the beach, some breeding in freshwater and others breeding in cow pats or dead bodies and garbage. The beach is complicated enough. Over the wall there are habitats like the Loons, Red Head, Meikle Water, the various Ward Hills, in addition to farmland and the woods of Hoy, which provide other habitats for the flies of Orkney. Many other species can - and will - be found there.

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DIPTERA

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Order follows that of Kloet, G.S. & Hinks, W.D. (1975) : *A Checklist of British Insects, Diptera and Siphonaptera*. Handbooks for the Identification of British Insects. 11: (5)

+ Previously recorded from Hoy in the unpublished records of the Newcastle University Hoy Invertebrate Survey, 1975-1983.

\* Previously recorded from Orkney, Meeuse, A.D.J. in Berry, R.J. (1985) : *The Natural History of Orkney*, Collins, London

NEMATOCERA

TIPULIDAE Crane Flies  
*Erioptera stricta* (Meigen)

The Links, North Ronaldsay;  
Noup Head, Westray.

PSYCHODIDAE Moth Flies  
*Pericoma nubila* (Meigen)

The Links, North Ronaldsay.

DIXIDAE Gnats  
*Dixella martinii* Peus

The Links, N. Ronaldsay. St.  
Catherine's Loch, Stronsay.

CHIRONOMIDAE Non-biting Midges  
*Halocladus fucicola* (Edwards)  
*H. variabilis* (Staeger)  
*Smittia pratorum* (Goetghebuer)

Birsay; North Ronaldsay.  
N. Ronaldsay; Stronsay; Westray.  
The Links, North Ronaldsay;  
Mainland; Stronsay.  
North Ronaldsay; Stronsay.  
Eday.  
North Ronaldsay.  
Eday.  
North Ronaldsay.

*Chironomus aprilius* Meigen  
*Microspectra aristata* Pinder  
*M. atrofasciata* Keiffer  
*M. fusca* (Meigen)  
*Tanytarsus gracilentus* Holmgren

BIBIDONIDAE St Mark's Flies.  
+*Dilophus femoratus* Meigen

Skara Brae, Mainland; Start  
Point, Sanday; Cemetary, Eday;  
North Ronaldsay.

SCIARIDAE Fungus Gnats <i>Bradisia fimbriata</i> Tuomikoski	The Links, North Ronaldsay.
SCATOPSIDAE + <i>Scatopse notata</i> (L.)	Scarfhall Point, Westray; Eday; N. Ronaldsay; Sanday; Stronsay.
BRACHYCERA	
EMPIDIDAE <i>Chersodromia arenaria</i> (Haliday)	Whitemill Bay, B. of Otterswick & B. of Lopness, Sanday; Westray; B. of Holland, Stronsay. Bay of Otterswick, Sanday. Westray.
<i>Ch. hirta</i> (Walker)	Start Point, Sanday; North Ronaldsay.
<i>Ch. incana</i> Haliday	Mainland; N. Ronaldsay; Sanday; Scarfhall Point, Westray.
<i>Rhempomyia morio</i> Zetterstedt	The Links, North Ronaldsay. The Links, N. Ronaldsay; Eday; Stronsay; Shapinsay; Westray.
+ <i>Xanthempis punctata</i> Meigen	The Links, North Ronaldsay; Sanday; Westray
<i>Dolichocephala guttata</i> (Haliday)	The Links, North Ronaldsay;
<i>Clinocera stagnalis</i> (Haliday)	Mainland.
DOLICHOPODIDAE <i>Dolichopus brevipennis</i> Meigen	North Ronaldsay; Red Head, Eday; The Ouse, Westray
+ <i>D. plumipes</i> (Scopoli)	Weyland, Shapinsay Point of Buckquoy, North Mainland
<i>Hydrophorus praecox</i> (Lehmann)	The Links, N. Ronaldsay; Eday; Mainland; The Noup, Westray
<i>Aphrosylus ferox</i> Haliday	The Links, North Ronaldsay; Shapinsay; Westray
<i>A. raptor</i> Haliday	The Links, North Ronaldsay
+ <i>Syntormon pallipes</i> (Fabricius)	The Links, North Ronaldsay
<i>Campsicnemus armatus</i> (Zetterstedt)	
+ <i>Sympycnus desoutteri</i> Parent	
CYCLORRHAPHA	
SYRPHIDAE Hover Flies * <i>Eristalis arbustorum</i> (L.)	Mainland; North Ronaldsay; Sanday; Shapinsay; Stronsay; Scarfhall Point, Westray
COELOPIDAE Kelp Flies * <i>Coelopa frigida</i> (Fabricius)	Otterswick, Sanday; Scarfhall Point, Westray
SPHAEROCERIDAE Lesser Dung Flies <i>Sphaerocera curvipes</i> Latreille <i>Lotophila atra</i> (Meigen)	The Links, North Ronaldsay Eday; Stronsay; Westray; The Links, North Ronaldsay
<i>Thoracocheata zosterae</i> (Haliday)	Otterpool, Eday; The Links, North Ronaldsay; Otterswick & Lopness Bay, Sanday; Bay of Cleat, Westray
* <i>Leptocera lutosa</i> (Stenhammar)	The Links, North Ronaldsay

*Spelobia clunipes* (Meigen)

*S. rufilabris* (Stenhammer)

*Telomerina pseudoleucoptera* (Duda)

*Minilimosina vitripennis* (Zetterstedt)

CALLIPHORIDAE Blow Flies

\**Calliphora uralensis* Villeneuve

\**C. vicina* (Robineau-Desvoidy)

\**Bellardia pusilla* (Meigen)

\**Cynomya mortuorum* (L.)

SCATHOPHAGIDAE Dung Flies

*Scathophaga calida* Curtis

\**S. furcata* (Say)

\**S. stercoraria* (L.)

*Ceratinostoma ostiorum* (Curtis)

ANTHOMYIIDAE

*Fucellia fucorum* (Fallén)

MUSCIDAE House Flies

*Fannia similis* (Stein)

\**Morellia hortorum* (Fallén)

\**Azelia cilipes* (Halliday)

*Hydrotaea dentipes* (Fabricius)

\**Hebecnema umbratica* (Meigen)

\**Myiospila mediatibunda* (Fabricius)

*Dexiopsis lacteipennis* (Zetterstedt)

*Coenosia pumila* (Fallén)

*C. tricolor* (Zetterstedt)

HYMENOPTERA Ants, Bees, Wasps

EUCOILIDAE Parasitic Wasps

*Kleidotoma subaptera* (Walker)

DIAPRIIDAE Parasitic Wasps

*Platymischus dilatatus* Westwood

SCIARIDAE Fungus Gnats

*Bradisia fimbriata* Tuomikoski

Papa Westray; Sanday; Stronsay;

The Links, N. Ronaldsay; Eday.

Stronsay; The Links, North

Ronaldsay

The Links, North Ronaldsay

Eday; Stronsay; The Links, North

Ronaldsay

Scarfall Point, Westray; Eday;

N. Ronaldsay; Sanday; Stronsay

Scarfall Point, Westray; Mainland

Eday; North Ronaldsay; Sanday;

Stronsay

Scarfall Point, Westray; North

Ronaldsay; Sanday; Stronsay

Scarfall Point, Westray; Mainland;

Eday; Rousay; Stronsay

North Ronaldsay; Stronsay.

Red Head, Eday; Holland, Stronsay

Mainland; Eday; North Ronaldsay;

Papa Westray; Sanday; Stronsay

Scarfall Point, Westray

Otterswick, Sanday; N. Ronaldsay

Shapinsay; Westray

North Ronaldsay; Westray

Scarfall Point, Westray

Scarfall Point, Westray

Scarfall Point, Westray; Mainland

Scarfall Point, Westray; Mainland;

Eday; Stronsay

Scarfall Point, Westray

Scarfall Point, Westray;

Mainland; Eday; Stronsay

Bride's Noust, North Ronaldsay

The Links, North Ronaldsay; Eday

The Links, North Ronaldsay;

Stronsay

Sanday; Shapinsay

Sanday.

The Links, North Ronaldsay.

There were the following reports of bats during 1991. None was critically examined in the hand but it is very probable that the records, at least from Stromness, refer to *Pipistrellus pipistrellus*, the Pipistrelle bat. 13/4/91. 1 North Ronaldsay. (North Ronaldsay Bird Observatory). From June to August bats were seen regularly at Melsetter, Hoy, with at least four being seen together. (Miss E. Seatter). 1/7/91. 1 Ley House. Hoy. (K. Fairclough). 18/8/91. 1 seen clinging to the wall of St. Peter's Church, Skail, Deerness. (D. Foubister).

Bats were reported during the summer from Stromness in the Franklin Road (I MacInnes) and Back Road (B. Wilson) areas. One was seen flying at the Hillside Road on 12/9/91 at 20.30 hrs.

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*Sericomyia lappona* (L.)

R. H. Andrew

(Diptera: Syrphidae) A wasp-mimic hoverfly new to Orkney.

While prospecting the Durkadale Orkney Field Club tree nursery and adjacent RSPB reserve on 12th May 1991 in preparation for a forthcoming Juniors event, I noticed a striking wasp-like hoverfly by the banks of the Durkadale burn. (GR 303248). Being a characteristically wet, cold day, it was possible to encourage the fly to slowly enter a tube without flying off. Looking superficially like a smaller specimen of the widely encountered *Sericomyia silentis* (Harris), often to be seen about boggy localities and peat cuttings, the fly proved to be a female of the more scarce *Sericomyia lappona*.

Both *S. silentis* and *S. lappona* have bluish-black bodies with yellowish legs and abdominal markings, in *S. lappona* the three interrupted transverse bands are narrower and paler. Both *S. silentis* and *S. lappona* have long-tailed or "rat-tailed" maggots which develop in decomposing peat sods and in peat banks. Records for *S. lappona* are widespread in Britain and Ireland but sparse, this is the first record for the species in Orkney of which I am aware.

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## Postscript!

I am indebted to Ian Lorimer who has drawn my attention to a previous Orkney record for *S. lappona* queried by Grimshaw (1905) *Ann. Scot. Nat. Hist.*, 22), the presence of this species can now be confirmed. Further

investigation will probably reveal *S. lappona* occurring in other suitable localities elsewhere in Orkney. Mention of the old record is made in a recent paper on hoverflies in the Northern Isles by a contributor to the present *Supplement*, Dr. B. R. Laurence (1991, *Dipterists Digest*, 8 : 15-16).

With Ian's help, an up to date list of Orkney Syrphidae incorporating all known records will appear in the 1993 *Supplement*.

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RECENT ADDITIONS TO THE ORKNEY CADDIS FLY FAUNA R. H. Andrew.

Introduction.

J. D. Walker lists 48 species of Orkney caddis fly in Berry, R.J. (1985) Collins *The Natural History of Orkney*.

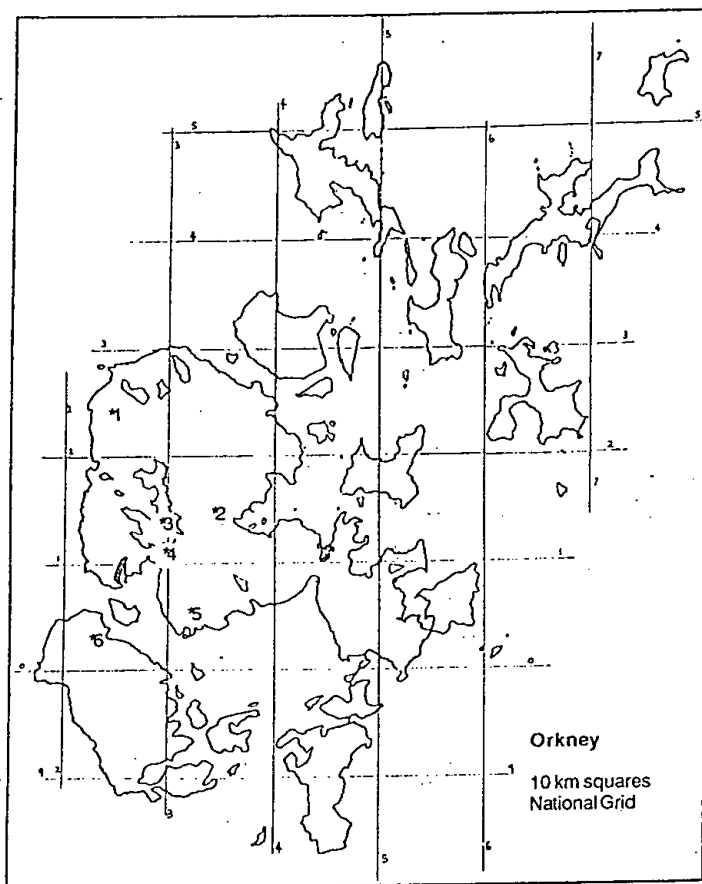
In 1986 and 1987 I undertook a survey using ultra-violet light and Malaise net trapping of Orkney caddis flies for the purpose of recording adult flight periods. The 18 species of caddis recorded in Orkney for the first time as a result of the survey and subsequent work are listed, together with some notes on their status. None of the newly recorded species is rare in terms of their occurrence within the UK, *Apatania wallengreni* is described as locally common by Wallace (1980).

Five trap sites were located on the Orkney mainland and one in Hoy, see map.

The five mainland sites were at The Loons, GR 57/242241; the Loch of Wasdale, GR 57/342144; the Loch of Harray, GR 57/296133; 500m from the Loch of Stenness, GR 57/305116 and Scorradale, Orphir, GR 57/325054.

Wasdale is a small, shallow, partially oligotrophic loch with very little emergent vegetation, the trap site was located at the water margin by the outflow leading to a moderately fast-flowing rocky stream. Harray is a very large, shallow, eutrophic loch with abundant weed and some emergent vegetation; light and Malaise traps were located at the water margin. The Stenness trap site was located in a garden with no large trees or shrubs, approximately 500m from the Loch of Stenness, a brackish water loch connecting to the sea and, in turn, to the Harray Loch. In Orphir, the trap site was located in an established garden with trees and shrubs, at 61m asl, this was the highest fixed trap site. The Loons is an extensive marshland (fen) area adjacent to the Loch of Isbister and is enclosed in a basin of low hills and old peat cuttings, there is a reasonably extensive *Phragmites* bed present. The Loons light trap site was located by the road (see Grid Ref.), the Malaise trap site was located 600m further in, on marsh by an area of open water.

The site in north Hoy at Quoy-i-dale, GR 57/239034, was not near water bodies but is surrounded by a number of burns within a 300m radius; it is also located at the base of the highest hill, monoplane and glaciated valley country in Orkney.



**Orkney Caddis Trap Sites**

- 1 The Loons
- 2 Loch of Wasdale
- 3 Loch of Harray
- 4 Stenness
- 5 Orphir
- 6 North Hoy

All specimens have been preserved in 75% alcohol and will remain in Orkney for reference.

#### Newly Recorded Species.

(The order follows that of P. C. Barnard's *Check List of the Trichoptera of Britain and Ireland* (1985) Those marked with an asterisk have had their identity confirmed by I. D. Wallace.

#### RHYACOPHILIDAE

\**Rhyacophila dorsalis* (Curtis)

#### HYDROPSYCHIDAE

\**Hydropsyche siltalai* Döhler

#### LIMNephILIDAE

*Apatania wallengreni* McLachlan  
\**Ecclisopteryx guttulata* (Pictet)  
\**Halesus radiatus* (Curtis)  
\**Micropterna lateralis* (Stephens)  
\**Grammotaulius nigropunctatus* (Retzius)

#### HYDROPTILIDAE

*Agraylea multipunctata* (Curtis)  
\**Hydroptila mertini* Marshall  
\**Oxyethira flavicornis* (Pictet)

#### PHRYGANEIDAE

\**Agrypnia obsoleta* (Hagen)

\**Limnephilus centralis* Curtis  
\**L. coenosus* Curtis  
\**L. hirsutus* (Pictet)  
\**L. ignavus* McLachlan  
\**L. lunatus* Curtis  
\**L. rhombicus* (L.)  
\**L. vittatus* (F.)

#### Comments.

*Rhyacophila dorsalis* - the caddis fly most restricted to conditions of high current speed in its larval habitat, most commonly 80-90 cms (Scott, 1958); where these conditions are present the species will probably be found.

*Agraylea multipunctata* - larvae only of this micro caddis fly were found from Graemeshall Loch, GR 57/488018; found in lakes and ponds in submerged and sheltered vegetation, members of this family are probably under-recorded, present in Caithness, (Marshall, 1978).

*Hydroptila mertini* - only found in Malaise net at one site, The Loons; present in Shetland (Marshall 1978).

*Oxyethira flavicornis* - found in slow-flowing water in vegetation thickets; present in Shetland (Marshall 1978)

*Hydropsyche siltalai* - larvae are net spinners restricted to rapidly flowing water, probably widely distributed.

*Agrypnia obsoleta* - found at higher altitudes where it appears to replace *Agrypnia varia* (Bray, 1966). 214m at Loch of Grut Fea in north Hoy, may be widespread in the higher lochs and peat pools; present in Caithness (Spirit, 1987)

	The Loons *Light *Malaise (*1987 only)	Wasdale Loch Light	Harray Loch Light *Malaise (*1987 only)	Stenness Light	Orphir Light	North Hoy Light	Additional Sites Comments
<i>Rhyacophila dorsalis</i>	1986 1987 41		1986 1987 9	1986 1987 5			N Hoy at light, Pegal Burn 1987 5 Ford of Hoy 1987 40 Rackwick Burn 1987 3
<i>Agraylea multipunctata</i>							larvae only, 1988 from Graemeshall Loch E Mainland 4
<i>Hydroptila martini</i>	Malaise only 6						
<i>Oxyethira flavicornis</i>	Malaise only 1	1987 1					
<i>Hydropsyche sitalai</i>	1986 1987 12		1987 1			1987 1	
<i>Agrypnia obsoleta</i>					1986 1	1987 1	Loch Grutfeå, 214m N Hoy, swept 1986 2 1987 1
<i>Apatania wallengreni</i>							Near Peerie Water, White Mire, W Mainland, swept 1990 1
<i>Ecclisopteryx guttulata</i>							Ford of Hoy, N Hoy at light 1987 2

<i>Halesus radiatus</i>		1986 1987 6	1986 1	1987 2	1986 1987 25		Hoy at Hoglins Wir 1986 1 swept, Hoy Lodge 1987 1 Pegal Burn 1987 1 Ford of Hoy 1987 1 at light Rackwick Burn 1987 1
<i>Micropterna lateralis</i>				1986 1			
<i>Grammotaulis nigropunctatus</i>	Malaise only 1	1986 1987 4			1986 1987 6	1987 3	
<i>Limnephilus centralis</i>					1987 6	1986 1	N Hoy at White Glen Plantation 1987 2, at light Hoy Lodge 1987 swept 4 Hoy Lodge Burn 1987 6
<i>Limnephilus coenosus</i>					1987 1		
<i>Limnephilus hirsutus</i>	Light, 69 Malaise 487		1986 1				
<i>Limnephilus ignavus</i>		1987 6	1987 1	1987 2	1986 1987 9		
<i>Limnephilus lunatus</i>	Light 29 Malaise 4	1986 1987 75	1986 1987 100 5	1986 1987 126	1986 1987 22	1986 1987 2	
<i>Limnephilus rhombicus</i>		1986 1987 17		1987 2	1986 1987 8	1987 2	
<i>Limnephilus vitatus</i>	Light 1	1986 1	1986 2		1986 1987 13	1986 3	N Hoy at light Ford of Hoy 1987 1 Rackwick Burn 1987 3

*Apatania wallengreni* - only recorded from one Scottish station during the Rothamsted Insect Survey 1964-1968 (Crichton, 1971), Rowardennan, (Loch Lomand) Stirling, and described as locally common (Wallace, 1980). Only one Orkney specimen obtained, Peerie Water, West Mainland, GR 57/338271; systematic searching may give greater numbers. This species has the earliest peak flight period of any British limnephilid, early May, and is only on the wing from mid-April to mid-June. (Crichton, 1988), so can be easily overlooked. Present in Caithness (Spirit, 1987).

*Ecclisopteryx guttulata* - larvae found in fast flowing upland rivers and streams (Hiley, 1976). Could easily be more widely distributed. Present in Caithness (Spirit, 1987).

*Halesus radiatus* - recorded from Shetland during the Rothamsted Insect Survey 1964-1968 (Crichton, 1972); larvae in weedy areas of most river and lake shores (Hiley, 1976), widespread.

*Micropterna lateralis* - no obvious reason why this species should not be more widespread.

*Grammotaulius nigropunctatus* - recorded from Shetland during the Rothamsted Insect Survey 1964-1968 (Crichton, 1971), larvae often found in stagnant ditches.

*Limnephilus centralis* - larvae found in temporary acidic pools (Hiley, 1976) Present in Caithness. (Spirit, 1987).

*L. coenosus* - only one specimen found in 1987, tends to be associated, like *E. guttulata*, with upland country in Scotland and Wales, (Crichton, 1971), larvae found in small pools on heather moors (Hiley, 1976).

*L. hirsutus* - only one specimen found in 1986, abundant at The Loons when trapped in 1987, illustrates the importance of locating trap sites at preferred larval habitat, which, for this species, is *Phragmites* swamp (Hiley, 1976). The Loons site was the only one which contained *Phragmites* beds of any size. Probably found wherever the preferred habitat occurs.

*L. ignavus* - recorded from Shetland during the Rothamsted Insect Survey 1964-1968 (Crichton, 1971).

*L. lunatus* - recorded from every Orkney site, the most widespread and abundant of the previously unrecorded species (not including Malaise trap material) Present in Caithness. (Spirit, 1987).

*L. rhombicus* - the most distinctive caddis and one of the largest of the previously unrecorded species (fore wing 16mm). The fore wing has a clear rhomboidal patch in the middle. Larvae can be found in a wide variety of weedy standing and slow running water.

*L. vittatus* - recorded from Shetland during the Rothamsted Insect Survey 1964-1968 (Crichton, 1971), present in Caithness (Spirit, 1987). Recorded from all but one site, probably widespread.

## Acknowledgements.

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Special thanks are due to the following light trap operators in Orkney who regularly forwarded caddis material to me during the survey. K. Fairclough, R. I. Lorimer, R. McCutcheon and E. Meek. Dr. I. D. Wallace kindly confirmed the identification of many of the newly recorded species. The Royal Society for the Protection of Birds permitted access to their reserve at The Loons, landowners E. Mowat and M. Gray granted access to study sites.

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Last year's Report included speculation on possible change in the status of certain species. An anticipated increase in the resident population of *Phlogophora meticulosa* L., Angle Shades, did not occur. A single hibernated larva was found, full-fed on 25/3/91 with the resulting imago emerging on 6/5/91, but although light-traps were in continuous use throughout the intervening period, the next record was not until 28/7/91 and only one or two more were seen before early October - many less than in the previous few years.

Of the other species under review, there were single records of *Luperina testacea* D. & S., Flounced Rustic, and *Eulithis pyraliata* D. & S., Barred Straw, but none of *Ecliptopera silaceata* D. & S., Small Phoenix. *Aporophyla nigra* Haworth, Black Rustic, continued to increase, with six records from Orphir and one from Hoy (K.F.); north of Orkney it has now reached Fair Isle (N.R. pers. comm.).

1991 was the best year for migrants since 1980, although for the first time *Agrotis ipsilon* Hufnagel, Dark Sword Grass, did not appear, suggesting that movement was from the east rather than the south. There were several waves; the main influx of *Pieris brassicae* L. arrived on 6/6/91. The regular immigrant Nymphalid butterflies, *Vanessa atalanta* L., Red Admiral, and *Cynthia cardui* L., Painted Lady, were seen in small numbers but over the whole of Orkney from 4/7/91. (R.G.A., C.J.B., E.C., K.F., J. McC., E.R.M.).

The first immigration of moths began in the second week of July and continued until interrupted by a period of haar from 19/7/91 - 23/7/91 after which it resumed, probably from a more easterly point of origin. During the first part, the most interesting arrival was *Abraxas grossulariata* L. The Magpie, of which there had been only five previous Orkney records. 1991 doubled the total with one each from Burray, (N.McC.), and Berriedale, Hoy, (K.F.), while three came to light in Orphir: during this period, Shetland had its first record ever. It is a mystery why this moth is not resident in Orkney; it is common in Thurso and the preferred food-plant is gooseberry, yet apparently no-one has ever seen the very conspicuous larva in gardens here. After the haar, immigration continued and included two species whose Scandinavian forms are easily recognisable on superficial characters - seven *Eurois occulta* L., Great Brocade, (St. Ola four, South Ronaldsay, one and Orphir, two, : S.V.G., J.McC., R.I.L.), and *Syngrapha interrogationis* L., Scarce Silver Y, Orphir. As well as *Autographa gamma* L., Silver Y, *Phlogophora meticulosa* L., Angle Shades, and *Plutella xylostella* L., Diamond-back Moth, there were single records of *Udea olivalis* (D. & S.) and *Yponomeuta evonymella* L., Bird-cherry Ermine.

Two records of the large, nomino-typical form of *Celaena leucostigma* Hübner, The Crescent, (North Hoy, S.F., and Orphir, R.I.L.) do not fit in with any other immigrant activity; but all previous records of the moth, (1970 - 2 and 1971 - 12) have been associated with immigrant species from the Baltic basin.

At least three, probably four, *Agrius convolvuli* L. Convolvulus Hawk-moth, were seen in Orkney in late August - early September: East Kirk, Kirkwall (Mrs. R. Ferguson, per S.V.G.); Sanday, (Miss V. Luke); Orphir, (R.I.L.) It

seems likely that the moth described in 'J.B.G.'s' column of "The Orcadian," 24/10/91, was also of this species.

The seventh Orkney specimen of *Amphipyra tragopoginis* Clerck. Mouse Moth, almost escaped comment, until a check of past records showed that five of the seven coincided almost exactly with records of *A. convolvuli*; news was then received of four records of *A. tragopoginis* on Fair Isle (N.R.), where where none had been previously recorded. Obviously any future records will have to be assessed as possibly immigrant.

A short burst of immigration began with a haer on 13/10/91. Three *Eupsilia transversa* Hufnagel, The Satellite, came to light at Scorradale, where only one had been seen in the previous twenty-five years. On North Ronaldsay, on the same night, Mr. M. Gray was recording a spectacular arrival of moths at the Lighthouse, including a number of *E. transversa* and the second and third Orkney *Orthonama obstipata* Fabricius, The Gem, which is a fairly common migrant in southern England, but rarely reaches Scotland. Mr. Gray is preparing a detailed note on this quite exceptional night. On the following night, *E. transversa* reached Fair Isle for the first time: I should like here to thank Mr. Riddiford for his communications. Use of them here is not an attempt to "steal" the records but to place our own within a wider context.

Two species were added to the Orkney list in 1991. *Dryobotodes eremita* Fabricius, Brindled Green: Orphir, 8/9/91, at mercury vapour light, (a detailed note on this species will be published), and *Coleophora alticoella* Zeller: Orphir, 24/8/91, kindly determined by Dr. K. P. Bland.

Most butterflies had a moderately successful season. *Maniola jurtina* L., Meadow Brown, appeared in larger numbers than it had since 1978, as noted not only here, but by observers throughout the U.K. mainland. A thorough search for *Argynnis aglaja* (L.), Dark Green Fritillary at Rackwick, in perfect conditions on 6/8/91 was once more unsuccessful. An unusually long mid-August break in the weather halted butterfly emergence, but the second brood of *Pieris napi* L., Green-veined White, appeared from about 20/8/91.

Thanks for help and records offered to R. G. Adam, C.J. Booth, E. Charter, K. & S. Fairclough, S. V. Gauld, M. Gray, J. & R. McCutcheon, N. McCance, E. R. Meek.

#### ACCIDENTAL IMPORTATIONS.

R. I. Lorimer.

Regular use of a light trap usually provides one or two surprises every year. These are often known immigrant species, such as *Agrius convolvuli* L. Convolvulus Hawk-moth, or known "wanderers" from other areas, such as *Lithomia solidaginis* Hübner, Golden-rod Brindle, whose presence can usually be accounted for by reference to weather-maps or by communication with colleagues further south.

Very occasionally, something completely inexplicable will arrive; this happened on 8/9/91. There was a bitterly cold polar air current on 5th and 6th September. On the 7th the wind slackened and veered to a very

light south-easterly - by no means warm. On the morning of the 8th there were very few moths in the trap, of which one was a female *Dryobotodes eremita*, Brindled Green, in absolutely mint condition.

This was surprising for several reasons. *D. eremita* is a woodland species, very sedentary in its habits, whose known distribution before this extended only to the Black Isle and whose only larval foodplant is oak. There had been no major warm air-masses from further south in the immediate past. The small oaks in my garden had been brought from the south as acorn seedlings over twenty years ago and, with a trap in regular use within twenty yards, it seemed impossible that they could have been supporting a population undetected. After a lot of thought, the only simple explanation seemed to be that the source must be the Gyre Plantation, just over a mile to the south-east, where some oaks from a forestry nursery in Morayshire had been planted earlier in the year. This suggestion would fit in with the life-history of the species. The ova are laid in small batches beside a terminal leaf bud in autumn. They hatch in late spring and the young larvae bore into the buds, spinning external webs as the leaves develop and finally feeding fully exposed. At the time of importation such larvae would have been well protected and able to feed undisturbed.

This example of a species which is itself without any reputation as a forestry pest, suggests that some monitoring of the fairly considerable tree planting at present going on in Orkney may be prudent. In view of the relatively short feeding season, it seems unlikely that pests of deciduous trees, other than the ubiquitous and already resident *Operophtera brumata*, Winter Moth, could adapt to Orkney conditions but the conifer-feeding species in Rumster Forest, Caithness, have shown that they, at least, can do so not much further south.

There will now be a further factor to take into account when speculating on the possible origins of additions to the Orkney lists.

I should like to thank E. Charter for her information concerning the source of the oaks planted at Gyre.

FISH

C. J. Booth.

Several records of sharks were noted in 1991.

*Lamna nasus* Porbeagle.

Four were caught off Sanday on 6/12/91. (The Orcadian, 12/12/91.)

*Prionace glauca* Blue Shark.

There were three reported strandings and, as in 1990, they were all in October.

7/10/91. 1 on west side of Graemsay, c. 1.5 metres in length. (Effie Everis).

13/10/91. 1 at Herston, South Ronaldsay. 2.2 metres in length.

(R. A. McCutcheon).

On c 20th October. 1 at Scapa Beach, c 2 metres in length. (per

P. Reynolds)

RECORDERS AND RECORDING. Orkney, Vol III, 1992 Update. *This cancels previous editions.*

*N.B. No records should be published until they have been verified by the appropriate Recorder. If in doubt, please consult Orkney Field Club Biological Records Centre. Please consult the appropriate Recorder about specimens.*

Abbreviations: Rec = Recorder. D.L. = Definitive Lists. Up. = Updates. A.Rec. = Assessment of Records. N/N = *The Natural History of Orkney*. BM/NH = British Museum, Natural History. OFC/BRC = Orkney Field Club Biological Records Centre. With few exceptions all Orkney Recorders submit copies of records to either BRC, Monks Wood or to their appropriate national specialist society AND to OFC/BRC.

MYXOMYCETES. No Rec. at present. D.L. N/N.

FUNGI. T. W. Eiggeling. D.L. N/N. Up. Bull. OFC. A.Rec. Herb. Ed.

MARINE ALGAE. No Rec. at present. D.L. N/N

FRESHWATER ALGAE. No Rec. at present.

CHARA. Rec. Elizabeth Charter, Richmond, Holm. D.L. N/N. Specimens MUST be preserved quickly before being passed on to the National Referee so please ask for instructions before attempting to collect specimens.

LICHENS. No Rec. at present. D.L. N/N. Voucher specimens and recording materials held in OFC Archives.

BRYOPHYTES. Rec. until end of 1984. Ann Thomson, Craigiefield, St. Ola. No Rec. at present. D.L. N/N.

VASCULAR PLANTS. Rec.(BSBI) E. R. Bullard, Toftwood, Kirkwall. D.L. N/N. Up. "Plant Records" in *Watsonia* and OFC Bulletin. A.Rec. Voucher specimens in Herb. Ed. Orkney "Flora". Research on *Primula scotica*. "Critical" species require identification by the national Referees.

...*Rosa* species, Rec. Hugo Shearer, Cromwell Rd. Kirkwall. A.Rec. BSBI Referees. Usually require specimens of flowers and fruit and mature foliage. Take care to insure the identity of the individual plant.

...*Potamogeton* Rec. Liz Charter, Richmond, Holm. D.L. M/N. Pressed specimens needed, with flowers and fruit.

MAMMALS. Rec. Sheila Spence, Linneth, Harray, Orkney. D.L. N/N. Up. OFC Bulletin and Stromness Museum including distribution charts. Records, including bones etc. can be accepted, with full details.

BATS. Rec. Chris Booth, Ronas, High St. Kirkwall. Up. Bull. OFC.

CETACEA. Recs. Peter Reynolds, Chris Booth. Up. Bull. OFC.

BIRDS. Rec. (SOC) Chris Booth. D.L. *The Birds of Orkney* Up. *The Orkney Bird Report* published annually. A. Rec., National rarities, The British Birds rarities Committee; Scottish rarities, The Scottish Birds Records Committee. Local rarities, The Orkney Records Committee

AMPHIBIA & REPTILES. Rec. Chris Booth. A.Rec. By Recorder and, if required, BM/NH.

LAND & FRESHWATER MOLLUSCS. Rec. Mrs. N.F.McMillan, Merseyside County Museum. Liverpool. D.L. to 1985 in Orkney County Library. Mrs. McMillan wishes to retire if someone would take over.

MARINE MOLLUSCA. Rec. Alan Skene, The Mount, Stromness. D.L. N/N.

ISOPODA. Rec. Colin Monteith, 28 St Catherine's Place, Kirkwall. A.Rec. *British Isopoda Study Group*.

HIRUNDINIA. No Rec. at present. D.L. N/M.

COLEOPTERA. Rec. Keith Fairclough, Viewforth, Swannay, Birsay. D.L. N/N. A.Rec. recognised experts.

ODONATA. - Adults and larvae - Rec. K. Fairclough. D.L. N/N Ork. Up. BRC and OFC Bulletin. For species already on the Orkney list a written or verbal record, (to Keith) with full details, will suffice.

ORTHOPTERA Rec. K. Fairclough. D.L. N/N. Acceptance of records as for Odonata

CADDIS FLIES - adults and larvae. Recs. R. Andrew, Millfield Cottage, Evie. J. Walker, Twargarn, Harray. D.L. N/N/Ork. BRC Monks Wood. Up BRC Monks Wood; OFC Bulletin.

MAYFLIES AND HOVER FLIES - adults and larvae. Rec. R. Andrew. D.L. N/N Ork. Ups. BRC and OFC Bulletin

DIPTERA. Rec. R. Andrew. A.Rec. Comparison with named material in reference collections, and to BM/NH.

WASPS. Rec. C. J. Booth, Ronas, 34 High Street, Kirkwall. D.L. - see note in OFC Bulletin No 1/1986. Up. OFC Bulletin. A. Rec. to be confirmed by Dr. M. E. Archer, York.

STONEFLIES - Adults and larvae. Rec. R. Andrew. D.L. N/N Ork. Up. BRC and OFC Bulletin. Also FLESH FLIES Blow Flies; Parasitic Flies.

LEPIDOPTERA Rec. R.I. Lorimer, Scorradale, Orphir. D.L. N/N Ork and *The Lepidoptera of the Orkney Islands* (1983) R. I. Lorimer, E. W. Classey Ltd. Oxon. Up. OFC Bulletin, and, every five years in "Entomologist's Gazette". A. Rec. BM/NH *et al*.

ARACHNIDA. No Rec. at present. D.L. N/N.