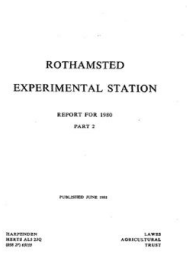
ROTHAMSTED RESEARCH

Rothamsted Experimental Station Report for 1980 Part 2



Full Table of Content

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L. R. Taylor, R. A. French, I. P . Woiwod, Maureen J. Dupuch and Joan Nicklen (1981) *Synoptic Monitoring for Migrant Insect Pests in Great Britain and Western Europe. I Establishing Expected Values for Species Content, Population Stability and Phenology of Aphids and Moths ;* Rothamsted Experimental Station Report For 1980 Part 2, pp 41 - 104 **- DOI: https://doi.org/10.23637/ERADOC-1-34238**

Synoptic Monitoring for Migrant Insect Pests in Great Britain and Western Europe I. Establishing expected values for species content, population stability and phenology of aphids and moths

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Abstract

Data from the first decade of monitoring aerial populations of aphids and moths are tabulated. The 42 suction trap stations in Western Europe and 286 light trap stations in Great Britain are listed, the 317 aphid and 616 moth species sampled, changes in weekly *Aphid Bulletins* over 10 years; the stabilisation of first flight dates for 30 aphid species are tabulated; the mean annual population density for 30 aphid and 20 moth species are given as progressive annual means for 2–10 years in three regions; the 10-year mean seasonal cycle of migration for 30 aphids and 20 moths and the 10-year daily means for total aphids and total moths for three regions are given graphically.

Introduction

A major hazard of agricultural entomology is the erratic appearance of many pests. During an epidemic, great attention is attracted and new projects started; but during the ensuing endemic stage, concern for that particular species rapidly wanes because attention is distracted by more immediate problems. Observations of its abundance, distribution and phenology and the search for any potential indirect measure of its population fluctuations, decline. At the critical period during the initiation of a new epidemic, current information is then found to be wanting and adequate preparation for control is delayed. Unless insect populations are monitored systematically during periods of scarcity as well as abundance, the first warning signs of impending population increase and the associated increase in risk, are never discovered. Each outbreak is tackled *de novo* and no lessons are learned except through subjective individual experience. Valuable as it is, this experience is not easily quantified and, as a result, it is lost to succeeding generations.

Short-term treatment warnings made on the basis of experience (qualitative models) or simple quantitative models (e.g. accumulative temperature thresholds) are adequate for some purposes some of the time. Crucial factors initiating epidemics may be missing and, because they occur infrequently, remain unrecognised. Unless such models are continuously confirmed and updated against systematic population measurements of known efficiency, no progressive improvement of monitoring, risk assessment, or of subsequent control proposals, can be made. It may be decades before a vital missing component in a forecasting model is identified, so that progressive advancement in agricultural entomology is only possible with continuous long-term monitoring (Taylor, 1977a, 1979).

Systematic information about the basic ecological factors concerned in insect pest outbreaks is not common and, when available, it usually relates to a single pest only. Many projects are concerned with one species or, at most, one crop. Closely related

https://doi.org/10.23637/ERADOC-1-20

non-pest species are rarely investigated, although there may be much to learn from the comparison of the population dynamics of pests and non-pests. It is conceivable that such vital seasonal features of life cycles as the times of migration that result in crop infestation, may be anticipated by the earlier flights of non-pest congeners. In other words, non-pests may provide clues for the observant agricultural entomologist that yield information on subsequent pest behaviour. In its most obvious form, the general earliness of a season is often indicated by activities of organisms of no special agricultural interest except as incipient analogues for pest dynamics.

Conventional population dynamics theory has so far been of little value in the control of insect pests, especially for such mobile pests as aphids, because it is mainly concerned with temporal, not spatial, change. Once a crop is infested, the growth of pest populations can be modelled with varying degrees of initial success but with good prospects of improvement, given time. Our knowledge of the initiation of infestation, usually by immigration, is currently dependent on systematic monitoring. Until this becomes established practice, the prospects for forecasting infestation are slight and for confirmation of forecasts are negligible.

For all these reasons the Insect Survey was devised and the first trap was re-started in January 1960 at Rothamsted on a site sampled earlier (Taylor, 1973, 1974), with the objective of providing this essential long-term background data for the improvement of pest forecasting techniques. Because sampling was intended to be spread widely in space, time and taxonomy, only flying adults were sampled to minimise the labour in a labour-intensive project. By replacing subjective judgement of population levels with objective measurement, an expectation of mean levels of population occurrence, timing and species content would be established against which current populations could later be assessed for prospective risk.

The first traps to operate were light traps sampling moths at a height of 1·2 m. This approach was adopted, not because moths are such serious pests in Great Britain but because their ease of identification minimised the cost of the experiment. Agricultural interest centres mainly on the aphids, sampled with suction traps at 12·2 m above ground level, the first samples of which were taken in 1963. Because the exercise was exploratory and initial concern was to assess the feasibility of sampling on this scale, the network of sampling stations developed only as results appeared to justify further extension; it took a decade to establish the sampling network to the level where insect distributions could be effectively mapped. As a result we are here concerned mainly with the second decade, from 1969 to 1978 for moths and 1970 to 1979 for aphids, during which an effective sampling system has operated. Weekly *Bulletins* of pest aphid numbers have been issued during this period and *Annual Summaries* for pest species of aphids and moths. This paper summarises the results over that decade to record the species to be expected in future samples, the seasonal cycles of population and the spatial and temporal mean densities and the degree of stability reached in the expected mean densities and times of migration. These long-term means form the basic picture against which current densities will be considered during the next decade in order that the deviations may be used to measure the prospective agricultural risk. The data are obviously extensive, dealing with 317 species of aphids and 616 species of moths of which sample data for 30 species of aphids at 12 sites for 10 years and for 20 moth species at 15 sites for the same period are further considered. Lack of space prevents the tabulation of similar data for potential indicators amongst non-pest species. We therefore establish the species content and the levels of stability of the background means to make them available for specialists in particular crops or pests, for confirmation of models and for subsequent analysis and discussion.

The potential of these aerial samples for specific advisory forecasts requires an under-

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standing of the ecology of the pest species concerned, its enemies and the crop; each species/crop problem is unique and in most instances the crop data and economic damage thresholds are not yet available. Subsequent papers will attempt to assess this forecasting potential where the pest problem is sufficiently well defined. In the meantime a companion paper by Bardner *et al.* (1981) assesses the economic value of the aerial sampling approach to forecasting, the target to which the whole agricultural concept is directed, and another by Heie *et al.* (1981) lists the aphid species found in Denmark by the same sampling method, for comparison with the species found in different parts of Britain. The speed with which pests can be identified, and upon which the value of forecasting depends, is determined by a foreknowledge of which species to expect and how frequently they are likely to occur. Similar species' lists should eventually become available for Holland, France, and Belgium where similar traps now operate.

The data are presented in tables and figures for easy access by applied entomologists. They are discussed briefly to facilitate interpretation and a few general conclusions are drawn. More detailed consideration will be given to separate species as the ancillary data required to place the dynamics in their agricultural context, become available.

We first list the dates of operation of sampling stations and their changes up to 1979 (Tables 1 and 2) and show their geographical distribution (Figs. 1 and 2); then the aphid and moth species currently identified are numbered and listed (Tables 3 and 4); changes in the aphids recorded in *Bulletins* between 1968 and 1980 indicate how sample size, entomological interest and change in taxonomic standards affect the definition of pest populations (Table 5); Table 6 gives the week numbers used in analysis and in the figures (3–14) which show mean seasonal cycles of aphid and moth populations in different regions of Great Britain for species listed in *Bulletins* and *Annual Summaries* (Taylor & French, 1970, 1980); Figs. 15 and 16 show the mean seasonal cycle of daily total numbers of aphids and moths sampled over the period 1968–78 as a measure of the sampling effort required.

Suction trap sampling stations

Table 1 lists the 43 stations where the 'forty-foot' suction traps, designed and first built at Rothamsted in 1963 (Taylor & Palmer, 1972), have operated. Slight modifications to construction and materials, including the extractor fan unit, have occurred but the volumetric sample remains essentially the same and is collected at 12·2 m.

The first trap was tested in 1963 and began permanent operation at the Rothamsted Tower station (901) on 29 April 1964. The station has operated continuously, interrupted only by power failures. The original trap was replaced in 1970 and its replacement is still in operation. Life expectancy of traps is 10–15 years with annual servicing. Traps have operated at other stations on Rothamsted Farm, and at Garston nearby for limited periods to investigate the effect of distance on sample content. Rothamsted Farm I (station 902) and Farm II (920) were 12·2 m apart at a distance of 1·4 km from station 901, which was 11·7 km from Garston (station 915).

The first transect of Great Britain, from Dundee (907) through Newcastle (906), High Mowthorpe (905), Broom's Barn (904) to Wye in Kent (903) was established by 1966 and extended to Elgin (916) by 1970, including Edinburgh (912), set up independently by the Department of Agriculture and Fisheries for Scotland (DAFS). Sampling began independently by the Welsh Plant Breeding Station (911) at Aberystwyth in 1969.

The second transect, from Broom's Barn (904) through Silwood Park (908), Long Ashton (914), Starcross (913) to Rosewarne (910) was also completed by 1970.

The transects intersected at Rothamsted Tower (901) and were used to assess the effectiveness of the sampling method and, in conjunction with the short-distance sites

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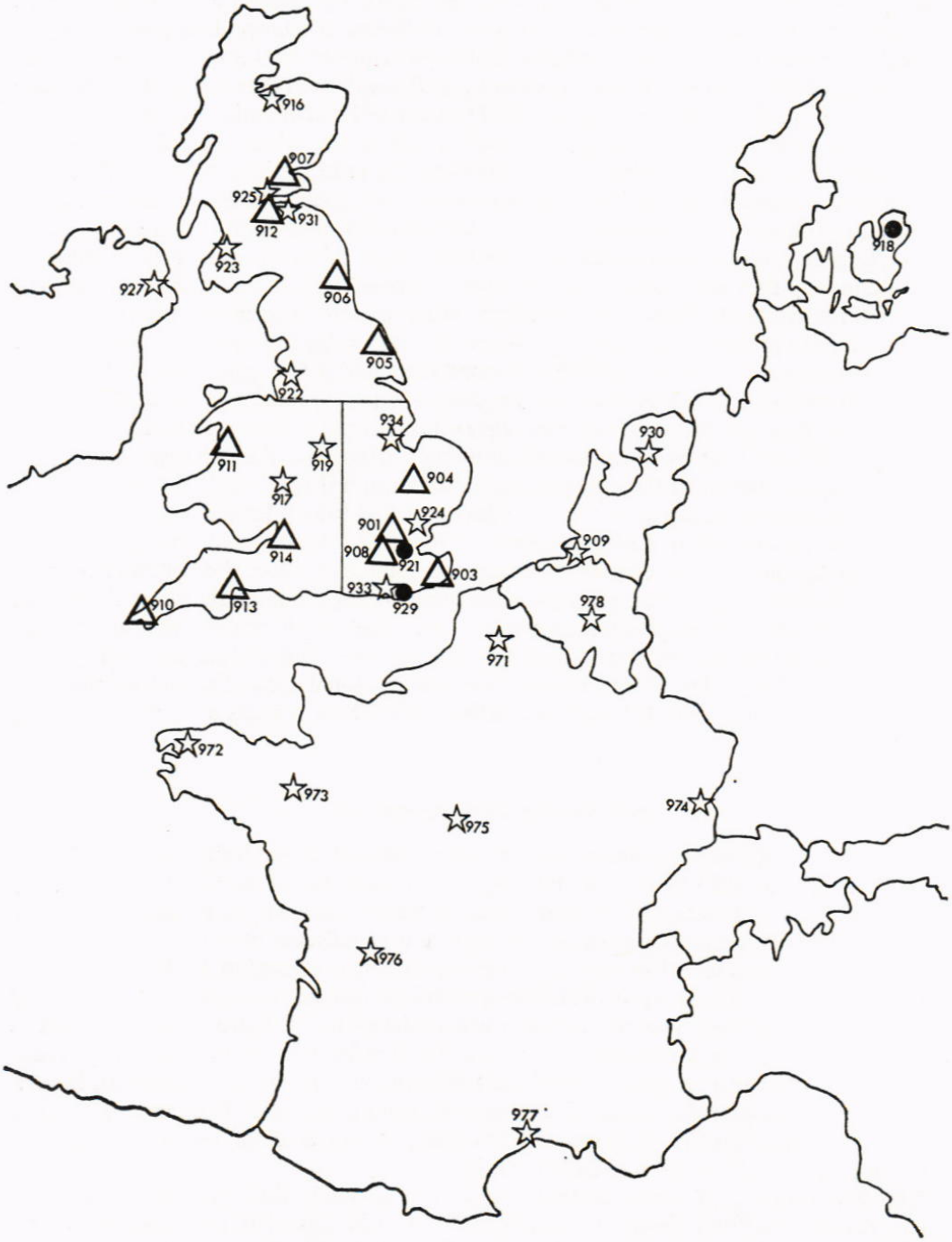

FIG. 1. Suction trap stations operated between 1964 and 1980 in Western Europe. Δ, stations currently operating and used for the 10-year means; ☆, stations currently operating but not so used; ●, stations not currently in operation. The island of Great Britain is divided into (1) South-eastern England (2), Wales with South-western England and (3) North England with Scotland for Tables 7 and 8. See legends for regions used in Figs. 3–9 and 15.

https://doi.org/10.23637/ERADOC-1-20

near Rothamsted, to assess the grid spacing for different degrees of mapping detail. Once this had been done (Taylor, 1974), interpolation of sites at Hereford (917), Shardlow (919), Preston (922) and Auchincruive (923) was achieved by 1974. Reorganisation made possible a station at Kirton (934) in 1980 and a projected station in Cumbria. DAFS increased the coverage in Central and SE Scotland (sites 925, 926 and 931) by 1979.

Sampling across the English Channel at Goes in Holland (909) began in 1968 and Copenhagen (918), across the North Sea, was operating by 1971. The site across the Irish Sea, Belfast (927), began independently in 1976. The major expansion abroad came after the initiative of M. Y. Bouchery at Colmar (974) in 1977 when the Association de Coordination Technique Agricole established a network of six more stations in France at Arras (971), Landerneau (972), Rennes (973), Orleans (975), Aigre (976) and Montpellier (977) in 1978. Additional stations now operate in Holland, NE Polder (930), and in Belgium, Gembloux (978) (Fig. 1).

Special projects have been mounted at Rainham (921, transferred to 928), at North Farm (929, transferred to Littlehampton, 933) and independently at Cranfield Institute of Technology (932).

Annual servicing includes replacing the net, 16 mesh per cm (40 mesh per in.) to retain aphids whilst permitting most thrips to pass through, and damaged rigging. The structure has been effective in surviving gales without loss. The design has not been changed, except to use more resistant materials and to include an inlet cage to prevent birds being sampled.

The volumetric air sample *c.* $3{\cdot}5 \times 10^4$ m^3 per 12-h day has been found a satisfactory compromise for most days. It could usefully be larger at the beginning of the season and the sample volume is halved in mid-summer. Subsampling is also necessary in high season, by subdividing the aphid catch after initial sorting.

Light trap sampling sites

Table 2 lists the 286 light trap stations in Great Britain, Channel Islands and Eire that have completed at least 1 year's trapping, with the year of starting and number of completed years to the end of 1979. The exact location of nearly all the stations is given by a grid reference with an indication of the predominant vegetation surrounding the trap and the name of the operator(s) and their appropriate organisations, where applicable. The Channel Islands and Eirean stations are located by latitude and longitude as they do not fall within the British National Grid system.

The environmental site categories are:

1. urban (including suburban)—a trapping station surrounded by buildings and roads with small areas of intensity cultivated ground such as gardens;
2. parkland—sites with areas of short permanent grass, tended shrubberies, flower borders, occasional standard trees and small experimental plots;
3. farmland—cultivated land with field crops, including grass;
4. scrubland—sites with gorse, scrub and rough grazing, usually on sandy soil;
5. woodland—sites where trees predominate;
6. moorland—high altitude permanent grassland with some heather and bracken;
7. coastal—sites of any environmental category near the sea;
8. mixed—any area which cannot be categorised as above.

https://doi.org/10.23637/ERADOC-1-20

FIG. 2. Light trap stations in Great Britain and the Channel Isles between 1960 and 1980. ▲, stations currently operating and used for the 10-year means and figures; ○, stations currently operating but not so used; ●, stations not currently operating. The island is divided into regions (1) Southern England, (2) Wales, Central and Northern England, (3) Scotland (see legend to Figs. 10–14 and 16).

https://doi.org/10.23637/ERADOC-1-20

Abbreviations for organisations operating light traps are:

ADAS—Ministry of Agriculture Development Advisory Service;
Exp. Farm—Ministry of Agriculture Experimental Farm;
Exp. Hort. Stn—Ministry of Agriculture Experimental Horticulture Station;
FC—Forestry Commission;
FC(RB)—Forestry Commission Research Branch;
FSC—Field Studies Council;
ITE—Institute of Terrestrial Ecology;
NCC—Nature Conservancy Council;
RSPB—Royal Society for the Protection of Birds.

In some organisations, the staff have changed regularly and it is not possible to list all helpers. In these instances, only the name of the organisation is given.

Because many light trap stations are operated by voluntary workers, they are less permanent than suction trap stations but the number in operation had stabilised at about 120 by the middle 1970s (Fig. 2). No change has been made to the original trap designed by Williams (1948) using a 200 W clear tungsten lamp.

Aphids from the suction traps in Great Britain

Table 3 lists the aphids caught between 1964 and 1979 at the sites in Great Britain listed in Table 1. Nomenclature is based on Kloet and Hincks (1964), numbered for use in the Survey.

Numbers 1–533 are species arranged sequentially as in the check list.

Numbers 700—999 are additions or alterations to species in the check list, inserted to conform with Eastop and Hille Ris Lambers (1976), as far as possible.

Numbers 1000—2499 are either part genera, or whole genera; these categories are used for damaged specimens unidentifiable to species, or for species groups not separable by available techniques.

Numbers 1–3, 6–21, 729, 730, 734–736 were identified by Mr C. I. Carter, Forestry Commission. Some rare or difficult species were identified by Dr H. L. G. Stroyan, Ministry of Agriculture, Fisheries and Food, and Dr V. F. Eastop, British Museum (Natural History).

The identification by Dr O. E. Heie of the Skive Seminarium, Denmark, of some species from the Copenhagen station (918) questions the earlier determinations of 287, *Pentatrichopus fragaefolii*, and 468, *Amphorophora rubi* (see under *The Aphid Bulletin* (p. 49) and Heie *et al.*, 1981).

Identification is by visual recognition of morphological characters at low power magnification with frequent cross-reference to ensure the maintenance of a common level of separation by different individuals. Because of the speed of recognition required for release of *Bulletin* information, training takes 2 years to reach the level of proficiency demanded.

Samples from most stations in Great Britain and Denmark have been sent twice weekly to Rothamsted for aphid identification. Samples from other stations were identified elsewhere as follows: 904, Dr G. D. Heathcote; 909, 930, Dr D. Hille Ris Lambers and Dr A. van Harten; 911, Mr J. A'Brook and Dr A. M. Dewar; 912, 925, 926, 931, Dr L. A. D. Turl; 927, Dr A. C. Bell.

Macrolepidoptera from light traps in Great Britain

Table 4 lists all the species of Macrolepidoptera caught by the light traps of the Insect Survey since the first trap started operating in 1933. The species are listed in numerical

https://doi.org/10.23637/ERADOC-1-20 *pp 8*

order from Heslop's (1964) check list. This system was adopted when a numerical list was first required to transfer records on to computer file. The Latin nomenclature has been frequently revised and the old English names, which remain unaltered, are often used in practice; they are taken from South (1961). The Latin names from South (1961) have also been adopted for common use in the Survey; the last column gives the current Latin names from Kloet and Hincks (1972).

Identification is based on visual recognition of wing shapes and patterns. A few groups, difficult to separate by this method, require dissection of the genitalia. Not all identifiers can do this nor can so much of this detailed work be done at Rothamsted; some species are therefore recorded in groups, allocated numbers following the main list of species, which are also used when moths are too damaged for rapid identification by eye (nos. 2500–2529).

Since Heslop (1964) and South (1961) were published, *Amphipyra pyramidea* (502) and *Plusia festucae* (627) have each been split into two species, The 'new' species 2507 and 2510, are separated at some stations since 1970; prior to that date any records under numbers 502 and 627 include records for 2507 and 2510 respectively. All four species occur rarely in samples and no group number was allocated for recording.

Since 1974, melanic forms of nine species have been recorded throughout the Survey, each under its specific number and separately under new numbers for typical and melanic specimens (nos. 2530–2548).

The *Aphid Bulletin*

The *Bulletin* reflects the interests of the aphid entomologists who receive it. Most are concerned with agricultural pest species but some with forest pests or with aphids used for experimental work. As these interests have changed, so have the *Bulletin* species. Also some species initially requested, have ultimately been found to occur too rarely for practical purposes, at the current sampling rate, and have been excluded.

Experience has shown that the validity of identification, at the rapid rate required, depends upon the relative frequency of occurrence of morphologically similar species in samples from different places and times. For practical agricultural purposes the occasional intruder in samples of an abundant pest is not relevant. If the pest itself occurs only in small numbers such misidentifications are important and only after long experience can the potential intruders be anticipated. This was one reason for making the initial decision to identify all aphids. Experience of the aphid aerofauna will now be used to identify these areas of taxonomic risk. In the list of aphids from the station at Tåstrup near Copenhagen in Denmark (Heie *et al.*, 1981) a few such high risk species have been identified because different, but closely related, species were known to occur in Denmark and Great Britain.

Changes made in the *Bulletin* species list between 1968 and 1980 were made for the following reasons (see Table 5).

E. tiliae (70) and *N. circumflexum* (378) were omitted from 1969 onwards because very few were caught and interest in them was small. *D. plantaginea* (234), *E. ulmi* (500) and *P. fagi* (78) were added because they were requested and numbers caught were sufficiently large. *A. frangulae* grp replaced *Aphis gossypii* (181) because it was not found possible to distinguish between *A. gossypii* and some other *Aphis* spp. *Pemphigus*/*Prociphilus* replaced *P. bursarius* (514) because it was not possible to separate *P. bursarius* from other pemphigine spp.

In 1970 it was found that samples contained small numbers of sibling species to *A. fabae* (132) which were not being separated, so *A. fabae* (132) was replaced by *A. fabae* grp. *Aphis* spp., which includes all *Aphis* spp. except those in *A. fabae* grp replaced *A. frangulae* grp.

https://doi.org/10.23637/ERADOC-1-20 *pp 9*

In 1973 *A. rubi* (468) replaced *Amphorophora* spp. as most *Amphorophora* caught in our traps were *A. rubi*. After checking it was found that *M. persicae* (322) included *M. certus* and *M. ajugae*, so it was replaced by *M. persicae* grp. Also in 1973 *Pemphigus* spp. (1506) replaced *Pemphigus*/*Prociphilus*, as *Pemphigus* could now be distinguished from the genus *Prociphilus*, which is not very common.

By 1976 it was possible to separate *M. certus* (319) from *M. persicae*, so *M. certus* was added. *M. persicae* grp still includes any *M. ajugae* which may be caught, but this is a rare species.

During 1980 a number of *Metopolophium* spp. were caught which resembled *M. festucae* (397) but were, as yet, undescribed; to cover this, *M. festucae* was replaced by *Metopolophium* spp. (1008).

The standard calendar

Table 6 lists the standard weeks used by the Insect Survey with their equivalent period in terms of day and month. By omitting 29 February and 31 December the year can be exactly divided into 52 weeks. As very few moths or aphids will be flying at the end of December or February the exclusion of these two days should have a minimal effect on subsequent analysis. It should be noted that these standard weeks are not used for the weekly *Aphid Bulletin* which runs from Monday to Sunday and this will only correspond to standard weeks in certain years.

The standard weeks are also grouped into standard 4-week periods indicated by the spacing in Table 6. These are the 13 periods used in the *Annual Summaries* (Taylor & French, 1970, 1980).

Phenology of flight of aphids and moths

An indication of the phenology of 28 of the 33 species of aphids recorded in *Bulletins* is given in Figs. 3–9 which are plots of weekly means over a 27-week period for three different areas of Great Britain and combined for all areas. The means use all the available data in a region from 1968 to 1979 (see Fig. 1 and legends to figures).

As far as possible species have been grouped together to demonstrate the main phenological patterns within the data. Thus Fig. 3a, b and c and Fig. 4a and b show species in which the first migration predominates, with later migrations being very small or non-existent. Fig. 5a and b are species with two well-defined migrations but with the first one larger than the second. Figs. 7c and d and 8a, b, c, and d are species which appear to have three distinct migrations, the middle one being the largest. Fig. 9a, c and d show another distinct pattern with three peaks in the year, each progressively larger. The remaining figures are either less clear-cut examples of one of the above patterns, or species where low numbers or the overlapping of migration cycles makes such categorisation difficult.

Enough is known of some species for these observed patterns of migration to be explicable in terms of the particular species' biology or ecology. Fig. 3a shows the typical single migration flight of the green spruce aphid (*Elatobium abietinum*) (Carter & Cole, 1977) and Fig. 5b the two migrations of the hop aphid (*Phorodon humuli*) where the second migration from the summer crop host hops (*Humulus lupulus*) to overwinter on *Prunus* can only be detected clearly in the two regions containing the main hop growing areas (Taylor *et al.*, 1979). The three migration cycles of some species such as *Aphis fabae* (Fig. 8a) (Way *et al.*, 1981) are now well-documented whilst that of *Myzus persicae* (Fig. 7a) (Taylor, 1977b) is regionally more complex. For many species, particularly those of less economic importance, this biological information is still lacking. These figures illustrate the phenological variability between species and, within some species, between regions. The use of calendar dates for obtaining means obscures much

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biological information, however, and this raises analytical problems that can only be resolved on a biological time scale that requires detailed knowledge of the components for individual species/host combinations not always yet available.

The seasonal cycle of flight activity for 20 moth species, included in the *Annual Summaries* as being of economic interest, are shown in Figs. 10–14 for the whole of Great Britain and separately for Southern England, Wales, Central and Northern England, and Scotland (Fig. 2). The figures represent weekly means from five sites in each region for 10 years. Moth phenology is generally simpler than for aphids (Figs. 3–9) there being usually only one generation per year and a single peak of activity. Unlike aphids, some species fly during the winter (Fig. 14) and others are confined to certain regions (e.g. Figs. 10c and 13b). All 30 aphid species occurred in all regions and this reflects their greater scale of redistribution.

Some moths appear to differ more in median flight date between regions; *Hepialus lupulina* and *Agrotis exclamationis* (Fig. 12c, d) fly later in Scotland whilst *Erannis aurantiaria*, *Operophtera brumata* and *Erannis defoliaria* (Fig. 14a, c, d) are earlier. Fig. 11 shows species with more than one generation per year, or extended flight period. *Plusia gamma* (Fig. 11b) is a migrant with several generations supplemented by periodic immigrations.

Stabilisation of mean aphid phenology with time

Table 7 presents information on another aspect of phenology, the rate at which the mean date of first flight stabilises for the 30 species of aphids shown in Figs. 3–9.

Three regions are separated, South-east, Wales and South-west, North and Scotland. In each region four sites are included for the analysis, those for which we have a complete run of 10 years records from 1970 to 1979 so that all regions' means are based on the same number of samples. A combined figure for all 12 sites is also given. The sites and areas used are indicated in Fig. 1. The values in the table show the effect on the mean date of first flight of adding years successively. In most cases the mean date stabilises after very few years, perhaps surprisingly so, considering the inherent uncertainty of recording individual aphids. Other measures such as first five aphids or median migration dates would probably provide even more stable means from which to judge yearly or regional deviations. As might be expected the mean date for the North and Scottish region is later than those for the other two regions in nearly all species. There is no clear relationship between the SW and SE regions, any differences being due to the particular life cycles and ecology of individual species. *Drepanosiphum platanoidis* seems to be unusual in that it has virtually identical dates of first flight in all regions as well as having very consistent mean dates throughout the 10-year period.

Stabilisation of sample size with time

Progressive annual arithmetic sample means for aphids are given in Table 8. The same species, years, regions and stations are used as in Table 7. Although some species in some regions seem to have reached a fairly stable level, others show trends over several years or sudden changes in the accumulated mean even after 9 years. An example of an apparent trend is seen in North and Scottish region for *Phyllaphis fagi* where there is an increase in mean from 1970 until 1973 is added, then a steady decrease until 1979. Sudden changes can be seen in several places in the table, most noticeably for *Metopolophium dirhodum* in the SE region which seems to have a fairly stable mean until 1979 when there is almost a five-fold increase in the mean with the addition of only a single year; the year 1979 was exceptional for this species (see Cochrane, 1980; Dewar

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et al., 1980). With numbers that are considerably smaller, a similar change can be seen in the SE region for *Rhopalosiphum maidis* when there is a six-fold increase in the mean with the addition of 1979.

Table 9 is equivalent to Table 8 but for 20 species of moths from light traps for regions with different boundaries and with the mean calculated from five traps in each region (see Fig. 2). In comparison with the aphids the progressive annual moth means become stable more quickly and most species have reached a consistent mean value after only 2 or 3 years. This is probably a reflection of the more local nature of moth populations and the small number of generations per year in comparison with the highly migratory and multigeneration aphid species.

Only two species of moth show marked discontinuities or trends in the mean after a few years. These are *Agrotis exclamationis* in the SE region, where the mean doubles with the addition of the 1976 data and remains at this higher level, and *Erannis aurantiaria* in Scotland where the mean increased by a factor of 10 from 1972 to 1978 with large jumps in 1977 and 1978.

Acknowledgements

We wish to thank past and present staff of the Insect Survey and also the following voluntary workers: Mr D. Barbour, Mr K. Bond, Mr W. I. Bowen, Mr M. D. Bryan Miss J. Cadwallader, Mr W. Coster, the late Mr D. Ffennell, Mr P. Follett, Mr F. Harrison, Mr P. Kendell, Mr W. W. Mather, Mr M. Mitchell, Mr R. M. Palmer, Mr E. Pickard, Mr R. E. M. Pilcher, Mr T. A. Potter (Jnr), Mr C. I. Rutherford, Mr M. J. Skelton, Mr P. Q. Winter, Mr B. Withers, Mr B. Wurzell, and Dr M. Young.

Our thanks are also given to Mr D. S. Fletcher and Mr D. J. Carter of the British Museum (Natural History) Entomology Department and Dr J. D. Bradley of the Commonwealth Institute of Entomology for help with difficult identifications of Lepidoptera.

References

References are to be found after the Tables and Figures on page 104.

https://doi.org/10.23637/ERADOC-1-20

TABLE 1

Sampling stations for the 12·2 m (40 ft) suction traps

Station number	Station name	Grid reference*	Date trapping commenced	Date trapping finished	Operator
ENGLAND					
901	Rothamsted Tower	TL 133134	29 April 1964		Rothamsted Experimental Station
902	Rothamsted Farm I	TL 119137	29 April 1965	16 October 1973	" " " "
903	Wye, Kent	TR 054470	30 November 1966		Wye College
904	Broom's Barn	TL 754656	22 March 1965		Broom's Barn Experimental Station
905	High Mowthorpe	SE 888686	5 August 1965		High Mowthorpe Experimental Husbandry Farm
906	Newcastle	NZ 202911	21 May 1965		Cockle Park Experimental Station
908	Silwood Park	SU 945687	26 March 1968		Imperial College Field Station
910	Rosewarne	SW 642411	12 November 1968		Rosewarne Expermental Horticulture Station
913	Starcross	SX 972821	5 February 1970		Agricultural Development and Advisory Service
914	Long Ashton	ST 536700	6 April 1970		Long Ashton Research Station
915	Garston	TL 124017	11 June 1970	5 November 1973	Building Research Station
917	Hereford	SO 564476	12 July 1971		Rosemaund Experimental Husbandry Farm
919	Shardlow	SK 438304	20 March 1972		Agricultural Development and Advisory Service
920	Rothamsted Farm II	TL 119137	6 September 1971	16 October 1973	Rothamsted Experimental Station
921	Rainham I	TQ 546832	26 March 1973	13 June 1976	W. O. Watts & Partners, Rainham
922	Preston	SD 984401	29 April 1974		Lancashire College of Agriculture
924	Writtle	TL 676067	22 May 1975		Writtle Agricultural College
928	Rainham II	TQ 532816	4 March 1977		E. Knight, South Hall Farm, Rainham
929	North Farm	TQ 121103	14 April 1977	31 March 1980	North Farm (Washington) Ltd., Pulborough
932	Cranfield	SP 955413	22 June 1978		Ecological Physics Research Group
933	Littlehampton	TQ 044034	4 May 1979		Glasshouse Crops Research Institute
934	Kirton	TF 297395	2 May 1980		Kirton Experimental Horticulture Station
SCOTLAND					
907	Dundee	NO 341300	12 May 1965		Scottish Crop Research Institute
912	Edinburgh	NT 181737	3 April 1969		Department of Agriculture and Fisheries for Scotland
916	Elgin	NJ 185625	6 August 1970		North of Scotland College of Agriculture, Aldroughty Farm
923	Auchincruive	NS 378233	30 August 1974		West of Scotland Agricultural College
925	Stirling	NS 815968	13 August 1979		University of Stirling
926	Musselburgh	NT 337708	14 June 1976	31 October 1976	David Lowe & Sons Ltd., Monkton Hall, Musselburgh
931	Pathhead	NT 412661	30 May 1977		Scottish Plant Breeding Institute
WALES					
911	Aberystwyth	SN 632837	16 March 1969		Welsh Plant Breeding Station
IRELAND					
927	Belfast	54°33·5′ N 5° 56·5′ W	1 July 1976		Northern Ireland Department of Agriculture

HOLLAND						
909	Zeeland (Goes)	51°31′ N 3°53′ E	5 May 1968	5 June 1972	Instituut voor Plantenziektenkundig Onderzoek	
909	Zeeland (Colijnsplaat)	51°35′ N 3°49′ E	6 June 1972	,, ,, ,, ,, ,,		
930	N. E. Polder	52°38′N 5°44′ E	29 March 1977	,, ,, ,, ,, ,,		
DENMARK						
918	Copenhagen	55°40′ N 12°17′ E	1 July 1971	30 November 1977	Den kgl. Veterinaer-og Landbohøjskole	
FRANCE						
971	Arras	50°17′ N 2°46′ E	31 March 1978		ACTA/SPV	Arras
972	Landerneau	48°26′N 4°15′W	24 April 1978		ACTA/FNPPPT/ITP	Landerneau
973	Rennes	48°6′ N 1°42′ W	18 April 1978		ACTA/INRA/ITP	Rennes
974	Colmar	48°3′ N 7′2′ E	2 May 1977		ACTA/INRA	Colmar
975	Orleans	47°59′ N 1°45′ E	26 May 1978		ACTA/SPV	Orleans
976	Aigre	45°54′ N 0°01′ E	28 May 1978		ACTA	Aigre
977	Montpellier	43°37′ N 3°52′ E	13 April 1978		ACTA/INRA	Montpellier
BELGIUM						
978	Gembloux	50°33′ N 4°42′ E	1 April 1980		Station de Zoologie Appliquée de l'État, Gembloux	

* Traps in Great Britain are designated by the National Grid Reference System; all other traps are designated by their latitude and longitude

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TABLE 2

Sampling stations for the 1·2 m (4 ft) Rothamsted light traps

No.	Name	Grid reference	Years operating		Environmental category	Operator or organisation
			1st year	No. years		
1	Barnfield	TL132 135	1933	29	Farmland	Rothamsted Entomology Department
10	Bradford	SE151 310	1966	3	Urban	Mr J. Briggs
12	Hatfield A	TL222 090	1964	5	Urban	Mr S. C. Littlewood
13	Hatfield B	TL217 081	1964	4	Urban	Mr S. C. Littlewood
15	Stockton on Tees	NZ424 153	1965	1	Urban	Dr I. J. Faulkner
16	Stratfield Mortimer	SU650 645	1965	14	Woodland	Dr M. I. Crichton
17	Dale Fort	SM823 052	1965	10	Coastal	FSC
18	Flatford Mill	TM076 332	1965	5	Farmland	FSC
20	Chipping Norton	SP315 264	1966	1	Urban	Mr P. D. J. Hugo
22	Geescroft I	TL132 128	1965	14	Woodland	Rothamsted Entomology Department
23	St. Ives, Hunts	TL309 710	1965	3	Parkland	Mr H. J. Berman
24	Aberystwyth	SN600 811	1966	1	Urban	Mr T. M. Whitacker
29	Rannoch	NN595 563	1966	14	Parkland	Mr D. G. J. Barry and Dr D. J. R. Wallace
31	Dunmow	TL680 205	1966	3	Parkland	Mr M. F. Walker
33	Dungeness	TR063 196	1966	6	Coastal	Mr R. E. Scott (RSPB)
34	Allotments	TL134 134	1966	14	Parkland	Rothamsted Entomology Department
35	Bangor	SH578 720	1966	14	Urban	Mrs M. J. Morgan
36	Portland Bill	SY681 690	1966	1	Coastal	Mr F. R. Clafton
37	Helston	SW661 271	1966	1	Urban	Mr L. M. Peters
38	Killiecrankie	NN912 637	1966	3	Farmland	Mr J. E. Thorpe
39	Chester le Street	NZ275 515	1966	14	Urban	Mr T. C. Dunn
40	Lancaster	SD486 616	1966	2	Urban	Mr N. A. Robinson and Mr R. A. Hadfield
45	Malham Tarn	SD894 672	1966	13	Moorland	FSC
46	Alice Holt	SU803 428	1967	13	Woodland	Mr C. I. Carter and Mr T. M. Winter (FC (RB))
47	Dundee	NO341 299	1967	13	Parkland	Mr S. C. Gordon
48	Kindrogan	NO055 630	1967	11	Parkland	Mr B. S. Brookes *et al.*
49	Fort Augustus	NH366 092	1967	13	Woodland	FC (RB)
50	Carbost, Skye	NG385 267	1968	8	Woodland	FC
53	Preston Montford	SJ433 143	1967	5	Parkland	FSC
57	Ardross	NH629 738	1967	10	Woodland	FC
58	Elgin	NJ160 636	1967	13	Woodland	FC (RB)
59	Morangie	NH755 836	1969	1	Woodland	Mr G. Small (FC)
60	Aros, Mull	NM554 453	1967	7	Farmland	FC
61	Sutton Bonington	SK505 261	1967	3	Parkland	Dr P. W. Murphy
62	Wye	TR059 472	1967	2	Parkland	ADAS
67	Slapton Ley	SX824 450	1967	13	Farmland	FSC
68	Harrogate	SE313 526	1967	11	Urban	Dr I. J. Faulkner
69	Wisley	TQ064 591	1967	7	Woodland	Dr K. Harris
72	Castletown, IOM	SC256 686	1968	7	Parkland	Mr J. Hedges
73	Orielton	SR956 992	1967	2	Parkland	FSC
74	Cullompton	ST019 074	1968	3	Urban	Mr A. H. Dobson
76	Iwerne Minster	ST864 147	1967	2	Parkland	The late Mr H. J. Moore
77	Maentwrog	SH666 414	1968	6	Woodland	Mr M. J. D'Oyly and Mr W. I. Jones (NCC)
78	Ringwood	SU184 070	1968	8	Woodland	Mr G. Barrell (FC) and the late Mr L. W. Siggs

79	Shardlow	SK438 304	1967	8	Mixed	Mr B. Cooper *et al.* (ADAS)
80	Shirley	SP119 800	1968	4	Urban	Mr C. H. Woolman
82	Dunblane	NN779 011	1968	3	Urban	Mr G. Thomson
83	Killiecrankie Pass	NN916 626	1968	2	Woodland	Mr J. E. Thorpe
85	Prestwich	SD817 043	1968	6	Urban	Mr D. Cowie, Mr G. J. Miller *et al.*
86	Cheltenham	SP025 285	1969	1	Urban	Mr L. R. Lassman
87	Writtle	TL677 071	1968	11	Parkland	Mr K. Seale *et al.*
88	Broom's Barn	TL752 656	1968	12	Farmland	Dr G. D. Heathcote
89	Sandwick	HU435 237	1968	1	Coastal	Miss V. Johnston
90	Isleworth	TQ155 771	1968	6	Mixed	Mr T. C. Walters *et al.*
92	Nettlecombe Court	ST056 378	1968	11	Parkland	Miss K. Noble *et al.* (FSC)
93	Newton St Loe	ST695 642	1968	1	Parkland	Mr L. Wolff
94	Monks Wood	TL203 798	1969	11	Parkland	ITE
95	Gibraltar Point	TF556 580	1970	3	Coastal	Bird Observatory staff
96	Riseholme	SK985 756	1969	8	Parkland	Agricultural college staff
97	Rowardennan	NS378 958	1968	9	Woodland	Mr J. Twaddle and Messrs. R. and D. McMath
98	Auchincruive	NS384 235	1968	6	Parkland	Dr G. N. Foster
99	Geescroft II	TL131 127	1973	7	Woodland	Rothamsted Entomology Department
100	Carlisle	NY408 559	1968	1	Urban	Mrs B. E. Day
101	Keighley	SE057 423	1968	5	Urban	Mr J. C. Lavin
102	Helston	SW661 281	1968	5	Urban	Mr H. R. Ashton
103	Durham	NZ274 404	1967	1	Parkland	Dr J. C. Coulson
104	Wellington, Somerset	ST146 199	1970	5	Urban	Mr I. W. Brassington
105	Caythorpe	SK958 483	1969	2	Farmland	Mr P. A. Manderfield
106	Haverfordwest	SM952 166	1969	1	Urban	Mr P. J. Brown
107	Axminster	ST270 051	1969	1	Mixed	Mr T. J. Wallace
108	Egremont	NY008 108	1969	5	Urban	Mr R. G. Burn and Mr M. R. Mills
109	Holme Fen	TL194 884	1969	7	Farmland	NCC
111	Llysdinam	SO009 586	1975	5	Woodland	Dr F. M. Slater
112	Solihull	SP120 797	1969	4	Urban	Mr E. Cross
113	Liskeard	SX251 649	1969	1	Urban	Mr R. C. Harrison
114	Rosewarne	SW642 411	1969	11	Farmland	Mr J. N. Levitt (Exp. Hort. Stn)
116	Tow Hill	SD829 872	1975	5	Moorland	Mr H. Kemp
117	Burton on Trent	SK259 214	1969	1	Parkland	Mr G. Goodall
119	Darlaston	SO975 970	1969	2	Urban	Dr F. M. Slater
120	Wickham Bishops	TL847 123	1969	7	Mixed	Mr G. C. Davidson
121	Port Talbot	SS747 928	1969	2	Urban	Mr R. J. Boak
123	Carmarthen	SN411 205	1969	1	Urban	Mr J. M. Jones
124	Longridge	SD627 346	1970	4	Mixed	Mr E. E. Jones
125	Sandy	TL187 478	1969	5	Scrubland	RSPB
126	Aberystwyth	SN633 836	1969	8	Farmland	Mr J. A'Brook
127	Kielder	NY632 936	1969	6	Woodland	FC (RB)
128	Norwich	TG229 066	1975	1	Urban	Mr L. O. Watkin
129	Wellingborough	SP903 676	1969	5	Urban	Mr P. G. Gent
130	Bath	ST773 644	1969	11	Parkland	Mr P. Clark
131	Spurn Head	TA419 150	1970	10	Coastal	Mr B. Spence
133	Leighton Moss	SD476 750	1970	7	Mixed	Mr J. Briggs and RSPB
137	Harrogate	SE325 559	1970	1	Urban	Mr D. A. Wood
138	Market Harborough	SP731 880	1970	4	Woodland	Mr G. Myton *et al.*
139	Gwenffrwd	SN749 460	1970	5	Moorland	Mr J. Humphrey (RSPB)
140	Loch Leven	NT160 991	1970	6	Moorland	RSPB

https://doi.org/10.23637/ERADOC-1-20

Table 2 *continued*

No.	Name	Grid reference	Years operating: 1st year	Years operating: No. years	Environmental category	Operator or organisation
142	Oundle	TL039 888	1970	1	Parkland	Mr G. H. Blackman
143	Stony Stratford	SP792 405	1970	1	Urban	Mr D. Millerchip
144	Bletchley Park	SP863 337	1970	5	Urban	Mr D. Petrie
145	Shenley Brook End	SP835 355	1970	4	Farmland	Mr G. Daniels
146	Jersey	49°14′N 2°55′W	1970	10	Parkland	Mr G. Thomas
147	Simpson	SP878 367	1970	3	Farmland	Mr K. Welchman
148	Cleeve Prior	SP087 491	1970	2	Mixed	Mrs J. Eburt
149	Starcross	SX972 821	1970	8	Parkland	Mr A. Rushton and Mr R. W. Brown (ADAS)
150	Bletchley	SP866 336	1972	1	Urban	Mr A. Robinson
153	Wimborne	SY984 964	1970	2	Urban	Mr W. G. West
154	Rowton	SJ625 195	1976	2	Farmland	Mr S. C. Littlewood
157	Barnsley	SE398 131	1970	7	Urban	The late Mr F. M. Snookes
158	Ipswich	TM179 463	1970	3	Parkland	Miss V. A. Short
160	Thorpe in the Glebe	SK614 261	1970	6	Farmland	Mr and Mrs J. Anabel-Cooper
163	Arne	SY969 877	1970	7	Scrubland	Mr B. P. Pickess (RSPB)
165	Bournemouth	SZ096 913	1975	1	Urban	Mr M. S. Woodward and Mr K. Horton
167	Malton	SE777 721	1975	1	Parkland	Mr R. Coulthard and Mr P. M. Burrow
168	Sutton Bonington	SK503 260	1970	10	Parkland	Dr P. W. Murphy and Mrs M. Garner
170	Howe Park	SP830 342	1971	7	Woodland	Mr J. C. Wickham
171	Windlesham	SU942 638	1971	9	Mixed	Mr and Mrs J. A. Bailey
172	Hempstead	TQ790 647	1971	1	Urban	Mr P. Legon
173	Lydd	TR048 221	1971	3	Urban	Mr E. Carpenter
174	Tenterden	TQ834 366	1971	3	Mixed	Messrs M. S. and J. S. Carpenter
175	Lancing	TQ194 065	1971	1	Parkland	Mr S. Gray and Dr G. Shaw
176	Brighton	TQ308 075	1971	2	Urban	Mr P. G. Webb
178	East Malling	TQ712 570	1971	7	Mixed	Mr M. E. Cook
179	Pirbright	SU952 545	1971	7	Mixed	Mr J. Boorman and Mr E. Dennison
180	Hurley	SU817 813	1971	9	Farmland	Mr R. O. Clements
181	Wye	TR066 485	1971	9	Mixed	ADAS
182	Woodstock	SP455 169	1972	7	Mixed	Mr E. J. Adnams
184	Dulverton	SS867 275	1971	2	Farmland	Mr T. Pearks
185	West Buckland	SS666 315	1971	3	Parkland	Dr Angela Avens
186	Great Torrington	SS504 228	1971	8	Farmland	Mr and Mrs M. J. Staines
187	Wykeham	SE941 875	1973	6	Woodland	RC (RB)
188	Stoke	SJ938 518	1972	1	Parkland	Mr R. C. Merrifield
189	Leek	SK010 550	1971	5	Mixed	Mr M. Waterhouse (RSPB)
191	Guernsey	49°28′N 2°36′W	1971	2	Urban	Mr A. Dale
192	Ringmer	TQ450 120	1971	2	Parkland	Mr C. R. Pratt
193	Rye Meads	TL386 103	1971	1	Mixed	Mr T. R. E. Devlin
195	Pershore	SO956 448	1971	8	Parkland	Mr O. Gale
196	Rousdon	SO295 913	1971	1	Parkland	Mr R. J. Olliver
197	Dunblane	NN785 017	1972	3	Urban	Mr G. Thomson
199	Chepstow	ST534 946	1971	1	Parkland	Mr R. J. Hompstead
200	Thame	SO697 058	1971	2	Parkland	Mr C. Brookes
201	Sutton Bonington	SK503 262	1972	8	Parkland	Dr P. W. Murphy, Mrs M. Garner and Mr M. Gubbins
202	Caythorpe	SK960 480	1975	5	Parkland	Mr P. A. Manderfield

https://doi.org/10.23637/ERADOC-1-20

207	Pallaskenry	52°37·5′N 9°22·5′W	1973	3	Mixed	Father J. Butler and Mr F. O'Donnell
208	Whipsnade	TL002 179	1972	2	Woodland	Mr G. J. Buss
210	Bettyhill	NC742 636	1972	1	Coastal	Mrs Lexie Mackay
211	Torpoint	SX402 552	1972	3	Coastal	Mr J. H. Swan
212	Hereford	SO564 476	1972	7	Farmland	Exp. Farm staff
213	Gower	SS544 893	1972	8	Coastal	Mr R. G. Burn
214	Rye Meads	TL386 103	1972	1	Mixed	Middle Lea Drainage Board staff
215	Basingstoke	SU710 552	1972	4	Parkland	Mr R. Coulthard
216	Terrington	TF547 186	1972	6	Farmland	Mr W. C. Hunt (Exp. Farm)
217	Woodstock II	SP456 169	1972	1	Mixed	Mr E. J. Adnams
218	Farnborough	SU867 654	1969	2	Urban	Mr G. Barson
219	Haslemere	SU904 340	1973	7	Urban	Mr T. Winter
220	Brighton	TQ308 091	1973	7	Urban	Mr D. Stone and Mr C. R. Pratt
223	Gibraltar Point	TF555 583	1973	7	Coastal	Bird Observatory staff
224	Llandrindod Wells	SO055 615	1973	1	Urban	Mr H. Beresford Williams and Mr. B. Willis
225	Newtown	SO082 892	1973	3	Woodland	Mr R. Lovegrove (RSPB)
226	Staylittle	SN875 905	1973	7	Moorland	Mr A. Bucknell and Dr M. Newson
227	Scillies	SV907 107	1973	2	Coastal	Miss Lena Hawkridge
228	Cleppa Park	ST281 849	1973	4	Parkland	Mr D. Webley and Exp. Hort. Stn staff
231	Brecon	SN977 262	1973	3	Moorland	Mr R. Adams
232	Capel Isaac	SN584 262	1973	4	Farmland	Mr J. W. Rayment
233	Trelech	SN286 316	1973	7	Woodland	Mr B. J. Reeley
235	Llangeler	SN362 402	1973	1	Mixed	Rev. A. J. Davies
236	Cardigan	SN190 469	1973	4	Coastal	Mr G. Williams
237	Rhostryfan	SH487 574	1973	3	Mixed	Mr N. A. Richardson
240	Rhos on Sea	SH842 800	1973	1	Coastal	Mr I. Harris
242	Denbigh	SJ056 660	1973	3	Urban	Mrs E. Littler-Jones
243	Nantclwyd	SJ106 514	1976	4	Mixed	Mr I. R. Green
244	Glyn Ceiriog	SJ200 370	1973	5	Mixed	Mr W. H. Buckley
245	Caergwrle	SJ285 579	1975	2	Mixed	Mr K. G. Sutton
246	Connah's Quay	SJ297 686	1973	1	Urban	Mr A. M. Francis
248	Banchory	NO655 995	1973	2	Parkland	Dr B. Mitchell and Mr P. Marren (ITE)
249	Caerlaverock	NY052 657	1975	2	Coastal	Mr L. Colley
251	Harpenden	TL132 151	1973	3	Urban	Mr R. Coulter
252	Guernsey	49°26·2′N 2°34·3′W	1973	7	Parkland	Miss Wendy Angell
253	Ashridge	SP980 125	1975	1	Woodland	Mr J. Wilson
255	Ysbyty Ystwyth	SN735 706	1973	3	Mixed	Mr J. J. Richards
256	Lydd	TR044 209	1974	3	Coastal	Mr E. Carpenter
257	Gleadthorpe	SK592 699	1973	7	Farmland	Mr W. A. Walker and Mr D. M. Alvey (Exp. Farm)
259	Santon Downham	TL816 876	1974	6	Woodland	FB (RB)
261	East Craigs	NT181 736	1974	6	Parkland	Mr K. I. Ransome
263	Middleton in Teesdale	NY934 260	1974	6	Mixed	Mr I. Findlay (NCC)
264	Culzean Castle	NS235 095	1976	4	Parkland	Mr D. Bremner and Mr G. Riddle
265	Middlesbrough	NZ492 190	1974	1	Urban	Mr C. Thornton
266	Yarner Wood	SX786 788	1974	6	Woodland	Mr R. Prowse and Mr D. A. Rogers (NCC)
267	Wolverhampton	SO914 988	1975	5	Urban	Dr R. D. Ward
268	Burnley	SD853 343	1975	1	Urban	Mr T. Welch and Mr G. Rushton
269	East Didsbury	SJ856 904	1974	4	Mixed	Mr O. Elwood
272	Wytham	SP471 096	1975	1	Parkland	Mr G. Barson and Mr C. Rivers
274	Wells next the Sea	TF918 435	1974	6	Coastal	Mr P. Banham
275	Bedgebury	TQ723 336	1974	6	Woodland	Mr A. Westall

https://doi.org/10.23637/ERADOC-1-20

Table 2 *continued*

No.	Name	Grid reference	Years operating: 1st year	Years operating: No. years	Environmental category	Operator or organisation
276	Knock e Dhooney	NX406 024	1974	1	Coastal	Mr J. J. Martin
277	Ewingswode	TL200 797	1974	6	Woodland	ITE
278	Rochester	NY833 961	1976	4	Farmland	Mr A. Murray (Exp. Farm)
279	Matlock	SK306 608	1974	6	Parkland	Mr C. E. Channon
280	Empingham	SK909 508	1974	6	Urban	Mr M. W. Tyler
281	Moor House	NY758 328	1976	4	Moorland	Mr P. Burnham (NCC)
283	Shuttleworth	TL148 444	1974	6	Parkland	Mr S. J. Willis
284	Salway Ash	SY456 964	1974	2	Mixed	Mr A. Dale
285	Winchester	SU519 342	1974	3	Farmland	Miss H. Simkins and Mr A. V. King (Exp. Farm)
287	Gatehouse of Fleet	NX602 553	1975	5	Woodland	Mr W. Kinsey (FC (RB))
288	Preston	SD499 400	1979	1	Parkland	Mr A. Lubman
289	Wisley	TQ065 581	1976	4	Parkland	Mr A. J. Halstead
290	Sandy	TL188 478	1974	2	Scrubland	RSPB
291	Hayton	SE821 456	1975	5	Mixed	Mr I. M. Horsley
292	Westonbirt	ST847 898	1975	5	Mixed	Mr C. Webber and Mr P. J. Webb (FC)
293	Auchincruive	NS377 233	1975	5	Parkland	Dr G. N. Foster
296	Kielder	NY632 936	1975	5	Woodland	Mr G. Forbes and Mr J. D. McNeill (FC (RB))
298	Dunblane	NN778 010	1975	5	Urban	Mr G. Thomson
299	Ilford	TQ450 884	1975	3	Urban	Mrs M. Verdon and Mr P. Verdon
301	Methwold Fen	TL686 958	1975	5	Farmland	Mr G. H. Waterfall
302	Duns	NT691 620	1975	1	Mixed	Miss H. L. Jones
303	Bedlington	NZ278 827	1976	3	Urban	Dr J. Parrack
304	Haltwhistle	NY747 726	1976	2	Moorland	Mr P. J. Lornie
305	Chigwell Row	TQ465 936	1976	4	Urban	Mr I. Simms
306	Castletown IOM	SC256 687	1976	4	Parkland	Mr J. Hedges
307	West Buckland	SS665 315	1978	2	Parkland	Dr Angela Avens
308	Yarner Wood II	SX785 788	1976	4	Woodland	Mr R. Prowse and Mr D. A. Rogers (NCC)
310	Shardlow	SK437 304	1976	1	Mixed	Mr B. Cooper and Mrs Alison Dick (ADAS)
312	Bolam	NZ199 225	1976	2	Mixed	Mrs. V. Campbell
315	Baldersby	SE360 767	1976	4	Mixed	Mr T. A. Potter, snr.
318	Sunderland	NZ398 567	1976	1	Urban	Mr T. Pettigrew
319	Petworth	SU943 165	1976	2	Parkland	Mr D. Hitchman
320	Stoke on Tern	SJ639 280	1976	2	Urban	The late Mr E. Jackson
322	Newton Rigg	NY491 311	1977	3	Parkland	Miss B. Balmain
323	Windermere	SD390 957	1976	4	Parkland	Dr M. Elliott and Mrs P. Tullett
324	Bridge of Dee	NX730 590	1976	2	Mixed	Dr J. K. Jackson
325	Penninghame	NX382 696	1976	1	Woodland	Mr K. Whitacker
326	Newton Stewart	NX407 655	1976	2	Urban	Dr P. G. Hopkins
328	Lambourne	SU375 806	1976	4	Farmland	Mr R. Caswell
330	Blacktoft Sands	SE816 226	1976	4	Urban	Mr A. Grieve (RSPB)
331	Tregaron	SN687 618	1976	4	Mixed	Mr I. J. L. Tillotson (NCC)
332	Whiteford	SS437 941	1976	3	Coastal	Mr M. R. Hughes (NCC)
333	Pontrhydfendigaid	SN730 667	1976	3	Urban	Mr J. J. Richards
334	Woolverstone	TM195 385	1978	2	Parkland	Mr A. Watkins
335	Grîtnam	SU283 065	1976	1	Woodland	S. Hale and the late Mr L. W. Siggs
336	Cockayne Hatley	TL253 494	1976	4	Mixed	Mr I. P. Woiwod

https://doi.org/10.23637/ERADOC-1-20

337	Jodrell Bank	SJ796 706	1976	4	Parkland	Mr J. H. Swan
338	Waterside Mains	NX873 974	1976	4	Mixed	Mr J. F. Young
339	Glentress	NT285 396	1976	4	Woodland	Mr D. Campbell (FC)
340	Aberystwyth	SN629 837	1977	3	Mixed	Mr J. A'Brook and Mr I. J. L. Tillotson
341	Malton	SE776 722	1976	1	Parkland	Mr P. Burrows
343	Rousdon	SY289 904	1977	3	Parkland	Mr R. J. Olliver
345	Benbecula	NF797 504	1976	2	Moorland	Mr R. Sutton
346	Rhandirmwyn	SN782 441	1977	3	Mixed	Mr D. Davies
347	Cardiff	ST199 789	1977	3	Urban	Mr R. Smith
349	Harris	NG013 873	1977	3	Coastal	Mr J. McWilliam
350	Beinn Eighe	NH024 629	1977	3	Mixed	Mr H. Brown (NCC)
351	Knockan	NC188 088	1977	3	Mixed	Mr W. Henderson (NCC)
352	Inverpolly	NC074 134	1977	3	Mixed	Mr D. Duncan and Mr A. Scott (NCC)
354	Bradwell Abbey	SP827 395	1978	2	Scrubland	Mr M. Baker and Mr P. Carty
355	Luddington	SP162 523	1977	3	Parkland	Mrs K. Littlewood
356	Chingford	TQ389 947	1977	3	Urban	Mr P. Hilliard
357	Oxwich	SS504 881	1977	2	Coastal	Mr D. Elias (NCC)
359	Wellesbourne	SP269 564	1977	3	Parkland	Miss R. Kay
360	Waresley	TL254 545	1977	3	Mixed	Mr J. C. V. Day
361	Whiteknights	SU739 716	1976	2	Parkland	Dr M. I. Crichton
363	Acomb	SE584 514	1977	3	Urban	Miss G. Wilson
364	Leeds	SE262 356	1979	1	Urban	Mr J. H. Nunney
365	Edale	SK097 855	1977	3	Moorland	Major R. Weeks
366	Lydd	TR050 212	1977	3	Coastal	Mr D. Chittenden
367	Wytham	SP471 096	1976	1	Parkland	Mr C. Rivers
368	Denny Lodge	SU333 056	1977	3	Mixed	Mr F. A. Courtier (FC)
369	Norwich II	TG192 075	1978	2	Parkland	Mr K. Walters
370	Sheppey	TR952 738	1977	3	Coastal	Mr G. Burton
371	Tarleton	SD446 224	1978	2	Mixed	Mr C. A. Garside
372	New Deer	NJ885 444	1977	3	Mixed	Mr and Mrs H. Smith
374	St Albans	TL162 059	1978	1	Urban	Mr K. Jackson
375	St Abb's	NT911 678	1978	1	Mixed	Mr G. Evans
376	Beverley	TA986 403	1978	2	Parkland	Mr M. D. Alder and Mrs O. Kershaw
377	Southwick	SU634 075	1978	1	Farmland	Mr B. Pound
378	Shardlow	SK438 307	1978	2	Parkland	Mr B. Cooper and Mrs Alison Dick (ADAS)
379	Winchester	SU517 339	1978	2	Farmland	Mr A. V. King (Exp. Farm)
380	Hope	SJ303 585	1978	2	Mixed	Mr K. G. Sutton
381	Terrington	TF547 186	1978	2	Farmland	Mr W. C. Hunt (Exp. Farm)
382	Preston Montford	SJ433 143	1978	2	Parkland	Mr A. J. Bayley (FSC)
384	East Malling	TQ706 578	1978	2	Parkland	Mr M. E. Cook
385	Leek	SJ972 560	1978	2	Urban	Mr N. J. R. Wickstead
388	West Bridgford	SK578 362	1979	1	Mixed	Mr M. E. Marchant and Mr C. H. Woolman
392	Slepe Farm	SY960 859	1979	1	Scrubland	Mr D. Wheeler (NCC)
394	Sheerness	TQ927 745	1979	1	Coastal	Mr M. Crawford
398	Cromarty	NH786 672	1979	1	Coastal	Dr P. J. Tilbrook
402	Wilmslow	SJ841 801	1979	1	Urban	Dr R. H. L. Dennis
403	Arnside	SD463 788	1979	1	Coastal	Mr C. Scott
409	Oxwich	SS502 881	1979	1	Coastal	Mr R. Kerr and Mr D. Elias (NCC)

https://doi.org/10.23637/ERADOC-1-20

TABLE 3

Species of Aphididae from suction traps in Great Britain 1964–79

EULACHNUS Del Guercio, 1909
1 *agilis* (Kaltenbach, 1843)
2 *bluncki* (Börner, C., 1940)
3 *brevipilosus* (Börner, C., 1940)

SCHIZOLACHNUS Mordvilko, 1909
4 *pineti* (Fabricius, 1781)

CINARA Curtis, 1835
6 *acutirostris* Hille Ris Lambers, 1956
7 *boerneri* Hille Ris Lambers, 1956
8 *bogdanowi* (Mordvilko, 1895)
9 *cupressi* (Buckton, 1881)
11 *juniperi* (DeGeer, 1773)
13 *laricis* (Walker, 1848)
14 *pectinatae* (Nördlander, 1880)
15 *piceae* (Panzer, 1801)
17 *pinea* (Mordvilko, 1895)
18 *pini* (Linnaeus, 1758)
19 *pinicola* (Kaltenbach, 1843)
20 *schimitscheki* Börner, C., 1940
21 *tujafilina* (Del Guercio, 1909)
729 *pinihabitans* (Mordvilko, 1895)
730 *stroyani* Pasék, 1954
734 *fresai* E. E. Blanchard, 1939
735 *brauni* Börner, 1940
736 *escherichi* (Börner, 1950)

LACHNIELLA Del Guercio, 1909
22 *costata* Zetterstedt, 1828

TUBEROLACHNUS Mordvilko, 1909
23 *salignus* (Gmelin, J. F., 1788)

MACULOLACHNUS Gaumont, 1920
24 *submacula* (Walker, 1848)

LACHNUS Burmeister, 1835
26 *roboris* (Linnaeus, 1758)
757 *exsiccator* Altum, 1882

PROTRAMA Baker, 1920
28 *flavescens* (Koch, C. L., 1857)
30 *ranunculi* (Del Guercio, 1909)

NEOTRAMA Baker, 1920
31 *caudata* (Del Guercio, 1909)

TRAMA von Heyden, C. H. G., 1837
33 *rara* Mordvilko, 1908
34 *troglodytes* von Heyden, C. H. G., 1837

PERIPHYLLUS van der Hoeven, 1863
35 *acericola* (Walker, 1848)
36 *xanthomelas* (Koch, C. L., 1854)
37 *californiensis* (Shinji, 1917)
38 *hirticornis* (Walker, 1848)
39 *lyropictus* (Kessler, 1886)
41 *testudinaceus* (Fernie, 1852)

CHAITOPHORUS Koch, C. L., 1854
42 *beuthani* (Börner, C., 1950)
43 *capreae* (Mosley, O., 1841)
45 *populeti* (Panzer, 1805)
46 *populialbae* (Boyer de Fonscolombe, 1841)
47 *saliciti* (Schrank, 1801)
48 *tremulae* (Koch, C. L., 1854)
49 *truncatus* (Hausmann, 1802)
50 *versicolor* Koch, C. L., 1854
742 *leucomelas* Koch, 1854

SIPHA Passerini, 1860
51 *glyceriae* (Kaltenbach, 1843)
52 *kurdjumovi* Mordvilko, 1921

CARICOSIPHA Börner, C., 1939
55 *paniculatae* Börner, C., 1939

ATHEROIDES Haliday, 1839
58 *hirtellus* Haliday, 1839
59 *serrulatus* Haliday, 1839

CALLAPHIS Walker, 1870
60 *juglandis* (Goeze, 1778)

CHROMAPHIS Walker, 1870
61 *juglandicola* (Kaltenbach, 1843)

MYZOCALLIS Passerini, 1860
63 *castanicola* Baker, 1917
64 *coryli* (Goeze, 1778)
65 *boerneri* Stroyan, 1957

TUBERCULOIDES van der Goot, 1915
68 *annulatus* (Hartig, T., 1841)
758 *borealis* (Krzywiec, 1971)
759 *neglectus* (Krzywiec, 1966)

TUBERCULATUS Mordvilko, 1894
69 *querceus* (Kaltenbach, 1843)

EUCALLIPTERUS Schouteden, 1906
70 *tiliae* (Linnaeus, 1758)

TINOCALLIS Matsumura, 1919
71 *platani* (Kaltenbach, 1843)

TAKECALLIS Matsumura, 1917
72 *arundicolens* (Clarke, 1903)
73 *arundinariae* (Essig, 1917)

PTEROCALLIS Passerini, 1860
75 *alni* (De Geer, 1773)

PHYLLAPHIS Koch, C. L., 1856
78 *fagi* (Linnaeus, 1767)

CALLIPTERINELLA van der Goot, 1913
79 *calliptera* (Hartig, T., 1841)
80 *minutissima* (Stroyan, 1953)

KALLISTAPHIS Kirkaldy, 1905
82 *basalis* Stroyan, 1957
83 *betulicola* (Kaltenbach, 1843)

BETULAPHIS Glendenning, 1926
84 *quadrituberculata* (Kaltenbach, 1843)

MONAPHIS Walker, 1870
85 *antennata* (Kaltenbach, 1843)

SYMYDOBIUS Mordvilko, 1894
86 *oblongus* (von Heyden, C. H. G., 1837)

CLETHROBIUS Mordvilko, 1928
87 *comes* (Walker, 1848)

EUCERAPHIS Walker, 1870
88 *punctipennis* (Zetterstedt, 1828)

DREPANOSIPHUM Koch, C. L., 1855
89 *acerinum* (Walker, 1848)
90 *aceris* Koch, C. L., 1855
91 *platanoidis* (Schrank, 1801)
754 *dixoni* Hille Ris Lambers, 1971

THERIOAPHIS Walker, 1870
92 *luteola* (Börner, C., 1949)
93 *ononidis* (Kaltenbach, 1843)
94 *trifolii* (Monell, 1882)
731 *riehmi* (Börner, 1949)

TRICHOCALLIS Börner, C., 1930
95 *cyperi* (Walker, 1848)

https://doi.org/10.23637/ERADOC-1-20 *pp 21*

ALLAPHIS Mordvilko, 1921
96 *thripsoides* (Hille Ris Lambers, 1939)

SUBSALTUSAPHIS Quednau, 1953
737 *ornata* (Theobald, 1927)

JUNCOBIA Quednau, 1954
100 *leegei* (Börner, C., 1940)

PTEROCOMMA Buckton, 1879
102 *pilosum* Buckton, 1879
103 *populeum* (Kaltenbach, 1843)
104 *salicis* (Linnaeus, 1758)
105 *steinheili* (Mordvilko, 1901)

PLOCAMAPHIS Oestlund, 1923
107 *bituberculata* (Theobald, 1912)

HYALOPTERUS Koch, C. L., 1854
109 *amygdali* (Blanchard, M. E., 1840)
110 *pruni* (Geoffrey, 1762)

RHOPALOSIPHUM Koch, C. L., 1854
111 *insertum* (Walker, 1849)
112 *maidis* (Fitch, 1856)
113 *nymphaeae* (Linnaeus, 1761)
114 *padi* (Linnaeus, 1758)
122 *luzulellum* Hille Ris Lambers, 1947
739 *rufulum* Richards, 1960
750 *pilipes* Ossiannilsson, 1959

EUSCHIZAPHIS Hille Ris Lambers, 1947
115 *palustris* (Theobald, 1929)

SCHIZAPHIS Börner, C., 1931
116 *graminum* (Rondani, 1847)

PARASCHIZAPHIS Hille Ris Lambers, 1947
121 *scirpi* (Passerini, 1874)

APHIS Linnaeus, 1758
125 *sambuci* Linnaeus, 1758
132 *fabae* Scopoli, 1763
137 *rumicis* Linnaeus, 1758
142 *corniella* (Hille Ris Lambers, 1935)
147 *epilobii* Kaltenbach, 1843
150 *idaei* van der Goot, 1912
152 *nasturtii* Kaltenbach, 1843
153 *pomi* DeGeer, 1773
154 *ruborum* (Börner, C., 1931)
155 *schneideri* (Börner, C., 1940)
163 *craccivora* Koch, C. L., 1854
179 *frangulae* Kaltenbach in Koch, C. L., 1855
192 *sedi* Kaltenbach, 1843
196 *tormentillae* Passerini, 1879
204 *taraxacicola* (Börner, C., 1940)

TOXOPTERA Koch, C. L., 1856
208 *aurantii* (Boyer de Fonscolombe, 1841)

CRYPTOSIPHUM Buckton, 1879
209 *artemisiae* Buckton, 1879

CERURAPHIS Börner, C., 1926
211 *eriophori* (Walker, 1848)

DYSAPHIS Börner, C., 1931
229 *ranunculi* (Kaltenbach, 1843)

S. POMAPHIS Börner, C., 1939
233 *maritima* (Hille Ris Lambers, 1955)
234 *plantaginae* (Passerini, 1860)
235 *pyri* (Boyer de Fonscolombe, 1841)

ANURAPHIS Del Guercio, 1907
237 *catonii* Hille Ris Lambers, 1935
238 *farfarae* (Koch, C. L., 1854)
239 *subterranea* (Walker, 1852)

BRACHYCAUDUS van der Goot, 1913
241 *cardui* (Linnaeus, 1758)
243 *helichrysi* (Kaltenbach, 1843)
244 *jacobi* Stroyan, 1957
245 *klugkisti* (Börner, C., 1942)
246 *linariae* Stroyan, 1950
248 *lychnidis* (Linnaeus, 1758)
249 *persicaecola* (Boisduval, 1867)
747 *populi* (del Guercio, 1911)

S. APPELIA Börner, 1930
745 *schwartzi* Börner, 1931

THULEAPHIS Hille Ris Lambers, 1961
253 *rumexicolens* (Patch, 1917)
254 *sedi* Jacob, 1964

BRACHYCOLUS Buckton, 1879
255 *cerastii* (Kaltenbach, 1846)

DIURAPHIS Aizenberg, 1935
259 *muehlei* (Börner, C., 1950)

ASPIDAPHIS Gillette, 1917
753 *porosiphon* Börner, 1950

HAYHURSTIA Del Guercio, 1917
261 *atriplicis* (Linnaeus, 1761)
262 *cucubali* (Passerini, 1863)

BREVICORYNE van der Goot, 1915
264 *brassicae* (Linnaeus, 1758)

LIPAPHIS Mordvilko, 1928
267 *erysimi* (Kaltenbach, 1843)

LIPAMYZODES Heinze, 1960
269 *matthiolae* (Doncaster, 1954)

HYADAPHIS Kirkaldy, 1904
271 *foeniculi* (Passerini, 1860)
778 *passerini* (Del Guercio, 1911)

STAEGERIELLA Hille Ris Lambers, 1947
273 *necopinata* (Börner, C., 1939)

DECOROSIPHON Börner, C., 1939
274 *corynothrix* Börner, C., 1939

PSEUDACAUDELLA Börner, C., 1944
275 *rubida* (Börner, C., 1939)

HYALOPTEROIDES Theobald, 1916
276 *humilis* (Walker, 1852)

COLORADOA Wilson, 1910
277 *absinthii* Hille Ris Lambers, 1939
278 *achilleae* Hille Ris Lambers, 1939
280 *rufomaculata* (Wilson, 1908)
281 *tanacetina* (Walker, 1850)
748 *inodorella* Ossiannilsson, 1959

LONGICAUDUS van der Goot, 1913
283 *trirhodus* (Walker, 1849)

ERICAPHIS Börner, C., 1939
284 *ericae* (Börner, 1933)

MYZAPHIS van der Goot, 1913
286 *rosarum* (Kaltenbach, 1843)

CHAETOSIPHON Nevsky, 1929

S. PENTATRICHOPUS Börner, C., 1930
287 *fragaefolii* (Cockerell, 1901)
288 *potentillae* (Walker, 1850)
289 *tetrarhodus* (Walker, 1849)

ELATOBIUM Mordvilko, 1914
290 *abietinum* (Walker, 1849)

LIOSOMAPHIS Walker, 1868
291 *berberidis* (Kaltenbach, 1843)

https://doi.org/10.23637/ERADOC-1-20 *pp 22*

Table 3 *continued*

CAVARIELLA Del Guercio, 1911
292 *aegopodii* (Scopoli, 1763)
293 *archangelicae* (Scopoli, 1763)
295 *konoi* Takahashi, 1939
296 *pastinaceae* (Linnaeus, 1758)
298 *theobaldi* (Gillette and Bragg, 1918)
299 *intermedia* Hille Ris Lambers, 1969)

JACKSONIA Theobald, 1923
300 *papillata* Theobald, 1923

OVATUS van der Goot, 1913
301 *crataegarius* (Walker, 1850)
302 *glechomae* Hille Ris Lambers, 1947
303 *insitus* (Walker, 1849)
304 *mentharius* (van der Goot, 1913)

S. OVATOIDES Börner, C., 1939
305 *inulae* (Walker, 1849)

S. OVATOMYZUS Hille Ris Lambers, 1947
306 *calaminthae* (Macchiati, 1885)
307 *stachyos* (Hille Ris Lambers, 1947)
764 *boraginacearum* Eastop, 1952

PHORODON Passerini, 1860
308 *humuli* (Schrank, 1801)

RHOPALOMYZUS Mordvilko, 1921
309 *poae* (Gillette, 1908)

S. JUDENKOA Hille Ris Lambers, 1949
310 *lonicerae* (von Siebold, 1839)

MYZODIUM Börner, C., 1950
311 *modestum* (Hottes, 1926)

MYZUS Passerini, 1860
312 *cerasi* (Fabricius, 1775)
314 *lythri* (Schrank, 1801)
315 *ornatus* Laing, 1932

S. NECTAROSIPHON Schouteden, 1901
318 *ascalonicus* Doncaster, 1946
319 *certus* (Walker, 1849)
320 *ligustri* (Mosley, O., 1841)
321 *myosotidis* (Börner, C., 1950)
322 *persicae* (Sulzer, 1776)
740 *varians* Davidson, 1912

S. SCIAMYZUS, Stroyan, 1954
323 *cymbalariellus* Stroyan, 1967

S. FIMBRIAPHIS Richards, W. R., 1959
324 *latifrons* (Börner, C., 1942)

TUBAPHIS Hille Ris Lambers, 1947
325 *ranunculina* (Walker, 1852)

GALIOBIUM Börner, C., 1933
326 *langei* (Börner, C., 1933)

VESICULAPHIS Del Guercio, 1911
327 *theobaldi* Takahashi, 1930

ASPIDAPHIUM Börner, C., 1939
330 *escherichi* Börner, C., 1939

PARAMYZUS Börner, C., 1933
333 *heraclei* Börner, C., 1933

CRYPTOMYZUS Oestlund, 1923
335 *ballotae* Hille Ris Lambers, 1953
336 *galeopsidis* (Kaltenbach, 1843)
339 *korschelti* Börner, C., 1938
340 *ribis* (Linnaeus, 1758)

CAPITOPHORUS van der Goot, 1913
341 *carduinus* (Walker, 1850)
342 *elaeagni* (Del Guercio, 1894)
343 *hippophaes* (Walker, 1852)
344 *horni* (Börner, C., 1931)
346 *similis* van der Goot, 1915

PLEOTRICHOPHORUS Börner, C., 1930
349 *duponti* Hille Ris Lambers, 1935
350 *glandulosus* (Kaltenbach, 1843)

NASONOVIA Mordvilko, 1914
352 *compositellae* (Theobald, 1924)
354 *pilosellae* (Börner, C., 1933)
355 *ribisnigri* (Mosley, O., 1841)

S. NEOKAKIMIA Doncaster and Stroyan, 1952
356 *dasyphylli* Stroyan, 1957

HYPEROMYZUS Börner, C., 1933
358 *lactucae* (Linnaeus, 1758)
359 *lampsanae* (Börner, C., 1932)
360 *pallidus* Hille Ris Lambers, 1935

S. NEONASONOVIA Hille Ris Lambers, 1949
361 *hieracii* (Börner, C., 1939)
362 *picridis* (Borner, C. and Blunk, 1916)

S. HYPEROMYZELLA Hille Ris Lambers, 1949
363 *rhinanthi* (Schouteden, 1903)

MYZOTOXOPTERA Theobald, 1927
364 *wimshurstae* Theobald, 1927

RHOPALOSIPHONINUS Baker, 1920
366 *latysiphon* (Davidson, W. M., 1912)
367 *ribesinus* (van der Goot, 1912)
368 *staphyleae* (Koch, C. L., 1854)

S. SUBMEGOURA Hille Ris Lambers, 1953
370 *heikinheimoi* (Börner, C., 1952)

MICROLOPHIUM Mordvilko, 1914
372 *evansi* (Theobald, 1923)

AULACORTHUM Mordvilko, 1914
374 *palustre* Hille Ris Lambers, 1947
375 *rufum* Hille Ris Lambers, 1947
376 *solani* (Kaltenbach, 1843)
377 *speyeri* Börner, C., 1939

S. NEOMYZUS van der Goot, 1915
378 *circumflexum* (Buckton, 1876)

ACYRTHOSIPHON Mordvilko, 1914
381 *loti* (Theobald, 1912)
382 *malvae* (Mosley, O., 1841)
389 *pisum* (Harris, 1776)
392 *primulae* (Theobald, 1913)

SUBACYRTHOSIPHON Hille Ris Lambers, 1947
394 *cryptobius* Hille Ris Lambers, 1947

METOPOLOPHIUM Mordvilko, 1914
395 *albidum* Hille Ris Lambers, 1947
396 *dirhodum* (Walker, 1848)
397 *festucae* (Theobald, 1917)
398 *frisicum* Hille Ris Lambers, 1947
399 *tenerum* Hille Ris Lambers, 1947

CRYPTAPHIS Hille Ris Lambers, 1947
400 *poae* (Hardy, J., 1850)

RHODOBIUM Hille Ris Lambers, 1947
401 *porosum* (Sanderson, 1901)

LINOSIPHON Börner, C., 1944
402 *galiophagus* (Wimshurst, 1923)

CORYLOBIUM Mordvilko, 1914
403 *avellanae* (Schrank, 1801)

https://doi.org/10.23637/ERADOC-1-20 *pp 23*

DELPHINIOBIUM Mordvilko, 1914
404 *junackianum* (Karsch, 1887)

ANTHRACOSIPHON Hille Ris Lambers, 1947
405 *hertae* Hille Ris Lambers, 1947

MACROSIPHUM Passerini, 1860
408 *cholodkovskyi* Mordvilko, 1909
410 *euphorbiae* (Thomas, C. A., 1878)
412 *funestum* (Macchiati, 1885)
413 *gei* (Koch, C. L., 1855)
414 *hellebori* Theobald and Walton, 1923
416 *rosae* (Linnaeus, 1758)

S. SITOBION Mordvilko, 1914
420 *avenae* (Fabricius, 1775)
421 *fragariae* (Walker, 1848)
423 *eastopi* Hille Ris Lambers

DACTYNOTUS Rafinesque, 1818
426 *achilleae* (Koch, C. L., 1855)
432 *jaceicola* Hille Ris Lambers, 1939
439 *tussilaginus* (Walker, 1850)

S. UROMELAN Mordvilko, 1914
449 *taraxaci* (Kaltenbach, 1843)

MACROSIPHONIELLA Del Guercio, 1911
450 *abrotani* (Walker, 1852)
451 *absinthii* (Linnaeus, 1758)
452 *artemisiae* (Boyer de Fonscolombe, 1841)
453 *millefolii* (DeGeer, 1773)
455 *pulvera* (Walker, 1848)
456 *sanborni* (Gillette, 1908)
457 *tanacetaria* (Kaltenbach, 1843)
458 *trimaculata* Hille Ris Lambers, 1938
459 *usquertensis* Hille Ris Lambers, 1935

S. PHALANGOMYZUS Börner, C., 1939
462 *persequens* (Walker, 1852)
463 *sejuncta* (Walker, 1848)
732 *tapuskae* (Hottes & Frison, 1931)

S. ASTEROBIUM Hille Ris Lambers, 1938
464 *asteris* (Walker, 1849)

AMPHOROPHORA Buckton, 1876
465 *ampullata* Buckton, 1876

S. EUNECTAROSIPHON Del Guercio, 1913
467 *gei* (Börner, C., 1939)
468 *rubi* (Kaltenbach, 1843)

MEGOURA Buckton, 1876
470 *viciae* Buckton, 1876

MEGOURELLA Hille Ris Lambers, 1949
471 *purpurea* Hille Ris Lambers, 1949

MASONAPHIS Hille Ris Lambers, 1939
741 *lambersi* MacGillivray, 1960

S. ERICOBIUM MacGillivray, 1958
475 *goldamaryae* (Knowlton, 1938)
476 *morrisoni* (Swain, 1918)

WAHLGRENIELLA Hille Ris Lambers, 1949
477 *arbuti* (Davidson, W. M., 1910)
479 *vaccinii* (Theobald, 1924)

ANOECIA Koch, C. L., 1857
480 *corni* (Fabricius, 1775)
483 *vagans* (Koch, C. L., 1856)

GLYPHINA Koch, C. L., 1856
487 *betulae* (Linnaeus, 1758)

THELAXES Westwood, 1840
490 *dryophila* (Schrank, 1801)

MINDARUS Koch, C. L., 1857
491 *abietinus* Koch, C. L., 1857

HORMAPHIS Osten-Sacken, 1861
496 *betulina* (Horváth, 1896)

ERIOSOMA Leach, 1818
497 *lanigerum* (Hausmann, 1802)

SCHIZONEURA Hartig, T., 1839
499 *patchae* Börner, C., and Blunk, 1916
500 *ulmi* (Linnaeus, 1758)

KALTENBACHIELLA Schouteden, 1906
502 *pallida* (Haliday, 1838)

TETRANEURA Hartig, T., 1841
503 *ulmi* (Linnaeus, 1758)

ASIPHUM Koch, C. L., 1856
505 *tremulae* (Linnaeus, 1761)

PROCIPHILUS Koch, C. L., 1857
507 *fraxini* (Geoffroy, 1762)
508 *pini* (Burmeister, 1835)

MIMEURIA Börner, C., 1952
510 *ulmiphila* (Del Guercio, 1917)

THECABIUS Koch, C. L., 1857
512 *affinis* (Kaltenbach, 1843)

PEMPHIGUS Hartig, T., 1839

S. PARATHECABIUS Börner, C., 1950
523 *lysimachiae* (Börner, C., 1916)

S. PEMPHIGINUS Börner, C., 1930
524 *populi* Courchet, 1879

SMYNTHURODES Westwood, 1849
526 *betae* Westwood, 1849

FORDA van Heyden, C. H. G., 1837
527 *formicaria* von Heyden, C. H. G., 1837

S. PENTAPHIS Horváth, 1896
528 *marginata* Koch, C. L., 1857

APLONEURA Passerini, 1863
530 *lentisci* (Passerini, 1856)

BAIZONGIA Rondani, 1848
531 *pistaciae* (Linnaeus, 1767)

GEOICA Hart, 1894
532 *setulosa* (Passerini, 1860)
533 *eragrostidis* (Passerini, 1860)

MELANAPHIS van der Goot, 1917
726 *elizabethae* (Ossiannilsson ‹1967)
727 *pyraria* (Passerini, 1861)

SEMIAPHIS van der Goot, 1913
728 *dauci* (Fabricius, 1775)

NEACTAPHIS Shaposhnikov, 1950
733 *bakeri* (Cowen, 1895)

UTAMPHOROPHORA Knowlton, 1947
751 *humboldti* (Essig, 1941)

CEDROBIUM Remaudière, 1954
756 *laportei* Remaudière, 1954

1000 *EULACHNUS* Del Guercio, 1909
1001 *PERIPHYLLUS* van der Hoeven, 1863
1002 *CHAITOPHORUS* Koch, 1854
1003 *MYZOCALLIS* Passerini, 1860
1004 *PTEROCOMMA* Buckton, 1879
1005 *APHIS* Linnaeus, 1758
1006 *DYSAPHIS* Börner, 1951
1007 *HYPEROMYZUS* Börner, 1933
1008 *METOPOLOPHIUM* Mordvilko, 1914
1009 *MACROSIPHUM* Passerini, 1860
1010 *ERIOSOMA* Leach, 1818
1011 *NASONOVIA* Mordvilko, 1914
1019 *CRYPTOMYZUS* Oestlund, 1922

https://doi.org/10.23637/ERADOC-1-20 *pp 24*

Table 3 *continued*

1024 *TUBERCULOIDES* van der Goot, 1915
1030 *MYZUS* Passerini, 1860
1031 *SITOBION* Mordvilko, 1914
1036 *DIURAPHIS* Aizenberg, 1935
1045 *RHOPALOSIPHUM* Koch, 1854
1046 *CAVARIELLA* Del Guercio, 1911
1500 *CINARA* Curtis, 1835
1501 *SUBSALTUSAPHIS* Quednau, 1953
1502 *HOLCAPHIS* Hille Ris Lambers, 1939
1503 *DACTYNOTUS* Rafinesque, 1818
1504 *UROMELAN* Mordvilko, 1914
1505 *AMPHOROPHORA* Buckton, 1876
1506 *PEMPHIGUS* Hartig, 1839
2002 *ADELGES* Vallot, 1836
2003 *PHYLLOXERA* Boyer de Fonscolombe, 1834

https://doi.org/10.23637/ERADOC-1-20 *pp 25*

TABLE 4

Species of Lepidoptera from light traps in Great Britain 1933–78

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks'* Latin name
79	Lime Hawk-moth	*Mimas tiliae*	*Mimas tiliae* Linn.
80	Poplar Hawk-moth	*Laothoe populi*	*Laothoe populi* Linn.
81	Eyed Hawk-moth	*Smerinthus occellata*	*Smerinthus ocellata* Linn.
86	Privet Hawk-moth	*Sphinx ligustri*	*Sphinx ligustri* Linn.
87	Pine Hawk-moth	*Hyloicus pinastri*	*Hyloicus pinastri* Linn.
91	Bedstraw Hawk-moth	*Celerio galii*	*Hyles gallii* Rott.
95	Small Elephant Hawk-moth	*Deilephila porcellus*	*Deilephila porcellus* Linn.
96	Elephant Hawk-moth	*elpenor*	*elpenor* Linn.
97	Humming-bird Hawk-moth	*Macroglossum stellatarum*	*Macroglossum stellatarum* Linn.
100	Alder Kitten	*Harpyia bicuspis*	*Furcula bicuspis* Borkh.
101	Poplar Kitten	*bifida*	*bifida* Brahm
102	Sallow Kitten	*furcula*	*furcula* Cl.
103	Puss Moth	*Cerura vinula*	*Cerura vinula* Linn.
104	Lobster Moth	*Stauropus fagi*	*Stauropus fagi* Linn.
106	Marbled Brown	*Drymonea dodonea*	*Drymonia dodonea* D. & S.
107	Lunar Marbled Brown	*Chaonia ruficornis*	*ruficornis* Hufn.
108	Swallow Prominent	*Pheosia tremula*	*Pheosia tremula* Cl.
109	Lesser Swallow Prominent	*gnoma*	*gnoma* Fabr.
110	Pebble Prominent	*Notodonta ziczac*	*Eligmodonta ziczac* Linn.
111	Iron Prominent	*dromedarius*	*Notodonta dromedarius* Linn.
114	Great Prominent	*trepida*	*Peridea anceps* Goeze
116	Maple Prominent	*Lophopteryx cucullina*	*Ptilodontella cucullina* D. & S.
117	Coxcomb Prominent	*capucina*	*Ptilodon capucina* Linn.
118	Scarce Prominent	*Odontosia carmelita*	*Odontosia carmelita* Esp.
119	Plumed Prominent	*Ptilophora plumigera*	*Ptilophora plumigera* D. & S.
120	Pale Prominent	*Pterostoma palpina*	*Pterostoma palpina* Cl.
121	Buff-tip	*Phalera bucephala*	*Phalera bucephala* Linn.
122	Chocolate-tip	*Clostera curtula*	*Clostera curtula* Linn.
124	Small Chocolate-tip	*pigra*	*pigra* Hufn.
125	Buff Arches	*Habrosyne pyritoides*	*Habrosyne pyritoides* Hufn.
126	Peach Blossom	*Thyatira batis*	*Thyatira batis* Linn.
127	Figure of Eighty	*Tethea ocularis*	*Tethea ocularis* Linn. spp. *octogesimea* Hb. *or* D. & S.
128	Poplar Lutestring	*or*	
129	Common Lutestring	*duplaris*	*Ochropacha duplaris* Linn.
130	Satin Lutestring	*fluctuosa*	*Tetheella fluctuosa* Hb.
131	Oak Lutestring	*Asphalia diluta*	*Cymatophorima diluta* D. & S. spp. *hartwiegi* Reisser
132	Yellow-horned	*Achyla flavicornis*	*Achyla flavicornis* Linn.
133	Frosted Green	*Polyploca ridens*	*Polyploca ridens* Fabr.
135	The Vapourer	*Orgyia antiqua*	*Orygia antiqua* Linn.
136	Dark Tussock	*Dasychira fascelina*	*Dasychira fascelina* Linn.
137	Pale Tussock	*pudibunda*	*pudibunda* Linn.
138	Brown-tail	*Euproctis chrysorrhoea*	*Euproctis chrysorrhoea* Linn.
139	Yellow-tail	*similis*	*similis* Fuess.
142	White Satin Moth	*Leucoma salicis*	*Leucoma salicis* Linn.
143	Gypsy Moth	*Lymantria dispar*	*Lymantria dispar* Linn.
144	Black Arches	*monacha*	*monacha* Linn.
145	The Lackey	*Malacosoma neustria*	*Malacosoma neustria* Linn.
147	Pale Eggar	*Trichiura crataegi*	*Trichiura crataegi* Linn.
148	December Moth	*Poecilocampa populi*	*Poecilocampa populi* Linn.
149	Small Eggar	*Eriogaster lanestris*	*Eriogaster lanestris* Linn.
150	Oak Eggar	*Lasiocampa quercus*	*Lasiocampa quercus* Linn.
151	Grass Eggar	*trifolii*	*trifolii* D. & S.
152	Fox Moth	*Macrothylacia rubi*	*Macrothylacia rubi* Linn.
154	The Drinker	*Philudoria potatoria*	*Philudoria potatoria* Linn.
156	The Lappet	*Gastropacha quercifolia*	*Gastropacha quercifolia* Linn.
157	Kentish Glory	*Endromis versicolora*	*Endromis versicolora* Linn.
159	Emperor Moth	*Saturnia pavonia*	*Saturnia pavonia* Linn.
161	Oak Hook-tip	*Drepana binaria*	*Drepana binaria* Hufn.
162	Barred Hook-tip	*cultraria*	*cultraria* Fabr.

* As used by Bradley & Fletcher (1979).

https://doi.org/10.23637/ERADOC-1-20 *pp 26*

Table 4 *continued*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
163	Pebble Hook-tip	*Drepana falcataria*	*Drepana falcataria* Linn.
164	Scalloped Hook-tip	*lacertinaria*	*Falcaria lacertinaria* Linn.
165	Chinese Character	*Cilix glaucata*	*Cilix glaucata* Scop.
166	Short-cloaked Moth	*Nola cucullatella*	*Nola cucullatella* Linn.
167	Small Black Arches	*strigula*	*Meganola strigula* D. & S.
168	Kent Black Arches	*albula*	*albula* D. & S.
169	Least Black Arches	*Celama confusalis*	*Nola confusalis* H.-S.
170	Scarce Black Arches	*tuberculana*	*aerugula* Hb.
171	Red-necked Footman	*Atolmis rubricollis*	*Atolmis rubricollis* Linn.
172	Muslin Footman	*Nudaria mundana*	*Nudaria mundana* Linn.
173	Round-winged Muslin	*Thumatha senex*	*Thumatha senex* Hb.
174	Rosy Footman	*Miltochrista miniata*	*Miltochrista miniata* Forst.
176	Four-dotted Footman	*Cybosia mesomella*	*Cybosia mesomella* Linn.
177	Four-spotted Footman	*Lithosia quadra*	*Lithosia quadra* Linn.
178	Buff Footman	*deplana*	*Eilema deplana* Esp.
179	Dingy Footman	*griseola*	*griseola* Hb.
180	Common Footman	*lurideola*	*lurideola* Zinck.
181	Scarce Footman	*complana*	*complana* Linn.
183	Pygmy Footman	*pygmaeola*	*pygmaeola* Doubl.
184	Hoary Footman	*caniola*	*caniola* Hb.
185	Orange Footman	*sororcula*	*sororcula* Hufn.
186	Dotted Footman	*Pelosia muscerda*	*Pelosia muscerda* Hufn.
188	Speckled Footman	*Coscinia cribraria*	*Coscinia cribraria* Linn.
191	The Cinnabar	*Callimorpha jacobaeae*	*Tyria jacobaeae* Linn.
192	White Ermine	*Spilosoma lubricipeda*	*Spilosoma lubricipeda* Linn.
193	Water Ermine	*urticae*	*urticae* Esp.
194	Buff Ermine	*lutea*	*luteum* Hufn.
195	Muslin Moth	*Cycnia mendica*	*Diaphora mendica* Cl.
196	Clouded Buff	*Diacrisia sannio*	*Diacrisia sannio* Linn.
197	Ruby Tiger	*Phragmatobia fuliginosa*	*Phragmatobia fulginosa* Linn.
200	Garden Tiger	*Arctia caja*	*Arctia caja* Linn.
201	Cream-spot Tiger	*villica*	*villica* Linn. ssp. *britannica* Ob.
202	Jersey Tiger	*Euplagia quadripunctaria*	*Euplagia quadripunctaria* Pod.
203	Scarlet Tiger	*Panaxia dominula*	*Callimorpha dominula* Linn.
208	The Festoon	*Apoda avellana*	*Apoda limacodes* Hufn.
218	Six-spot Burnet	*Zygaena filipendulae* ssp. *anglicola*	*Zygaena filipendulae* Linn. ssp. *anglicola* Trem.
263	Reed Leopard	*Phragmataecia castaneae*	*Phragmataecia castaneae* Hb.
264	Leopard Moth	*Zeuzera pyrina*	*Zeuzera pyrina* Linn.
265	Goat Moth	*Cossus cossus*	*Cossus cossus* Linn.
266	Ghost Swift	*Hepialus humuli*	*Hepialus humuli* Linn.
267	Orange Swift	*sylvina*	*sylvina* Linn.
268	Map-winged Swift	*fusconebulosa*	*fusconebulosa* DeG.
269	Common Swift	*lupulina*	*lupulinus* Linn.
270	Gold Swift	*hecta*	*hecta* Linn.
272	Coast Dart	*Euxoa cursoria*	*Euxoa cursoria* Hufn.
273	Garden Dart	*nigricans*	*nigricans* Linn.
274	White-line Dart	*tritici*	*tritici* Linn.
276	Square-spot Dart	*obelisca*	*obelisca* D. & S. ssp. *grisea* Tutt
277	Turnip Moth	*Agrotis segetum*	*Agrotis segetum* D. & S.
278	Archer's Dart	*vestigialis*	*vestigialis* Hufn.
280	Heart and Club	*clavis*	*clavis* Hufn.
281	Light Feathered Rustic	*denticulata*	*cinerea* D. & S.
282	Shuttle-shaped Dart	*puta*	*puta* Hb.
283	Crescent Dart	*trux* ssp. *lunigera*	*trux* Hb. ssp. *lunigera* Steph.
285	Heart and Dart	*exclamationis*	*exclamationis* Linn.
286	Dark Sword-grass	*ipsilon*	*ipsilon* Hufn.
287	Sand Dart	*ripae*	*ripae* Hb.
289	True Lover's Knot	*Lycophotia varia*	*Lycophotia porphyrea* D. & S.
290	Portland Moth	*Actebia praecox*	*Ochropleura praecox* Linn.
292	Pearly Underwing	*Peridroma porphyrea*	*Peridroma saucia* Hb.
293	Northern Rustic	*Ammogrotis lucernea*	*Standfussiana lucernea* Linn.

https://doi.org/10.23637/ERADOC-1-20

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294	Dotted Rustic	*Rhyacia simulans*	*Rhyacia simulans* Hufn.
295	Stout Dart	*Spaelotis ravida*	*Spaelotis ravida* D. & S.
297	Double Dart	*Graphiphora augur*	*Graphiphora augur* Fabr.
298	Purple Clay	*Diarsia brunnea*	*Diarsia brunnea* D. & S.
299	Ingrailed Clay	*mendica*	*mendica* Fabr.
301	Barred Chestnut	*dahlii*	*dahlii* Hb.
302	Small Square-spot	*rubi*	*rubi* View.
304	Flame Shoulder	*Ochropleura plecta*	*Ochropleura plecta* Linn.
305	Heath Rustic	*Amathes agathina*	*Xestia agathina* Dup.
306	Northern Dart	*alpicola*	*alpicola* Zett. ssp. *alpina* Humph. & Westw.
308	Ashworth's Rustic	*ashworthii*	*ashworthii* Doubl.
309	Autumnal Rustic	*Paradiarsia glareosa*	*Paradiarsia glareosa* Esp.
310	Neglected or Grey Rustic	*Amathes castanea*	*Xestia castanea* Esp.
311	Dotted Clay	*baja*	*baja* D. & S.
312	Plain Clay	*Eugnorisma depuncta*	*Eugnorisma depuncta* Linn.
313	Setaceous Hebrew Character	*Amathes c-nigrum*	*Xestia c-nigrum* Linn.
314	Triple-spotted Clay	*ditrapezium*	*ditrapezium* D. & S.
315	Double Square-spot	*triangulum*	*triangulum* Hufn.
316	Square-spotted Clay	*stigmatica*	*rhomboidea* Esp.
317	Six-striped Rustic	*sexstrigata*	*sexstrigata* Haw.
318	Square-spot Rustic	*xanthographa*	*xanthographa* D. & S.
319	The Flame	*Axylia putris*	*Axylia putris* Linn.
320	Green Arches	*Anaplectoides prasina*	*Anaplectoides prasina* D. & S.
321	Great Brocade	*Eurois occulta*	*Eurois occulta* Linn.
322	White-marked	*Gypsitea leucographa*	*Cerastis leucographa* D. & S.
323	Red Chestnut	*Cerastis rubricosa*	*rubricosa* D. & S.
324	The Gothic	*Naenia typica*	*Naenia typica* Linn.
326	Cousin German	*Euschesis sobrina*	*Paradiarsia sobrina* Dup.
327	Lesser Yellow Underwing	*comes*	*Noctua comes* Hb.
328	Lunar Yellow Underwing	*orbona*	*orbona* Hufn.
329	Lesser Broad-bordered Yellow underwing	*janthina*	*janthina* D. & S.
330	Least Yellow Underwing	*interjecta*	*interjecta* Hb. ssp. *caliginosa* Schaw.
331	Large Yellow Underwing	*Noctua pronuba*	*pronuba* Linn.
332	Broad-bordered Yellow Underwing	*Lampra fimbriata*	*fimbriata* Schreb.
334	Bordered Sallow	*Pyrrhia umbra*	*Pyrrhia umbra* Hufn.
335	Marbled Clover	*Heliothis viriplaca*	*Heliothis viriplaca* Hufn.
340	Bordered Straw	*peltigera*	*peltigera* D. & S.
341	Scarce Bordered Straw	*armigera*	*Helicoverpa armigera* Hb.
342	Beautiful Yellow Underwing	*Anarta myrtilli*	*Anarta myrtilli* Linn.
345	Cabbage Moth	*Mamestra brassicae*	*Mamestra brassicae* Linn.
346	Dot Moth	*Melanchra persicariae*	*Melanchra persicariae* Linn.
347	Silvery Arches	*Polia hepatica*	*Polia hepatica* Cl.
348	Pale Shining Brown	*nitens*	*bombycina* Hufn.
351	Bright-line Brown-eye	*Diataraxia oleracea*	*Lacanobia oleracea* Linn.
353	Broom Moth	*Ceramica pisi*	*Ceramica pisi* Linn.
354	The Shears	*Hada nana*	*Hada nana* Hufn.
355	The Nutmeg	*Dicestra trifolii*	*Dicestra trifolii* Hufn.
357	Light Brocade	*Hadena w-latinum*	*Lacanobia w-latinum* Hufn.
358	Dog's Tooth	*suasa*	*suasa* D. & S.
359	Pale-shouldered Brocade	*thalassina*	*thalassina* Hufn.
360	Beautiful Brocade	*contigua*	*contigua* D. & S.
361	Glaucous Shears	*bombycina*	*Papestra biren* Goeze
363	Broad-barred White	*bicolorata*	*Hecarata bicolorata* Hufn.
365	White Spot	*albimacula*	*Hadena albimacula* Borkh.
366	Marbled Coronet	*conspersa*	*confusa* Hufn.
367	Varied Coronet	*compta*	*compta* D. & S.
368	The Lychnis	*bicruris*	*bicruris* Hufn.
369	Barrett's Marbled Coronet	*barrettii*	*luteago* D. & S. ssp. *barrettii* Doubl.
370	The Campion	*rivularis*	*rivularis* Fabr.
371	Tawny Shears	*lepida*	*perplexa* D. & S. ssp. *perplexa* D. & S.

https://doi.org/10.23637/ERADOC-1-20

Table 4 *continued*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
372	Pod Lover	*Hadena lepida* ssp. *capsophila*	*Hadena perplexa* D. & S. ssp. *capsophila* Dup.
374	White Colon	*Heliophobus albicolon*	*Sideridis albicolon* Hb.
375	Bordered Gothic	*calcatrippae*	*Heliophobus reticulata* Goeze
376	Feathered Gothic	*Tholera popularis*	*Tholera decimalis* Poda
377	Hedge Rustic	*cespitis*	*cespitis* D. & S.
378	Antler Moth	*Cerapteryx graminis*	*Cerapteryx graminis* Linn.
380	Silver Cloud	*Xylomyges conspicillaris*	*Egira conspicillaris* Linn.
382	Hebrew Character	*Orthosia gothica*	*Orthosia gothica* Linn.
383	Blossom Underwing	*miniosa*	*miniosa* D. & S.
384	Small Quaker	*cruda*	*cruda* D. & S.
385	Common Quaker	*stabilis*	*stabilis* D. & S.
386	Lead-coloured Drab	*populeti*	*populeti* Fabr.
387	Clouded Drab	*incerta*	*incerta* Fabr.
388	Twin-spotted Quaker	*munda*	*munda* D. & S.
389	Northern Drab	*advena*	*opima* Hb.
390	Powdered Quaker	*gracilis*	*gracilis* D. & S.
391	Pine Beauty	*Panolis flammea*	*Panolis flammea* D. & S.
392	Flame Wainscot	*Meliana flammea*	*Senta flammea* Curt.
393	Common Wainscot	*Leucania pallens*	*Mythimna pallens* Linn.
394	Mathew's Wainscot	*favicolor*	*favicolor* Barr.
395	Smoky Wainscot	*impura*	*impura* Hb.
396	Southern Wainscot	*straminea*	*straminea* Treit.
397	Striped Wainscot	*pudorina*	*pudorina* D. & S.
398	Obscure Wainscot	*obsoleta*	*obsoleta* Hb.
399	Shore Wainscot	*litoralis*	*litoralis* Curt.
400	Shoulder-striped Wainscot	*comma*	*comma* Hb.
401	Devonshire Wainscot	*putrescens*	*putrescens* Hb.
402	White-speck	*unipuncta*	*unipuncta* Haw.
403	L-album Wainscot	*l-album*	*l-album* Linn.
404	The Delicate	*vitellina*	*vitellina* Hb.
406	White-point	*albipuncta*	*albipuncta* D. & S.
407	The Clay	*lythargyria*	*ferrago* Fabr.
408	Brown-line Bright-eye	*conigera*	*conigera* D. & S.
409	Double line	*Mythimna turca*	*turca* Linn.
410	The Anomalous	*Stilbia anomala*	*Stilbia anomala* Haw.
411	Large Wainscot	*Rhizedra lutosa*	*Rhizedra lutosa* Hb.
413	Small Wainscot	*Arenostola pygmina*	*Photedes pygmina* Haw.
414	The Concolorous	*extrema*	*extrema* Hb.
415	Mere Wainscot	*fluxa*	*fluxa* Hb.
417	Lyme Grass	*elymi*	*elymi* Treit.
419	Fen Wainscot	*phragmitidis*	*Arenostola phragmitidis* Hb.
420	Brighton Wainscot	*Oria musculosa*	*Oria musculosa* Hb.
421	Rush Wainscot	*Nonagria algae*	*Archanara algae* Esp.
422	Webb's Wainscot	*sparganii*	*sparganii* Esp.
423	Bulrush Wainscot	*typhae*	*Nonagria typhae* Thunb.
424	Twin-spotted Wainscot	*geminipuncta*	*Archanara geminipuncta* Haw.
425	Brown-veined Wainscot	*dissoluta*	*dissoluta* Treit.
427	Small Rufous	*Coenobia rufa*	*Coenobia rufa* Haw.
428	Silky Wainscot	*Chilodes maritima*	*Chilodes maritimus* Tausch.
429	Treble Lines	*Meristis trigrammica*	*Charanyca trigrammica* Hufn.
430	Mottled Rustic	*Caradrina morpheus*	*Caradrina morpheus* Hufn.
431	The Uncertain	*alsines*	*Hoplodrina alsines* Brahm
432	The Rustic	*blanda*	*blanda* D. & S.
433	Vine's Rustic	*ambigua*	*ambigua* D. & S.
435	Pale Mottled Willow	*clavipalpis*	*Caradrina clavipalpis* Scop.
436	Small Mottled Willow	*Laphygma exigua*	*Spodoptera exigua* Hb.
438	Bird's Wing	*Dypterygia scabriuscula*	*Dypterygia scabriuscula* Linn.
441	Light Arches	*Apamea lithoxylea*	*Apamea lithoxylea* D. & S.
442	Reddish Light Arches	*sublustris*	*sublustris* Esp.
444	Dark Arches	*monoglypha*	*monoglypha* Hufn.
446	Clouded Brindle	*epomidion*	*epomidion* Haw.
447	Clouded-bordered Brindle	*crenata*	*crenata* Hufn.
448	Rustic Shoulder-knot	*sordens*	*sordens* Hb.
449	Small Clouded Brindle	*unanimis*	*unanimis* Hb.

https://doi.org/10.23637/ERADOC-1-20

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
451	Crescent Striped	*Apamea oblonga*	*Apamea oblonga* Haw.
452	Large Nutmeg	*infesta*	*anceps* D. & S.
453	The Confused	*furva*	*furva* D. & S.
		ssp. *britannica*	ssp. *britannica* Cock.
454	Dusky Brocade	*remissa*	*remissa* Hb.
455	Slender Brindle	*scolopacina*	*scolopacina* Esp.
456	Common Rustic	*secalis*	*Mesapamea secalis* Linn.
457	Double Lobed	*ophiogramma*	*Apamea ophiogramma* Esp.
458	Dingy Shears	*ypsillon*	*Enargia ypsillon* D. & S.
460	Northern Arches	*exulis*	*Apamea exulis* Lefeb.
		ssp. *assimilis*	ssp. *assimilis* Dbl.
461	Dusky Sallow	*Eremobia ochroleuca*	*Eremobia ochroleuca* D. & S.
462	Marbled Minor	*Procus strigilis*	*Oligia strigilis* Linn.
463	Tawny Marbled Minor	*latruncula*	*latruncula* D. & S.
464	Rufous Minor	*versicolor*	*versicolor* Borkh.
465	Middle-barred Minor	*fasciuncula*	*fasciuncula* Haw.
466	Rosy Minor	*literosa*	*Mesologia literosa* Haw.
467	Cloaked Minor	*furuncula*	*furuncula* D. & S.
469	Flounced Rustic	*Luperina testacea*	*Luperina testacea* D. & S.
472	Small Angle Shades	*Euplexia lucipara*	*Euplexia lucipara* Linn.
473	Angle Shades	*Phlogophora meticulosa*	*Phlogophora meticulosa* Linn.
475	The Saxon	*Hyppa rectilinea*	*Hyppa rectilinea* Esp.
476	Straw Underwing	*Thalpophila matura*	*Thalpophila matura* Hufn.
478	Small Dotted Buff	*Petilampa minima*	*Photedes minima* Haw.
479	Rosy Marbled	*Hapalotis venustula*	*Elaphria venustula* Hb.
480	Marsh Moth	*Hydrillula palustris*	*Athetis pallustris* Hb.
481	Haworth's Minor	*Celaena haworthii*	*Celaena haworthii* Curt.
482	The Crescent	*leucostigma*	*leucostigma* Hb.
			ssp. *leucostigma* Hb.
484	Ear Moth	*Hydraecia oculea*	*Amphipoea oculea* Linn.
485	Saltern Ear	*paludis*	*fucosa* Freyer
			ssp. *paludis* Tutt
486	Large Ear	*lucens*	*lucens* Freyer
487	Crinan Ear	*crinanensis*	*crinanensis* Burr.
488	Rosy Rustic	*Gortyna micacea*	*Hydraecia micacea* Esp.
490	Frosted Orange	*flavago*	*Gortyna flavago* D. & S.
491	Giant Ear	*Hydraecia hucherardi*	*Hydraecia osseola* Stdgr
			ssp. *hucherardi* Mab.
492	Heart Moth	*Dicycla oo*	*Dicycla oo* Linn.
493	Lunar-spotted Pinion	*Cosmia pyralina*	*Cosmia pyralina* D. & S.
494	Lesser-spotted Pinion	*affinis*	*affinis* Linn.
495	White-spotted Pinion	*diffinis*	*diffinis* Linn.
496	The Dun-bar	*trapezina*	*trapezina* Linn.
497	Angle-striped Sallow	*Enargia paleacea*	*Enargia paleacea* Esp.
499	Double Kidney	*Zenobia retusa*	*Ipimorpha retusa* Linn.
500	The Olive	*subtusa*	*subtusa* D. & S.
502*	Copper Underwing	*Amphipyra pyramidea*	*Amphipyra pyramidea* Linn.
503	Mouse Moth	*tragopogonis*	*tragopogonis* Cl.
504	Brown Rustic	*Rusina ferruginea*	*Rusina ferruginea* Esp.
505	Old Lady	*Mormo maura*	*Mormo maura* Linn.
506	Marbled Beauty	*Cryphia perla*	*Cryphia domestica* Hufn.
507	Marbled Green	*muralis*	*muralis* Forst.
512	The Miller	*Apatele leporina*	*Acronicta leporina* Linn.
513	The Sycamore	*aceris*	*aceris* Linn.
514	Poplar Grey	*megacephala*	*megacephala* D. & S.
515	Alder Moth	*alni*	*alni* Linn.
517	Dark Dagger	*tridens*	*tridens* D. & S.
518	Grey Dagger	*psi*	*psi* Linn.
520	Light Knot Grass	*menyanthidis*	*menyanthidis* Esp.
523	Knot Grass	*rumicis*	*rumicis* Linn.
524	The Coronet	*Craniophora ligustri*	*Craniophora ligustri* D. & S.
525	Reed Dagger	*Simyra venosa*	*Simyra albovenosa* Goeze
527	The Shark	*Cucullia umbratica*	*Cucullia umbratica* Linn.
528	Star-wort	*asteris*	*asteris* D. & S.
529	Chamomile Shark	*chamomillae*	*chamomillae* D. & S.

* See No. 2507 and text on p. 48.

https://doi.org/10.23637/ERADOC-1-20

Table 4 *continued*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
533	The Mullein	*Cucullia verbasci*	*Cucullia verbasci* Linn.
535	Striped Lychnis	*lychnitis*	*lychnitis* Ramb.
537	Golden-rod Brindle	*Lithomoia solidaginis*	*Lithomoia solidaginis* Hb.
538	Tawny Pinion	*Lithophane semibrunnea*	*Lithophane semibrunnea* Haw
539	Pale Pinion	*socia*	*socia* Hufn.
540	Blair's Shoulder-knot	*leautieri*	*leautieri* Boisd.
			ssp. *hesperica* Bours.
543	Grey Shoulder-knot	*ornitopus*	*ornitopus* Hufn.
		ssp. *lactipennis*	ssp. *lactipennis* Dadd
544	Sword-grass	*Xylena exsoleta*	*Xylena exsoleta* Linn.
545	Red Sword-grass	*vetusta*	*vetusta* Hb.
546	Early Grey	*Xylocampa areola*	*Xylocampa areola* Esp.
547	Toadflax Brocade	*Calophasia lunula*	*Calophasia lunula* Hufn.
549	Beautiful Gothic	*Leucochlaena oditis*	*Leucochlaena oditis* Hb.
550	The Sprawler	*Brachionycha sphinx*	*Brachionycha sphinx* Hufn.
551	Rannoch Sprawler	*nubeculosa*	*nubeculosa* Esp.
552	Minor Shoulder-knot	*Bombycia viminalis*	*Brachylomia viminalis* Fabr.
553	Deep-brown Dart	*Aporophyla lutulenta*	*Aporophyla lutulenta* D. & S.
554	Deep-brown Dart	*lutulenta*	*lutulenta* D. & S.
		ssp. *lunebergensis*	*ssp. lunebergensis* Freyer
555	Black Rustic	*nigra*	*nigra* Haw.
556	Feathered Brindle	*australis*	*australis* Boisd.
		ssp. *pascuea*	ssp. *pascuea* Humph. & Westw.
557	Green-brindled Crescent	*Allophyes oxyacanthae*	*Allophyes oxyacanthae* Linn.
559	Merveille de Jour	*Griposia aprilina*	*Dichonia aprilina* Linn.
560	Flame Brocade	*Trigonophora flammea*	*Trigonophora flammea* Esp.
562	Dark Brocade	*Eumichtis adusta*	*Blepharita adusta* Esp.
563	Feathered Ranunculus	*lichenea*	*Eumichtis lichenea* Hb.
564	The Suspected	*Parastichtis suspecta*	*Parastichtis suspecta* Hb.
565	Brindled Green	*Dryobotodes eremita*	*Dryobotodes eremita* Fabr.
567	Brindled Ochre	*Dasypolia templi*	*Dasypolia templi* Thunb.
568	Large Ranunculus	*Antitype flavicincta*	*Polymixis flavicincta* D. & S.
569	Grey Chi	*chi*	*Antitype chi* Linn.
570	Black-banded	*xanthomista*	*Polymixis xanthomista* Hb.
		ssp. *statices*	ssp. *statices* Gregs.
571	The Satellite	*Eupsilia transversa*	*Eupsilia transversa* Hufn.
572	Orange Underwing	*Jodia croceago*	*Jodia croceago* D. & S.
573	Dotted Chestnut	*Dasycampa rubiginea*	*Conistra rubiginea* D. & S.
574	Lunar Underwing	*Omphaloscelis lunosa*	*Omphaloscelis lunosa* Haw.
575	Red-line Quaker	*Agrochola lota*	*Agrochola lota* Cl.
576	Yellow-line Quaker	*macilenta*	*macilenta* Hb.
577	The Brick	*circellaris*	*circellaris* Hufn.
578	Beaded Chestnut	*lychnidis*	*lychnidis* D. & S.
579	Flounced Chestnut	*Anchoscelis helvola*	*helvola* Linn.
580	Brown-spot Pinion	*litura*	*litura* Linn.
581	Centre-barred Sallow	*Atethmia xerampelina*	*Atethmia centrago* Haw.
582	Orange Sallow	*Tiliacea citrago*	*Xanthia citrago* Linn.
583	Barred Sallow	*aurago*	*aurago* D. & S.
584	Pink-barred Sallow	*Citria lutea*	*togata* Esp.
585	The Sallow	*Cirrhia icteritia*	*icteritia* Hufn.
586	Dusky-lemon Sallow	*gilvago*	*gilvago* D. & S.
588	Pale-lemon Sallow	*ocellaris*	*ocellaris* Borkh.
590	The Chestnut	*Conistra vaccinii*	*Conistra vaccinii* Linn.
591	Dark Chestnut	*ligula*	*ligula* Esp.
592	Green Silver-lines	*Bena fagana*	*Pseudoips fagana* Fabr.
			ssp. *britannica* Warr.
593	Scarce Silver-lines	*Pseudoips prasinana*	*Bena prasinana* Linn.
594	Cream-bordered Green Pea	*Earias clorana*	*Earias clorana* Linn.
595	Oak Nycteoline	*Nycteola revayana*	*Nycteola revayana* Scop.
601	Small Marbled	*Eublemma parva*	*Eublemma parva* Hb.
603	Marbled White-spot	*Lithacodia fasciana*	*Lithacodia pygarga* Hufn.
606	Silver Hook	*Eustrotia uncula*	*Eustrotia uncula* Cl.
610	Red Underwing	*Catocala nupta*	*Catocala nupta* Linn.
617	Nut-tree Tussock	*Colocasia coryli*	*Colocasia coryli* Linn.
619	Figure of Eight	*Episema caeruleocephala*	*Diloba caeruleocephala* Linn.

https://doi.org/10.23637/ERADOC-1-20 **pp 31**

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
621	Golden Plusia	*Polychrisia moneta*	*Polychrisia moneta* Fabr.
623	Burnished Brass	*Plusia chrysitis*	*Diachrysia chrysitis* Linn.
625	Scarce Burnished Brass	*chryson*	*chryson* Hb.
626	Gold Spangle	*bractea*	*Autographa bractea* D. & S.
627†	Gold Spot	*festucae*	*Plusia festucae* Linn.
630	Plain Golden Y	*jota*	*Autographa jota* Linn.
631	Beautiful Golden Y	*pulchrina*	*pulchrina* Haw.
632	Ni Moth	*ni*	*Trichoplusia ni* Hb.
635	Silver Y	*gamma*	*Autographa gamma* Linn.
636	Scarce Silver Y	*interrogationis*	*Syngrapha interrogationis* Linn.
638	Dark Spectacle	*Unca trigemina*	*Abrostola trigemina* Werneb.
639	The Spectacle	*triplasia*	*triplasia* Linn.
641	Four-spotted	*Acontia luctuosa*	*Tyta luctuosa* D. & S.
644	The Blackneck	*Lygephila pastinum*	*Lygephila pastinum* Treit.
646	The Brother	*Raphia frater*	*Raphia frater* Grote
648	Straw Dot	*Rivula sericealis*	*Rivula sericealis* Scop.
649	Small Purple-barred	*Phytometra viridaria*	*Phytometra viridaria* Cl.
650	Waved Black	*Parascotia fuliginaria*	*Parascotia fuliginaria* Linn.
651	The Herald	*Scoliopteryx libatrix*	*Scoliopteryx libatrix* Linn.
652	Beautiful Snout	*Bomolocha crassalis*	*Hypena crassalis* Fabr.
653	The Snout	*Hypena proboscidalis*	*proboscidalis* Linn.
654	Bloxworth Snout	*obsitalis*	*obsitalis* Hb.
656	Buttoned Snout	*rostralis*	*rostralis* Linn.
657	White-line Snout	*Schrankia taenialis*	*Schrankia taenialis* Hb.
658	Pinion-streaked Snout	*costaestrigalis*	*costaestrigalis*
659	Marsh Oblique-barred	*Hypenodes turfosalis*	*Hypenodes turfosalis* Wocke
661	The Fan-foot	*Zanclognatha tarsipennalis*	*Herminia tarsipennalis* Treit.
662	Small Fan-foot	*nemoralis*	*nemoralis* Fabr.
663	Dotted Fan-foot	*cribrumalis*	*Macrochilo cribrumalis* Hb.
664	Clay Fan-foot	*Paracolax derivalis*	*Paracolax derivalis* Hb.
665	Common Fan-foot	*Herminia barbalis*	*Herminia strigilata* Linn.
666	Beautiful Hook-tip	*Laspeyria flexula*	*Laspeyria flexula* D. & S.
669	March Moth	*Alsophila aescularia*	*Alsophila aescularia* D. & S.
671	Grass Emerald	*Pseudoterpna pruinata* ssp. *atropunctaria*	*Pseudoterpna pruinata* Hufn. ssp. *atropunctaria* Walk.
672	Large Emerald	*Geometra papilionaria*	*Geometra papilionaria* Linn.
673	Blotched Emerald	*Comibaena pustulata*	*Comibaena bajularia* D. & S.
674	Common Emerald	*Hemithea aestivaria*	*Hemithea aestivaria* Hb.
675	Small Grass Emerald	*Chlorissa viridata*	*Chlorissa viridata* Linn.
678	Sussex Emerald	*Thalera fimbrialis*	*Thalera fimbrialis* Scop.
679	Small Emerald	*Hemistola immaculata*	*Hemistola chrysoprasaria* Esp.
680	Little Emerald	*Jodis lactearia*	*Jodis lactearia* Linn.
681	Blood-vein	*Calothysanis amata*	*Timandra griseata* Peters.
682	Birch Mocha	*Cosymbia albipunctata*	*Cyclophora albipunctata* Hufn.
683	Dingy Mocha	*pendularia*	*pendularia* Cl.
684	The Mocha	*annulata*	*annulata* Schulze
686	False Mocha	*porata*	*porata* Linn.
687	Maiden's Blush	*punctaria*	*punctaria* Linn.
688	Clay Triple-lines	*linearia*	*linearia* Hb.
689	Smoky Wave	*Scopula ternata*	*Scopula ternata* Schr.
690	Lewes Wave	*immorata*	*immorata* Linn.
691	Tawny Wave	*rubiginata*	*rubiginata* Hufn.
692	Mullein Wave	*conjugata*	*marginepunctata* Goeze
693	Lace Border	*ornata*	*ornata* Scop.
694	Small Blood-vein	*imitaria*	*imitaria* Hb.
695	Rosy Wave	*emutaria*	*emutaria* Hb.
696	Sub-angled Wave	*nigropunctata*	*nigropunctata* Hufn.
698	Lesser Cream Wave	*immutata*	*immutata* Linn.
699	Cream Wave	*lactata*	*floslactata* Haw.
700	Bright Wave	*Sterrha ochrata* ssp. *cantiata*	*Idaea ochrata* Scop. ssp. *cantiata* Prout
701	Least Carpet	*vulpinaria*	*vulpinaria* H.-S. ssp. *atrosignaria* Lempke
702	Dwarf Cream Wave	*interjectaria*	*fuscovenosa* Goeze
704	Silky Wave	*dilutaria*	*dilutaria* Hb.

† See No. 2510 and text on p. 48.

https://doi.org/10.23637/ERADOC-1-20

Table 4 *continued*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
706	Purple-bordered Gold	*Sterrha muricata*	*Idaea muricata* Hufn.
707	Single-dotted Wave	*dimidiata*	*dimidiata* Hufn.
708	Weaver's Wave	*eburnata*	*contiguaria* Hb.
		ssp. *britanniae*	ssp. *britanniae* Müll.
710	Small Dusty Wave	*seriata*	*seriata* Schr.
711	Satin Wave	*subsericeata*	*subsericeata* Haw.
712	Dotted Border Wave	*sylvestraria*	*sylvestraria* Hb.
716	Plain Wave	*straminata*	*straminata* Borkh.
717	Riband Wave	*aversata*	*aversata* Linn.
718	Treble Brown Spot	*trigeminata*	*trigeminata* Haw.
719	Small Fanfooted Wave	*biselata*	*biselata* Hufn.
720	Small Scallop	*emarginata*	*emarginata* Haw.
721	The Vestal	*Rhodometra sacraria*	*Rhodometra sacraria* Linn.
723	Large Twin-spot Carpet	*Xanthorhoe quadrifasciata*	*Xanthorhoe quadrifasciata* Cl.
724	Red Carpet	*munitata*	*munitata* Hb.
725	Dark-barred Twin-spot	*ferrugata*	*ferrugata* Cl.
726	Red Twin-spot Carpet	*spadicearia*	*spadicearia* D. & S.
727	Balsam Carpet	*biriviata*	*biriviata* Borkh.
728	Flame Carpet	*designata*	*designata* Hufn.
729	Silver-ground Carpet	*montanata*	*montanata* D. & S.
730	Garden Carpet	*fluctuata*	*fluctuata* Linn.
731	The Gem	*Nycterosea obstipata*	*Orthonama obstipata* Fabr.
732	Beech-green Carpet	*Colostygia olivata*	*Colostygia olivata* D. & S.
733	Green Carpet	*pectinataria*	*pectinataria* Knoch
734	Striped Twin-spot Carpet	*salicata*	*Coenotephria salicata* Hb.
		ssp. *latentaria*	ssp. *latentaria* Curt.
735	Mottled Grey	*multistrigaria*	*Colostygia multistrigaria* Haw.
736	Twin-spot Carpet	*didymata*	*Perizoma didymata* Linn.
737	Barberry Carpet	*Pareulype berberata*	*Pareulype berberata* D. & S.
738	Shoulder Stripe	*Earophila badiata*	*Anticlea badiata* D. & S.
739	The Streamer	*Anticlea derivata*	*derivata* D. & S.
740	Beautiful Carpet	*Mesoleuca albicillata*	*Mesoleuca albicillata* Hb.
741	Grey Mountain Carpet	*Entephria caesiata*	*Entephria caesiata* D. & S.
742	Yellow-ringed Carpet	*flavicinctata*	*flavicinctata* Hb.
743	Marsh Carpet	*Perizoma saggitata*	*Perizoma saggitata* Fabr.
744	Pretty Pinion	*blandiata*	*blandiata* D. & S.
745	Barred Carpet	*taeniata*	*taeniatum* Steph.
746	The Rivulet	*affinitata*	*affinitatum* Steph.
747	Small Rivulet	*alchemillata*	*alchemillata* Linn.
748	Sandy Carpet	*flavofasciata*	*flavofasciata* Thunb.
749	Grass Rivulet	*albulata*	*albulata* D. & S.
750	Barred Rivulet	*bifaciata*	*bifaciata* Haw.
751	Heath Rivulet	*minorata*	*minorata* Treit.
		ssp. *ericetata*	spp. *ericetata* Steph.
752	Sharp-angled Carpet	*Euphyia unangulata*	*Euphyia unangulata* Haw.
753	White-banded Carpet	*luctuata*	*Spargania luctuata* D. & S.
754	Cloaked Carpet	*picata*	*Euphia biangulata* Haw.
755	Royal Mantle	*cuculata*	*Catarhoe cuculata* Hufn.
756	Ruddy Carpet	*rubidata*	*rubidata* D. & S.
758	Yellow Shell	*bilineata*	*Camptogramma bilineata* Linn.
759	Pretty Chalk Carpet	*Melanthia procellata*	*Melanthia procellata* D. & S.
760	Oblique Striped	*Mesotype virgata*	*Mesotype virgata* Hufn.
761	Purple Bar	*Lyncometra ocellata*	*Cosmorhoe ocellata* Linn.
762	Water Carpet	*Lampropteryx suffumata*	*Lampropteryx suffumata* D. & S.
763	Devon Carpet	*otregiata*	*otregiata* Metc.
764	Broken-barred Carpet	*Electrophaes corylata*	*Electrophaes corylata* Thunb.
765	Small Phoenix	*Ecliptopera silaceata*	*Ecliptopera silaceata* D. & S.
766	Netted Carpet	*Eustroma reticulata*	*Eustroma reticulatum* D. & S.
767	The Phoenix	*Lygris prunata*	*Eulithis prunata* Linn.
768	The Chevron	*testata*	*testata* Linn.
769	Northern Spinach	*populata*	*populata* Linn.
770	The Spinach	*mellinata*	*mellinata* Fabr.
771	Barred Straw	*pyraliata*	*pyraliata* D. & S.
772	Barred Yellow	*Cidaria fulvata*	*Cidaria fulvata* Forst.
773	Blue-bordered Carpet	*Plemyria rubiginata*	*Plemyria rubiginata* D. & S.

https://doi.org/10.23637/ERADOC-1-20

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
774	Red-green Carpet	*Chloroclysta siterata*	*Chloroclysta siterata* Hufn.
775	Autumn Green Carpet	*miata*	*miata* Linn.
776	Common Marbled Carpet	*Dysstroma truncata*	*truncata* Hufn.
778	Dark Marbled Carpet	*citrata*	*citrata* Linn.
779	Grey Pine Carpet	*Thera obeliscata*	*Thera obeliscata* Hb.
780	Spruce Carpet	*variata*	*variata* D. & S.
		ssp. *britannica*	ssp. *britannica* Turn.
781	Chestnut-coloured Carpet	*cognata*	*cognata* Thunb.
782	Pine Carpet	*firmata*	*firmata* Hb.
783	Juniper Carpet	*juniperata*	*juniperata* Linn.
784	July Highflyer	*Hydriomena furcata*	*Hydriomena furcata* Thunb.
785	May Highflyer	*coerulata*	*impluviata* D. & S.
786	Ruddy Highflyer	*ruberata*	*ruberata* Freyer
787	Brown Scallop	*Philereme vetulata*	*Philereme vetulata* D. & S.
788	Dark Umber	*transversata*	*transversata* Hufn.
			ssp. *britannica* Lempke
789	The Tissue	*Triphosa dubitata*	*Triphosa dubitata* Linn.
790	Scarce Tissue	*Rheumaptera cervinalis*	*Rheumaptera cervinalis* Scop.
791	Scallop Shell	*undulata*	*undulata* Linn.
792	Argent and Sable	*hastata*	*hastata* Linn.
794	Wood Carpet	*Epirrhoe rivata*	*Epirrhoe rivata* Hb.
795	Common Carpet	*alternata*	*alternata* Müll.
796	Small Argent and Sable	*tristata*	*tristata* Linn.
797	Galium Carpet	*galiata*	*galiata* D. & S.
800	The Streak	*Chesias legatella*	*Chesias legatella* D. & S.
801	Broom-tip	*rufata*	*rufata* Fabr.
802	Chimney-Sweeper	*Odezia atrata*	*Odezia atrata* Linn.
803	Treble-Bar	*Anaitis plagiata*	*Aplocera plagiata* Linn.
804	Lesser Treble-bar	*efformata*	*efformata* Guen.
805	Manchester Treble-bar	*Carsia sororiata*	*Carsia sororiata* Hb.
		ssp. *anglica*	ssp. *anglica* Prout
806	Slender-striped Rufous	*Coenocalpe lapidata*	*Coenocalpe lapidata* Hb.
807	Small Waved Umber	*Horisme vitalbata*	*Horisme vitalbata* D. & S.
809	The Fern	*tersata*	*tersata* D. & S.
810	The Seraphim	*Lobophora halterata*	*Lobophora halterata* Hufn.
811	Small Seraphim	*Mysticoptera sexalata*	*Pterapherapteryx sexalata* Retz.
812	Yellow-barred Brindle	*Acasis viretata*	*Acasis viretata* Hb.
813	Barred Tooth-striped	*Trichopteryx polycommata*	*Trichopteryx polycommata* D. & S.
814	Early Tooth-striped	*carpinata*	*carpinata* Borkh.
815	Oblique Carpet	*Orthonama lignata*	*Orthonama vittata* Borkh.
816	Lead Belle	*Ortholitha mucronata*	*Scotopteryx mucronata* Scop.
817	July Belle	*plumbaria*	*luridata* Hufn.
			ssp. *plumbaria* Fabr.
818	Shaded Broad-bar	*chenopodiata*	*chenopodiata* Linn.
820	—	*peribolata*	*peribolata* Hb.
821	Chalk Carpet	*bipunctaria*	*bipunctaria* D. & S.
		ssp. *cretata*	ssp. *cretata* Prout
822	The Mallow	*Larentia clavaria*	*Larentia clavaria* Haw.
823	Dark Spinach	*Pelurga comitata*	*Pelurga comitata* Linn.
824	Autumnal Moth	*Oporinia autumnata*	*Epirrita autumnata* Borkh.
825	Small Autumnal Moth	*filigrammaria*	*filigrammaria* H.-S.
826	November Moth	*dilutata*	*dilutata* D. & S.
827	Pale November Moth	*christyi*	*christyi* Allen
828	Winter Moth	*Operophtera brumata*	*Operophtera brumata* Linn.
829	Northern Winter Moth	*fagata*	*fagata* Scharf.
830	Small White Wave	*Asthena albulata*	*Asthena albulata* Hufn.
831	Drab Looper	*Minoa murinata*	*Minoa murinata* Scop.
832	Small Yellow Wave	*Hydrelia flammeolaria*	*Hydrelia flammeolaria* Hufn.
833	Waved Carpet	*testaceata*	*sylvata* D. & S.
834	Dingy Shell	*Euchoeca nebulata*	*Euchoeca nebulata* Scop.
835	Welsh Wave	*Venusia cambrica*	*Venusia cambrica* Curt.
836	Blomer's Rivulet	*Discoloxia blomeri*	*Discoloxia blomeri* Curt.
888	Clouded Magpie	*Abraxas sylvata*	*Abraxas sylvata* Scop.
889	The Magpie	*grossulariata*	*grossulariata* Linn.
891	Clouded Border	*Lomaspilis marginata*	*Lomaspilis marginata* Linn.

https://doi.org/10.23637/ERADOC-1-20

Table 4 *continued*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
892	Scorched Carpet	*Ligdia adustata*	*Ligdia adustata* D. & S.
893	Sloe Carpet	*Bapta distinctata*	*Aleucis distinctata* H.-S.
894	White-spotted Pinion	*bimaculata*	*Lomographa bimaculata* Fabr.
895	Clouded Silver	*temerata*	*temerata* D. & S.
896	Common White Wave	*Deilinia pusaria*	*Cabera pusaria* Linn.
897	Common Wave	*exanthemata*	*exanthemata* Scop.
898	Barred Red	*Ellopia fasciaria*	*Hylaea fasciaria* Linn.
899	Light Emerald	*Campaea margaritata*	*Campaea margaritata* Linn.
900	Orange Moth	*Angerona prunaria*	*Angerona prunaria* Linn.
901	Peacock Moth	*Semiothisa notata*	*Semiothisa notata* Linn.
902	Sharp-angled Peacock	*alternata*	*alternata* Hb.
903	Tawny-barred Angle	*liturata*	*liturata* Cl.
904	Early Moth	*Theria rupicapraria*	*Theria primaria* Haw.
905	Spring Usher	*Erannis leucophaearia*	*Agriopis leucophaearia* D. & S.
906	Scarce Umber	*aurantiaria*	*aurantiaria* Hb.
907	Dotted Border	*marginaria*	*marginaria* Fabr.
908	Mottled Umber	*defoliaria*	*Erannis defoliaria* Cl.
909	Barred Umber	*Ananoga pulveraria*	*Plagodis pulveraria* Linn.
910	Large Thorn	*Ennomos autumnaria*	*Ennomos autumnaria* Werneb.
911	August Thorn	*quercinaria*	*quercinaria* Hufn.
912	Canary-shouldered Thorn	*Deuteronomos alniaria*	*alniaria* Linn.
913	Dusky Thorn	*fuscantaria*	*fuscantaria* Haw.
914	September Thorn	*erosaria*	*erosaria* D. & S.
915	Early Thorn	*Selenia bilunaria*	*Selenia dentaria* Fabr.
916	Lunar Thorn	*lunaria*	*lunaria* Hb.
917	Purple Thorn	*tetralunaria*	*tetralunaria* Hufn.
918	Lilac Beauty	*Apeira syringaria*	*Apiera syringaria* Linn.
919	Scalloped Hazel	*Gonodontis bidentata*	*Odontopera bidentata* Cl.
920	Feathered Thorn	*Colotois pennaria*	*Colotois pennaria* Hb.
921	Scalloped Oak	*Crocallis elinguaria*	*Crocallis elinguaria* Linn.
922	Scorched Wing	*Plagodis dolabraria*	*Plagodis dolabraria* Linn.
923	Brimstone Moth	*Opisthograptis luteolata*	*Opisthograptis luteolata* Linn.
924	Bordered Beauty	*Epione repandaria*	*Epione repandaria* Hufn.
926	Little Thorn	*Cepphis advenaria*	*Cepphis advenaria* Hb.
927	Speckled Yellow	*Pseudopanthera macularia*	*Pseudopanthera macularia* Linn.
928	Swallow-tail Moth	*Ourapteryx sambucaria*	*Ourapteryx sambucaria* Linn.
929	Pale Brindled Beauty	*Phigalia pilosaria*	*Apocheima pilosaria* D. & S.
930	Small Brindled Beauty	*Apocheima hispidaria*	*hispidaria* D. & S.
933	Brindled Beauty	*Lycia hirtaria*	*Lycia hirtaria* Cl.
934	Oak Beauty	*Biston strataria*	*Biston strataria* Hufn.
935	Peppered Moth	*betularia*	*betularia* Linn.
936	Waved Umber	*Menophra abruptaria*	*Menophra abruptaria* Thunb.
937	Ringed Carpet	*Cleora cinctaria*	*Cleora cinctaria* D. & S.
938	Willow Beauty	*rhomboidaria*	*Peribatodes rhomboidaria* D. & S.
939	Brussels Lace	*Cleorodes lichenaria*	*Cleorodes lichenaria* Hufn.
940	Satin Beauty	*Deileptenia ribeata*	*Deileptenia ribeata* Cl.
941	Mottled Beauty	*Alcis repandata*	*Alcis repandata* Linn.
943	Dotted Carpet	*jubata*	*jubata* Thunb.
944	Great Oak Beauty	*Boarmia roboraria*	*Boarmia roboraria* D. & S.
945	Pale Oak Beauty	*Pseudoboarmia punctinalis*	*Serraca punctinalis* Scop.
946	The Engrailed	*Ectropis biundulata*	*Ectropis bistortata* Goeze
948	Square Spot	*consonaria*	*consonaria* Hb.
949	Brindled White-spot	*extersaria*	*extersaria* Hb.
950	Grey Birch	*Aethalura punctulata*	*Aethalura punctulata* D. & S.
952	Horse Chestnut	*Pachycnemia hippocastanaria*	*Pachycnemia hippocastanaria* Hb.
953	The Annulet	*Gnophos obscurata*	*Gnophos obscuratus* D. & S.
954	Scotch Annulet	*obfuscata*	*obfuscatus* D. & S.
958	Common Heath	*Ematurga atomaria*	*Ematurga atomaria* Linn.
959	Bordered White	*Bupalus piniaria*	*Bupalus piniaria* Linn.
960	Bordered Grey	*Selidosema brunnearia* ssp. *scandinaviaria*	*Selidosema brunnearia* Vill. ssp. *scandinaviaria* Stdgr.
961	The V-moth	*Itame wauaria*	*Semiothisa wauaria* Linn.
962	Rannoch Looper	*brunneata*	*brunneata* Thunb.
963	Brown Silver-lines	*Lithina chlorosata*	*Petrophora chlorosata* Scop.
964	Latticed Heath	*Chiasma clathrata*	*Semiothisa clathrata* Linn.

https://doi.org/10.23637/ERADOC-1-20 *pp 35*

Heslop's species No.	South's common name	South's Latin name	Kloet and Hincks' Latin name
965	Grey Scalloped Bar	*Dyscia fagaria*	*Dyscia fagaria* Thunb.
967	Straw Belle	*Aspitates gilvaria ochrearia*	*Aspitates gilvaria* D. & S. *ochrearia* Rossi
968	Yellow Bell	*Perconia strigillaria*	*Perconia strigillaria* Hb.
969	Grass Wave	*Eupithecia* spp.	
2500	Pugs		
2501	Unidentifiable macros		
2502		*Hydraecia* spp.	
2503		*Oporinia* spp.	
2504		*Caradrina* spp.	
2505		*Procus* spp.	
2509		*Sterrha* spp.	
2511		*Dysstroma* spp.	
2512		*Apatele* spp.	
2530	Sp. No. 557 typical	*Allophyes oxyacanthae*	
2531	Sp. No. 557 melanic		
2532	Sp. No. 617 typical	*Colocasia coryli*	
2533	Sp. No. 617 melanic		
2534	Sp. No. 919 typical	*Gonodontis bidentata*	
2535	Sp. No. 919 melanic		
2536	Sp. No. 903 typical	*Semiothisa liturata*	
2537	Sp. No. 903 melanic		
2538	Sp. No. 936 typical	*Menophra abruptaria*	
2539	Sp. No. 936 melanic		
2540	Sp. No. 941 typical	*Alcis repandata*	
2541	Sp. No. 941 melanic		
2542	Sp. No. 929 typical	*Phigalia pilosaria*	
2543	Sp. No. 929 melanic		
2544	Sp. No. 938 typical	*Cleora rhomboidaria*	
2545	Sp. No. 938 melanic		
2546	Sp. No. 935 typical	*Biston betularia*	
2547	Sp. No. 935 intermediate		
2548	Sp. No. 935 melanic		
2507*	(Svensson's Copper Underwing)		*Amphipyra berbera* Rungs ssp. *svenssoni* Fletch. 1968
2510†	(Lempke's Gold Spot)		*Plusia putnami* Grote ssp. *gracilis* Lempke 1966

* See No. 502
† See No. 627 and text on p. 48.

https://doi.org/10.23637/ERADOC-1-20 *pp 36*

TABLE 5

Changes in the Aphid Bulletin *1968–80*

	Aphid Bulletin in 1968	1969	1970/71/72	1973/74/75	1976/77/78/79	1980	
389	*Acyrthosiphon pisum*	,,	,,	,,	,,	*Acyrthosiphon pisum*	389
1505	*Amphorophora* spp.	,,	,,	*Amphorophora rubi*	,,	*Amphorophora rubi*	468
132	*Aphis fabae*	,,	*Aphis fabae* grp.	,,	,,	*Aphis fabae* grp.	132
181	*Aphis gossypii*	*Aphis frangulae*	*Aphis* spp. (all				
150	*Aphis idaei*	,,	except *A. fabae*	,,	,,	*Aphis* spp (all except *A. fabae* grp.)	1005
152	*Aphis nasturtii*	,,	grp.)				
376	*Aulacorthum solani*	,,	,,	,,	,,	*Aulacorthum solani*	376
243	*Brachycaudus helichrysi*	,,	,,	,,	,,	*Brachycaudus helichrysi*	243
264	*Brevicoryne brassicae*	,,	,,	,,	,,	*Brevicoryne brassicae*	264
292	*Cavariella aegopodii*	,,	,,	,,	,,	*Cavariella aegopodii*	292
1500	*Cinara* spp.	,,	,,	,,	,,	*Cinara* spp.	1500
91	*Drepanosiphum platanoidis*	,,	,,	,,	,,	*Drepanosiphum platanoidis*	91
		Dysaphis plantaginea	,,	,,	,,	*Dysaphis plantaginea*	234
290	*Elatobium abietinum*	,,	,,	,,	,,	*Elatobium abietinum*	290
70	*Eucallipterus tiliae*						
		Eriosoma ulmi	,,	,,	,,	*Eriosoma ulmi*	500
110	*Hyalopterus pruni*	,,	,,	,,	,,	*Hyalopterus pruni*	110
		Hyperomyzus lactucae	,,	,,	,,	*Hyperomyzus lactucae*	358
410	*Macrosiphum euphorbiae*	,,	,,	,,	,,	*Macrosiphum euphorbiae*	410
470	*Megoura viciae*	,,	,,	,,	,,	*Megoura viciae*	470
396	*Metopolophium dirhodum*	,,	,,	,,	,,	*Metopolophium dirhodum*	396
397	*Metopolophium festucae*	,,	,,	,,	,,	*Metopolophium* spp.	1008
318	*Myzus ascalonicus*	,,	,,	,,	,,	*Myzus ascalonicus*	318
					Myzus certus	*Myzus certus*	319
315	*Myzus ornatus*	,,	,,	,,	,,	*Mysus ornatus*	315
322	*Myzus persicae*	,,	,,	*Myzus persicae* grp.	,,	*Myzus persicae* grp.	322
355	*Nasonovia ribisnigri*	,,	,,	,,	,,	*Nasonovia ribisnigri*	355
378	*Neomyzus circumflexum*						
514	*Pemphigus bursarius*	*Pemphigus/Prociphilus*	,,	*Pemphigus* spp.	,,	*Pemphigus* spp.	1506
287	*Pentatrichopus fragaefolii*	,,	,,	,,	,,	*Pentatrichopus fragaefolii*	287
308	*Phorodon humuli*	,,	,,	,,	,,	*Phorodon humuli*	308
		Phyllaphis fagi	,,	,,	,,	*Phyllaphis fagi*	78
111	*Rhopalosiphum insertum*	,,	,,	,,	,,	*Rhopalosiphum insertum*	111
112	*Rhopalosiphum maidis*	,,	,,	,,	,,	*Rhopalosiphum maidis*	112
114	*Rhopalosiphum padi*	,,	,,	,,	,,	*Rhopalosiphum padi*	114
420	*Sitobion avenae*	,,	,,	,,	,,	*Sitobion avenae*	420
421	*Sitobion fragariae*	,,	,,	,,	,,	*Sitobion fragariae*	421

TABLE 6

Standard Week Numbers used in tables and figures and for analysis of insect samples

Week no.	Dates	Week no.	Dates
1	1 January– 7 January	27	2 July– 8 July
2	8 January–14 January	28	9 July–15 July
3	15 January–21 January	29	16 July–22 July
4	22 January–28 January	30	23 July–29 July
5	29 January– 4 February	31	30 July– 5 August
6	5 February–11 February	32	6 August–12 August
7	12 February–18 February	33	13 August–19 August
8	19 February–25 February	34	20 August–26 August
9	26 February– 4 March	35	27 August– 2 September
10	5 March–11 March	36	3 September– 9 September
11	12 March–18 March	37	10 September–16 September
12	19 March–25 March	38	17 September–23 September
13	26 March– 1 April	39	24 September–30 September
14	2 April– 8 April	40	1 October– 7 October
15	9 April–15 April	41	8 October–14 October
16	16 April–22 April	42	15 October–21 October
17	23 April–29 April	43	22 October–28 October
18	30 April– 6 May	44	29 October– 4 November
19	7 May–13 May	45	5 November–11 November
20	14 May–20 May	46	12 November–18 November
21	21 May–27 May	47	19 November–25 November
22	28 May– 3 June	48	26 November– 2 December
23	4 June–10 June	49	3 December – 9 December
24	11 June–17 June	50	10 December–16 December
25	18 June–24 June	51	17 December–23 December
26	25 June– 1 July	52	24 December–30 December

The standard week is obtained by omitting 29 February and 31 December. The table is divided into the standard 4-week periods used in the Annual Summary (Taylor & French, 1970, 1980)

https://doi.org/10.23637/ERADOC-1-20

TABLE 7

Progressive annual arithmetic mean date of first catch (zero catch ≡ 30/12) for 30 aphids recorded in Bulletins *from 12 suction trap stations grouped into three regions (see Fig. 1) and in all regions, from 1–10 years (1970–79)*

Species name	No.	Region	1970	70–71	70–72	70–73	70–74	70–75	70–76	70–77	70–78	70–79
Acyrthosiphon pisum	389	N/S	16/6	17/6	19/6	19/6	18/6	20/6	18/6	21/6	22/6	23/6
		SW	25/5	21/5	26/5	1/6	3/6	1/6	31/5	1/6	3/6	6/6
		SE	18/5	15/5	18/5	19/5	18/5	21/5	20/5	21/5	22/5	23/5
		GB	30/5	28/5	31/5	3/6	3/6	4/6	2/6	4/6	5/6	7/6
Aphis fabae grp.	132	N/S	16/6	18/6	26/6	20/6	19/6	21/6	23/6	26/6	24/6	27/6
		SW	1/6	27/5	4/6	1/6	1/6	4/6	3/6	4/6	4/6	5/6
		SE	6/6	30/5	3/6	31/5	28/5	31/5	28/5	29/5	29/5	29/5
		GB	8/6	4/6	11/6	7/6	6/6	8/6	8/6	10/6	9/6	10/6
Amphorophora rubi	468	N/S	—	—	—	—	13/8	13/8	6/8	7/8	2/8	8/8
		SW	—	—	—	—	18/6	15/6	13/6	20/6	28/6	17/7
		SE	—	—	—	—	18/6	16/6	13/6	20/6	19/6	19/6
		GB	—	—	—	—	7/7	5/7	1/7	6/7	7/7	15/7
Aulacorthum solani	376	N/S	26/11*	20/5	8/9	20/8	4/8	24/7	16/7	23/7	24/7	6/8
		SW	20/5	11/5	19/5	17/5	17/5	15/5	14/5	17/5	24/5	28/5
		SE	6/6	23/5	9/6	3/6	30/5	30/5	26/5	4/6	5/6	21/6
		GB	28/7	21/6	7/7	24/6	17/6	12/6	8/6	15/6	17/6	28/6
Brachycaudus helichrysi	243	N/S	5/6	26/5	27/5	26/5	24/5	24/5	24/5	26/5	27/5	30/5
		SW	13/5	11/5	13/5	12/5	11/5	9/5	7/5	9/5	10/5	12/5
		SE	22/5	18/5	16/5	15/5	13/5	13/5	12/5	14/5	13/5	15/5
		GB	24/5	18/5	19/5	18/5	16/5	15/5	14/5	17/5	17/5	19/5
Brevicoryne brassicae	264	N/S	19/10	6/10	23/9	18/9	9/9	2/9	23/8	27/8	9/9	21/9
		SW	6/7	17/6	19/6	16/6	12/6	10/6	7/6	14/6	13/6	24/6
		SE	15/6	13/6	21/6	18/6	14/6	12/6	11/6	19/6	22/6	28/6
		GB	3/8	23/7	22/7	18/7	12/7	9/7	4/7	10/7	15/7	25/7
Cavariella aegopodii	292	N/S	7/6	3/6	3/6	1/6	31/5	1/6	30/5	1/6	2/6	3/6
		SW	25/5	20/5	23/5	18/5	15/5	11/5	7/5	8/5	10/5	13/5
		SE	25/5	19/5	19/5	19/5	18/5	20/5	19/5	20/5	20/5	21/5
		GB	29/5	24/5	25/5	23/5	22/5	21/5	19/5	20/5	21/5	23/5
Drepanosiphum platanoidis	91	N/S	22/5	19/5	18/5	20/5	19/5	15/5	14/5	16/5	16/5	18/5
		SW	16/5	13/5	17/5	19/5	17/5	16/5	15/5	17/5	17/5	17/5
		SE	12/5	12/5	15/5	15/5	15/5	16/5	15/5	16/5	17/5	17/5
		GB	17/5	15/5	16/5	18/5	17/5	15/5	15/5	16/5	17/5	17/5

Dysaphis plantaginea	234	N/S	22/8	15/8	4/9	21/9	5/10	14/10	19/10	17/10	21/10	25/10
		SW	17/7	15/7	17/7	18/7	21/7	27/7	27/7	22/7	21/7	21/7
		SE	9/6	9/6	14/6	13/6	12/6	17/6	15/6	15/6	15/6	15/6
		GB	28/7	13/7	22/7	28/7	2/8	9/8	10/8	8/8	9/8	10/8
Elatobium abietinum	290	N/S	30/5	20/5	20/5	19/5	19/5	19/5	18/5	26/5	25/5	27/5
		SW	14/5	9/5	30/5	24/5	19/5	17/5	15/5	16/5	15/5	15/5
		SE	24/5	13/5	12/5	12/5	12/5	12/5	11/5	13/5	12/5	13/5
		GB	22/5	14/5	21/5	18/5	17/5	16/5	15/5	18/5	17/5	18/5
Eriosoma ulmi	500	N/S	17/6	18/6	20/6	19/6	19/6	19/6	19/6	20/6	20/6	20/6
		SW	10/6	14/6	17/6	16/6	14/6	25/6	24/6	29/6	27/6	30/6
		SE	7/6	9/6	10/6	10/6	9/6	11/6	10/6	10/6	10/6	11/6
		GB	11/6	14/6	16/6	15/6	14/6	18/6	18/6	20/6	19/6	20/6
Hyalopterus pruni	110	N/S	19/6	23/6	23/6	20/6	20/6	22/6	21/6	21/6	22/6	23/6
		SW	7/6	9/6	15/6	11/6	10/6	17/6	16/6	16/6	17/6	18/6
		SE	7/6	8/6	11/6	8/6	7/6	10/6	9/6	9/6	10/6	10/6
		GB	11/6	13/6	16/6	13/6	12/6	16/6	15/6	16/6	17/6	17/6
Hyperomyzus lactucae	358	N/S	18/6	17/6	14/6	26/6	23/6	23/6	21/6	20/6	21/6	20/6
		SW	31/5	28/5	3/6	31/5	29/5	22/5	22/5	23/5	25/5	26/5
		SE	25/5	23/5	26/5	26/5	24/5	25/5	24/5	25/5	26/5	27/5
		GB	4/6	2/6	4/6	7/6	5/6	3/6	1/6	2/6	3/6	4/6
Macrosiphum euphorbiae	410	N/S	5/7	16/6	18/6	15/6	13/6	10/6	9/6	17/6	16/6	18/6
		SW	24/5	16/5	24/5	23/5	19/5	17/5	16/5	16/5	16/5	20/5
		SE	30/5	27/5	24/5	22/5	18/5	19/5	17/5	18/5	18/5	21/5
		GB	9/6	30/5	1/6	30/5	27/5	26/5	24/5	27/5	27/5	30/5
Megoura viciae	470	N/S	2/10*	14/9	8/9	24/8	22/8	21/8	20/8	1/9	14/9	13/9
		SW	1/7	26/6	15/7	25/7	27/7	15/8	3/9	18/9	29/9	26/9
		SE	18/9	14/10	10/10	14/9	30/8	22/8	27/8	11/9	24/9	20/9
		GB	27/8	28/8	31/8	21/8	16/8	19/8	27/8	10/9	22/9	20/9
Metopolophium dirhodum	396	N/S	18/6	18/6	15/6	13/6	14/6	13/6	12/6	15/6	15/6	17/6
		SW	19/5	4/5	10/5	11/5	10/5	7/5	29/4	2/5	2/5	6/5
		SE	27/5	19/5	28/5	26/5	20/5	11/5	11/5	13/5	13/5	15/5
		GB	1/6	24/5	28/5	27/5	25/5	21/5	18/5	20/5	20/5	23/5
Metopolophium festucae	397	N/S	27/6	4/6	31/5	28/5	25/5	25/5	24/5	14/6	15/6	17/6
		SW	14/5	11/5	13/5	7/5	1/5	29/4	1/5	8/5	9/5	11/5
		SE	19/5	13/5	12/5	10/5	6/5	2/5	3/5	7/5	9/5	12/5
		GB	30/5	19/5	19/5	15/5	11/5	9/5	9/5	20/5	21/5	23/5

* Effect of zero samples (see Table 8).

https://doi.org/10.23637/ERADOC-1-20

TABLE 7 *continued*

Species name	No.	Region	1970	70–71	70–72	70–73	70–74	70–75	70–76	70–77	70–78	70–79
Myzus ascalonicus	318	N/S	26/5	12/5	10/5	25/4	27/4	29/4	1/5	18/5	19/5	26/5
		SW	12/5	21/4	22/4	15/4	15/4	13/4	15/4	21/4	29/4	1/5
		SE	10/5	3/5	1/5	21/4	19/4	13/4	9/4	13/4	15/4	18/4
		GB	16/5	2/5	1/5	20/4	20/4	18/4	18/4	27/4	1/5	5/5
Myzus certus	319	N/S	—	—	—	—	—	—	3/9	7/9	29/8	28/8
		SW	—	—	—	—	—	—	22/7	18/7	18/7	16/7
		SE	—	—	—	—	—	—	8/7	6/7	6/7	14/7
		GB	—	—	—	—	—	—	1/8	31/7	28/7	30/7
Myzus ornatus	315	N/S	16/11*	21/8	21/8	1/8	29/7	15/7	8/7	15/7	21/7	1/8
		SW	7/5	19/4	8/5	27/4	25/4	15/4	12/4	17/4	30/4	13/5
		SE	25/7	9/6	10/6	31/5	22/5	20/5	16/5	30/5	1/6	10/6
		GB	5/8	16/6	23/6	9/6	5/6	27/5	22/5	31/5	7/6	18/6
Myzus persicae grp.	322	N/S	18/7	6/7	1/7	1/7	26/6	24/6	19/6	24/6	27/6	1/7
		SW	20/5	17/5	22/5	18/5	17/5	11/5	6/5	10/5	14/5	18/5
		SE	27/5	20/5	25/5	22/5	17/5	16/5	14/5	16/5	20/5	24/5
		GB	11/6	3/6	5/6	3/6	30/5	27/5	24/5	27/5	31/5	4/6
Nasonovia ribisnigri	355	N/S	19/6	9/6	11/6	10/6	12/6	15/6	16/6	25/6	25/6	27/6
		SW	8/6	29/5	2/6	31/5	29/5	30/5	28/5	30/5	3/6	3/6
		SE	22/5	19/5	25/5	26/5	23/5	25/5	24/5	26/5	27/5	27/5
		GB	6/6	29/5	2/6	2/6	1/6	3/6	2/6	7/6	8/6	9/6
Pemphigus spp.	1506	N/S	1/7	30/6	5/7	7/7	3/7	7/7	29/6	3/7	4/7	5/7
		SW	15/6	8/6	19/6	20/6	23/6	26/6	24/6	27/6	29/6	30/6
		SE	10/6	19/6	24/6	22/6	20/6	26/6	24/6	24/6	24/6	24/6
		GB	18/6	19/6	26/6	26/6	25/6	30/6	26/6	28/6	29/6	29/6
Phorodon humuli	308	N/S	21/6	25/6	1/7	27/6	28/6	6/7	3/7	8/7	6/7	6/7
		SW	3/6	5/6	10/6	8/6	6/6	6/6	12/6	12/6	11/6	11/6
		SE	29/5	26/5	26/5	26/5	25/5	26/5	25/5	26/5	26/5	27/5
		GB	7/6	8/6	12/6	10/6	9/6	12/6	13/6	15/6	14/6	14/6
Phyllaphis fagi	78	N/S	10/6	3/6	7/6	4/6	7/6	6/6	4/6	10/6	9/6	9/6
		SW	3/6	4/6	21/6	16/6	24/6	22/6	17/6	24/6	21/6	26/6
		SE	18/5	20/5	1/6	29/5	30/5	3/6	2/6	2/6	2/6	2/6
		GB	31/5	30/5	9/6	6/6	10/6	10/6	8/6	12/6	11/6	12/6
Rhopalosiphum insertum	111	N/S	3/6	10/6	5/6	3/6	2/6	4/6	29/5	29/5	29/5	30/5
		SW	12/5	20/5	24/5	26/5	15/5	17/5	16/5	18/5	19/5	20/5
		SE	30/5	6/6	30/5	31/5	28/5	30/5	28/5	28/5	28/5	28/5
		GB	26/5	2/6	30/5	27/5	25/5	27/5	24/5	25/5	26/5	26/5

https://doi.org/10.23637/ERADOC-1-20

Rhopalosiphum maidis	112	N/S	12/8	25/7	3/8	25/7	20/7	18/7	29/7	29/7	29/7	24/5	27/7
		SW	21/6	22/6	30/6	28/6	24/6	30/6	9/7	5/7	3/7	9/4	2/7
		SE	25/6	17/7	24/7	17/7	24/7	21/7	31/7	28/7	22/7	5/5	17/7
		GB	10/7	11/7	19/7	13/7	13/7	13/7	23/7	21/7	18/7	3/5	16/7
Rhopalosiphum padi	114	N/S	28/5	26/5	2/6	23/5	26/5	23/5	22/5	23/5	24/5	27/5	
		SW	15/4	8/4	23/4	16/4	19/4	7/4	4/4	8/4	9/4	13/4	
		SE	19/5	7/5	12/5	7/5	6/5	30/4	29/4	2/5	5/5	7/5	
		GB	11/5	4/5	13/5	5/5	7/5	30/4	29/4	1/5	3/5	6/5	
Sitobion avenae	420	N/S	27/6	13/6	12/6	11/6	10/6	9/6	7/6	7/6	9/6	12/6	
		SW	19/5	16/5	21/5	16/5	14/5	7/5	7/5	8/5	10/5	15/5	
		SE	24/5	16/5	15/5	16/5	15/5	15/5	14/5	14/5	16/5	20/5	
		GB	3/6	26/5	26/5	25/5	24/5	21/5	19/5	20/5	22/5	26/5	
Sitobion fragariae	421	N/S	19/7	25/6	22/6	19/6	17/6	19/6	17/6	22/6	20/6	21/6	
		SW	19/5	7/5	16/5	18/5	16/5	15/5	14/5	13/5	14/5	15/5	
		SE	31/5	28/5	28/5	18/5	18/5	20/5	20/5	21/5	19/5	20/5	
		GB	12/6	30/5	1/6	29/5	27/5	28/5	27/5	29/5	28/5	29/5	

* Effect of zero samples (see Table 8)

https://doi.org/10.23637/ERADOC-1-20

TABLE 8

Progressive annual arithmetic sample means (to nearest integer) for 30 aphids recorded in Bulletins *from 12 suction trap stations grouped into three regions (see Fig. 1) and in all regions, from 1–10 years (1970–79)*

Species name	No.	Region	1970	70–71	70–72	70–73	70–74	70–75	70–76	70–77	70–78	70–79
Acyrthosiphon pisum	389	N/S	21	35	31	29	31	29	47	42	51	72
		SW	20	24	19	23	20	20	23	30	30	36
		SE	292	256	183	168	140	134	153	166	166	243
		GB	111	105	78	73	64	61	74	79	82	117
Aphis fabae grp.	132	N/S	803	449	458	443	434	378	333	302	343	362
		SW	103	132	226	252	224	189	169	176	176	173
		SE	993	688	796	801	768	677	597	680	678	879
		GB	633	423	493	499	475	415	367	386	399	471
Amphorophora rubi	468	N/S	—	—	—	—	3	3	4	5	5	6
		SW	—	—	—	—	6	11	12	11	10	9
		SE	—	—	—	—	4	5	8	8	8	8
		GB	—	—	—	—	4	7	8	8	7	8
Aulacorthum solani	376	N/S	0	4	4	3	5	6	7	6	6	5
		SW	22	26	22	20	20	22	22	20	19	18
		SE	5	8	7	7	8	10	11	10	10	9
		GB	9	13	11	10	11	13	13	12	12	11
Brachycaudus helichrysi	243	N/S	91	171	243	246	260	294	273	254	258	239
		SW	1133	1105	827	695	787	718	679	652	660	623
		SE	418	930	1035	1126	1171	1210	1097	1068	1057	1008
		GB	547	735	702	689	739	741	683	658	658	623
Brevicoryne brassicae	264	N/S	6	4	8	6	6	7	13	11	10	9
		SW	21	363	254	197	162	157	171	156	173	156
		SE	978	574	414	375	308	332	362	320	295	275
		GB	335	314	225	193	159	165	182	162	159	147
Cavariella aegopodii	292	N/S	36	79	136	117	131	115	126	116	111	121
		SW	88	280	233	221	245	209	208	234	215	216
		SE	64	844	658	717	705	602	570	624	582	603
		GB	63	401	342	352	360	308	301	325	303	313
Drepanosiphum platanoidis	91	N/S	2455	1603	1519	1205	1177	1055	1228	1116	1285	1219
		SW	881	753	633	491	456	401	507	450	446	438
		SE	1987	1291	1083	836	724	611	595	539	491	519
		GB	1774	1216	1078	844	786	689	777	702	741	725

Dysaphis plantaginea	234	N/S	2	2	2	1	1	1	1	1	1	1	1	1	1
		SW	58	51	38	34	30	28	36	35	35	35	33	33	33
		SE	145	95	71	70	69	60	60	58	55	55	51	51	51
		GB	68	49	37	35	34	30	32	31	30	30	28	28	28
Elatobium abietinum	290	N/S	5	223	166	297	269	250	237	211	190	171	171	171	171
		SW	83	321	224	207	211	262	252	250	237	241	241	241	241
		SE	30	180	133	139	150	133	130	116	133	121	121	121	121
		GB	39	241	174	215	210	215	206	192	186	178	178	178	178
Eriosoma ulmi	500	N/S	56	57	76	80	84	73	90	84	88	89	89	89	89
		SW	84	51	42	45	38	32	31	28	26	24	24	24	24
		SE	410	255	187	181	151	128	119	107	102	106	106	106	106
		GB	183	121	102	102	91	78	80	73	72	73	73	73	73
Hyalopterus pruni	110	N/S	31	196	1161	896	739	709	664	589	530	492	492	492	492
		SW	99	237	299	273	239	203	192	239	219	222	222	222	222
		SE	287	937	823	855	758	641	626	701	653	889	889	889	889
		GB	139	456	761	675	579	518	494	510	467	534	534	534	534
Hyperomyzus lactucae	358	N/S	12	12	26	22	23	24	27	25	23	23	23	23	23
		SW	55	55	48	43	39	40	39	45	43	42	42	42	42
		SE	67	72	62	58	58	64	59	61	59	80	80	80	80
		GB	44	46	45	41	40	43	42	44	41	48	48	48	48
Macrosiphum euphorbiae	410	N/S	29	45	81	69	85	94	89	86	96	92	92	92	92
		SW	33	33	29	33	35	48	50	87	85	79	79	79	79
		SE	46	42	41	52	66	71	80	82	78	79	79	79	79
		GB	36	40	50	51	62	71	73	85	86	83	83	83	83
Megoura viciae	470	N/S	0	1	2	2	2	2	2	2	1	1	1	1	1
		SW	2	4	3	3	3	3	2	2	2	2	2	2	2
		SE	4	3	3	5	5	5	4	4	3	4	4	4	4
		GB	2	3	3	3	4	3	3	2	2	2	2	2	2
Metopolophium dirhodum	396	N/S	1110	687	646	645	715	784	986	893	1609	2014	2014	2014	2014
		SW	164	107	196	164	141	147	224	293	278	368	368	368	368
		SE	2328	1964	1491	1174	1000	1111	1141	1084	1120	5125	5125	5125	5125
		GB	1201	920	777	661	619	681	783	757	1002	2502	2502	2502	2502
Metopolophium festucae	397	N/S	16	109	98	78	78	82	93	81	73	69	69	69	69
		SW	50	55	43	43	43	50	47	44	43	41	41	41	41
		SE	25	153	152	150	210	187	177	163	152	146	146	146	146
		GB	30	106	97	90	110	106	106	96	89	85	85	85	85
Myzus ascalonicus	318	N/S	16	33	34	42	47	48	47	41	38	35	35	35	35
		SW	33	51	41	37	35	39	37	33	31	29	29	29	29
		SE	116	127	103	109	143	135	130	115	108	98	98	98	98
		GB	55	70	59	63	75	74	71	63	59	54	54	54	54

https://doi.org/10.23637/ERADOC-1-20

TABLE 8 *continued*

Species name	No.	Region	1970	70–71	70–72	70–73	70–74	70–75	70–76	70–77	70–78	70–79
Myzus certus	319	N/S	—	—	—	—	—	—	8	7	7	6
		SW	—	—	—	—	—	—	11	11	10	9
		SE	—	—	—	—	—	—	19	17	16	15
		GB	—	—	—	—	—	—	13	12	11	10
Myzus ornatus	315	N/S	0	3	4	4	5	6	7	6	6	5
		SW	6	12	10	11	13	18	19	17	16	14
		SE	2	7	6	8	9	12	12	11	10	9
		GB	3	7	7	8	9	12	12	11	10	9
Myzus persicae grp.	322	N/S	75	58	112	120	124	154	149	135	122	114
		SW	47	118	106	112	94	95	96	107	104	96
		SE	243	185	159	183	171	210	288	267	252	249
		GB	122	120	126	138	130	153	178	169	159	153
Nasonovia ribisnigri	355	N/S	5	6	7	6	6	6	6	6	6	6
		SW	18	30	34	29	25	23	22	27	26	25
		SE	22	26	24	22	22	21	20	21	22	24
		GB	15	20	21	19	18	17	16	18	18	18
Pemphigus spp.	1506	N/S	407	541	550	459	378	329	311	280	263	246
		SW	789	1559	1336	1339	1086	942	873	773	770	711
		SE	583	464	374	324	273	236	218	205	265	307
		GB	593	855	753	707	579	502	467	419	433	421
Phorodon humuli	308	N/S	4	11	11	11	9	8	8	8	11	11
		SW	82	134	146	124	256	220	214	242	224	216
		SE	213	597	502	726	866	759	726	1061	985	979
		GB	100	247	219	287	377	329	316	437	407	402
Phyllaphis fagi	78	N/S	16	48	102	337	281	257	231	204	184	167
		SW	15	19	16	16	14	13	16	14	13	13
		SE	27	78	60	119	105	88	110	101	91	88
		GB	19	49	59	158	133	119	119	106	96	89
Rhopalosiphum insertum	111	N/S	2412	2353	3150	2736	2371	2033	1896	1782	1863	2094
		SW	1817	2842	2569	2307	2057	1777	1565	1439	1865	2002
		SE	472	888	946	821	751	675	611	772	1318	1338
		GB	1567	2028	2222	1954	1726	1495	1357	1331	1682	1812
Rhopalosiphum maidis	112	N/S	7	6	5	4	4	11	10	10	9	22
		SW	27	22	18	19	17	16	15	16	15	25
		SE	15	11	8	10	9	9	9	11	10	60
		GB	16	13	10	11	10	12	11	12	12	36

https://doi.org/10.23637/ERADOC-1-20 pp 45

Rhopalosiphum padi	114	N/S	7757	7007	6802	7072	6208	5681	5837	5779	6926	7016
		SW	8854	10801	8375	8018	6595	5924	5370	5722	5975	5747
		SE	7643	7436	5696	5004	4293	4007	3987	4760	5743	6062
		GB	8084	8414	6957	6698	5699	5204	5065	5420	6215	6275
Sitobion avenae	420	N/S	479	426	482	397	362	781	1142	1089	1000	939
		SW	474	484	557	517	485	833	1135	1343	1239	1141
		SE	2433	3409	2824	2352	2032	2357	3113	3085	2831	2668
		GB	1129	1439	1287	1089	960	1323	1797	1839	1690	1583
Sitobion fragariae	421	N/S	14	37	88	69	69	63	59	53	56	64
		SW	102	144	146	139	138	134	125	121	131	132
		SE	52	101	146	150	151	147	133	122	165	247
		GB	56	94	127	119	119	115	106	99	117	148

https://doi.org/10.23637/ERADOC-1-20

TABLE 9

Progressive annual arithmetic sample means for 20 moth species from 15 light trap stations grouped into three regions (see Fig. 2), and in all regions, from 1–10 years (1969–78)

Species name	No.	Region	1969	69–70	69–71	69–72	69–73	69–74	69–75	69–76	69–77	69–78
Hepialus lupulina Common Swift	269	Scot.	3	3	2	2	2	2	2	2	2	2
		M/N	1	5	8	7	7	6	5	5	5	5
		SE	1	3	3	3	3	3	2	2	2	2
		GB	2	3	4	4	4	4	3	3	3	3
Euxoa nigricans Garden Dart	273	Scot.	0	0	0	0	1	1	1	1	1	1
		M/N	0	0	0	0	1	1	1	3	3	3
		SE	1	1	0	0	0	0	0	0	0	0
		GB	0	0	0	0	0	1	1	1	2	2
Agrotis exclamationis Heart and Dart	285	Scot.	6	7	6	6	6	6	6	7	11	11
		M/N	25	48	79	90	81	73	67	84	91	87
		SE	36	135	149	130	124	136	135	294	300	275
		GB	22	63	78	75	70	72	70	128	134	124
Noctua pronuba Large Yellow Underwing	331	Scot.	14	18	17	17	17	17	16	15	15	14
		M/N	30	36	33	32	42	44	46	48	46	47
		SE	7	15	14	16	18	18	18	19	18	18
		GB	17	23	21	22	26	26	27	27	26	26
Mamestra brassicae Cabbage Moth	345	Scot.	1	1	2	3	2	2	2	2	2	2
		M/N	7	5	4	3	3	3	3	3	3	4
		SE	3	5	5	7	6	6	6	6	6	6
		GB	4	4	4	4	4	4	4	4	4	4
Melanchra persicariae Dot Moth	346	Scot.	0	0	0	0	0	0	0	0	0	0
		M/N	7	4	3	3	3	3	2	2	2	1
		SE	29	20	14	11	9	9	8	7	7	6
		GB	12	8	6	5	4	4	3	3	3	2
Diataraxia oleracea Bright-line Brown-eye	351	Scot.	3	3	3	3	3	3	3	2	3	3
		M/N	5	4	4	4	4	3	3	4	4	4
		SE	10	9	9	11	11	12	11	11	10	9
		GB	6	6	5	6	6	6	6	6	6	5
Cerapteryx graminis Antler Moth	378	Scot.	137	148	111	89	79	77	79	78	82	78
		M/N	0	0	0	0	0	0	1	1	1	1
		SE	1	2	2	2	2	2	2	2	2	2
		GB	46	50	38	30	27	26	27	27	28	27
Panolis flammea Pine Beauty	391	Scot.	1	3	3	3	2	2	2	3	2	2
		M/N	0	0	0	0	0	0	0	0	0	0
		SE	0	0	0	0	0	0	0	0	0	0
		GB	0	1	1	1	1	1	0	1	1	0

Apamea secalis Common Rustic	456	Scot.	22	26	27	32	30	31	30	30	30	30	30	30
		M/N	17	22	18	17	25	26	33	42	43	41	41	41
		SE	26	30	28	23	28	30	31	31	30	30	30	30
		GB	21	26	24	24	28	29	31	34	34	33	33	33
Luperina testacea Flounced Rustic	469	Scot.	3	3	2	3	3	3	4	4	6	6	6	6
		M/N	8	12	17	21	23	29	33	41	48	47	47	47
		SE	47	48	48	56	59	60	61	80	94	91	91	91
		GB	19	21	22	26	28	31	33	42	49	48	48	48
Phlogophora meticulosa Angle Shades	473	Scot.	0	0	0	0	0	0	0	0	0	0	0	0
		M/N	10	5	4	4	4	4	4	4	5	6	6	6
		SE	1	1	2	2	2	2	2	2	2	2	2	2
		GB	4	2	2	2	2	2	2	2	2	2	2	2
Gortyna micacea Rosy Rustic	488	Scot.	148	123	100	98	92	85	80	82	77	73	73	73
		M/N	46	48	41	40	36	32	30	28	26	24	24	24
		SE	15	13	13	13	12	11	12	13	12	12	12	12
		GB	69	61	51	50	47	43	41	41	38	36	36	36
Plusia gamma Silver Y	635	Scot.	15	8	9	8	7	6	6	6	5	5	5	5
		M/N	64	36	34	27	31	27	27	26	26	25	25	25
		SE	75	44	46	35	41	36	37	35	35	32	32	32
		GB	51	29	30	23	26	23	23	22	22	21	21	21
Alsophila aescularia March Moth	669	Scot.	5	6	6	6	6	6	6	6	5	5	5	5
		M/N	10	7	8	9	10	10	9	9	9	10	10	10
		SE	10	7	7	10	9	9	9	9	9	9	9	9
		GB	8	7	7	8	8	9	8	8	8	8	8	8
Operophtera brumata Winter Moth	828	Scot.	15	24	24	21	22	23	29	32	32	30	30	30
		M/N	38	51	69	61	56	56	56	51	49	48	48	48
		SE	21	22	30	25	30	35	41	40	40	40	40	40
		GB	25	32	41	36	36	38	42	41	40	39	39	39
Operophtera fagata Northern Winter Moth	829	Scot.	2	5	8	12	13	16	28	37	38	37	37	37
		M/N	0	0	0	0	0	0	0	0	0	0	0	0
		SE	0	0	0	0	0	0	0	0	0	0	0	0
		GB	0	2	3	4	4	5	9	12	13	12	12	12
Abraxas grossulariata Magpie Moth	889	Scot.	0	0	0	0	0	0	0	0	0	0	0	0
		M/N	30	22	20	20	18	19	17	16	16	16	16	16
		SE	22	19	15	14	14	14	14	13	12	11	11	11
		GB	17	14	12	11	10	11	10	9	9	9	9	9
Erannis aurantiaria Scarce Umber	906	Scot.	14	15	13	17	25	27	37	44	94	171	171	171
		M/N	6	5	7	6	6	7	7	7	6	6	6	6
		SE	1	1	2	2	2	2	3	3	3	3	3	3
		GB	7	7	7	8	11	12	16	18	34	60	60	60
Erannis defoliaria Mottled Umber	908	Scot.	3	3	4	3	4	4	8	8	10	15	15	15
		M/N	5	9	12	11	11	14	14	13	12	12	12	12
		SE	7	10	12	11	11	12	12	14	13	13	13	13
		GB	5	7	9	8	8	10	11	12	12	13	13	13

https://doi.org/10.23637/ERADOC-1-20

Figs. 3–9 show the mean seasonal cycle of migrations of most of the *Bulletin aphids* in Great Britain, excluding *Megoura viciae* (470), *Pentatrichopus fragaefolii* (287), *Aphis* spp. (1005), *Amphorophora rubi* (468) and *Cinara* spp. (1500), all of which have low densities through most of the season, like *Myzus ornatus* (315) (Fig. 9b). Data are plotted on $\log_{10}$ scales, shifted vertically at one log intervals, from week 17 (23–29 April) to week 44 (29 October–4 November) (see Table 6). Curve 0 is the mean for all areas; 1 is the South-east; 2 is Wales and the South-west; 3, Midland England, comprises sites 917, 919, 922; and 4 is Northern England and Scotland; see Fig. 1 for trap stations and regions (except Midland England); all available stations were used in each region.

https://doi.org/10.23637/ERADOC-1-20 *pp 49*

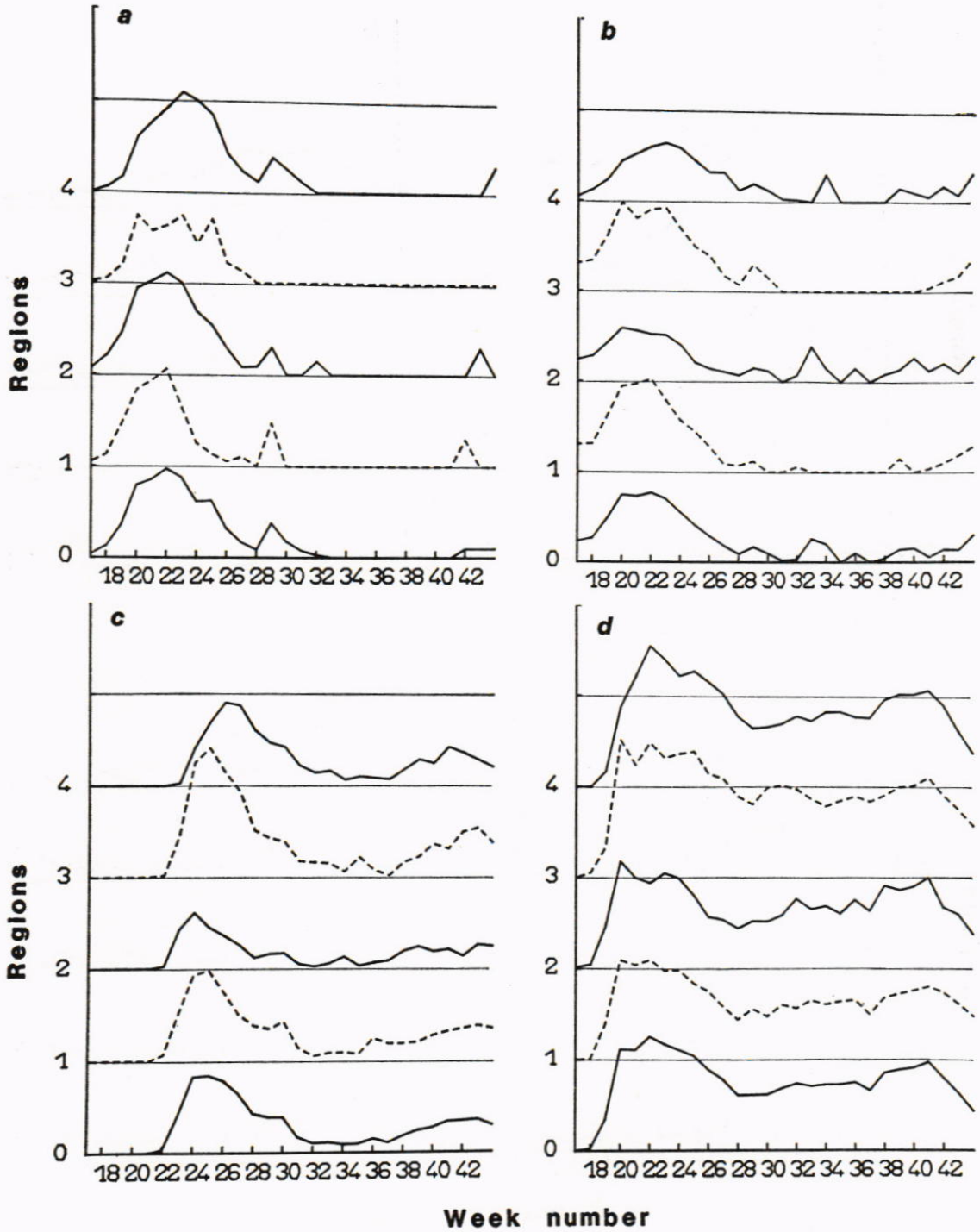

FIG. 3. a, 290, *Elatobium abietinum;* b, 318, *Myzus ascalonicus;* c, 500, *Eriosoma ulmi;* d, 91, *Drepanosiphum platanoidis.*

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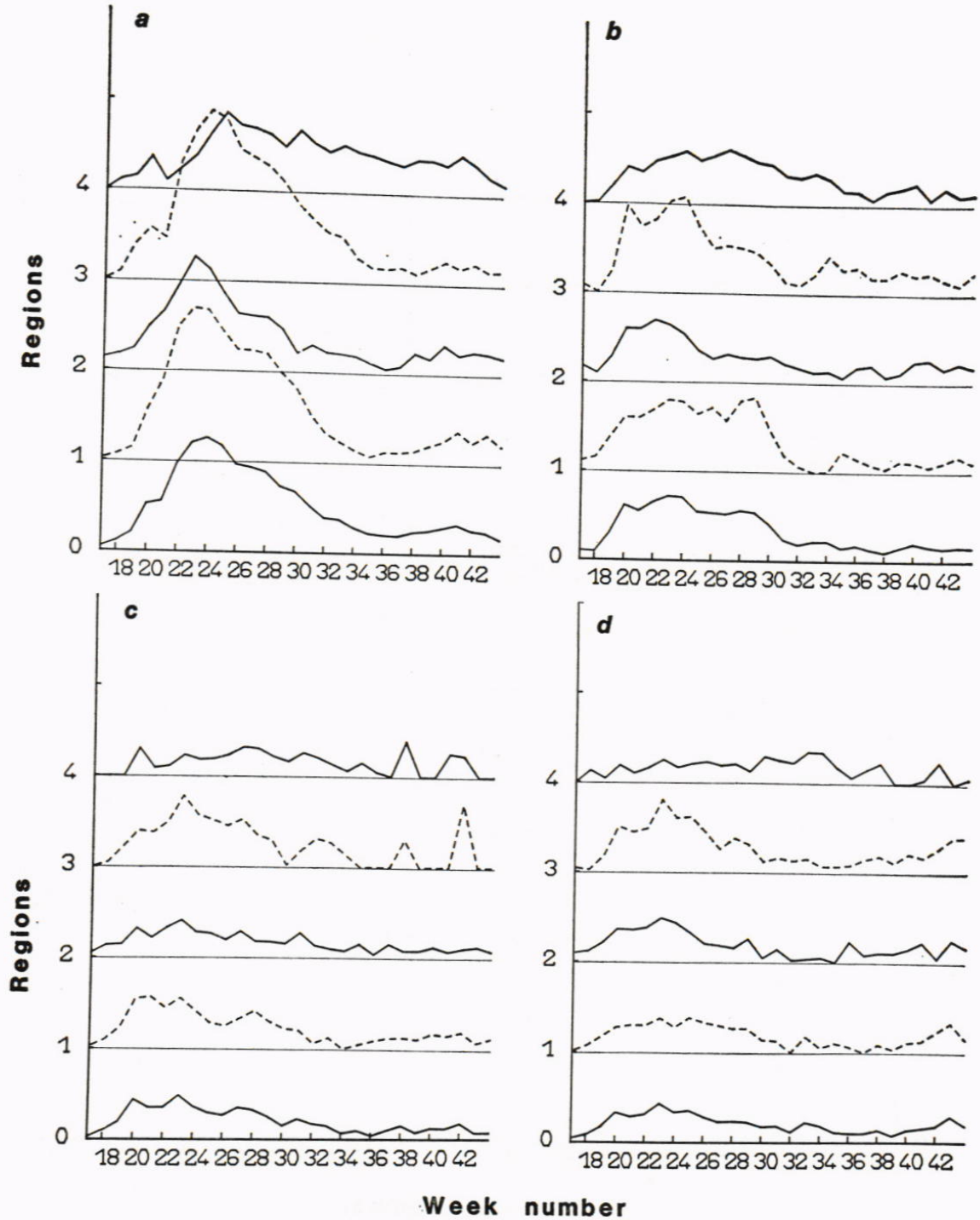

FIG. 4. a, 292, *Cavariella aegopodii;* b, 397, *Metopolophium festucae;* c, 319, *Myzus certus;* d, 376, *Aulacorthum solani*.

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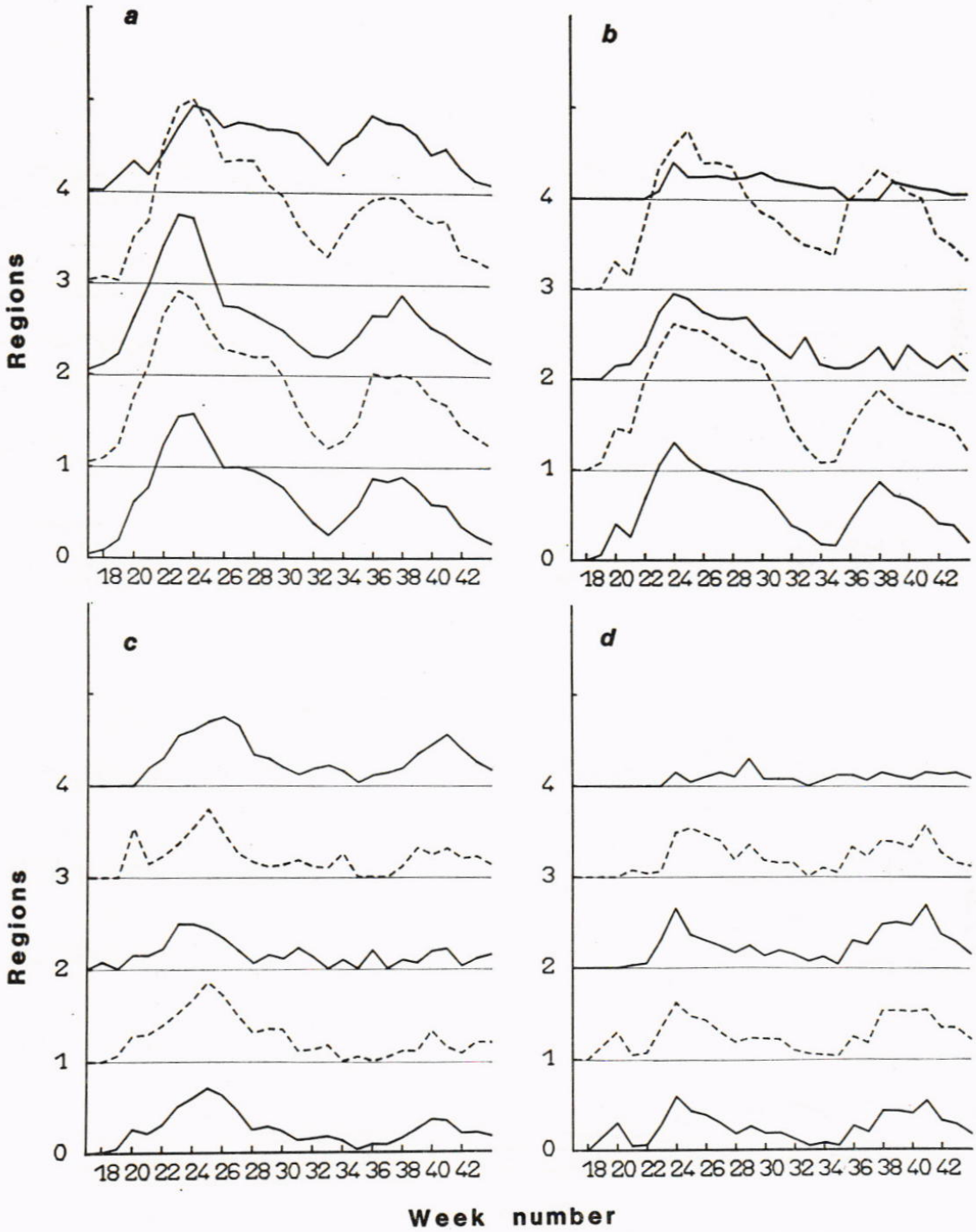

FIG. 5. a, 243, *Brachycaudus helichrysi;* b, 308, *Phorodon humuli;* c, 78, *Phyllaphis fagi;* d, 234, *Dysaphis plantaginea.*

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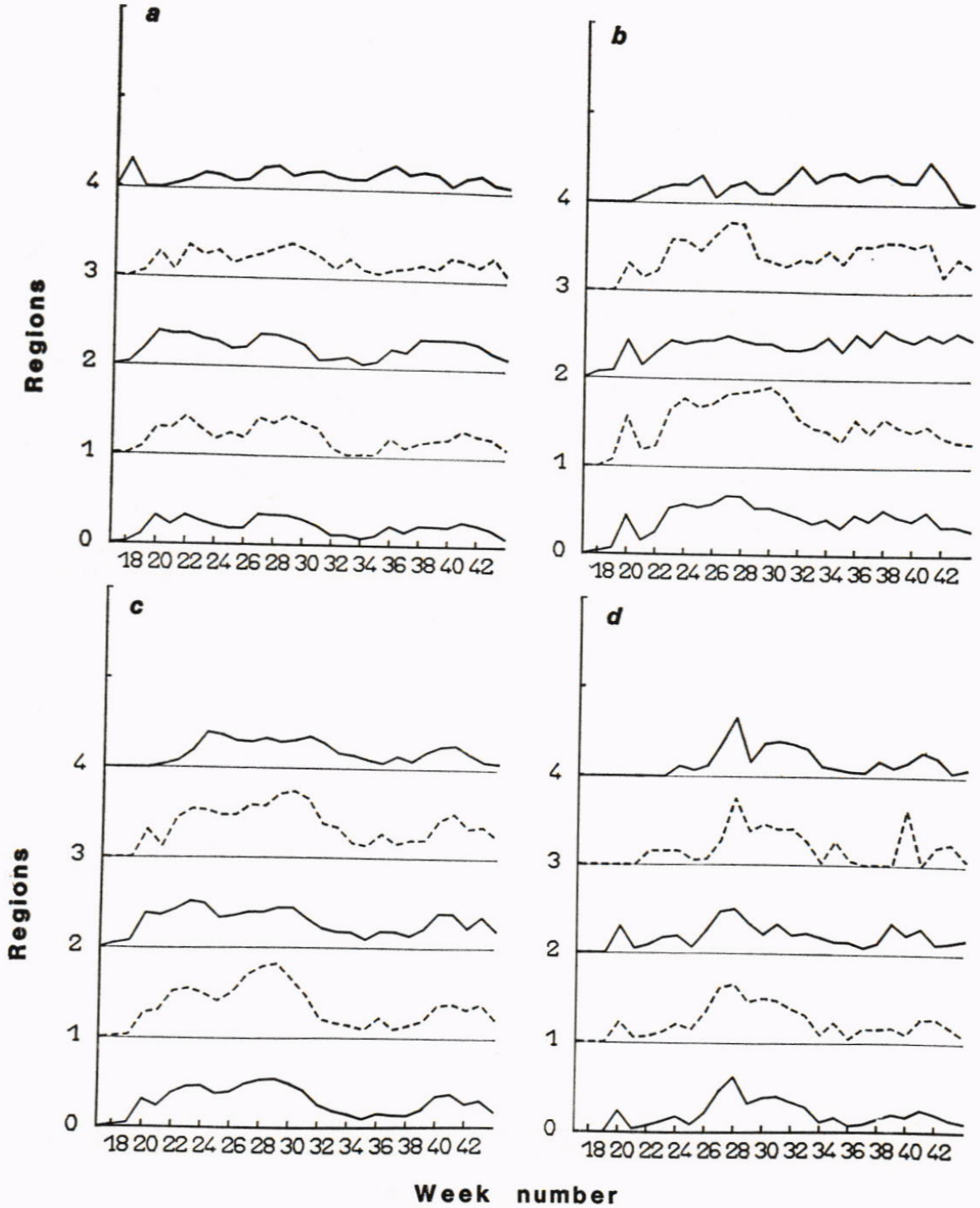

FIG. 6. a, 355, *Nasonovia ribisnigri;* b, 264, *Brevicoryne brassicae;* c, 358, *Hyperomyzus lactucae;* d, 112, *Rhopalosiphum maidis.*

https://doi.org/10.23637/ERADOC-1-20 *pp 53*

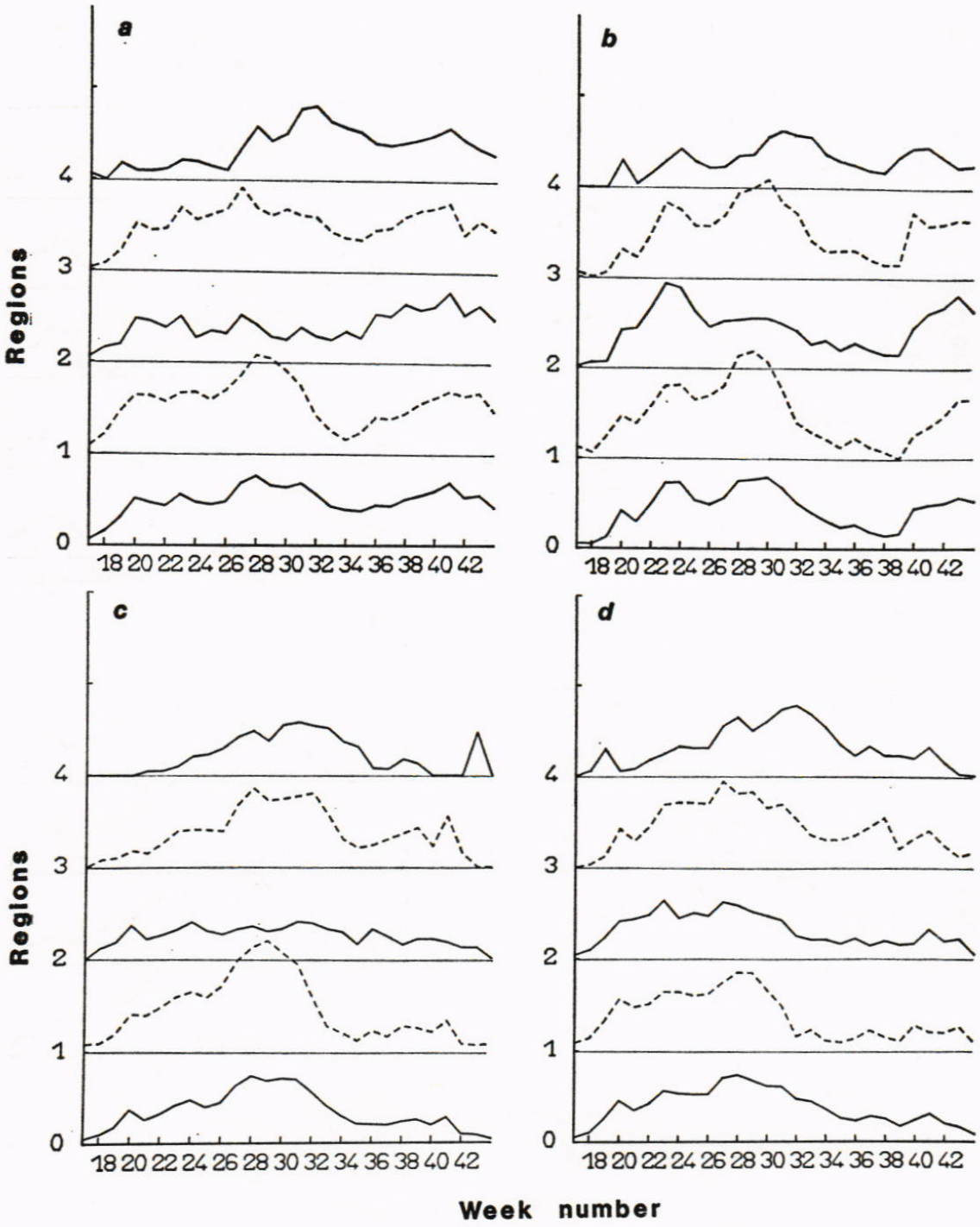

FIG. 7. a, 322, *Myzus persicae* group; b, 421, *Sitobion fragariae;* c, 389, *Acrythosiphon pisum;* d, 410, *Macrosiphum euphorbiae.*

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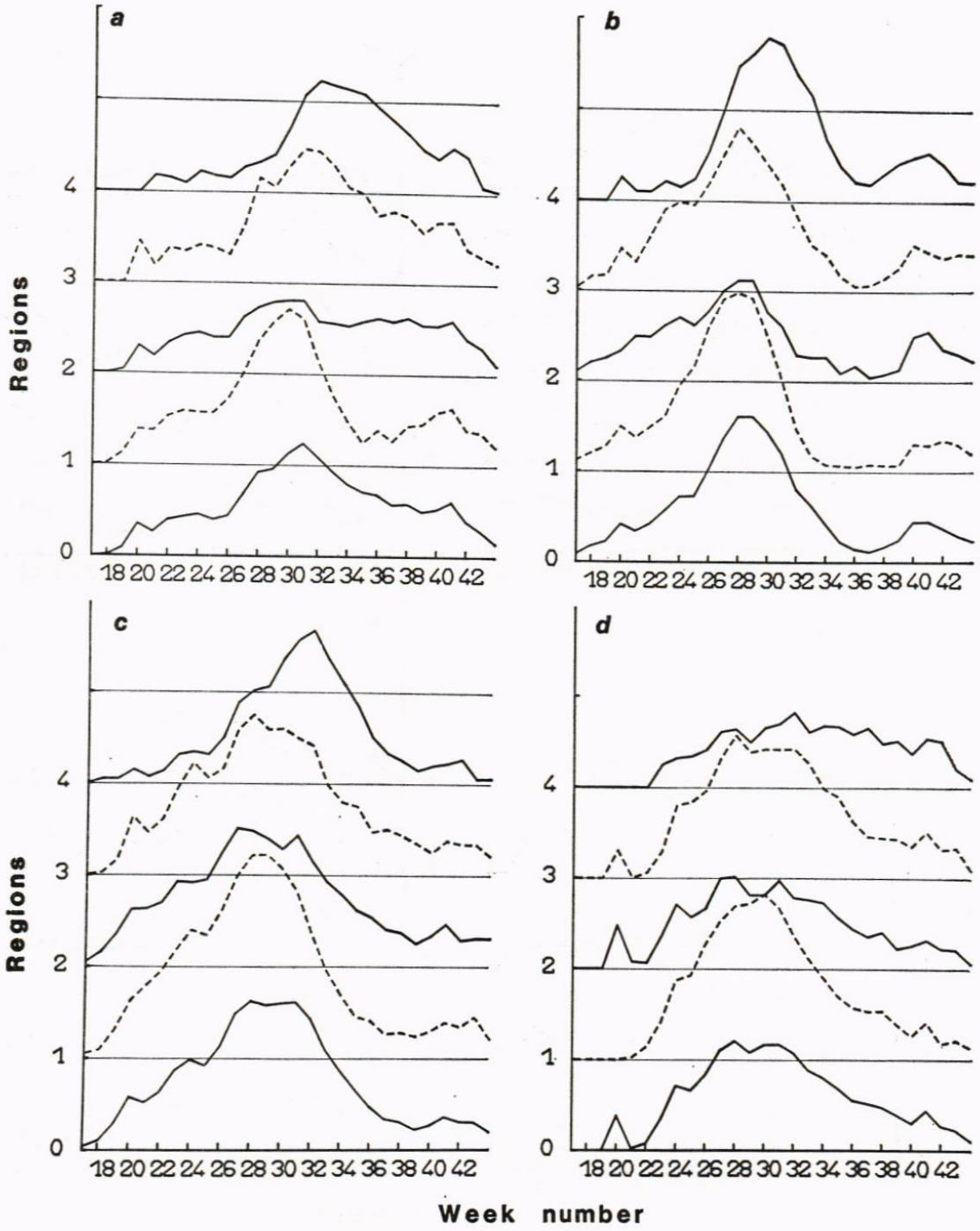

FIG. 8. a, 132, *Aphis fabae* group; b, 396, *Metopolophium dirhodum;* c, 420, *Sitobion avenae;* d, 110, *Hyalopterus pruni.*

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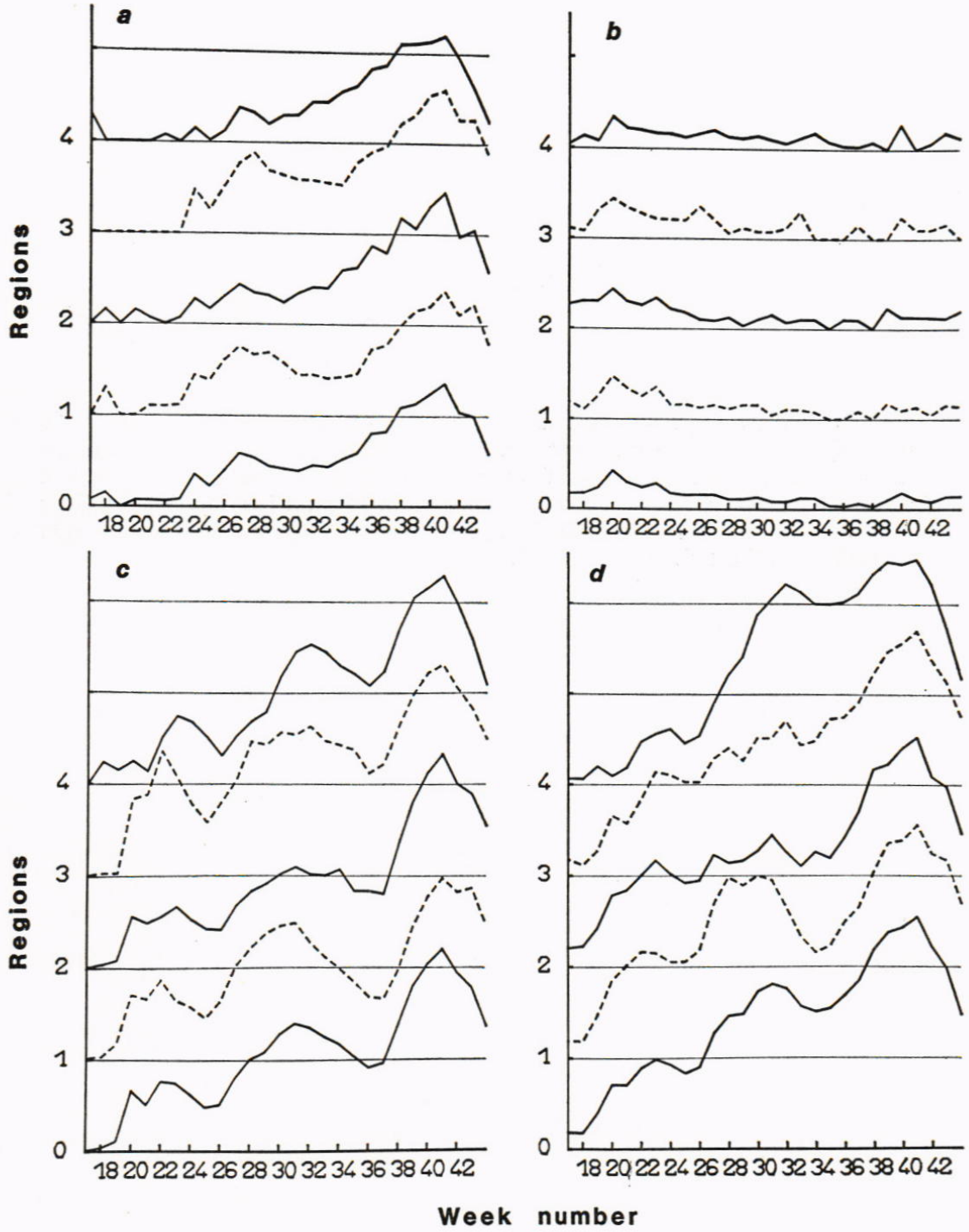

FIG. 9. a, 1506, *Pemphigus* spp.; b, 315, *Myzus ornatus;* c, 111, *Rhopalosiphum insertum;* d, 114, *Rhopalosiphum padi*.

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Figs. 10–14 show the mean seasonal flight period as measured by light traps for 20 species of moths of economic importance. Data are plotted on $\log_{10}$ scale shifted vertically by $\frac{1}{2}$ log intervals. Regions, species and traps used are the same as those in Table 9. Curve 0 is the mean for all areas over 10 years and for 15 sites; 1 is Southern England; 2 is Wales, Central and Northern England; 3 is Scotland (10 years and five stations in each region, see Fig. 2 for stations used).

https://doi.org/10.23637/ERADOC-1-20 *pp 57*

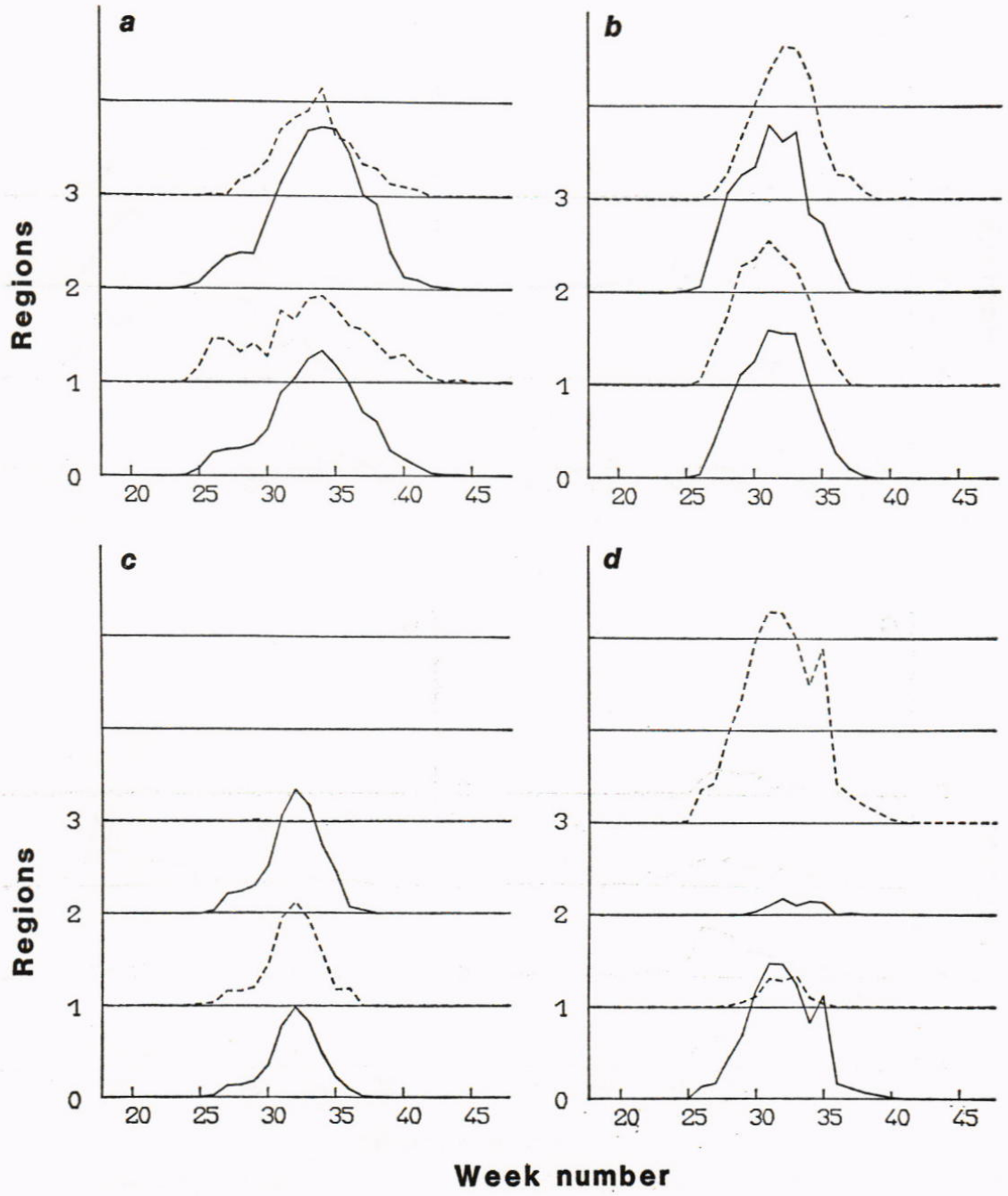

FIG. 10. a, 331, *Noctua pronuba;* b, 456, *Apamea secalis;* c, 889, *Abraxas grossulariata;* d, 378, *Cerapteryx graminis.*

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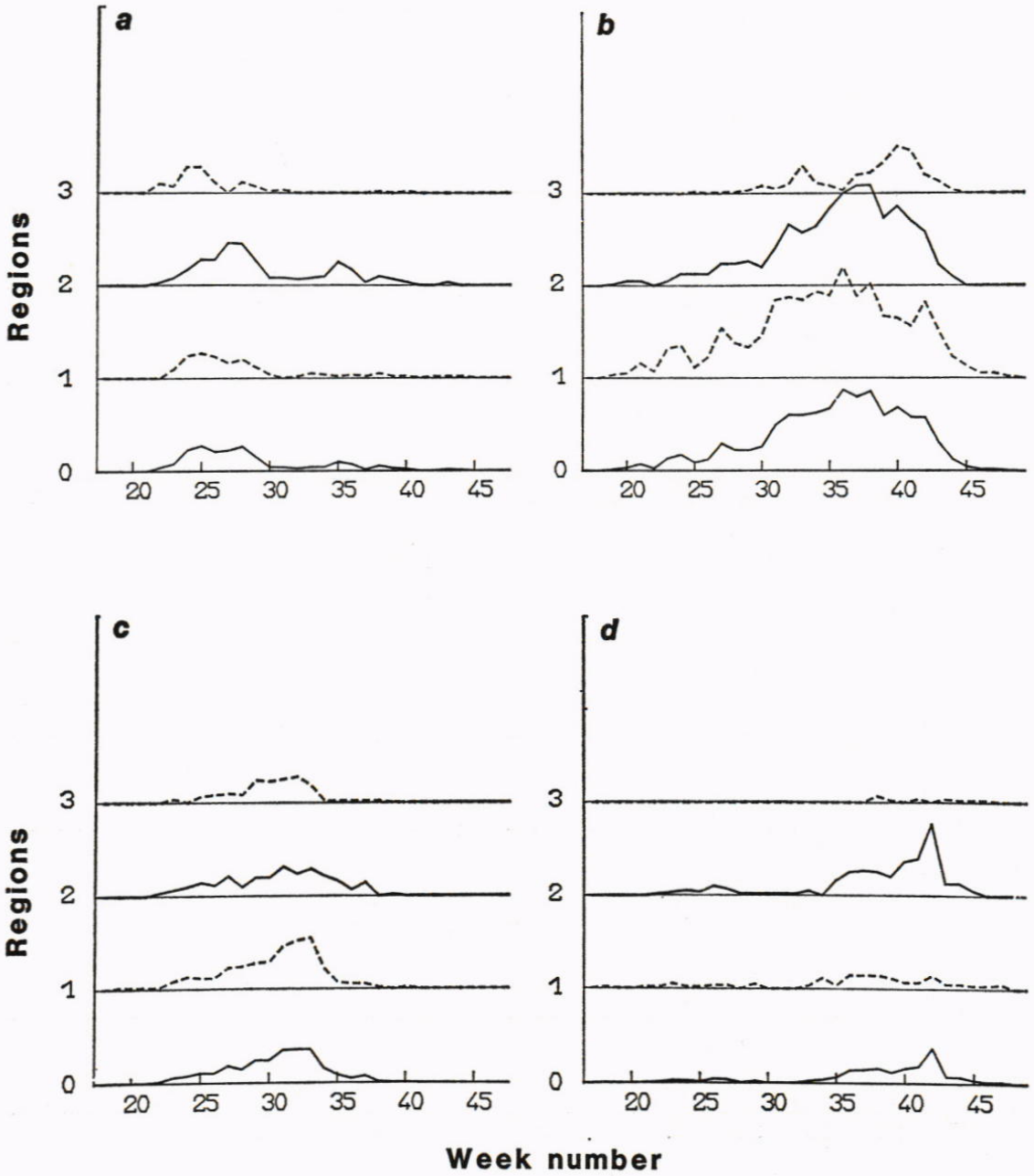

FIG. 11. a, 277, *Agrotis segetum;* b, 635, *Plusia gamma;* c, 345, *Mamestra brassicae;* d, 473, *Phlogophora meticulosa.*

https://doi.org/10.23637/ERADOC-1-20 *pp 59*

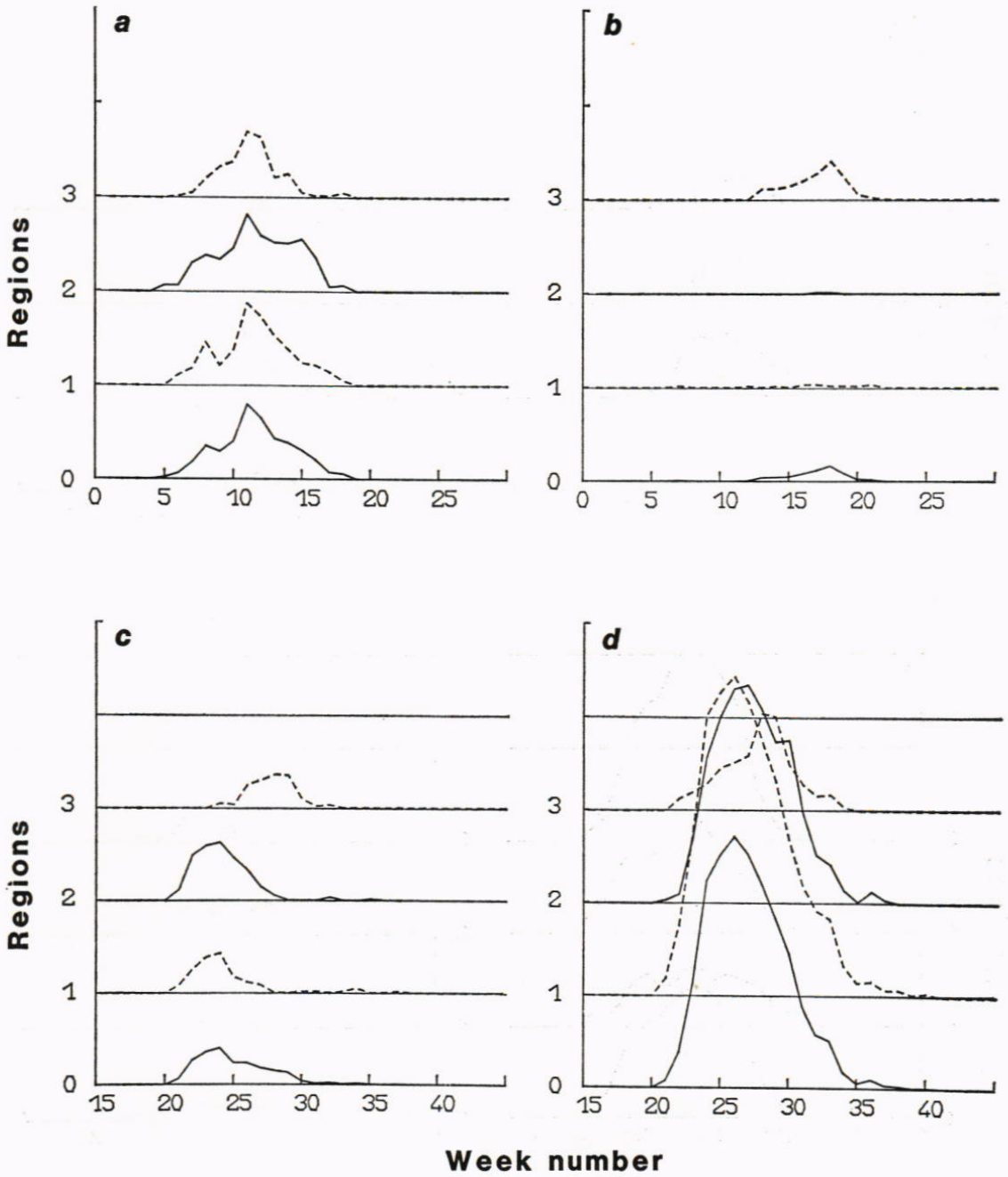

FIG. 12. a, 669, *Alsophila aescularia;* b, 391, *Panolis flammea;* c, 269, *Hepialus lupulina;* d, 285, *Agrotis exclamationis.*

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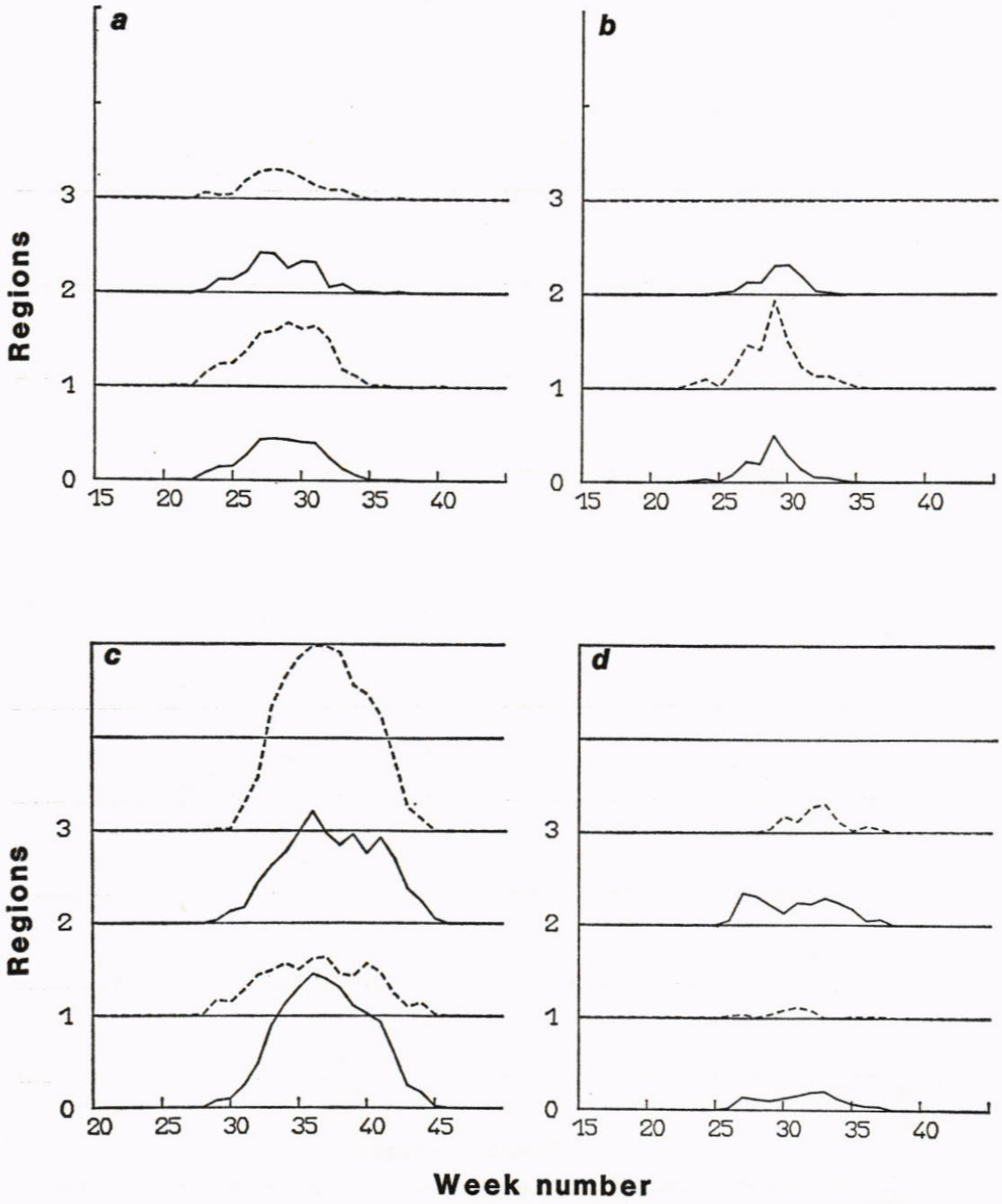

FIG. 13. a, 351, *Diataraxia oleracea;* b, 346, *Melanchra persicariae;* c, 488, *Gortyna micacea;* d, 273, *Euxoa nigricans.*

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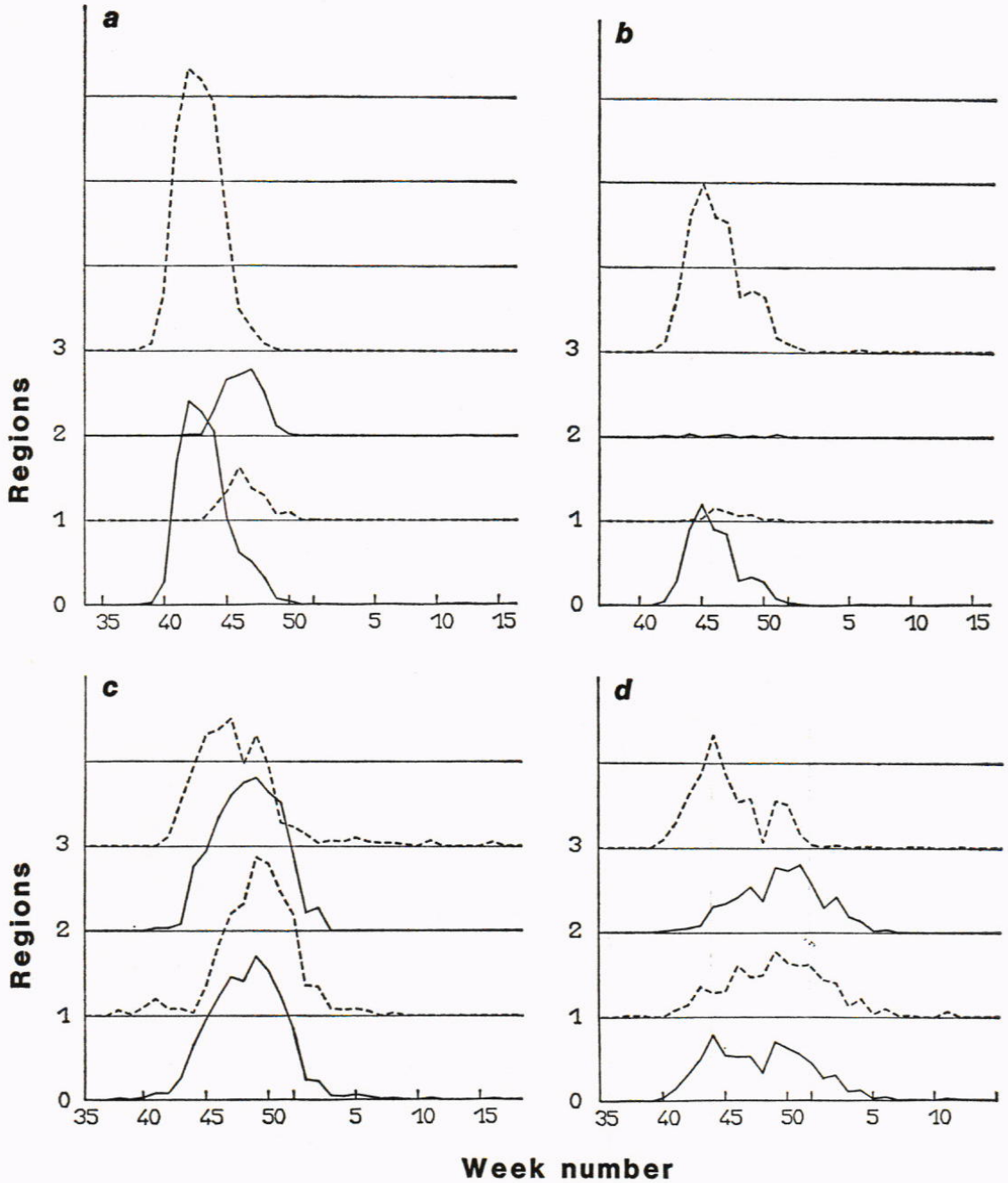

FIG. 14. a, 906, *Erannis aurantiaria;* b, 829, *Operophtera fagata;* c, 828, *Operophtera brumata;* d, 908, *Erannis defoliaria.*

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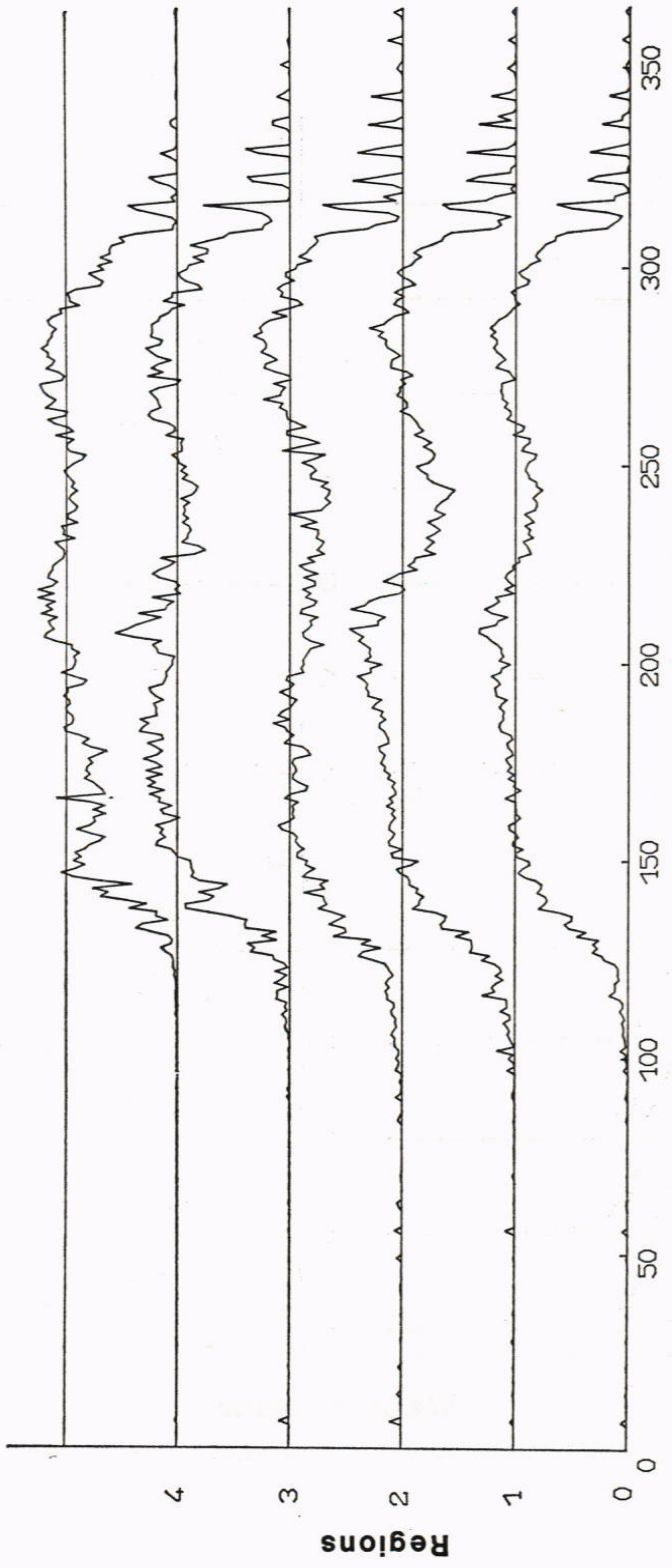

FIG. 15. Mean seasonal cycle of daily total numbers of aphids, on $\log_{10}$ scales shifted vertically at two log intervals. Curve 0 is the mean daily total per station for all of Great Britain over 10 years; 1 is South-east England; 2 is Wales and South-west England; 3 is Midland England; 4 is Northern England and Scotland. See legend to Figs. 3–9 (p. 88).

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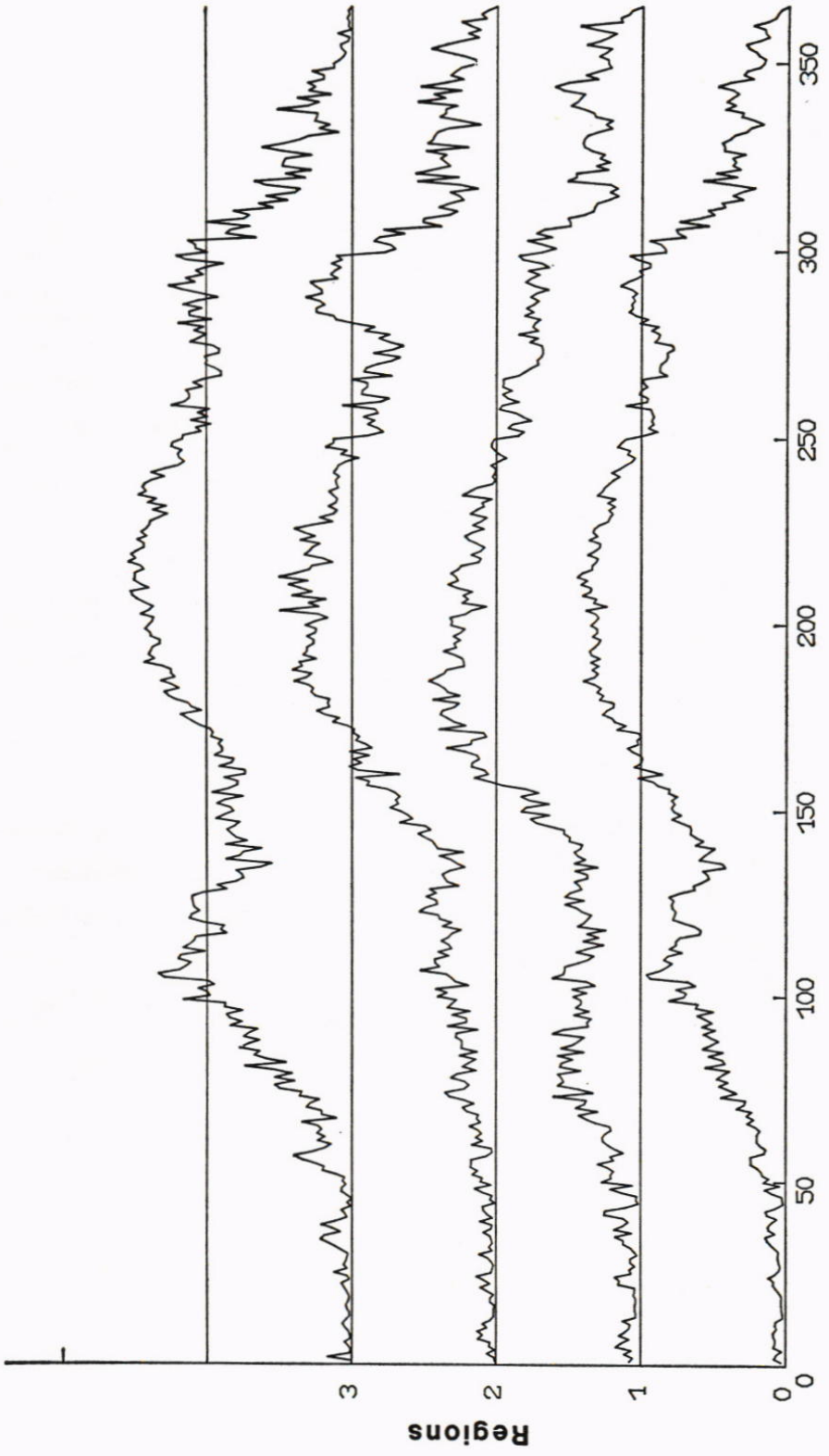

FIG. 16. Mean seasonal cycle of daily total numbers of moths, on $\log_{10}$ scales shifted vertically at one log interval. Curve 0 is the mean daily total per station for all of Great Britain over 10 years; 1 is Southern England; 2 is Wales, Central and Northern England; 3 is Scotland (10 years and five stations in each region; see Fig. 2 for stations used).

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