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P. Laštovka, Department of Entomology, Research Institute of Food Industry, Czech Academy of Agriculture, Prague.

L.N. Kieđ, Werneth Park Study Centre and Natural History Museum, Oldham, March 28th, 1974.

Coenoscelis subdeplanata Bris. (Col., Cryptophagidae) in Birmingham. - In early November, 1973, a number of beetles were sent to me for identification which, though obviously belonging to the genus *Coenoscelis*, were clearly not *ferruginea* Sahlb., the species to which they ran in Joy (1932, *A Practical Handbook of British Beetles*, 1). By using the key given by Portevin (1931, *Coleoptères de France*, 2) they were identified as *C. subdeplanata* Bris. and this diagnosis was confirmed by comparing a dissected aedeagus with the figure of that organ given by Mr. Colin Johnson (1966, *Entomologist*, 99: 129-31) and later by examination of a specimen named by him in the British Museum (Nat. Hist.).

C. subdeplanata was first recorded in Britain by Johnson in 1966 (*loc. cit.*) on the occurrence of a single specimen in Yorkshire. Subsequently Mr. A.A. Allen reported it from Kent (1968, *Entomologist's mon. Mag.*, 104:122), Blackheath and Berkshire (1970, *Entomologist's mon. Mag.*, 107:161). In contrast to all these occurrences in more or less rural surroundings the subjects of the present note were found in a factory in the Selly Oak district of Birmingham, an area of old terraced houses and industrial premises. The locality from which the beetles came was the spectroscopic laboratory of the Birmingham Battery and Metal Company, to whose chief metallurgist, Mr. Taylor, I am indebted for the original specimens and also for the opportunity to collect more in his laboratory. The insects had been noticed over a period of some weeks, sometimes in such numbers as to become a nuisance. In all I have examined 18 examples, including the ones sent by Mr. Taylor and those which I collected myself. All were *C. subdeplanata* and I see no reason to suppose that any other species had been present.

It was not clear just where the beetles were coming from. The spectrographic laboratory is a new room, only opened in 1972, and has a tiled floor, painted concrete walls and a tiled ceiling. Above this is a shallow space and then a tiled roof supported on reinforced concrete beams. The room which is air conditioned and maintained at a temperature of 68±2°F. is kept very clean and the floor had been scrubbed and polished on the morning of my visit, although despite this about half a dozen *Coenoscelis* were found squashed there. This habitat seems a far cry from the fungus infested wood or refuse heaps cited as the usual ones by Freude, Harde & Lohse (1967, *Die Käfer Mitteleuropas*, 7). According to Mr. Taylor the beetles have not been noticed anywhere else in the factory apart from one or two in the room adjoining the laboratory which were almost certainly stragglers from the main colony. I looked around the laboratory in the hope of finding some suitable pabulum for *Coenoscelis*, but without success and I had to conclude that the beetles must be entering either from the air conditioning system or from the ducts taking waste and water pipes through the floor. Obviously the air conditioner would not allow the passage of particles the size of *Coenoscelis* into the room so the possibility that the fans were drawing in beetles from some waste tip or other source outside the factory is remote. My guess is, therefore, that the beetles were coming up the pipe ducts, perhaps from some older part of the building where they were living in rotting timber or other decaying organic material. - P.J. LOSBORNE, Geology Department, University of Birmingham: December 10th, 1973.

THE DISTRIBUTION AND ECOLOGY OF WOODWASPS [13] (HYM., SIREXIDAE) AND THEIR PARASITOID, (HYM., RHYSSA PERSULASORIA) (L.) (HYM., ICHNEUMONIDAE), IRELAND [23]

BY A.A. KIRK

SYNOPSIS

This paper describes the distribution and status of siricids and their parasitoids in Ireland, discusses their ecology and compares the species content of the Irish fauna with the British.

INTRODUCTION

The siricid woodwasp *Urocenus gigas* (L.), and its associated ichneumonid parasitoid, *Rhyssa persulatoria* (L.), have frequently been recorded from Ireland. Surveys for siricids and their parasitoids were made in Ireland by the CSIRO Sirex Biological Control Unit as part of a programme of biological control of the introduced *Sirex noctilio* F. in Australia.

MATERIALS AND METHODS

Collections of siricid-infested material were made in 1968, 1969 and 1970 during early spring before insect emergence. Dead, standing and fallen trees, logs, stumps, roots, and branches of conifers were sampled for siricid larvae and galleries, and currently infested timber was cut into one-metre length logs. The logs were transported to the Sirex Biological Control Unit insectary at Silwood Park where they were stored in an outdoor insectary. Infested logs from different localities and tree species were kept in separate cubicles and adults were collected daily during the emergence period. Additional data on distribution were obtained from the literature and museum collections.

RESULTS

The results of the surveys for siricid-infested material in Ireland are summarized in Table 1. *U. gigas* was reared from eight species of conifer: *Abies alba* Miller, *A. grandis* Lindley, *A. procera* Rehder, *Larix decidua* Miller, *Picea abies* (L.) Karst., *P. sitchensis* (Bong.) Carr, *Pseudotsuga menziesii* (Mibel) Franco and *Pinus sylvestris* L. The average number of emerging *U. gigas* adults per log was 16 with a maximum of 108 from Ballykelly where only 16 of the 60 infested logs were consigned to the insectary. More than 90 per cent. of the *U. gigas* host material was from fallen trees, cut logs, stumps and roots; the remainder was from dead, standing trees.

Established populations of *Sirex cyaneus* F. and *Urocenus augur augur* (Klug.) were recorded from Ireland for the first time, the latter being the first record for the British Isles. *Sirex juvenis* (L.), which is abundant and widespread in other parts of the British Isles, was not found during the survey.

The only parasitoid found during the survey was the ichneumonid, *R. persulatoria* which accounted for 28.0 per cent. of total adult emergence (Table 1).

TABLE 1 - LOCALITIES, HOST TREES AND EMERGENCE OF SIRICIDS AND PER CENT. PARASITISM BY *R. PERSUASORIA*

LOCALITY	TREE SPECIES	No. of Logs	F.T.	S.T.	INSECT EMERGENCE				No. of Insects/Log	Parasitism (per cent.)
CO. ANTRIM					U.g.	U.a.	S.c.	R.p.		
Glenarm	<i>L. decidua</i>	5	x	—	77	—	—	52	26.0	40.3
CO. DOWN										
Newcastle	<i>L. decidua</i>	2	x	—	8	—	—	2	5.0	20.0
"	<i>P. sitchensis</i>	2	x	—	9	—	—	21	15.0	70.0
"	<i>P. sylvestris</i>	2	x	—	6	—	—	4	5.0	40.0
CO. KERRY										
Kenmare	<i>A. alba</i>	6	x	—	30	—	—	8	6.5	20.5
"	<i>A. grandis</i>	9	x	—	28	—	—	34	6.9	54.8
"	<i>L. decidua</i>	4	x	—	4	—	—	4	2.0	50.0
"	<i>P. sitchensis</i>	8	x	—	60	1	—	—	7.5	—
Muckross	" "	3	x	—	5	—	—	4	3.0	44.4
Parknasilla	<i>A. procera</i>	17	x	x	45	1	—	28	4.9	33.7
"	" "	7	—	x	34	10	—	17	7.4	32.6
CO. LONDONDERRY										
Ballykelly	" "	16	x	—	1354	—	76	305	108.4	17.5
CO. TYRONE										
Baronscourt	<i>P. sitchensis</i>	5	x	—	9	—	—	71	16.0	88.7
"	" <i>P. abies</i>	32	x	—	252	—	—	229	15.0	48.0
Gortin Glen	<i>L. decidua</i>	1	x	—	69	—	—	—	69.0	—
"	<i>P. menziesii</i>	7	x	—	23	—	—	32	7.8	58.1
CO. WICKLOW										
Glencree	<i>L. decidua</i>	1	x	—	1	—	—	—	1.0	—
Glenmalure	<i>P. sitchensis</i>	3	x	—	15	—	—	15	10.0	50.0
GRAND TOTALS		130	119	11	2029	12	76	824	22.6	28.0

Abbreviations:- F.T. : Fallen Timber; S.T. : Standing Timber; U.g. : *U. gigas*; U.a. : *U. augur*; S.c. : *S. cyaneus*; R.p. : *R. persuasoria*

The pattern of emergence of adult siricids and *R. persuasoria* is given in fig 1. *R. persuasoria* emerged first, beginning in mid-May, reaching a peak in late May to mid-June before the emergence of its hosts. The parasitoid continued to emerge in small numbers until late August. *U. gigas* was the first siricid to emerge, from mid-June to mid-July and continued until mid-August to mid-September. *S. cyaneus* emerged from mid-July until the end of September and *U. augur augur* during August.

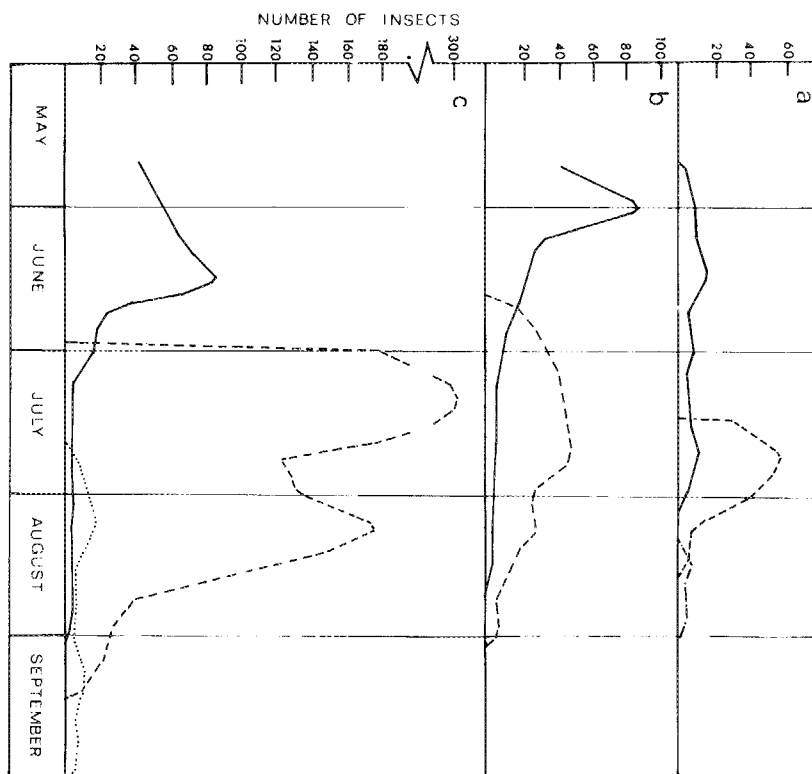


Fig. 1. - Siricid and *R. persuasoria* emergence from infested material collected at: (a) Parknasilla; (b) Baronscourt; and (c) Ballykelly.

----- *U. gigas* *S. cyaneus* *R. persuasoria* *U. augur*

The distribution of siricids and *R. persuasoria* in Ireland is given in fig. 2, which is based on the new records in Table 1 as well as museum and published records, complete lists of which, with references, have been deposited with the Royal Entomological Society of London Library, the Ulster Museum, Belfast and the National Museum, Dublin.

DISCUSSION

Benson (1943) discussed the presence of indigenous British and Irish populations of *U. gigas* and concluded that there is no reason to suppose that native siricids became extinct during the mass destruction of the British and Irish conifer forests during the 18th century. This survey, together with museum and literature records, shows that *U. gigas* is widespread in all areas

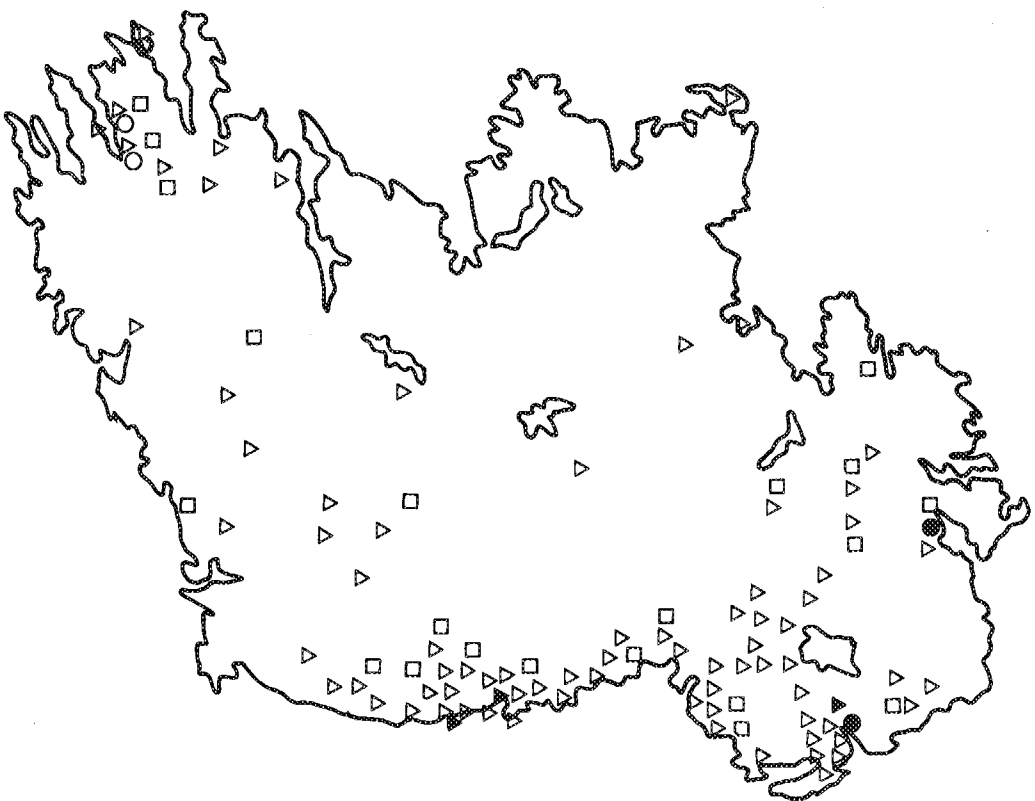


Fig. 2. — Distribution of siricids and *Rhysia persuasoria* in Ireland.
 Δ, *U. gigas*; ●, *S. cyaneus*; ▲, *S. juvenis*; □, *R. persuasoria*; ○, *U. augur*.

where conifers are now grown. Very heavy *U. gigas* attack was recorded at Muckross, Ross Duha Island and Parknasilla (Co. Kerry), Ballykelly (Co. Londonderry) and Gortin Glen (Co. Tyrone) where fallen timber and cut logs were rendered useless for constructional and pulping purposes with up to 100 galleries and exit holes per metre length of timber. At Ballykelly it was estimated that the 60 infested logs would have produced 6,500 adults. Some of this material consisted of old stumps, one positively identified as 8 years old, which still contained live siricid larvae. Many relict forests of *Abies* spp. have been seen in the eastern Mediterranean region where siricids and parasitoids survive in the stumps (unpublished observations). It seems likely, therefore, that the present Irish population of *U. gigas* was derived from indigenous sources, possibly supplemented by introductions from imported timber, especially around the ports of Dublin and Belfast.

The populations of *U. augur augur* in the *Abies procera* forests at Parknasilla and Kennmare (Co. Kerry) probably originated from infested timber imported from continental Europe, for this species is a central European and montane siricid, and has been occasionally recorded in England but never become established (Benson, 1943).

S. cyaneus has not previously been recorded as an established species in Ireland although one specimen was found in a new house in Belfast where it probably emerged from imported constructional timber (Ulster Museum, Belfast). The emergence of 76 *S. cyaneus* from *A. procera* collected in Ballykelly indicates that this species is established although it is likely that it originated from nearby Londonderry. *S. cyaneus* is established in England and is common in Europe where it has been found predominantly in *Abies* spp. from cold and temperate bioclimatic areas (Spradbery & Kirk, unpublished). It is likely, therefore, that *S. cyaneus* will become more widespread in the *Abies* forests of Ireland. Although *U. gigas* does not normally attack living trees and is not phytotoxic to conifers, there is some evidence that *S. cyaneus* can cause primary damage to living trees in the same way as *S. noctilio* (Spradbery, 1973).

From the survey results and other records there is little doubt that *S. juvenis* is not established in Ireland. All records are from furniture shops and factories and are clearly concerned with accidental introductions. The remaining European siricids, *S. noctilio*, *U. augur sah* Moos. and *Xeris spectrum* (L.) were not found during the surveys, although there is one previous record of *X. spectrum* emerging from imported timber (National Museum, Dublin). Benson (1943) agreed with Waterson (in Chrystal, 1928) that *U. gigas*, *S. cyaneus*, *S. juvenis* and *S. noctilio* are established British species and *Urocercus albicornis* (F.), *U. flavicornis* (F.), *U. augur augur* and *Stix areolaris* (Cresson) are occasional but unestablished introductions. Spradbery (personal communication) has confirmed Waterson's list of established species in Great Britain and added *X. spectrum* (one locality in North Wales). Parasitism by *R. persuasoria* in Ireland was 28.0 per cent. compared to 29.4 per cent. by *R. persuasoria* and *Ibalia leucospoides* (Hochenw.) in three English localities (Chrystal, 1930), 28 per cent. in 138 European localities where six parasitoid

species were involved (Spradbery & Kirk, unpublished) and 36 per cent. in several Belgian localities in which four parasitoids were present (Wolf, 1967).

In areas of Europe which are bioclimatically homologous with Ireland, the major siricid parasitoids are *R. persuasoria* and the cynipoid *I. leucospoides* which are frequently found together in the same infested material (Spradbery & Kirk, unpublished). *I. leucospoides* is an established parasite of *U. gigas* (Spradbery, 1970) and common in England (Chrystal, 1930). It would therefore be expected that imported timber containing *R. persuasoria* would also contain *I. leucospoides* and that both species would become part of the siricid complex in Ireland. However, *I. leucospoides* has never been recorded and it is suggested that *R. persuasoria* is only rarely if ever imported into Ireland. A numerical taxonomic study of European *R. persuasoria* populations lends some support to the hypothesis, for the Irish population formed a fairly distinct group compared to other populations (Spradbery & Ratkowsky, 1974). The present population of *R. persuasoria* in Ireland is probably native, having survived in small pockets together with the indigenous *U. gigas* hosts. Of the remaining European species of siricid parasitoids, only *Italia drewseni* Borries would be climatically compatible with Ireland, but despite being established in England (Spradbery, 1970), it has never been recorded in Ireland.

The Irish siricid complex is thus only half that of the British which itself is poor in species content compared to the eight siricid and six parasitoid species of continental Europe. These results confirm Beirne's (1952) statement that, numerically, the entomological fauna of Ireland is half that of Britain which itself is half that of Europe.

SUMMARY

The siricid woodwasps, *U. gigas*, *U. angur angur*, *S. cyaneus* and their parasitoid, *R. persuasoria*, are established in Ireland. *S. juvenis* is an occasionally introduced but unestablished species. *U. gigas* is widespread, *U. angur angur* restricted to one known area and *S. cyaneus* was found in only one site. *R. persuasoria*, which accounted for 28.0 per cent. of total emergence, is widespread. The *U. gigas* and *R. persuasoria* populations are, to a large extent, native with a possible influx from imported timber, especially around the ports of Dublin and Belfast. Although siricids in Ireland are at a reasonably low economic level, *U. gigas* can reduce the value of salvageable timber and *S. cyaneus*, which may kill living trees, could become widespread.

ACKNOWLEDGEMENTS

I thank the Directors of the National Museum, Dublin, and Ulster Museum, Belfast, for allowing me access to their siricid records and the Department of Lands, Dublin, and the Ministry of Agriculture, Belfast, for permission to collect siricid-infested timber. This work was supported by the National Sirex Fund, Australia.

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Division of Entomology, CSIRO, Sirex Biological Control Unit, Silwood Park, Ascot, England.

Present Address: U.P.N.G., Biology Department, P.O. Box 4820, Papua New Guinea. March 12th, 1974.

Insects at flowers of Elecampane (Inula helenium L.). Elecampane (*Inula helenium* L.) is an old herbal plant rarely found in the wild, a tall and very robust Composite with large heads of yellow flowers. As it happens, there are two colonies of this fine plant known to me in South Essex, about nine miles apart, and during the flowering period of 1973, between July 24th and August 19th, I kept both colonies under observation. In total, 51 species of insects were observed on the flowers, comprising 27 Diptera, 10 Lepidoptera, 7 Hymenoptera, 4 Coleoptera, 2 Hemiptera and an Earwig. Only 11 of the total were seen at both localities; these species are marked with an asterisk (*) in the following list:-

DIPTERA: *Anachetopsis zetterstedti* Ringdahl, *Coptophlebia albiventris* (Mg.), *Eristix rufomaculatus* (Degeer)*, *Eristalis arbustorum* L.*, *E. intricatus* L., *E. sepulchralis* L., *E. tenax* L.*, *Helophilus hybridus* Loew, *H. pendulus* L., *Lucilia richardsi* Collin, *L. sericata* Mg., *Morella hortorum* (Fln.), *M. simplex* Loew, *Musca autumnalis* Degeer, *Orthellia caesarian* (Mg.)*, *Paragale radicum* (L.), *Pegomylenia fagax* Mg., *Psysiphora demandata* F., *Platychetus manicatus* (Mg.), *Sepsis cynipsea* (L.), *Sphaerophoria scripta* L., *Syrphia pipiens* L.*, *Syrphus balteatus* Degeer, *S. corollae* F.*, *S. ribesii* L.*, *S. torvus* Ost.-Sack., *Tephritis bardanae* (Schrank).

LEPIDOPTERA: *Agrotis urticae* (L.), *Coenonympha pamphilus* (L.), *Inachis io* (L.), *Maniola jurtina* (L.), *Pieris brassicae* (L.), *P. napi* (L.), *P. rapae* (L.), *Polymonatus icarus* (Rott.), *Pyronia tithonus* (L.), *Thymelicus sylvestris* (Poda).

HYMENOPTERA: *Apis mellifera* L., *Bombus humilis* (Ill.), *B. lapidarius* (L.)*, *B. rudarius* (Muller), *B. terrestris* (L.), *Megachile ligniseca* (Kirby), *Osmia teitiana* (Kirby).

COLEOPTERA: *Anthonomus rubi* (Herbst), *Meligethes aeneus* F.*, *Oedemera lurida* (Marsham), *Rhagonycha fulva* (Scop.)*.

HEMiptera: *Lygus rugulipennis* Popp., *Plagiognathus arbustorum* (F.)*.

DERMAPTERA: *Forficula auricularia* L.

The only species in this list which was recorded from Elecampane by Knuth (1908, *Handbook of Flower Pollination*, trans. J.R.A. Davis, 2:598) is *Eristalis arbustorum*. I am indebted to Dr. A.M. Easton and to Mr. D.M. Ackland for naming the *Meligethes* and the *Anthonomyidae* respectively. — R.M. PAYNE, 49 Galton Road, Westcliff-on-Sea, Essex: February 4th, 1974.

Calligrypona reyi (Fieber) (Hem., Delphacidae) in the Isle of Wight. — I have taken a pair of this very local British species at Benbridge, Isle of Wight, on May 31st, 1971 and another male at the same locality on June 5th, 1973. It had been previously recorded in England from Weybourne, Norfolk; Seaford, Sussex and Anne, Dorset. All these localities are very close to the sea. — W.J. LE QUENSEN, Anne Cottage, 70 Lye Green Road, Chesham, Bucks. HP5 3NB: April 3rd, 1974.