

THE COLEOPTERIST'S NEWSLETTER

NUMBER 22

NOVEMBER 1985

During 1980 I tried to organise a "Coleopterist's Weekend" in Hereford, but as matters progressed it became obvious that the facilities here were quite inadequate and the venture was ably taken over by the staff at Monks Wood Experimental Station. The resulting meeting attracted about 80-90 Coleopterists and at its close I suggested someone ought to start an informal newsletter. Having raised the idea, needless to say folks looked to me to organise it and so the "Coleopterist's Newsletter" was born. Garth Foster told me, doubtless born from personal experience with the Balfour-Browne Club Bulletin, that the first ten issues would be the most difficult to organise. How true that was, in the end there came a limit to what I could think up personally to pad out an otherwise thin issue. Fortunately I have not had to ask anyone to contribute anything for about 18 months I think. A steady dribble of items arrives to make each quarter's issue up to at least four pages. However, please bear in mind that articles are always needed and the content of the "Newsletter" depends upon what its subscribers send in.

This is the 21st Newsletter - there being no number 12 due to a lapse of memory on my part when typing the stencil for the issue after number 11. Thanks go to all the subscribers and contributors that have supported the venture. With a membership of 100, all the hard slog must be worthwhile. I apologise for my indifferent typing which has yet to pass the one finger stage. At times the duplicator plays up, but as this is virtually free, print quality has to be offset against subscription price. Other production methods would mean a higher subscription. Talking of which, the 1986 sub. is now due.... please use the form provided. Receipts will be sent with the February issue. Thanks to those few that have already paid!

J.Cooter.

THE SPREAD OF AXINOTARSUS MARGINALIS LAP. IN BRITAIN.

Mr Allen's recent note (1985 Entomologist's mon. Mag., 121:141) on the appearance of this species in south-east London in 1983 prompts me to suggest that it might be an interesting co-operative exercise to document the dispersal of this beetle from South Hampshire, where it was first noted by Mr Appleton in 1966 (see Allen, A.A., 1971 Entomologist's Rec. J. Var., 83:48). I have been finding it at new sites in north-east Surrey and Berkshire since 1981 and I know of unpublished records for Gloucestershire and Herefordshire. If readers of the "Newsletter" with records of this species would like to let me know the details, I will collate the data for subsequent publication in the "Newsletter".

Perhaps I might be forgiven for reminding readers that A. marginalis is rather similar to A. pulicarius F. and runs down to the latter species in the key given by Joy, who did not include marginalis. Mr Allen (loc. cit.) has pointed out, inter alia, that in marginalis the 5th antennal segment is not longer than the 4th whereas in pulicarius it is plainly longer. This would seem to be a simple and reliable means of distinguishing between the two. It could be worthwhile checking any specimens standing as pulicarius taken in the last 20 years to see that they really are that species, if this has not already been done.

J.A. Owen, 8 Kingsdown Road, Epsom, Surrey, KT17 3PU

TO SEA, OR NOT TO SEA, THAT IS THE QUESTION.

In inclement springs flights of flying insects are a feature of good weather when it comes, and in coastal areas many get swept out over the sea.

At the end of May 1985 I chose a good day and followed the tide out as it receded across the Hoyle Banks beyond the mouth of the Cheshire Dee. At about 33/159895 it became clear that large numbers of insects had somehow been aggregated on the surface of the sea, and were being deposited in a well defined strand composed of nothing else. Amongst flies, Limnophila (32), Bibionidae (120) and Empis tessellata F. (8) were the most common. There was one Hymenopteran, Dolichovespula sylvestris (Scop.), and, unusually in this region so far from land, one "hopper" Cercopis vulnerata Ill. I stopped counting beetles at 500 and the results were:

<u>Amara familiaris</u> Duft.	1
<u>Sphaeridium scarabaeoides</u> L	8
<u>Aphodius fossor</u> L.	2
<u>A. haemorrhoidalis</u> L	1
<u>A. prodromus</u> Brahm	236
<u>Limonium aeruginosus</u> Ol.	3
<u>Cantharis rustica</u> Fall.	1
<u>Adalia decempunctata</u> L	1
<u>Coccinella septempunctata</u> L	7
<u>Gastrophysa polygoni</u> L	53
<u>Galerucella lineola</u> (F.)	61
<u>Altica lythrii</u> Aube	48
<u>A. oleracea</u> L.	5
<u>Phyllobius argentatus</u> L.	73

All of these beetles occur commonly in the immediate coastal area of the Cheshire Plain.

Only one beetle (Sphaeridium) was alive; all of the others had been dealt with identically, namely that their elytra had been forced apart, the abdominal tergites removed or punctured, and the contents cleaned out. Any suggestions for a possible marine predator would be welcomed. Beetle corpses discarded by the aquatic Hemipteran Notonecta sometimes appear rather like these.

On August 30th, 1981 at Llandanwg, Merionethshire, I observed several adult Strangalia quadrifasciata L. on and emerging from a metre section of elm trunk which had been rafted onto the lower saltmarsh within the large embayment at 23/571278. The trunk may well have originated locally from higher in the Artro drainage, but its prolonged contact with sea water is not in doubt.

P.F.Whitehead, "Moor Leys", Little Comberton, Pershore.

YUGOSLAVIA 1985

I spent the first two weeks of June at the mountain resort of Zabljak in Montenegro - booked through "Yugotours" as a standard package from their brochure. The town lies in the Durmitor National Park. The purpose of going was to collect beetles, and in this respect I did well. However, it should be born in mind that it is illegal to collect in Yugoslavian National Parks - alas, I could not find this out before leaving despite numerous letters. Friends of an Italian friend were deported for collecting (!) so be warned (or very careful). Permits can be had and for the Durmitor National Park, they are issued from the Montenegrin Academy of Arts and Science at Titograd.

A longer report will appear in the Amateur Entomologist's Bulletin in due course.

J.Cooter.

ZOOPEOBAS MORIO F. (TENEBRIONIDAE) A POTENTIAL NEW

BRITISH SPECIES ? Recently when I tried to buy mealworm for lizard food in a pet shop in Ilford Essex, I was offered not only the familiar larvae of Tenebrio molitor but also two other Tenebrionid larvae, namely Alphitobius diaperinus (Pz.) and Zoophobas morio F.

Z. morio comes from South and Central America where it feeds on guano in caves. The fully grown larvae are about 42mm long, dirty yellow in colour with head, first and last three segments dark brown. The terminal segment has four small upward pointing spines. The larvae will not pupate until they find a suitable niche where they are not disturbed by other larvae. They thus may walk in cramped quarters for many months before pupating. The imago is 22mm long with elytra 8mm at the widest. The pronotum is slightly transverse measuring about 5mm by 4mm. The beetle is dull black above but shiny black below.

Dr Paul Hyman in his "Invertebrate Site Register" which contains the most up-to-date listing of British species does not include this species, but I would be surprised if Z. morio does not establish itself in this country.

I.M'Clenaghan, 20 St.Nicholas Grove, Ingrave, Essex.

(This is an interesting find, but raises the question what is a British Insect. Pope (1977, Kloet & Hincks A Check List of British Insects, 2nd ed. pt 3) lists several "stored product species" but Lophocaretes pusillus, a cosmopolitan species is not on our List despite being a familiar "stored product" beetle. To

list every species that has turned up in our docks or warehouses would be a waste of time and very unistructive. However, it does seem that regular and familiar species are being overlooked and inclusion on our List might be regarded as somewhat arbitrary (cg Aphodius scrofa for example).

J.Cooter.

SCOTTISH ENTOMOLOGY MEETING, 1986.

Next year's Scottish meeting is being organised by Adam Carside, Department of Natural History, The Museum, Albert Square, Dundee, DD1 1DA, who will gladly send further details and accept bookings.

The venue is the Scottish Field Studies Association Field Centre at Kindrogan, Blairgowrie, Perthshire (map ref NO(37)055629 on OS sheet 43) and the dates June 27th - 29th with optional extension to July 2nd if required. The cost is £11 per day.

The field centre is well equipped with good laboratory facilities and library, but it is advisable to bring a microscope.

Kindrogan is close to many interesting sites in Perthshire and Angus - Caenlochan Glen, Loch Brandy (!), Den of Airlie, Loch of Lintrathen, Loch Lowes and many others.

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BURYING BEETLES - A BIBLIOGRAPHY.

By Martin Henderson,
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Burying Beetles, also called Sexton Beetles, are a small group of insects of the beetle family Silphidae. They are unusual in showing subsocial behaviour, the adult female and often the male too, staying in the underground "nest" or chamber throughout the larval development of their brood, or beyond.

Naturally the life-history of these insects has attracted serious study. In the last twenty-five years the literature on Burying Beetles, especially that treating the subject from an ecological perspective, has burgeoned. The student of their biology may therefore find it difficult to locate all the information he needs. This Bibliography, probably the only one treating the topic, cites particularly those articles adopting a behavioural or ecological perspective. Significant literature in French, German or Polish has been located and included.

The bibliography is arranged by subject in seven broad categories. Within each, authors are cited in chronological sequence by date of publication. Developments in the study of each category can therefore be traced more easily. An author index concluded the work.

SOURCES.

Institutions with important libraries visited during the compilation of the bibliography were the Royal Entomological Society of London and the British Museum (Natural History).

The printed indices and abstracts consulted were Entomological Abstracts and Biological Abstracts.

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1 LIFE HISTORY, general

All the contributions in this section are comprehensive. Some are very clearly written in a narrative style.

The work of Fabre, supplemented by that of Pukowski and Leech, first put the study of Burying Beetle behaviour on a scientific footing.

The recent study by Ratcliffe covers the rather different behaviour of Necrodes, the others relate specifically to Nicrophorus (Nicrophorus auct. misspelling).

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The glow-worm and other beetles, translated by A.T. De Mattos. London, Hodder and Stoughton, 1919.

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Proc. Ent. Soc. British Columbia, 52(31):36-40.

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J. New York Ent. Soc., 52(4):311-327.

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2 BIOLOGY, FIELD STUDIES.

A primary concern of these studies is the nature of the association between carrion-frequenting insects and the carrion itself. Two aspects of this are the attraction of insects to carrion, and the succession of insects during the several stages of decay. Related factors are the seasonal variation in populations of insect species, and habitat preferences amongst the insect fauna. Many of the papers refer specifically to burying beetles or silphids.

Also covered are investigations of the relationship between burying beetles and the mites which are often found unfasting them.

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analysis of the horticolous necrophagous Coleoptera
found in Pannal Ash, nr Harrogate, during the years 1936-39.
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Habitat preferences of carrion beetles in the Great Swamp
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An inexpensive carrion beetle trap (Col., Silphidae).
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- 57 Wilson, D.S. & Fudge, J. 1984.
Burying beetles, intraspecific interactions and reproductive
success in the field. *Ecological Entomology*, 9(2):195-203.

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Species packing and temperature dependent competition
among burying beetles (Silphidae, Necrophori) Ecological
Entomology, 9(2):205-216.

3 FEEDING HABITS, adults.

This area has been treated separately as the literature is quite self-contained. It consists mostly of short articles written early this century as it became clear that both Necrophorus and Necrodes could adopt predatory habits as adults. The article by Ratcliffe (No 7 in this bibliography) treats feeding habits of adult Necrodes more scientifically than some of these studies.

- 59 Bell, ?. 1873 .
A glimpse of insect life. The Canadian Entomologist, 5:94-5.
(The first account of burying beetles feeding on fly larvae).
- 60 Clark, C.U. 1895.
On the food habits of certain dung and carrion beetles.
J. New York Ent. Soc., 3(2):61.
- 61 Selous, C.F. 1911.
A preliminary note on the so-called carrion feeding
Coleoptera. Ent. Mon. Mag., 47:86-89.
- 62 Davis, W.T. 1915.
Silpha surinamensis and Creophilus villosus as predaceous
insects. J. New York Ent. Soc., 23(2):150-151.
- 63 Jaques, H.E. 1915.
The fish-feeding Coleoptera of Cedar Point. The Ohio
Naturalist, 15(8):525-528.

- 64 Weiss, H.B. & West, E. 1920.
Fungous insects and their hosts. Proc. Biol. Soc. Washington,
33:1-20.
- 65 Steele, B.F. 1927.
Notes on the feeding habits of carrion beetles. J. New York
Ent. Soc., 35:77-81. (Records Nicrophorus orbicollis and
N. tomentosus took fly larvae in preference to carrion).
- 66 Abbott, C.E. 1937.
The necrophilous habit in Coleoptera. Bull. Brooklyn Ent.
Soc., 32(5):202-204.
- 67 Fichter, G.S. 1949.
Necrophily versus necrophagy. Ohio J. Science, 49(5):201-204.
- 68 Marikovskii, P.I. 1974.
Insects harmful to molluscs of the genus Bradybaena.
Soviet J. Ecology (translated from the Soviet J. Ecologiya,
by the Plenum publishing company). Vol, 5(6):560-562.
(Shows in certain circumstances Necrodes will feed on
certain molluscs).

4 BIOLOGY, LABORATORY STUDIES.

Developments in microscopy which led to the electron microscope and the scanning electron microscope made much of this work feasible. With the exception of the basic early work by Abbott, the studies are ultrastructural investigations (of the olfactory sensillae, or the diffraction gratings on the elytra) or investigations by means of various acoustic structure and function. This latter work led to the important ethological discovery that the larvae of burying beetles orient at certain times to the chirping sounds of the adult beetles.

Most of this work took place in Germany during the 1960's and 1970's.

- 69 Abbott, C.E. 1927.
Experimental data on the olfactory sense of Coleoptera, with special reference to the Necrophori. Ann. Ent. Soc. America, 20(2):207-216.
- 70 Abbott, C.E. 1927.
Further observations on the olfactory powers of the Necrophori. Ann. Ent. Soc. America, 20(4):550-553.
- 71 Ernst, K-D. 1969.
Die feinstruktur von riechsensillen auf der antennae des aaskafers Necrophorus (Col.) (Fine structure of the olfactory sensilla on the antennae of carrion beetles).
Zeitschrift fur Zellforschung und Mikroskopische Anatomie, 94: 72-102. In German, English summary.
- 72 Hinton, H.E. 1969.
Diffraction gratings in burying beetles (Nicrophorus)
The Entomologist, 102:185-189.
- 73 Niemitz, C. & Krampe, A. 1971.
Gehorsinn bei polyphagen Kafern nachgewiese. (Demonstration of hearing in Coleoptera) Die Naturwissenschaften, 58(7): 368-369.
- 74 Ernst, K-D. 1972.
Die ontogenie der basiconischen riechsensillen auf der antenne von Necrophorus. Zeit. fur Zell. Mikroskop. Anatomie, 129(1)217-236. (Development of basiconic olfactory sensilla on antennae). German, English summary.
- 75 Niemitz, C. 1972.
Biokustische, verhaltens-physiologische und morphologische untersuchungen an Necrophorus vespillo (F.). Forma et Functio, 5(3):209-230. (Bioacoustical, ethological and morphological studies on N. vespillo). German, English summary.

- 76 Niemitz, C. & Kranpe, A. 1972.
Untersuchungen zum orientierungsverhalten der larven von Necrophorus vespillo F. (Col., Silphidae). Zeit. für Tierpsychologie, 30(4):456-463. German with English summary. (Orientation of larvae during chirp-vocalisation of adults).
- 77 Schumacher, R. 1973.
Beitrag zur kenntnis der stridulationsapparate einheimischer Necrophorus-arten. Zeit. für morphologie der Tiere, 75(1): 65-75. German, English summary. (Stridulatory apparatus).
- 78 Waldow, U. 1973.
Elektrophysiologie eins neuen aasgeruchrezeptors und seine bedeutung fuer das verhalten des totengraebers (Necrophorus) J.Comp. Physiology, 83(4):415-424. German, English summary. (Electrophysiology of a new carrion smell receptor and its role in behaviou of Necrophorus).

5 GENERAL STUDIES OF RELEVANCE.

This category comprises studies which adopt a wider perspective in their discussion of issues in biology but which are germane to the theme of this biography.

- 79 Darwin, C.R. 1890.
The descent of man, and selection in relation to sex. 2nd edn. revised. London, John Murray, 702pp (Necrophora p.302, fig.25).
- 80 Wood, J.G. 1892.
Insects at Home. New edn. London, Longmans, Green, 670pp (Necrophora pp86-93, pl.4).

- 81 Morley, C. 1902.
Field notes on stridulation. Ent. Mon. Mag., 38:249-250.
- 82 Hatch, M.H. 1925.
Habitats of Coleoptera. J. New York Ent. Soc., 33(4):217-223.
- 83 Jones, F.M. 1932.
Insect coloration and the relative acceptability of insects to birds. Trans. Ent. Soc. Lond., 80(2):345-385.
- 84 Richards, O.W. 1953.
The Social Insects. London, Macdonald, 219pp.
- 85 Savage, J.M. 1958.
The concept of ecological niche, with reference to the theory of natural coexistence. Evolution, 12:111-112.
- 86 Varley, G.C. 1962.
The interpretation of change and stability in insect populations. Proc. Royal Ent. Soc. London, (C), 27:52-57.
- 87 Park, T. 1962.
Beetles, competition and populations. Science, 138(3548): 1369-1375.
- 88 Hennig, W. 1965.
Phylogenetic systematics. Ann. Rev. Ent., 10:97-116.
- 89 Wilson, E.O. 1971.
The Insect Societies. Cambridge, Massachusetts, Harvard Univ. Press. 548pp.
- 90 Lin, N. & Michener, C.D. 1972
Evolution of sociality in insects. Quart. Rev. Biol., 47(2): 131-159.

- 91 Schneider, P. 1975.
Die flugtypen der kafer. Entomologica Germanica, 1(3/4):
222-231.
- 92 Hermann, E.R. (Ed). 1979 - 1982.
Social Insects. Academic Press, 4 vols.
Presocial Insects by G.C. Eichwort in vol. 2 pp 199-280.

6 GEOGRAPHIC DISTRIBUTION.

Burying beetles are predominantly to be found in temperate climates. Little readily available detailed literature in geographical distribution appears to exist.

- 93 Fowler, W.W. 1912.
The Fauna of British India, Coleoptera, general introduction, Cicindelidae & Pausidae. London, Tayloe & Francis, 529pp (Silphidae pp 83-85).
- 94 Theodorides, J. 1950.
Sur la repartition geographique de Necrophorus humator F. Vie et Milieu, 1(1):97.
- 95 Anderson, R.S. 1982.
On the decreasing abundance of Necrophorus americanus Ol., in eastern North America. The Coleopterist's Bulletin, 36(2):362-365.

7 SYSTEMATICS.

No attempt has been made at complete coverage of this area, as the approach adopted has been the study of behaviour and ecology. Only those articles which illustrate aspects of the preceding topics are cited.

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Descriptions of the larva of Nicrophorus tomentosus Web.
Bull. Brooklyn Ent. Soc., 4(7&8):37-38.
- 97 Hatch, M.H. 1927.
Studies on the Silphinae. J. New York Ent. Soc., 35(4):331-371.
- 98 Portevin, G. 1926.
Les Grande necrophages du globe. Encyclopedie Entomologique
Vol. 6. (Paris, ed P. Lechevalier). Necrodini pp 155-174
Necrophora pp 175-248. In French.
- 99 Pukowski, E. 1934.
Zur systematik der Nicrophorus-Larven. Stettiner Ent. Zeit.,
95(1):53-60. In German.
- 100 Anderson, R.S. 1982.
Burying beetle larvae; Nearctic Nicrophorus and Oriental
Ptomascopus morio (Silphidae). Systematic Ent., 7(3):249-64.

AUTHOR INDEX.

The article or articles by a given author are indicated by the number(s) used to refer to it (them) in this bibliography. To examine the contribution of a known author refer directly to this index.

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