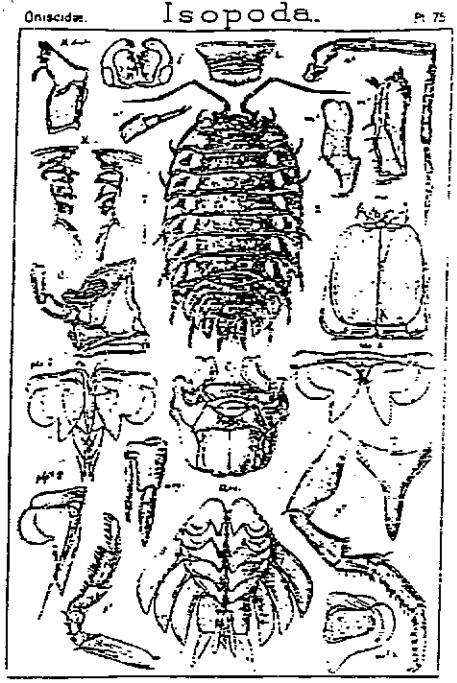

BRITISH ISOPOD STUDY GROUP

NEWSLETTER 35

June 1993

Edited by David Bilton

Editorial

Not much in the way of record cards has come my way this year, but presumably you have all saved postage and sent them to BRC for me to pick up in July?! Many thanks to Paul Harding and others at BRC for handling this. The field meeting in Sussex was a great success (see below), with a grand total of 24 species turning up! Let's hope we can be equally successful in Scotland next year. Also there is the possibility of getting together in Lincolnshire in October, which would be a good chance to fill in some blanks, and could produce some interesting species. As well as kindly writing the meeting account in my absence Jon Daws has been busy again - see notes below. A tour of cemeteries during my flying visit to Carlisle at Christmas produced a thriving colony of Haplophthalmus danicus a long way north of other modern records. Please don't forget that Steve Hopkin and I will be producing new maps later this year, and so I would like all your outstanding records, particularly those of the rarer species. Jonathan Wright (Canada) has produced an account of the recent Vancouver woodlouse symposium for this newsletter, and asks what happened to the British contingent?! He informs me that all the species he has taken in Canada are European introductions, and has also produced a record of Armadillidium depressum in Gloucestershire. As you will see at the end of this newsletter I am now returning to Britain (for good?) and have an address where I should be for the forseable future.

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BISG/BMG Field Meeting, Sussex

The meeting based at Stafford House Field Centre, Hassocks - temporary headquarters of the cream of Isopod and Myriapod Study Groups - was a great success. Although the final number of experts that made it to Hassocks was only 13 (unfortunately Gordon Blower went down with flu), it turned out to be a lucky number.

By the end of Thursday evening, 12 species of woodlice had been found in the county, with Armadillidium depressum being quite common on mortared walls and Porcellio laevis recorded from a derelict farm.

Friday started out damp (to be honest it was pissing it down), but, having sat in the car for ten minutes at Shoreham-by-sea, hoping it would dry up, we donned our wellies and cagoules. The surprise was that Halophiloscia couchi was not only found on the beach, but also over 100m inland, around some old sea defences in what I previously considered to be too dry a habitat for it. From there we drove east to the beach just the other side of New Haven, where H. couchi proved to be abundant on the shingle. I was amazed when, on lifting a half sleeper situated on the strandline of an inlet, it revealed approximately 60 H. couchi on the underside, which promptly disappeared. Further up the beach we discovered an ants'nest beneath a large piece of wood, with Platyarthrus hoffmannseggi wandering around it. We were amused when H. couchi suddenly dashed through the nest. This will probably lead to a paper on "H. couchi: A new species found in ants'nest" by Daws and Gregory in the near future! Miktoniscus patiencei was also found at this site, in spearsely vegetated shingle on the inlet strandline. The search for H. couchi continued, with two more 10km squares being ticked off for this species, and it being found in a woodpile, again over 100m inland.

On returning to Stafford House some very hungry isopodologists demolished all the food put in front of them, but the kitchen staff rallied well, and took orders for seconds; even Paul Harding couldn't manage the third helpings on offer. I thought Steve Gregory and myself had done well during the day, but Paul Richards (as ever armed with his Good Beer Guide) and Paul Lee had found Eluma purpurascens and Buddelundiella cataractae at Langley Point, Eastbourne, taking the meeting's isopod list to 21.

On Saturday we only managed to add three species to the meeting's list, with Trichoniscoides albidus turning up in two sites. I found it whilst pulling large stones out of a bridge, and the two Pauls - or the Good Beer Guide Team - found it in large numbers below stepping stones. The two Pauls also found two male Haplophthalmus montivagus outside heated greenhouses at Nyman's Gardens, Handcross, as well as at the Newbury Pond nature reserve. The other species was Porcellionides pruinosus, which Dick Jones found around a stable yard. Besides these highlights the group continued to fill in more 10km squares for previously recorded species.

Saturday night finished in the early hours of Sunday morning, with several empty bottles of whisky and a lot of drained beer glasses scattered across the tables in the bar at the centre. Breakfast (8am) was attended by some fragile BISG/BMG members, with even more fragile stomachs. Those of us who hadn't touched the amber nectar divided up the unwanted breakfasts between us.

Besides fixing the date and destination for next year's field meeting, a discussion of poorly surveyed areas in Britain led to a proposal for either a day or a weekend

meeting based in Lincolnshire in October. Anyone who is interested should drop either Dick Jones or myself a line by September. To finish I would like to thank the following people: the staff of Stafford House, for looking after us so well; Paul Harding and his staff for their efforts towards running the scheme and choosing the meeting's base at Hassocks; Tony Barber for finding sites for us to visit; and finally all those who attended for making it such a useful and enjoyable meeting.

Jon Daws
19 The Portwey,
Leicester LE5 0PT.

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Another character for separating Trichoniscoides helveticus and T. sarsi

Flicking through Volume 1 of Vandel recently I notice that these two species are separated by characters of the male hind leg. These have worked on all specimens I have seen, and the main character can be seen without dissection. Trichoniscoides sarsi has a crotchet-like curved projection coming out of the underside of the merus, which is completely absent in T. helveticus. It may be better to carry on dissecting pleopods, however, since there a number of non-British species which also have some form of projection, although its details differ one to the other. There may yet be other Trichoniscoides species hiding somewhere in the UK!

David Bilton

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Vancouver Symposium

The annual meeting of the American Society of Zoologists, which took place in Vancouver, December 26th-30th, 1992, was the forum for a unique symposium, "The evolution of structural and eco-physiological adaptations of isopods to life on land". Despite some late withdrawls and a rather disappointing turnout - even given the inopportune dating - the hard efforts of co-organisers M.A. Alikhan and Michael Warburg bore fruit in an intimate and strongly interactive meeting. The session opened with a seminar on aquatic survival in woodlice in relation to habitat and phylogeny by Barbara Taylor and Tom Carefoot. This was followed by a valuable study by Cliff Crawford and co-workers of the effects of litter from native

Populus fremontii and introduced Eleagnus angustifolia and Tamarix pentandra on populations of Porcellio laevis and Armadillidium vulgare in the Rio Grande flood-plain forest ecosystem. After coffee we had two presentations relating to studies of isopod reproductive capacity by Michael Warburg and M.A. Alikhan, the former considering effects of temperature and photoperiod, the latter, specific characteristics of an industrial barran population. I kicked off the afternoon session with a talk on vapour absorption, which I have paraphrased below. The last address was given by Kristine Szlavecz who gave an interesting seminar on habitat conservation in Hungary, from an "isopodocentric" perspective. Papers presented at the symposium will be published in a forthcoming volume of Crustacean Issues. As a suitably social and festive ending to the day, participants converged on a Greek restaurant to continue isopod discussions over food (they put us in a separate room!) and in the company of belly dancers, kindly organized by Tom Carefoot and Barbara Taylor. By the end of the day, I think everyone slept very well!

Jonathan Wright

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Water vapour absorption by isopods

In an earlier paper Spencer & Edney (J. Exp. Biol., 1954) investigated and discounted the possibility of an active water vapour absorption mechanism occuring in woodlice. Despite some strongly suggestive findings of weight gains in sub-saturated relative humidities (RH) in the mammoth study of Den Boer (1961) and in more recent papers by Dieter Coenen-Stass (1981, 1989), the established view seems to have stood ground, perpetuating the pervasive - though I think rather misleading - view that isopods have adapted to terrestriality primarily by behavioural, not physiological, mechanisms.

It was three years' ago, while I was working in John Machin's lab. in Toronto, that the true significance of vapour uptake became clear to me. More recently I have been continuing this work with Mike O'Donnell at McMaster University. All Crinocheta studied are capable of vapour uptake, and minimum humidities from which absorption is possible (the "uptake thresholds") vay between 86.5% RH (A. vulgare) and 92.2% RH (O. asellus) for the twelve species currently investigated. When expressed per unit vapour pressure deficit, the uptake rates of isopods are the highest documented for any known vapour absorbers. However, owing to their relatively high transpiration rates, absorption does not offset simultaneous losses until humidities are 2 to 3% above the threshold. Despite their relatively unimpressive thresholds (values for lepismatids [bristletails] and anobiids [beetles] get down to ca. 45% RH, and both psocopterans and flea larvae come hot on their heels), the rapid absorption

rates allow Crinocheta to recover very substantial water debts over the course of a 12-hour absorption period in saturated air. Theoretically, it should be possible for Crinocheta to sustain near-lethal desiccation during nocturnal foraging and recover incurred water losses fully by a 12-hour diurnal period of vapour uptake, given access to 100% RH. We need combined field and lab. studies to assess whether animals routinely subject themselves to substantial desiccation during foraging.

The basic absorption process is relatively simple. A substantial volume of strongly hyperosmotic fluid is secreted into the pleoventral cavity (by the endopods?) and ventilatory beating of the exopods circulates air over this fluid. Colligative lowering of water vapour pressure by the concentrated solutes, chiefly sodium and chlorine ions, brings the fluid into equilibrium with the ambient threshold humidity and, in ambient humidities above this, water vapour will condense down the vapour pressure gradient into the pleon fluid of the woodlouse. As shown by Hoese (1981), the pleoventral cavity is contiguous with the anterior water capillary system and the rectum. It is still uncertain whether the endopods or the rectum constitute the primary fluid resorption site.

As well as allowing isopods to recover large water debts relatively rapidly, we have recent evidence to indicate that vapour absorption is normally temporally coupled to ammonia volatilization. This creates a remarkable situation where ammonotely is actually associated with a net water gain, and provides a further example of the impressive physiological adaptations which the Crinocheta have evolved to cope with the hostilities of life on land.

Jonathan Wright
Dept. of Biology,
McMaster University,
Hamilton,
Ontario, Canada L8S 4K1.

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Woodlice in northern Iberia

It sounds as if I missed an enjoyable and productive meeting, but the work which kept me away this year is proving very rewarding. I am currently reaching the end of a six-month fellowship to survey the woodlouse fauna of the northwest of Spain and Portugal with a view to producing a taxonomic revision of the fauna. Being based in Santiago de Compostela, the Galician goal of countless pilgrims, most of my forays have been in Galicia and northern Portugal. Crossing this region in a north-south direction one passess through a number of climate zones, changing from a very wet Atlantic climate (more wind and rain than Cornwall!) to a far drier Mediterranean/Atalantic one. The woodlouse fauna reflects the

climate; many Galician species are found in saturated environments. The landscape of the region is dominated by low, rounded granite hills dissected by precipitous and winding river valleys which have not been ironed out by glaciation, and make for some very hairy hairpin bends! In the valleys fragments of native oak forest (and associated woodlice) survive amidst the agricultural land and ever-growing Eucalyptus plantations. Coastal scenery is varied, with rocky headlands alternating with small sandy coves, leading to a varied woodlouse fauna.

To date I've found something around 50 species of woodlice, including many new and interesting species. The soil fauna in northern Iberia is particularly rich, and trichoniscids dominate my list. Numerous Trichoniscoides species have turned up including one which is barely one millimetre long as an adult. This species was found below boulder scree, in wet granitic gravel, with the rule appearing to be the larger the stone turned, the smaller the woodlouse! Numerous curses, broken fingernails and a bad back also resulted from dissecting the scree, but the species appears to be a new one, so was well worth the effort. Most of the Trichoniscoides species seem to have heavily female-biased sex-ratios, meaning that the discovery of one specimen entails spending about a day looking for more to obtain enough males.

As well as Miktoniscus patiencei on the coast M. bisetosus also occurs in Galicia. This large, yellowich species looks and behaves rather like Haplophthalmus danicus in the field, and lives inland, being almost semi-aquatic in saturated soil and moss beside waterfalls, or actually within small seepages. In the same habitat is Trichoniscoides lusitanus, which looks suprisingly like Oritoniscus flavus before dissection, together with what must be another new species of Oniscus. Oniscus asellus is rather rare here, the rugged O. lusitanus being the commonest species. Porcellio scaber is also rather scarce, and can be divided into threee distinct forms whose distribution and ecology also appears to differ, but whose status is at present uncertain due to considerable morphological overlap. The commonest Porcellio is P. debueni, a large, smooth and broad species with a rounded telson.

Woodlice are usually very scarce and uninteresting at high altitude in Britain, but here species of Trichoniscoides and Armadillidium have been taken from around patches of semi-permanent snow in the Cantabrian Mountains. Both the species concerned may well be new ones.

The best find so far is what must be a new genus of primitive trichoniscid taken from soaking wet soil beside a cascade stream in mountains in northeast Portugal during a torrential thunderstorm. Lightning appeared to be materialising in front of me at the time! All in all I certainly have enough material to keep me busy for some time to come!

David Bilton

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Eluma purpurascens in Essex

Early in November 1992 I visited Canvey Island to look for Halophiloscia couchi along the coast, at a site mentioned by Collinge (Harding & Sutton, 1985). I was under the impression that the coastline would be rocky with shingle or boulders. However, this is not the case, most of the area being below sea level with seawalls and muddy estuaries as the main habitats.

Having wandered along the coast for over an hour, with only Ligia oceanica and Cylisticus convexus for company, I decided that a change of habitat was needed. This turned out to be a landfill site that had been capped three years previously, but a small part of which was still being used as a collection site for refuse, with the rubbish being removed in skips. A council work team supping tea were surprised by my request to look for woodlice. I started my search behind the furthest skip where there was an overgrown ditch and plenty of rubbish to rummage through. The third piece of wood I moved had a woodlouse attached to it, which, of course, fell off as soon as I saw it (or did it jump??) and landed amongst a grass tussock and old hedge clippings. A further few minutes of hand searching and I managed to capture the little pill-woodlouse in a tube.

The first thing I noticed about it was that it was slightly hairy, but the single ocellus confirmed the species as Eluma purpurascens. Further hand searching produced two more specimens several metres apart. Eluma seemed to be confined to this area of loose rubbish, which was devoid of other woodlice. Nearby on an embankment, Porcellionides pruinosus was found under rotten logs, and was also found in small numbers elsewhere around the site. The other woodlouse fauna was made up of Oniscus asellus, Porcellio scaber, Philoscia muscorum and Armadillidium vulgare on the more open areas.

Jon Daws

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Joint Committee for the Conservation of British Invertebrates

This is what used to be the joint committee for the conservation of British insects, and is a committee of national societies concerned with invertebrate conservation. JCCBI's main aims are to promote invertebrate conservation in Britain, by ensuring that the needs of invertebrates are fully considered in management and planning decisions. The BISG now has voting rights within JCCBI, and at the moment I represent our interests. As for any invertebrates woodlouse conservation is effectively habitat conservation, although in some cases woodlice would be affected detrimentally by the "tidying up" of sites which is practiced by many conservation

bodies. If anyone has any views on the matter in general, please get in touch.

David Bilton

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Twitching on Corsica

A week's visit to Corsica in late March allowed me to investigate the island's woodlouse fauna, which is suprisingly rich and exciting. A large percentage of the species present are endemics, and the first stone turned produced a few specimens of Cylisticus vandeli, a small, white soil-dwelling relative of our C. convexus. Numerous other species were found during the week, a day spent on the Mediterranean coast being one of the highlights. I had never been to the Med. before, and although I realized that there were virtually no tides, I hadn't appreciated the effect this had on the structure of the littoral habitats. All the zones which on an Atlantic beach are well separated appear to be crammed into a couple of metres, meaning that the area available for supralittoral woodlice is easily missed. Still, as well as Halophiloscia I managed to get hold (with difficulty!) of a few Ligia italica, which looks and behaves like a Scutigera version of our species. A compacted Zostera strandline produced what I was really after though - Stenophiloscia zosterae. This looks and behaves rather like a very small H. couchi, but strikes one as being mottled bluish-grey, and rather narrow and flat. Start keeping all those little Halophiloscia in future, since we still must rediscover this species in the UK. There did not appear to be any special trick to getting the species, it was abundant in the upper strandlines.

A **must** for any isopodologist on Corsica is the Tyrrhenean endemic tylid Helleria brevicornis. This roller get up to 30mm long, and may not be as big as a living ping-pong ball, but certainly comes close! The species was abundant in wet litter etc. all over the island, wherever there was forest. I have a colony in the lab., and if they survive will bring them along to the next meeting!

David Bilton

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Trachelipus rathkei found in Norfolk

Having seen some dots in the distant sky and been assured they were Goshawks and visited Weeting Heath to see a single Stone

Curlew, the third stop was to provide the best tick of the day. We had been told that the area where the Little Ouse River flood banks widened out near Hockwold cum Wilton (TL72-86-), to form an area of rough grazed meadow, was occasionally used as a stop over by Black-tailed Godwits on passage.

I wandered around after the other three twitching birders along the top of the flood bank, with a flushed snipe causing our binoculars to rise momentarily. With nothing much in the bird line to see, my attention drifted to a log close to a nearby hedgerow. Turning over the log revealed a couple of Trachelipus rathkei. I also had a look on the other side of the flood bank under pieces of wood, amongst flood refuse at the bank's base, to find several more specimens.

With this record in mind I have been examining several other areas of flood meadow and adjacent rough grassland. This has turned up a second Norfolk record for T. rathkei, this time at Denver Bridge (TF59-01-), which lies at the north-east end of the Ouse Washes. Here Trachelipus was found in rough grass surrounding a manure heap dumped on the flood bank of the Great Ouse.

Jon Daws

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BISG/BMG Meeting 1994

I am informed that this is to be based in central or eastern Scotland, and organised by Charles Rawcliffe. The venue will be decided after possible accomodation has been scrutinised. I doubt we will be able to manage as long a list as from Sussex, but it should prove interesting, and generate some useful records as always. Further details in the next edition of this newsletter. Also don't forget the proposed Lincs meeting in October!

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Addresses

From July I will be at the University of York, where I will be based for the forseeable future. Please send record cards (for the new maps!!), specimens, correspondence, newsletter articles etc. to me there:

Dr. D.T. Bilton,
Department of Biology,
University of York,
Heslington,
YORK YO1 5DD