ADENOMERIS GIBBOSA - NEW TO THE UNITED KINGDOM

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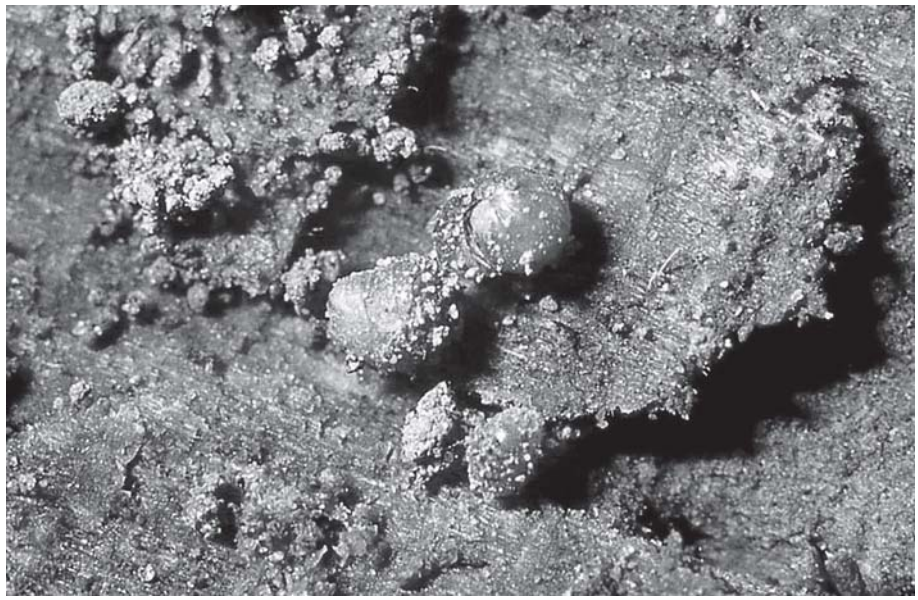
SUMMARY
Adenomeris gibbosa Mauriès, 1960 was found on 16th April 2004, new to the United Kingdom, at Aston Clinton, Buckinghamshire. The species is likely to be an introduction from Western Europe perhaps a century or more ago.

LOCATION
On 16th April 2004, during the BMIG annual weekend at Green Park, Aston Clinton, Buckinghamshire the authors collected at Cobblers Pit just across the disused canal, the Wendover branch of the Grand Union Canal, and adjacent to the Park. Cobblers Pit (SP886112, vc24, Alt.100m) is a nature reserve of Buckinghamshire County Council and consists of a strip of mixed woodland running uphill, between grass fields, from the canal to the A4011 road across which is the large area of Halton Woods. At the lower (northerly) end of the reserve, where it abuts the canal and Green Park, there is a group of yew, *Taxus baccata*, that may well have been planted, perhaps a hundred years ago. A signboard at the canal entrance to the reserve gives some history which includes: i) a sunken lane runs through the reserve, perhaps connecting the Upper and Lower Icknield Ways, or it may have been used to transport marl or other pit products down to the canal; ii) a short length of concrete canalbank there is said to have prevented water leaking out - or could it have been a wharf for unloading goods (perhaps including plants from Europe) for Sir Anthony de Rothschild's Green Park House and gardens in its heyday? The site has clearly seen much human activity, particularly the transport of goods.

Surface searching among the yew trees and open scrub was reasonably productive for invertebrates but stones and logs were noticeably in short supply so resort was made to sieving and grubbing through leaf litter, humus and soil among the ivy *Hedera helix*, dog's mercury *Mercurialis perennis*, and in bare areas. Apart from *Glomeris marginata*, *Melogona scutellare*, *Macrosternodesmus palicola* and *Ophiodesmus albonanus*, a few microglomerids were noticed which were initially assumed to be *Geoglomeris subterranea* Verhoeff, 1908 (syn. *Stygioglomeris crinata*



PHOTOGRAPH 1.
Adenomeris gibbosa, Cobblers Pit, Aston Clinton, 16.4.2004. First finds three specimens, obscured by dirt, difficult to spot. Head and collum tuck under the telson protectively giving the ovoid shape. Size: (curled-up) 1.50mm x 1.25mm. Photograph: Paul Richards (using: Olympus OM2n + 90mm Tamron macro lens + 3 extension tubes + 2x convertor. Ektachrome 200).

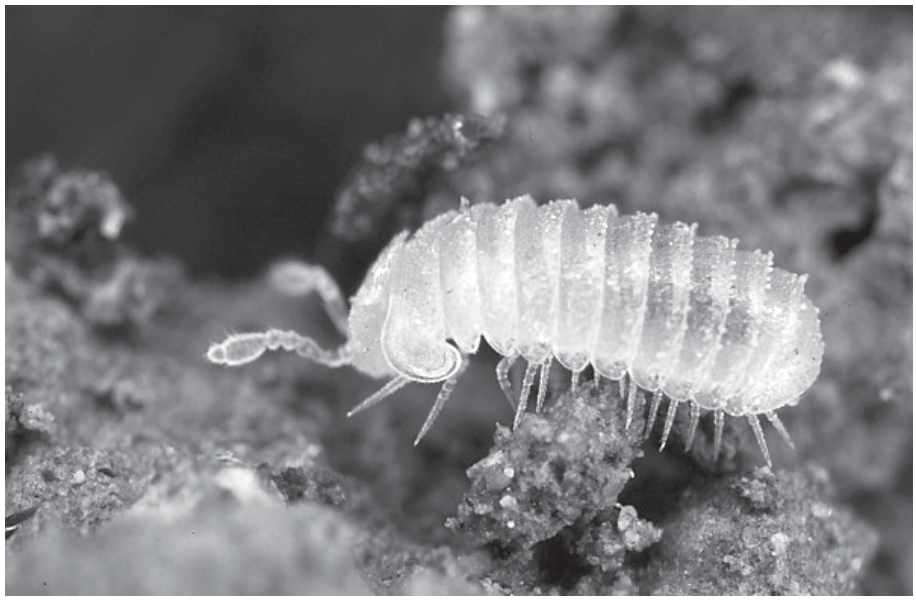
Brölemann, 1913) but the colour seemed wrong. They had a buff or pale brown ground colour instead of the more familiar distinct whiteness of *G. subterranea* found in limestone habitats; however many had the dark gut contents showing through as Richards (1995) mentions for this species. When JH viewed some of the specimens with a x20 hand lens in the field he quickly realised that many had an ornamentation of small lumps and, from memory of the drawings in Blower (1985), hazarded they were *Adenomeris* or even *Trachysphaera* reported more recently in the UK (Jones and Keay 1986).

IDENTIFICATION

A hasty retreat to base and microscopical examination allowed us to conclude that they were indeed *Adenomeris gibbosa* (or a closely related species) based on the 12 tergites (collum, shield and telson included) and their ornamentation of tubercles (otherwise variously called protuberences or excrescences). The initial specimens were obtained by sieving, but the resultant dirt covering obscured detail (Photo 1) so cleaner specimens were later obtained by careful direct grubbing. Closer examination showed that the majority of the specimens (approx. 30) were *A. gibbosa* together with five female *G. subterranea*. They were found at a depth of 1cm - 2cm in moist conditions: a) among humus; b) at the boundary of humus and soil; c) under pieces of wood embedded in the soil; and d) within interstices of the crumbly clayey soil - basic as it is derived from the chalk of the Chiltern Hills. It is likely that the substrate of buff clay particles somehow influences the similar internal ground colour of the animals in both species; this compares with the normal white ground colour of *G. subterranea* found in limestone districts.

Jean-Paul Mauriès of the Muséum National d'Histoire Naturelle, Paris has confirmed the identity of the Cobblers Pit specimens as *Adenomeris gibbosa*. A few, including a male, have been deposited with the MNHN. Two females have been placed in the BMIG Basic Collection.

Alerted by the find on the 16th, the following day Helen Read searched a nearby section of Halton Woods, (mentioned above) just a short distance uphill from Cobbler's Pit. She found two more of the species at SP887106. Also that day, Steve Gregory and Paul Lee accompanied JH to the original site and found a few more *A. gibbosa* and *G. subterranea*.



PHOTOGRAPH 2.
Adenomeris gibbosa, Cobblers Pit, Aston Clinton, 17.4.2004. Note characteristic rows of tubercles. Grooves on the shield allow the posterior edge of the telson and succeeding tergites to fit tightly making it difficult to open a contracted animal. Note only 11 tergites are apparent; collum indistinct from head. Size: 2.5mm long. Photograph: Steve Hopkin (using: Olympus OM4Ti, 38mm macro lens with ring flash, Fuji Velvia film. f16 auto flash exposure).

DESCRIPTION

As the accounts of *A. gibbosa* and *G. subterranea* given in Blower (1985) were quite adequate to separate the species on this occasion there is no need to repeat a full description here. Further, *A. gibbosa* is superficially similar to *Trachysphaera lobata* (Ribaut, 1954) for which an accessible description together with a good drawing is found in Jones and Keay (1986). Although *T. lobata* also has transverse rows of tubercles (*Trachsphaera* and *Adenomeris* are both placed in the Trachysphaeridae) close examination shows there are some very distinct differences, including: i) *T. lobata* has only 11 tergites compared to the 12 of *A. gibbosa*; ii) *T. lobata* has a row of five ocelli down the side of the head whereas *A. gibbosa* has none; iii) the telson of *T. lobata* is rounded with no transverse ridge.

However, notes from the examination (at x40 magnification) of 7 males and 25 females from Aston Clinton may be usefully recorded. There is always the possibility that further microglomerids await discovery in the UK and Ireland and additional characters may help to distinguish members of this difficult group.

a) As a main feature of *Adenomeris* (of *T. lobata* also), the bulbous tubercles are quite variable in size and colour, varying from pale buff usually to quite dark on a few specimens. However, occasionally they are far from obvious, especially in specimens that have been subjected to abrasion; indeed at least one of the specimens appears to have almost none, so that if tubercles appear to be absent one needs to refer to other features. Gut contents are not always apparent and probably depend upon food intake; indeed this could suggest interesting student projects:- i) does food type affect gut colour? ii) do the animals feed and/or digest food at low temperatures?

b) The posterior one third of most tergites is thicker and forms a transverse crescentic band (Photograph 3), widest on the dorsum and tapering latero-ventrally. The tubercles are mostly concentrated along this band; when small they appear scattered evenly in a strip about 4 tubercles wide; if large ones are present they occur at the anterior and posterior edges of the band, so giving the appearance of two parallel rows. Viewed with reflected light, the anterior two thirds of each tergite is covered in low papillations that in transmitted light appear porelike. The tergite surface of *G. subterranea* is much smoother and shinier, the papillations much smaller and there is a general pilosity of adpressed microsetae.

c) In a lateral view of the telson the transverse ridge (anterior to the centre) is usually obvious, compared to the smooth convexity of *G. subterranea*. Most of the telson is covered by tubercles with those on the ridge larger and

PHOTOGRAPH 3.
Adenomeris gibbosa, Cobblers Pit, Aston Clinton, 17.4.2004
Rebated ledge on anterior edge of shield allows the telson to fit tightly. Spacing of posterior row of tubercles shows well from this angle. Note tapering crescent on each tergite. Size: 1.0mm wide. Photograph: Steve Hopkin (details as above).

hence accentuating it. However, the twin horns of the transverse ridge, or two divergent sets of enlarged tubercles (Mauriès, 1960), are hardly apparent in these specimens, to the point of being absent. Comparing the specimens (two years in 70% ethanol) with the photographs, the tubercles may have shrunk a little but not appreciably.

d) With direct light (backlight), a lateral view shows up a general and distinct pilosity only on the head and collum and at the posterior edges of most tergites (cf. *G. subterranea* above).

e) The posterior margin of the telson is interesting: in posterio-dorsal view with direct light, the edge is very finely crenulate, seemingly corresponding with equally fine parallel longitudinal chasings in a broad band round the posterior edge; they appear much less clear in *G. subterranea*.

f) Seen laterally each tergite of *A. gibbosa* is slightly concave, the effect accentuated by the layer of squashed exudate on the band described in b) above (even with the tubercles removed); when the animal is rolled up, the effect is to produce a scalloped outline as seen in Photo 4. This compares with the slightly convex surface of each tergite in *G. subterranea* giving, in the rolled up state, a very smooth outline.

g) The "characteristic obliquely running grooves of the antero-ventral portions of the tergite lobes" mentioned by Blower (1985), for *G. subterranea* particularly, are also clearly present in *A. gibbosa* though finer and probably often obscured by exudate.

h) Size of females: The two largest are 3.0mm long x 1.2mm broad; however most are 2.5mm x 1.0mm, apart from a few smaller immatures.

i) Size of males: most are 2.5mm x 1.0mm with a couple smaller.

j) Eggs: One of the two largest females contained eight eggs; the presence of the males suggests that A. gibbosa is sexually reproductive at this site. Approximately 12 males and 32 females altogether were collected which gives some idea of the sex ratio.

k) Mature females have 17 pairs of legs. Males have 19 pairs - the last three pairs adapted as copulatory structures - gonopods / telopods.

PHOTOGRAPH 4.
Adenomeris gibbosa, Cobblers Pit, Aston Clinton, 17.4.2004. The rightmost animal, viewed laterally, shows the scalloped outline of the tergites. Size: 1.5mm x 1.25mm.
Photograph: Steve Hopkin (details as above).

DISTRIBUTION

Adenomeris gibbosa was first collected and described by Mauriès (1960) from Saint Pé de Bigorre in the Hautes Pyrénées. Two further collections were from Eaux-Bonnes and Licq-Atherey in the Pyrénées Atlantiques according to Des Kime (pers.comm.); ie. the western end of the Pyrenees; these constitute the brief mention by Demange (1981), itself subsequently refered to by Blower (1985).

Subsequently the species was found at two sites around Dublin, Ireland by Declan Doogue: At Ballygall in 1978 and at Lucan in 1981. Both of these are referred to by Blower (1985) and Des Kime (pers. comm.). From the descriptions given, both the Irish sites are close to old or abandoned habitation.

As the British and Irish sites are all synanthropic, it is highly likely that the species has been introduced. *A. gibbosa* is found naturally in fine limestone scree under moss, or in the soil, in Beech *Fagus sylvatica* forest in the western Pyrenean mountains (Des Kime, pers.comm.). Among possible hypotheses it would seem quite plausible that any "alpine" enthusiast collecting a few plants (with a little soil) from the Pyrenees for their treasured alpine garden, especially early in the last century before the days of mass availability at garden centres, could easily introduce the unobtrusive microglomerids and for them to become naturalised at lower elevations in our higher latitudes. The same scenario could be envisaged for several other species of microglomerid genera which may lurk unsuspected in gardens or their surrounds in calcareous parts of Britain and Ireland. For a start there are two more species of *Adenomeris*: *A. hispida* Ribaut (1909) found more to the east in the central Pyrenees; and *A. viscaiana* Mauriès and Barraqueta (1985) from the Spanish province of Viscaya in the Basque Country.

ACKNOWLEDGEMENTS

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