

Bulletin of the British Myriapod Group 4 (1987)

ON SOME STRUCTURAL ABNORMALITIES IN LITHOBIUS AND CRYPTOPS (CHILOPODA) AND
THEIR POSSIBLE SIGNIFICANCE

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In a recent paper, Minelli and Pasqual (1986) described eight abnormal specimens of centipede and listed previously recorded cases. They distinguished three principal types of abnormality namely, spiral segmentation, homeotic mutations (the mutation of one structure into another, such as that of an insect wing into a haltere) and schistomely (the bifurcation of appendages).

It is not always possible to be sure whether malformed structures are due to some developmental problem or to regeneration after damage. Thus Kraus (1957) suggested that the abnormal spinulation of the last pair of legs in many individuals of a population of the scolopendrid centipede Digitipes katangensis Kraus from Zaire was due to mutation caused by radiation emitted by the rocks of the area but Lewis (1981) suggested that it could well have been caused by regeneration as are the abnormal numbers of antennal segments and spinulation of the last pair of legs in Scolopendra amazonica (Bücherl) (= S. morsitans Linn.) (Lewis, 1968). Developmental abnormalities may provide useful information about the homologies of certain structures, such as the female gonopod and walking leg in Lithobius (Demange, 1971) and may also have implications for taxonomists: Matic (1958) pointed out that they may be the kinds of differences that are used to separate species.

In a survey of the distribution of centipedes in Somerset currently being carried out by pupils at Taunton School, four abnormal specimens were collected. They are here described.

A Abnormal coxal pores in Lithobius variegatus Leach

A female Lithobius variegatus 21 mm long was collected on 11.iii.1986 from beneath the bark of a dead tree in deciduous woodland between Stockland, Bristol and Stogursey, Somerset (Grid ref. 223 436). The formula for the coxal pores of the last four pairs of legs is 6, 7, 6, 5 for

for the left side, and 6, 6, 6, 8 for the right side. The coxae of the fifteenth pair of legs are atypical being narrower than in normal specimens (Fig. 1). The right coxa has an abnormally high number of pores (eight). The left coxa has a more typical number of five pores but these are irregularly arranged. The telopodites of both legs are missing. I ascribe the condition of the coxae of the fifteenth pair of legs of this specimen to regeneration after damage.

B Abnormal prehensorial coxosternum in Lithobius borealis Meinert

A female Lithobius borealis 12.5 mm long was collected on 21.i.1986 from a beech wood at Lydeard Hill, 1 km east of West Bagborough, Somerset (Grid ref. 182 339). The anterior border of the left prehensorial coxosternum instead of being rather humped, with a pronounced shoulder, is straight (Fig. 2). The two coxosternal teeth on this side are very small. This condition approaches that seen in Lithobius pontifex Pocock from Mexico as figured by Eason (1973). There is no obvious sign that this specimen had been damaged; the abnormality may well be a developmental one.

C Abnormal prehensorial coxosternum in Cryptops parisi Brölemann

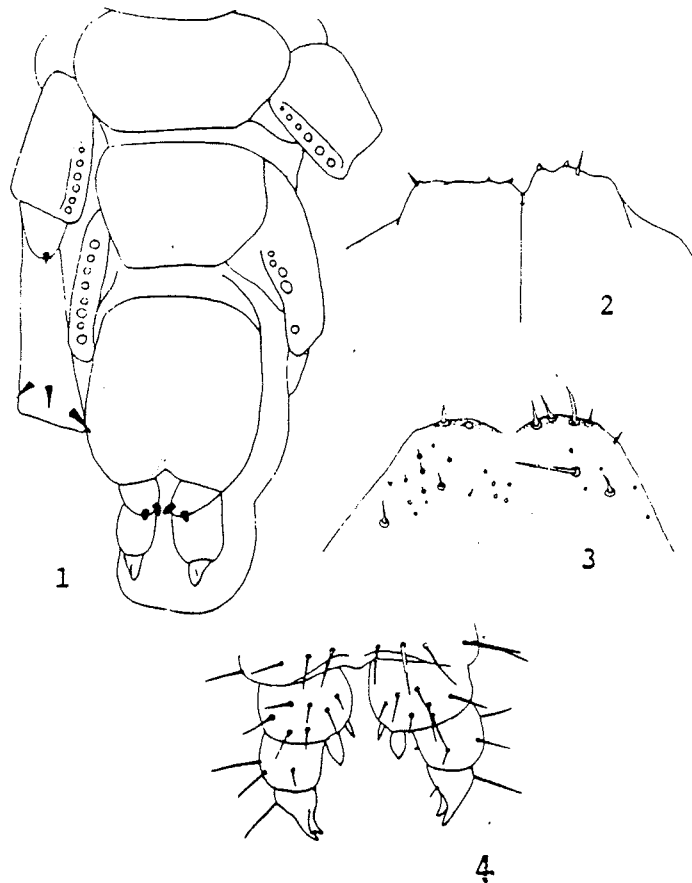
A Cryptops parisi 33 mm long was collected on 5.ii.1985 from humus on waste ground at Taunton School, Taunton, Somerset (Grid ref. 221 260). This specimen shows the normal four stout setae on the anterior border of the coxosternum on the left but has only one on the right, although a socket for a second is present. There is a proliferation of smaller setae behind the anterior border on this side (Fig. 3). There is no indication of damage or regeneration in this specimen and I presume that this is a developmental abnormality.

D Abnormal female gonopods in Lithobius borealis

A Lithobius borealis 10.5 mm long was collected on 21.i.1986 from a beech wood at Lydeard Hill, 1 km east of West Bagborough, Somerset (Grid ref. 182 339). This specimen has only one conical spur on each gonopod; normally two are present. In this case the second is reduced to a spine (Fig. 4). This again would appear to be a developmental abnormality.

Legends to Figures

- Figure 1. Ventral view of segments 14 and 15 and terminal segments of a female Lithobius variegatus from between Stockland Bristol, Somerset.
- Figure 2. Prehensorial coxosternum of a female Lithobius borealis from Lydeard Hill, Somerset.
- Figure 3. Prehensorial coxosternum of a Cryptops parisi from Taunton, Somerset.
- Figure 4. Gonopods of a female Lithobius borealis from Lydeard Hill, Somerset.



Discussion

Cases B, C and D described above, appear to be developmental abnormalities which may well be due to mutation. Mutation during the course of development leading to changes on one side only. These cases indicate that radical changes in the number and size of setae and spines may take place and this should be borne in mind during taxonomic studies.

Acknowledgments

I am indebted to those pupils of Taunton School who have been involved in the survey of Somerset centipedes, in particular Paul Colthurst, Tom Gliddon and Alex Robins. My thanks are also due to the Royal Society Research in Schools Committee and to Dr. D.J. Stradling for support, encouragement and advice.

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