

**A KEY TO THE LITHOBIOMORPH CENTIPEDES OF BRITAIN.**

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Lithobiomorphs are unmistakable animals, 15 leg pairs (in adult), prominent antennae, frequently quite enlarged 15th leg pair, generally brownish in colour and fast moving. One species, *Lithobius variegatus* tends to remain still on a turned over stone or log, relying on camouflage until disturbed.

Separation of the various species is not always easy and may be difficult if not impossible for most workers in the field. Generally preserved specimens, preferably with all legs intact, must be taken back to the laboratory for examination.

Characters to look for are:

- (a) The number of antennal segments.
- (b) The number of and arrangement of ocelli (simple eyes) on either side of the head capsule. In many cases there is one large eye with several rows of smaller ones.
- (c) The presence or absence of posterior projections on various tergites (dorsal plates). There is, except for tergites 7 and 8 which are both large, an alternation of small (short) and large (more or less equal) tergites. Projections, if present, tend to be on tergites 9, 11, 13 and sometimes on 7.
- (d) The number and arrangement of teeth on the anterior border of the coxosternite, the structure at the base of the poison claws (ventral).
- (e) Females are recognised by a pair of ventral, posterior claws on the last segment. These have two (sometimes more) more or less conical spurs at their base. The structures in males are less distinctive. In certain species (*Lithobius macilentus*, *Lamyctes fulvicornis*) only females are known from Britain.
- (f) The nature of the terminal claw of the last leg. This may be single, double or triple. The accessory claws must not be confused with bristles or spines.
- (g) Various secondary sexual characteristics in males. Only certain species have these which may take the form of projections, swellings, clusters of setae, etc. They are not always easy to see although those of *L. calcaratus* are very distinctive and those of *L. curtipes* are the best way of separating that species from *L. crassipes*.
- (h) The shape of the coxal pores which are found ventrally at the bases of the last four pairs of legs. They may be round, oval, slit shaped or even key hole shaped in some larger animals.
- (i) Colour. Not generally a reliable character but *L. variegatus* ('the striped centipede') is, in life, distinctly rather light coloured and variegated. *L. melanops* is often very light and may appear slightly similar. *L. calcaratus* is almost black, specimens of *L. muticus* and *Lamyctes fulvicornis* may sometimes also be quite dark.
- (j) Spinulation. The legs of *Lithobius* have a series of stout spines at the distal ends of the various leg segments. They are regarded as a valuable diagnostic character but for most purposes there are two important spines:

i) In *L. borealis* there is an additional, diagnostic spine on the prefemur between the usual three ventral and three dorsal ones, a total of 7.

ii) The spine 15 VaC (ventral anterior spine on the coxa of the 15th leg) is useful in separating some species. It is a small, conical spine latero-ventrally and should not be confused with the spine 15 DaC (dorsal) which is latero-dorsal.

Spines which must be distinguished from bristles (or setae) seem daunting to the beginner but the system is basically simple:

V (ventral) or D (dorsal)

a (anterior), m (median) or p (posterior)

C (coxa), t (trochanter), P (prefemur), F (femur) or T (tibia)

in all cases preceded by the leg number, 1-15.

The first and last legs for any particular spine is often the most valuable aspect. However, for most British specimens, the knowledge of the two particular spines mentioned above is usually sufficient.

NB. Very immature animals lack a full complement of legs and, in general, immatures have the various structures mentioned less well developed including ocelli, coxosternite teeth, coxal pores, tergite projections etc.

## KEY TO THE GENERA OF BRITISH LITHOBIOMORPHA

1. Only one ocellus on each side, no projections on the tergites, no spines (only thin bristles) on the legs, forcipular coxosternite with 3+3 teeth, always female, claws of last leg triple. Commonly late summer and autumn. Variable in colour from chestnut brown to very dark or greyish.....*Lamyctes fulvicornis*  
Meinert

2. At least three ocelli on each side, with or without projections on the tergites, at least some spines almost invariably present on at least some legs, forcipular coxosternite with 2+2 up to 6+6 or more teeth, may be male or female, claw of last leg double or single. All times of year, various brownish, blackish or lighter colours.....  
.....*Lithobius* sp.

*Lithobius* is split into sub genera by a number of authors. *Monotarsobius* in which the articulation between the tarsus and metatarsus is fused on legs 1-11 includes *L. crassipes*, *L. curtipes* and *L. microps*. Other British species are in the subgenus *Lithobius*.

## KEY TO THE KNOWN BRITISH SPECIES OF *LITHOBIUS*

*Lithobius* can be conveniently divided into relatively large forms (up to 30 mm or more) with 4 to 7 or more teeth on each forcipular coxosternite: *L. variegatus*, *L. pilicornis*, *L. peregrinus*, and *L. quadridentatus* (sometimes only 3) and the remaining generally smaller species (up to 17 mm or more in *L. melanops* but often less than 15 mm) with 2 (rarely 3) teeth on each side.

1. Forcipular coxosternite with 4 or more teeth on each side (may be fewer in immature animals). Projections on tergites 11 and 13 (may also be present on T9 and possibly on T7). Relatively large animals when mature (20-40 mm).....2
  - Forcipular coxosternite with 2 teeth on each side (rarely 3). Projections on tergites 11 and 13 present or absent. Relatively smaller when mature (up to 17 mm)..8
2. No projections on tergite 9, claw of 15th pair of legs single or with vestigial accessory claw, female gonopods with 2+2 conical spurs. Spine 15 VaC present (also 15VmC ventrally on coxae). Southern and South-Western species but recorded from urban sites elsewhere on a few occasions. May be very large (40 mm).....*Lithobius pilicornis* Newport
  - Projections on tergite 9 conspicuous, claw of 15th legs single or double, female gonopods may have more than 2 spurs on each side. 15 VaC present or absent, 15 VmC absent.....3
3. Claw of 15th legs single, 15 VaC absent. Female gonopod spurs normally 2+2. Common and widespread animals.....4
  - Claw of 15th legs double, 15 VaC present. Female gonopod spurs 2 or more on each side.....5
4. Projections present on tergite 7, coxal pores on last 4 pairs of legs round, very conspicuous variegations on legs in living or freshly killed animal. Widespread and common in much of Britain away from urban areas.....*Lithobius variegatus* Leach
  - No projections on tergite 7, coxal pores oval or slit shaped, no conspicuous variegations, more or less uniform chestnut brown. Very common especially in man influenced habitats.....*Lithobius forficatus* (Linne)
5. VaC present on coxae of 14th legs as well as 15th, female gonopod spurs 2+2. Known from one urban locality in Kent.....*Lithobius peregrinus* Latzel
  - VaC only present on 15th legs, female gonopod spurs 3+3 or 4+4. Woodland etc., S.E. England, rather local.....*Lithobius quadridentatus* Menge (= *piceus*)

6. Three (sometimes 4) ocelli on each side, forcipular coxosternite with 2+2 teeth, claw of last leg usually double, last legs relatively thicker than others, female gonopod spurs rather long and slender. Small (up to 9.5 mm) reddish brown animals with a tendency to curl up when disturbed.....*Lithobius microps* Meinert
- Usually 6 or more ocelli on each side, not as above.....7
7. Antennal articles about 20, no projections on tergites 9, 11 or 13, claw of last legs single. Small (up to 13.5mm) reddish brown species.....8
- Not as above, antennal articles at least 26.....9
8. Up to 13.5 mm long; ocelli 9 to 13 with posterior slightly larger than others which are arranged in 2 or 3 straight rows; forcipular coxosternite without definite shoulders, outer teeth project further forward than inner. No distinctive features to tibia of last legs of male. Very common in much of northern and eastern Britain.....  
.....*Lithobius crassipes* L. Koch
- Up to 11 mm; ocelli 6 to 9 with two relatively large posterior ones and others not in definite rows, often in an incomplete rosette; forcipular coxosternite without shoulders and with two closely set teeth projecting to about the same extent. Male has a distinct flattened projection on the postero-lateral extremity of the tibia of the last legs. Scattered records from various parts of England and Wales. Difficult to separate from *L. crassipes* unless males. Curls up when disturbed more readily than that species.....*Lithobius curtipes* C.L. Koch
9. No projections on tergites 9, 11 or 13; antennal articles at least 34. Often rather darkish or black animals, up to 15 mm long.....10
- Projections on at least tergites 11 and 13 or on 13 alone; chestnut brown, light brown, occasionally dark chestnut, up to 17 mm long.....12
10. Double claw on 15th legs; head about as broad as long, little broader than the 3rd tergite; ocelli 2+9 two relatively large posteriorly and rosette of remainder. Males with very distinct posterior-dorsal projection on femur of 15th leg. Animal of moorland, heath and grassland.....*Lithobius calcaratus* C. L. Koch
- Single claw on 15th legs, ocelli with one large then several rows of smaller ones. Males lack the projection on the femur of leg 15. See also *L. lapidicola* where projections on T13 may be more or less absent (double claw on last legs).....11

11. Head markedly broad compared with rest of body especially in male where it is 1.25 times as broad as long; ocelli 10-14, one large, others in 3 or 4 rows. Small, indistinct swelling on dorsal surface of tibia of 14th legs or males. Characteristically as animal of deciduous woodland in S.E. England but sometimes found elsewhere.....  
.....*Lithobius muticus* C. L. Koch
- Head not markedly broader than rest of body; ocelli 13-23 with 4 to 6 curved rows. No such swelling on male 14th tibia. Recorded from an urban site in Edinburgh but usually described as an alpine species.....*Lithobius lucifugus* L. Koch
- 12 Claw of 15th legs simple, antennal segments 36-43, ocelli 14-18, up to 14 mm long. Only recent record is from a Welsh coastal site but earlier records from Cornwall and Durham.....*Lithobius tenebrosus* Meinert
- Claw of 15th legs double..... 13
- 13 Tergite 9 with distinct, broad projections..... 14
- No projections on tergite 9, sometimes only on 13 or poorly developed..... 15
- 14 Forcipular coxosternite teeth with median ones projecting further forward than lateral and with no shoulders lateral to teeth. Projections on tergites 9, 11, 13; chestnut brown in colour, up to 14 mm long. Always female. Widespread but scattered.....*Lithobius macilentus* L. Koch
- Median teeth less forward than lateral, more or less distinct shoulders lateral to teeth. Rather broad projections on tergites, 9, 11 and 13 up to 17 mm long. Males and females..... 15
- 15 Accessory spine between VpP and DpP on 15th leg. Northern specimens.....  
.....*Lithobius borealis* Meinert (in part)
- No such accessory spine..... 16
- 16 Females with 2+2 gonopod spurs; spine 15 VaC absent; definite shoulders to forcipular coxosternite. Usually light brown with distinct broad median dark stripe in life. Widespread, often associated with human activity or coastal..  
.....*Lithobius melanops* Newport
- Females with 3+3 gonopod spurs; spine 15 VaC present or absent; no definite shoulders. Variable chestnut brown in colour. Various habitats. South Devon, has occurred in Wales and Isle of Wight.....*Lithobius tricuspis* Meinert
- 17 Tergite 9 without projections (may be developed in northern animals) but present on tergites 11 and 13. Extra posterior spine on prefemur of 15th legs, up to 12.5 mm. Mountains, moorland and lowland sites especially in Western Britain.....  
.....*Lithobius borealis* Meinert

17 Tergite 9 without projections (may be developed in northern animals) but present on tergites 11 and 13. Extra posterior spine on prefemur of 15th legs, up to 12.5 mm. Mountains, moorland and lowland sites especially in Western Britain.....  
.....*Lithobius borealis* Meinert

- Tergite 9 without projections, may also be absent on tergite 11 and possibly on 13. Shoulders of forcipular coxosternite weakly developed, tergites described as 'wrinkled'. Up to 8 mm. no accessory spine on 15th legs. Kent and Suffolk coasts, glasshouses in Edinburgh.....*Lithobius lapidicola* Meinert

### LEGEND FOR TABLE

\* Many species normally with 2+2 teeth may sometimes have 2+3 or 3+3 (or very rarely more).

A character in parenthesis indicates that it is not always present

ANT. - Antennal segments

OCEL. - Ocelli

F.C. TEETH - Forcipular coxosternite teeth (1 side)

15th CLAW - Claw of 15th leg

COX. PORES - Coxal pores (R - Round, O - Oval, S - Slit shaped)

TABULAR KEY TO CHARACTERISTICS

SPECIES	SIZE mm	ANT.	OCEL.	FC *	15th CLAW	COX. PORES	TERGITE PROJECTIONS				15 VaC	♀ SPURS	CHECK
							T7	T9	T11	T13			
<i>L. variegatus</i>	24	35-46	13-18	6-7	1	R	*	*	*	*	2	Colour	
<i>L. forficatus</i>	30	35-43	20-30	5-7	1	O-S	*	*	*	*	2		
<i>L. peregrinus</i>	24	38-52	11-19	5-7	2	R-S	*	*	*	*	2	14 VaC	
<i>L. quadridentatus</i>	21	49-54	11-16	3-5	2	R	*	*	*	*	3-4		
<i>L. pilicornis</i>	40	29-34	20-40	3-6	1	O-S	*	*	*	*	2		
<i>L. melanops</i>	17	32-42	10-13	2	2	R	*	*	*	*	2		
<i>L. tricusps</i>	14	40-45	10-12	2	2	R	*	*	*	(*)	3		
<i>L. borealis</i>	12.5	28-34	8-12	2	2	R	(*)	*	*	*	2	15th Leg	
<i>L. lapidicola</i>	8	26-34	10-11	2	2	R	(*)	(*)	(*)	(*)	2		
<i>L. macilentus</i>	14	39-45	7-9	2	2	R	*	*	*	*	2	For. Cox.	
<i>L. tenebrosus</i>	14	36-43	14-18	2	1	R	*	*	*	*	2		
<i>L. calcaratus</i>	15	39-50	7-9	2	2	R					2	♂ 15th Leg	
<i>L. muticus</i>	15	34-43	10-14	2	1	R					2	♂ 14th Leg	
<i>L. lucifugus</i>	17	33-50	13-23	2(-4)	1	R					2		
<i>L. crassipes</i>	13.5	20	9-13	2	1	R					2		
<i>L. curtipes</i>	11	20	6-9	2	1	R					2	♂ 14th Leg	
<i>L. microps</i>	9.5	23-27	3(-4)	2	1(2)	R					2		
<i>L. fulvicornis</i>	10.5	25	1	3	3	R					2	No spines	