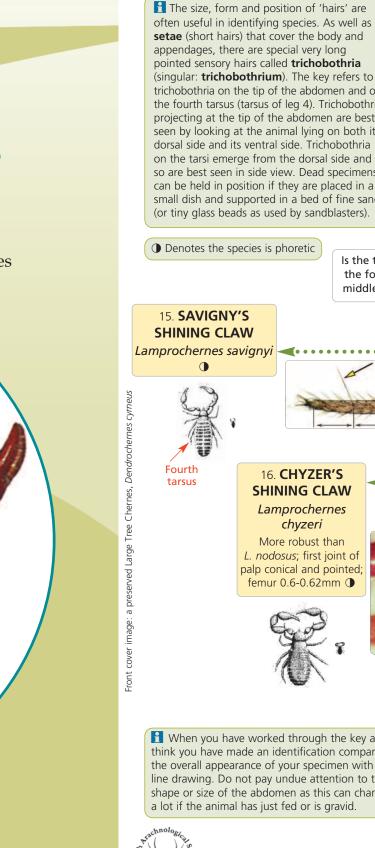
ENVIRONMENTAL UNDERSTANDING TO ALL

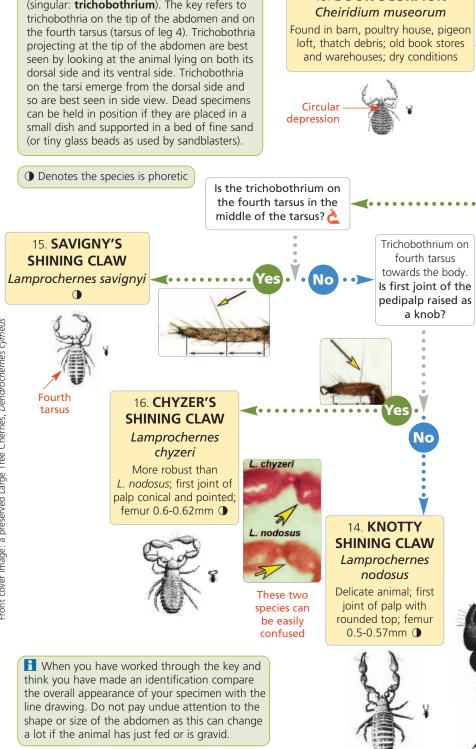
pointed sensory hairs called trichobothria (singular: **trichobothrium**). The key refers to Illustrated key to the British False Scorpions (Pseudoscorpions)

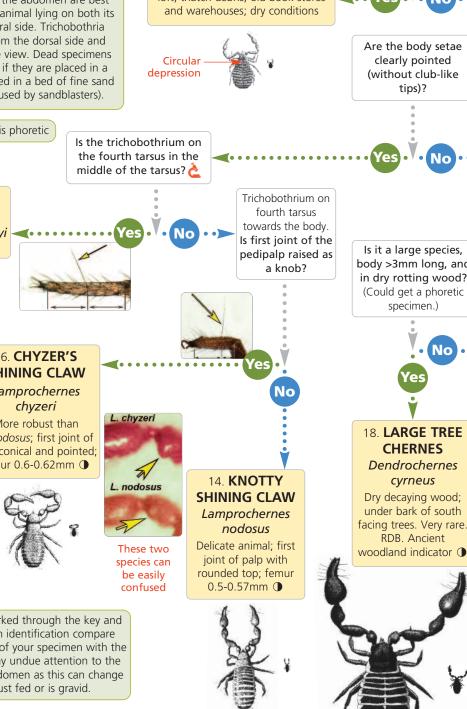
By Gerald Legg with Francis Farr-Cox and with line drawings of the species by Richard Jones

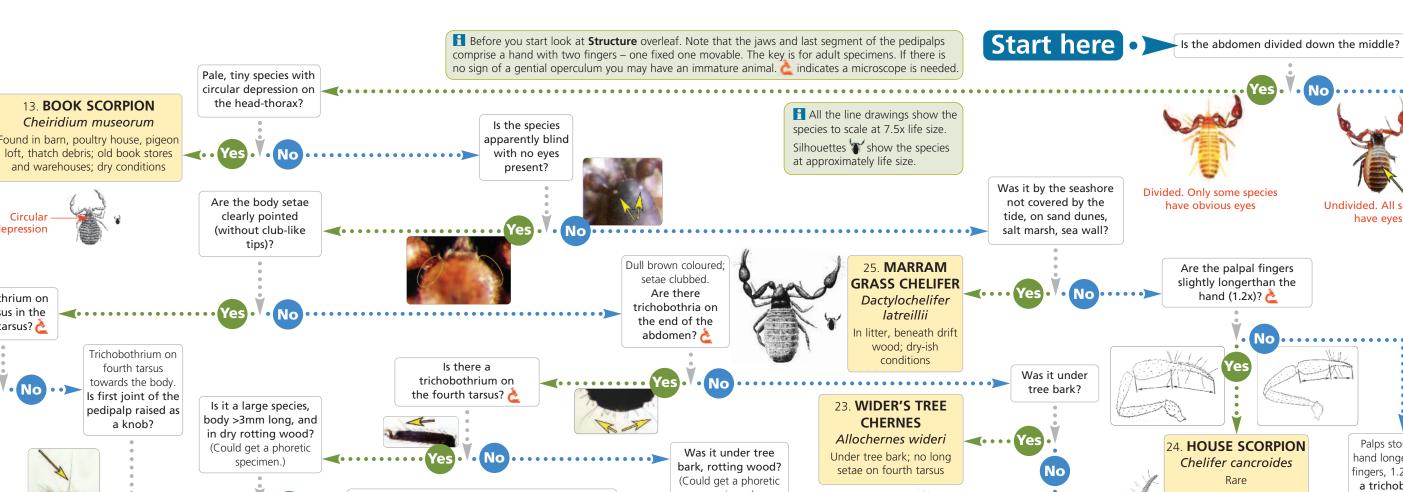


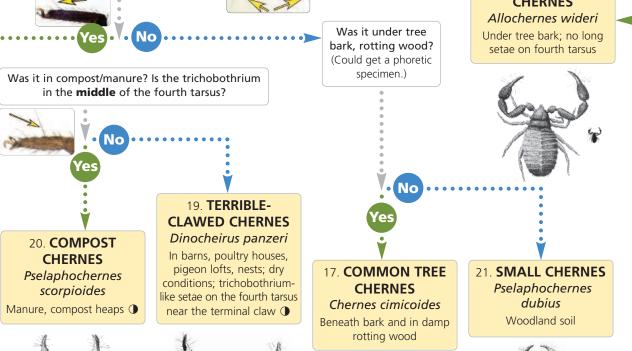


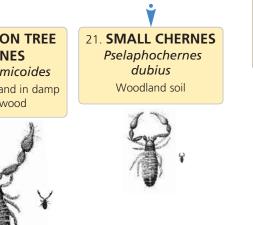








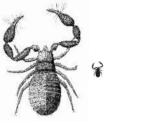


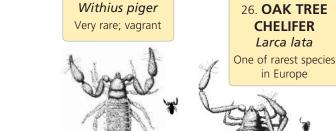


Allochernes powelli In barns etc; a slightly larger setae on top surface of fourth tarsus near the claw

2. POWELL'S

CHERNES





Divided. Only some species

have obvious eves

Are the palpal fingers

slightly longerthan the

4. HOUSE SCORPION

Chelifer cancroides

27. **LAZY**

CHELIFER



. DARK-CLAWED

Chthonius tenuis

2. KEW'S

CHTHONID

Chthonius kewi

Undivided. All species

Palps stout. Palpal

hand longer than the

fingers, 1.2x. Is there

a trichobothrium

on the fourth tarsus

and trichobothria

on the end of the

abdomen? Are the

body setae

serrated? 🦰

Is it from the east < coast, on or near the shore (above high tide) and are there 2 large and 2 tiny setae on the rear edge of the head-thorax?

DIMPLED-CLAWED CHTHONID Chthonius tretrachelatus

equal setae on the rear edge of the head-thorax; under stones in woods, quarries etc.

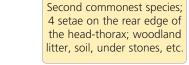
4. COMMON

CHTHONID

Chthonius ischnocheles

2 tiny and 2 normal length setae on the rear edge of the headthorax; maritime species





litter, soil, under stones, etc. orthodactylus setae on the rear edge of the head-thorax; grassland leaf litter, tussocks



At the front of the animal there are two sets of

which are closer to the body. The jaws and the last

with two fingers – one fixed, one movable.

segment of the pedipalps are comprised of a hand

Very rare; resembles Are the eyes poorly developed, the teeth Neobisium carcinoides of the palps blunt and close together, not Found in Sphagnum and triangular and spaced apart? 2

CHTHONID Chthonius halbert

as long as the head thorax

the same width as the

xtremely rare; restricted to the south coast of Britain. Palps thickset. Hand broad

when compared with the other chthonids which are fine and delicate. Beneath rocks and stone on and above the mean-tide level

sized setae on the rear edge of the headthorax?

No

≺·····Yes

6. STRAIGHT-

FINGERED

CHTHONID

Chthonius

developed. Are

there 4 similar-

From the top of the upper shore to the splash zone in rock crevices where it shelters from the tide. South

NEOBISID

Neobisium

martimum

and south-west



8. MOSS NEOBISID Neobisium carcinoides Most widespread species; found from woodlands to

⋖·····Yes



How many eyes, 4 or 2? 🚵

Palpal femur at least

1.6x longer than the

tibia. Is the galea low

and flat and the

movable finger of the

palps as long as the

hand? And was it on

the seashore below

spring tide and may

be covered by tide?

Is the palpal femur

relatively short, about

1.25x longer than the

BOG CHELIFER

Microbisium

brevifemoratum

alder carr ¹



Note 1 Neobisium carcinoides can also occur here and is the most likely species to be found as *M. brevifemoratum* has only been recorded twice in the British Isles.

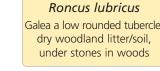
spring tide





Roncreagris cambridgei Galea elongate and oranched; under stones in woods, quarries, etc.





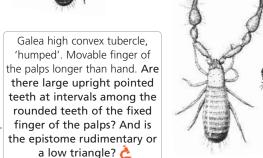
1. REDDISH TWO-

EYED CHELIFER

Is galea on movable

branched process (best

finger of jaws a distinct





Veobisium carpenter Coastal, from splash zone or above in extreme high water spring tidal debris salt marsh and sand dune









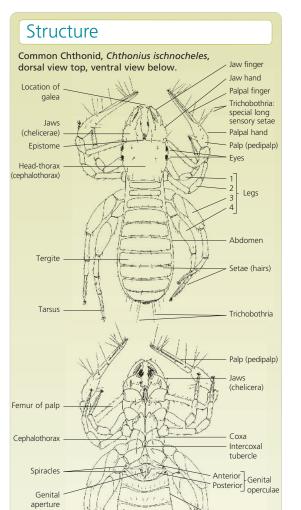


Illustrated key to the British False Scorpions Pseudoscorpions)

By Gerald Legg with Francis Farr-Cox

time are fascinated. It is probably because they are so tiny (1.3-4.2mm) yet have an intriguing body shape that is still discernible to the naked eye. Pseudoscorpions or false-scorpions are the fourth most numerous order of arachnids (the 8-legged invertebrate group which includes the spiders). Although there are only 27 different species in the British Isles there are over 2,000 of the animal enable it to know what is behind. The species worldwide. They are never large animals, the

Most people who see a pseudoscorpion for the first



biggest species, which is a vet undescribed species from

the pedipalps, give a pseudoscorpion the superficial appearance of a scorpion, albeit tailless, hence pseudoscorpion or false scorpion. As aggressive hunters they catch their prey using these formidable weapons which vary in shape and size depending on their favoured prey. Once caught the prey is chewed by jaws called chelicerae and digestive juices are poured into the victim. The resulting soup is then sucked-up into the mouth.

Although many species have eyes, these are only To find pseudoscorpions start by getting some woodland sensitive to light levels. For pseudoscorpions to leaf litter, spread it out it over a white sheet and wait... and accurately navigate, find prey and mate, they feel their way using special long sensory hairs – the trichobothria – many of which are on the pedipalps. Others on the rear chelicerae of some species have a special knob or longer process on the tip of the moveable finger. This 'galea' produces silk which is used to make silken chambers in which the animal can moult, hibernate or look after its young. Chambers made by pseudoscorpions can sometimes be found beneath tree bark. Mating involves no direct sexual contact. The male would

be a nice meal for the female so he keeps away! Sperm are transferred to the female 'indirectly' – the male collecting bag is needed as the species are tiny). produces a silken spermatophore that he deposits on the ground on top of which is a packet of sperm which the female picks up with her genitalia. An examination of the underside of the abdomen can determine the sex of an individual, males usually having a more complex and distinctive genital area than females. Young do not have this distinct genital area. Some species fertilise their eggs soon after mating whilst others store the sperm for future use. By storing sperm these species can exploit temporary habitats like a rotting log, compost heap or birds' nest allowing a single female with eggs and sperm to start a new population.

Where they can be found

This is only a guide as our understanding of the habitat requirements of species is not fully known so species could appear in different habitats. Numbers refer to individual species as used in the species descriptions and the key.

- Littoral, on the seashore under stones, in crevices: 1, 2 (east), 3, 8, 9, 10 (west), 25.
- B. On sand dunes in vegetation debris, under drift wood: 1, 25.
- . Sphagnum bogs/alder carr: 7, 8.

Coastal, in woods: 4, 8, 12. K. Under stones and in rock crevices: 1 (coastal), 2, 3, 4, 5, 8, 9, 10, 11, 12. L. In manure and compost heaps: 14, 15, 20. . In leaf litter and other decaying vegetation: 4, 6, 8, 11, 12, M. In dwellings (excluding phoretic species that may pop in): 13, 24.

Pakistan, is only 15mm long. The enlarged and lobster-like second pair of appendages,

female's genital opening and hatch as protonymphs which also remain attached and are fed with 'milk' produced by the ovary. The protonymphs grow and moult into deutonymphs, then moult again into tritonymphs and finally into adults. In some species protonymphs remain with their mother in the silken chamber and hence they have never been seen in the wild. To move around, those in soil, leaf litter, etc., just walk, but those in transient habitats, like compost heaps, hitch-hike - they attach themselves to flies, beetles, parasitic wasps and harvestmen and get a lift to a new habitat, a process known as phoresy (phoretic).

Eggs are not laid but glued together and attached to the

wait – pseudoscorpions defend themselves from disturbance by 'lying low'. They will usually start to move when all the other invertebrates have run off the sheet and you have decided to start again with another load of leaves! When they do appear, if you touch them with a tiny leaf from the front you will see another defence they have – a very fast reverse gear! Once spotted make a clear, 'no-man'sland area', around the individual so it can't easily hide and use a fine lightly moistened paint brush (or a small blade of licked grass) to pick them up. For the better equipped enthusiast pseudoscorpions can be found more efficiently using a variety of standard invertebrate techniques e.g. Tullgren funnel and D-vac (a very fine

You can view them with a x20 hand-lens and be able to identify some of the commoner species. However, it is virtually impossible to identify many without the use of a binocular microscope, and in some cases a compound microscope. Getting the lighting right will greatly improve the chance of seeing some of the features, especially the various hairs and bristles that distinguish some species. When using this key take into account the habitat the specimen was found in. It is important to realise that some species will be relatively easy to identify because of colour, habitat and size, but related species may be more difficult to differentiate.

F. In bird and mammal nests: 4 (damp), 8, 13, 19, 23, 24 (rarely). 26 (in decaying trees).

- G. Beneath tree bark and in dead wood: 4, 14 (rarely), 16, 23, 17, 18 (very dry).
- H. Among moss, lichen, litter, etc. (woodland, heathland, grassland): 4, 5, 8.
- Among stored products in barns, warehouses and old buildings: 4 (rarely), 13, 19, 22, 24, 27, Among grass stem bases and rhizomes (tussocks), (away from
- the sea): 4, 5, 6, 8.

Some of these images are taken from live specimens others from preserved specimens so the colours may not



1. **Halbert's chthonid** Chthonius halberti

1.2mm. Originally at Malahide, Co. Durham in 1915 and under stones on and below the high water mark in Axmouth, Devon this rare species has recently been found at Charnel near Kimmeridge, Dorset.



Kew's chthonid Chthonius kewi

1.4-1.8mm; preserved specimen which is somewhat dark, in reality very similar in appearance to the following (3). Found and probably restricted to the east coast (Norfolk to Kent) in drift-line debris, timber and under stones. However there have been records from Dorset, Sussex, Lincolnshire and Notts.



Dimpled-clawed chthonid Chthonius tetrachelatus

1.3-1.9mm; preserved specimen. Widespread but especially near the coast. Easily confused with a more recent species, C. kewi (2). It occurs in strandline debris, under brick and stones and may be synanthropic.

The 'thermometers' represent the likelihood of finding a particular species, taking into account the habitat and geographical location.

Chthonoidea: Chthoniidae



4. Common chthonid Chthonius ischnocheles Males 1.6mm, females 2.4mm. One of the two most likely found species (Neobisium carcinoides (8) is the other). A widespread distribution, but not far into Scotland. It occurs in leaf litter and humus of woodlands, hedgerows even the coastal strandline (C. tetrachelatus (3) favours this microhabitat too), beneath stones, bricks, and even in birds' nests.



Dark-clawed chthonid Chthonius tenuis

Males 1.3mm, females 2.3mm. The dark palps, pale legs and general colour make this an easy species to identify. Found in leaf litter, humus and beneath stones it appears to prefer well drained habitats on sandstone, sands and chalk.



6. Straight-fingered chthonid Chthonius orthodactylus

Males 1.9mm, females 3.0mm; preserved specimen. The status of this species has been put in doubt but it is distinct enough to be included here in the British fauna. Records are largely from the south-east and south Wales occurring in dead leaves and grass tussocks.



1.6-2.4mm. Our most recent addition to the British

fauna, only found in two localities, both raised Sphagnum bogs. At first glance it could be confused with N. carcinoides (8) as this is often found in Sphagnum, but the stubby femora and its overall size clearly identify it. If in doubt compare with a known N. carcinoides specimen. Records especially needed.



B. **Moss neobisid** Neobisium carcinoides

2.2-3.0mm. Our commonest and most widespread species previously know as *N. muscorum*. It can be found from Lands End to the Orkney Isles, favouring damp leaf litter of woodlands, hedgerows, but will also occur in margins of Sphagnum bogs, beneath stones, on heathlands, grasslands, birds' nests, in moss and even on the seashore.



9. Carpenter's neobisid Neobisium carpenteri 3.3mm; preserved specimen. Colour not typical due to

preservation. Originally found in 1909 beneath Arbutus bark and in moss on the coast of Glengariff. Found off the Essex coast in the 1950s. Further ones matching the description found in a Welsh guarry. It has been suggested the original specimen was a form or subspecies of *N. ischyrum*. All this suggests we are dealing either with a misunderstood species or more than one species



10. Shore neobisid Neobisium maritimum

3.2mm. Found along the Welsh coast, Atlantic coast, and Channel coast as far west as and including the Isle of Wight. It tolerates submergence at high tide and hides in rock crevices and beneath stones from the top of the upper shore to the splash zone.



2.0-2.5mm. A tritonymph is shown, which has the characteristic reddish palps and thorax. It appears to be restricted to the southern half of Britain and favours dry leaf litter, particularly beech, poplar and sycamore. It can

also be found under stones in woods and hedges.



12. Cambridge's two-eyed chelifer Roncocreagris cambridgei

1.2-2.0mm; histologically fixed/preserved specimen. A westerly/south-westerly species that favours driest deciduous woodland litter and beneath stones. More common along the coast.



3. Book scorpion Cheiridium museorum

1.3-1.4mm. Our of our tiniest species, almost mite-sized can be found in very dry barn debris, chicken refuse, thatch, packaging, lofts, old nests, etc.

Cheliferoidea: Chernitdae: Lamprpchernetinae



1.8-2.2mm. Easily confused with *L. chyzeri* (16), but has smaller palpal femora and tibia lengths both of 0.5mm. A synanthropic species preferring rich dung and compost heaps but has also been found in rotting wood where L. chyzeri is more typically found. Phoretic on flies.



Savigny's shining claw Lamprochernes savignyi 1.5-1.7mm; preserved specimen. A cosmopolitan synanthropic species found in compost and manure heaps, plant beds and is commonly phoretic on flies. Palpal femur length is around 0.36mm and the tibia 0.4mm.



6. Chyzer's shining claw Lamprochernes chyzeri 1.8-2.0mm; preserved specimen. There are a paucity of records, possible resulting from confusion with *L. nodosus* (14). Palpal femur and tibia length both usually 0.6mm. It can be found beneath bark on old and dying trees, especially aspen but also beech and birch and is also phoretic on flies.



7. Common tree chernes Chernes cimicoides 2.2-2.3mm. This widespread species can be found under

the bark of dry, dead and over-mature trees, particularly oak, beech, elm and willow. In ancient woodland it can occur with our largest and one of our rarest species, the Large tree chernes (18).

Cheliferoidea: Cherntidae: Cheretinae



ancient woodland. Phoretic on ichneumons and beetles.

18. Large tree chernes Dendrochernes cyrneus 3.5-4.2mm. Our largest and one of the rarest species listed in the Red Data Book. It likes old very dry decaying wood or beneath the bark, often exposed to the sun. Oaks are favourite, but it has been found associated with beech and elm. Regarded as being associated with



2.2-2.3mm; preserved specimen. No trichobothria on its

species occurring in hay, straw and grain refuse in barns and warehouses, old chicken-houses and pigeon lofts. Also found in the nests of birds, mammals and ants. Could possibly turn up in dry rotting wood.



20. **Compost chernes** *Pselaphochernes scorpioides* 1.5-2.0mm. Distinctive trichobothria on its rear end and on the tarsus of leg four. This species favours rich

hitchhiking on flies.



1. **Small chernes** *Pselaphochernes dubius* 1.5-1.7mm. Similar but smaller to (20) and lacking the

trichobothrium on tarsus of leg four. Apparently associated with calcareous conditions in grassland and woodland litter, under stones and occassionally in rotting wood.



22. **Powell's chernes** Allochernes powelli

23. Wider's tree chernes Allochernes wideri

(dry-lightly damp; not wet rot). See species (22) above

and possible confusion over identification

2.2-2.5mm. Associated with dead and overmature oak,

beech and elm trees beneath bark and in rotting wood

19. **Terrible-clawed chernes** *Dinocheirus panzeri* rear end. Largely synanthropic. Found in barn and stable 2.1-2.6mm; preserved specimen. A mainly synanthropic refuse, but has been found in dead wood which the following species (22) prefers and so can easily be misidentified. Dinocheirus panzeri (19) can occur in similar habitats but can be separated from the *Allochernes* species as it has trichobothria on the end of the abdomen.



decaying organic matter and is often synanthropic being found in compost, manure and damp rotting straw. It has also been found in leaf litter, dead wood and red-ant nests. It may turn up indoors as this is a phoretic species,



barns, flour mills, grain stores, warehouses and thatch. Note. owing to misidentification the illustration of *Chelifer* cancroides in the Linnean Synopsis is actually Larca lata (26).



2.6-3.5mm; preserved specimen. Synanthropic in stables.

24. House scorpion Chelifer cancroides

2.3-3.1mm. A very distinctive species easily identified with its chocolate brown palps and thorax. Lives among marram grass leaf-bases, litter and debris and beneath drift wood above ISBN 978 1 908819 30 7. the strand-line, on saltmarshes, sand dunes and seawalls.



26. Oak tree chelifer Larca lata

1.7-2.1mm; preserved specimen. One of our rarest and most recently discovered species. It appears to prefer old nests in ancient trees and is only found in old forests of north-west Europe where it is regarded as rare. A single record of this species in Windsor Great Park. Records particularly needed.



27. Lazy chelifer Withius piger

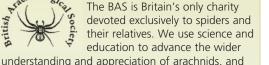
2.3-3.0mm; preserved specimen. A rare synanthropic species associated with stored food products, especially grain, and warehouse debris. Probably introduced to the British Isles in ships' cargo.

Further information

Further images of the UK species, help with identification and details of the UK recording scheme can be found at www.chelifer.com Most of the superb pen and ink illustrations of

the British species by Richard E. Jones were first published by the Linnean Society of London and Estuarine and Brackish-Water Sciences Association: .egg, G. & Jones, R.E. (1988). Pseudoscorpions. nopses of the British Fauna No. 40). Brill/Backhuys.

(Out of print but second hand copies can be found).



understanding and appreciation of arachnids, and to promote their conservation. Find us at:

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