

ling hybrids, the progeny of a male *Salmo salar* and a female Loch-leven trout. The interesting and practical question arises, Will these, as a rule, be sterile or prolific? If sterile, will they possess the migratory instinct of the salmon or the non-migratory habits of the brook-trout. Should the latter occur, rivers, such as the Thames, might be stocked with fish suitable for sport and food above the polluted portion. Then, again, would arise the inquiry whether they would remain in condition all the year round; for if so, such stock might afford constant sport to the angler, while the captures would be clean fish.

Notes on some little-known Collembola, and on the British Species of the Genus *Tomocerus*. By GEORGE BROOK, F.L.S.

[Read December 7, 1882.]

(PLATE I.)

THE four species which form the subject of the present notes have all been described by Tullberg. Dr. Reuter has come across a single specimen of *Tomocerus vulgaris* in Shetland, and also a single specimen, which he queries *Achorutes manubrialis*, from Finland. With these two exceptions I am not aware that any of them have been since observed. Tullberg's specimens were from Sweden, so that notes of their occurrence in England and in Jersey may prove of value. When quoting Tullberg I have made use of his latest descriptions, as these are in some cases altered a little from the originals.

ACHORUTES MANUBRIALIS, Tullb. (Pl. I. figs. 1-5.)

In October 1880, while on a dredging-trip with Dr. Murie, we landed one day on Warden Point, Thanet, and began searching the sun-dried blocks of clay on the beach. Amongst the crevices of one large block I found swarms of an *Achorutes*, which appeared at first sight to be *A. purpurescens*, Lubbock; but a closer inspection made this doubtful, and we collected a good many for reference. Twelve months passed over without the specimens being examined; but when at last they were brought out, they proved to be *A. manubrialis*, Tullb., and an addition to our fauna.

Tullberg's description is as follows:—"Unguiculus inferior adest. Dentes furculæ, manubrio breviores, vix duplo longiores quam mucrones, qui graciles sunt. Spinæ anales perparvæ.

Long. 1 mm.;”* and I may add from his original description, “Ocelli in macula nigra positi, unguiculus superior sine dente, inferior parvus”†.

In this species the anal spines are not so large as in *A. purpurescens*, and the papillæ on which they are placed are very small and further apart than in Lubbock’s species. The chief distinction, however, lies in the spring. In *purpurescens* the *manubrium* is not longer than the *dentes*, and the latter gradually taper off into the *mucrones* with merely a faint line to show the point of union. In *manubrialis*, on the contrary, the *manubrium* is as long as the *dentes* and *mucrones* together. The *dentes* do not taper as in *purpurescens*, but end abruptly in the *mucrones*, which are slender and convergent. The latter character is useful in helping to distinguish from *A. Theelii*, Tullb., an intermediate species, which has the *mucrones* not convergent and the *dentes* tapering a little more than in *manubrialis*, but still with the point of union between the *dentes* and *mucrones* quite distinct. It may be doubted whether, in making such minute differences of specific value, Tullberg is not going a little too far; but it would be impossible to judge fairly without comparing a large number of specimens. In any case *manubrialis* appears to be sufficiently distinct from *purpurescens* to rank as a separate species. Its body-colour is similar to that of *purpurescens*, namely a dark blue-grey. My specimens, however, which have now been two years in spirit, show lighter patches dotted over the body, but not sufficiently large to alter the general colour to the naked eye. In other respects they agree with Tullberg’s description.

XENYLLA MARITIMA, Tullb. (Pl. I. figs. 6–10.)

The genus *Xenylla* contains at present four species, none of which, as far as I am aware, have yet been found in England. Tullberg distinguishes it from *Achorutes* as follows:—“Ocelli 10; 5 in utroque latere capitis. Organa postantennalia desunt. Furcula parva, non ad tubum ventralem pertinens spinæ anales 2”‡. The real distinctions of *Xenylla* are as follows:—The spring, which is short (extremely so in *X. brevicauda* and *X. nitida*), is of a peculiar construction. The *manubrium* is almost triangular in shape; and the *dentes* taper so suddenly into the

* Sveriges Podurider, 1872.

† Skan. Podur. af Underfam. Lipurinae, 1869.

‡ Sveriges Podurider, 1872, p. 52.

mucrones that it is almost impossible to say where the exact point of union is. In *Achorutes*, on the contrary, the contour of each segment of the spring is well marked; for even in *A. purpurescens*, Lubbock, although the dentes gradually taper into the mucrones, there is a distinct line across marking the point of union. In *Xenylla* there is no lower claw, and the number of ocelli on each side is five instead of eight as in *Achorutes*. There are always two tenent hairs on each tibia; I have seen three in one or two instances.

X. maritima, Tullb., is distinguished as follows:—"Undique prunosa. Dentes furculæ cum mucronibus longitudinem tibiæ æquantes. Spinæ anales parvæ, papillis latis affixæ. Long. $1\frac{1}{2}$ mm." *

This species is distinguished from the others of the genus by its larger spring, with more suddenly tapering dentes, and by the position of the extremely small anal spines, which are placed on two broad papillæ *touching at the base*; while in *X. brevicauda* and *X. nitida* the anal spines are placed on papillæ only slightly larger than the granulations of the skin and with their bases comparatively wide apart. My specimens were sent to me by Mr. J. Sinel of Jersey, who collected them in Dec. 1881 under damp wood, curiously enough in the company of *Tomocerus vulgaris*, Tullb., about which I shall have something to say later.

TRIÆNA MIRABILIS, Tullb. (Pl. I. figs. 11-14.)

Tullberg's diagnosis of this genus is as follows:—"Organa postantennalia nulla; ocelli 16, 8 in utroque latere capitis. Antennæ conicæ, articulo quarto gracillimo. Unguiculus inferior nullus. Furcula perparva, dentibus papilliformibus. Spinæ anales 3"†.

This genus, which contains as yet only one species, is nearest related to *Anurida* of Laboulbène, which it resembles greatly in the mouth-parts. These present a transitional stage between *Lipura*, in which the mandibles have a certain limited freedom of action, and *Anoura*, in which the mouth is entirely suctorial. Besides the three anal spines and the absence of a postantennal organ, the chief characteristic of *Triæna* lies in the formation of the spring. This is the most rudimentary one yet described, and merely consists of a small basal piece and of two almost

* Sveriges Podurider, 1872.

† Ibid.

wart-like dentes, each with an extremely small and indistinct mucro.

Triæna mirabilis is a small blue-grey insect about $1\frac{1}{2}$ millim. long, with distinct eye-patches as in *Achorutes*. The three anal spines are rather large for the size of the insect, and broader towards the base. Besides the spines the fifth abdominal segment is usually provided with strong hairs which, unless accurately focused, look broad enough at the base to be taken for spines.

Tullberg found his specimens under boards in a farmyard and also amongst seaweed cast up on the shore. My specimens, five in number, were also found under boards in my garden. One appears to have had five anal spines. There are the usual three on the sixth abdominal segment; and some considerable distance higher up, above the middle of the fifth abdominal segment, is a fourth spine similar in all respects to the others; but the corresponding one on the other side appears to have been broken off. The specimen appears to agree with *T. mirabilis* in other respects, so that perhaps this is only an accidental variation.

TOMOCERUS VULGARIS, Tullb. Fört. Öfver., Sv. Podur. 1871. (Pl. I. figs. 15–19.)

Tullberg's diagnosis of this species is as follows:—"Antennæ corpore non longiores. Spinæ dentium simplices 12–16, intima magna. Unguiculus superior dentibus 4–6 armatus; inferior muticus, lanceolatus. Long. 4 mm." Tullberg gives the ground-colour as grey, and the locality under bits of wood, bricks, &c. near houses. My specimens agree almost exactly with the above description, but the body-colour is rather dirty yellow than grey. But here, as has been usual with the specimens I have examined of other species, the body-colour was sometimes tinted with a reddish brown. Of course I speak of specimens in spirit; what the body-colour may have been when the insect was alive I cannot say. This species is easily distinguished from *T. tridentiferus* by the simple spines on the spring and by the lanceolate lower claw. The spines are arranged with a slight curve at the end nearest the manubrium, very much as in *T. tridentiferus*. In this genus, and particularly in this species, the claws are large and show well both the pseudonychia and the double lamelliform nature of the upper claw. As will be seen from the figure, the upper claw consists of two thin plates cemented together along the outer margin, but at such an angle

as to leave a considerable distance between the inner margins. Seen from above, the claw shows several transverse bars, which are very distinct in some specimens. I cannot say what these are, but they may be thickenings between the two plates of the claw. Dr. O. M. Reuter, in his study on the function of the ventral tube ('Etudes sur les Collembolés,' Helsingfors, 1880), has some very interesting remarks which show the utility of this hollow upper claw. Speaking of *Smynturus apicalis*, Reuter, he records having many times watched this little insect rub one of the antennæ with one or other of its claws, holding it so that the hollow was touching the antenna. By this rubbing motion a tiny drop of water was gradually collected from the hygroscopic hairs and pushed nearer and nearer to the tip of the antenna, until at last it was received into the hollow of the claw and transferred towards the mouth. At the same time the ventral tube was pushed forwards and the drop divided between the two tubes and the mouth. It is probable that in any of the long-bodied Collembola the ventral tube would not reach as far as the mouth; but still the claw might be used as described by Reuter for *Smynturus*.

My specimens were gathered under damp wood in Jersey in Dec. 1881, and sent to me by Mr. J. Sinel.

On the British Species of the Genus TOMOCERUS.

Lubbock, in his Ray Soc. monograph, describes three British species of *Tomocerus*, viz. *T. longicornis*, Müller, *T. plumbea*, L., and *T. niger*, Bour. Of these the first named is regarded by Tullberg as the *T. plumbea* of Linnæus, because Lubbock's *T. plumbea* has not been found in Sweden, whereas the form with long coiled antennæ is very common there, and is found in just such localities as described by Linnæus in his 'Fauna Suecica.' Thus it would appear best for us to drop the specific name *longicornis*, and adopt that of *plumbea*, L., for this species. Next, as regards the *T. plumbea* of Lubbock and *T. niger*, Bour. The only real difference between these two species appears to be that *T. plumbea* has the body-colour grey when devoid of scales, while in *T. niger* it is yellow. It is very questionable whether in any case the body-colour of a scaled species of Collembola is of sufficient importance to be taken as a specific character. Of the many specimens I have examined, referable to one or other of these species, the majority have had yellow as the basis of the ground-colour, sometimes with brown patches and sometimes with

the yellow fading away into a leaden colour almost like that of the scales. Thus, as the colour is so variable, it appears impossible to make it of specific value here at any rate, and the two species should be united. In fact, if naturalists describing these insects would pay more attention to even minute morphological details and not spend so much time in recording the position of every little patch of colour, we should not be troubled with so many synonyms.

It appears that the common English species of *Tomocerus* is identical with the *T. tridentiferus* of Tullberg; in fact in the north of England at least it is very much more plentiful than *T. plumbea*, L., of Tullb.; while in Sweden the reverse is the case, Tullberg himself not having seen *tridentiferus* alive when he described the species. It is very easy to distinguish, as it is the only species yet described with tridentate spines on the spring. Lubbock indeed does not distinctly say that the spines in his species are tridentate; but he remarks that they "have small processes at the sides," which amounts pretty much to the same thing. Of the specimens I have examined there are a few with the lateral teeth so small that Lubbock's description would appear more applicable, but the great majority have the spines distinctly tridentate. I am not aware of any other observer having previously noted this tridentate species; and as Lubbock's name is now taken up, it appears that that of Tullberg should stand. Since the publication of Sir John Lubbock's monograph Tullberg has described several new species of *Tomocerus*, in the diagnosis of which great stress is laid on the number and arrangement of the caudal spines. As in the descriptions of our British species this has not specially been noted, perhaps it would be as well to add here a short diagnosis of each species.

TOMOCERUS PLUMBEA, L., of Tullberg, *Sveriges Podurider*, 1872, = *T. longicornis*, Müller, &c.

Antennæ much longer than the body, the 3rd and 4th segments often coiled up. Spines on the dentes simple, 7-8 on each side, small, and arranged in almost a straight line. Upper claw with two or three teeth; lower one acuminate, produced into a hair-like point and with a minute tooth.

TOMOCERUS TRIDENTIFERUS, Tullb. *Sveriges Podurider*, 1872.

Antennæ not longer than the body. Spines on the dentes tridentate, 10-11 on each side, 3 or 4 nearest the manubrium, the last and either the last but two or the last but three con-

siderably larger than the others; the 4 or 5 nearest the manubrium arranged in a curve, the others nearly in a straight line. Upper claw with 5 or 6 teeth, lower one broad and suddenly tapering from a small tooth on the inner margin.

TOMOCERUS VULGARIS, Tullb. Fört. Cefver., Sv. Pod. 1871.

A description of this species has already been given, so that it is needless here to repeat it. Dr. O. M. Reuter obtained a single specimen of this species in Shetland in the summer of 1876 (see 'Scottish Naturalist,' Jan. 1880).

I am not aware that this species has since been recorded as British.

DESCRIPTION OF PLATE I.

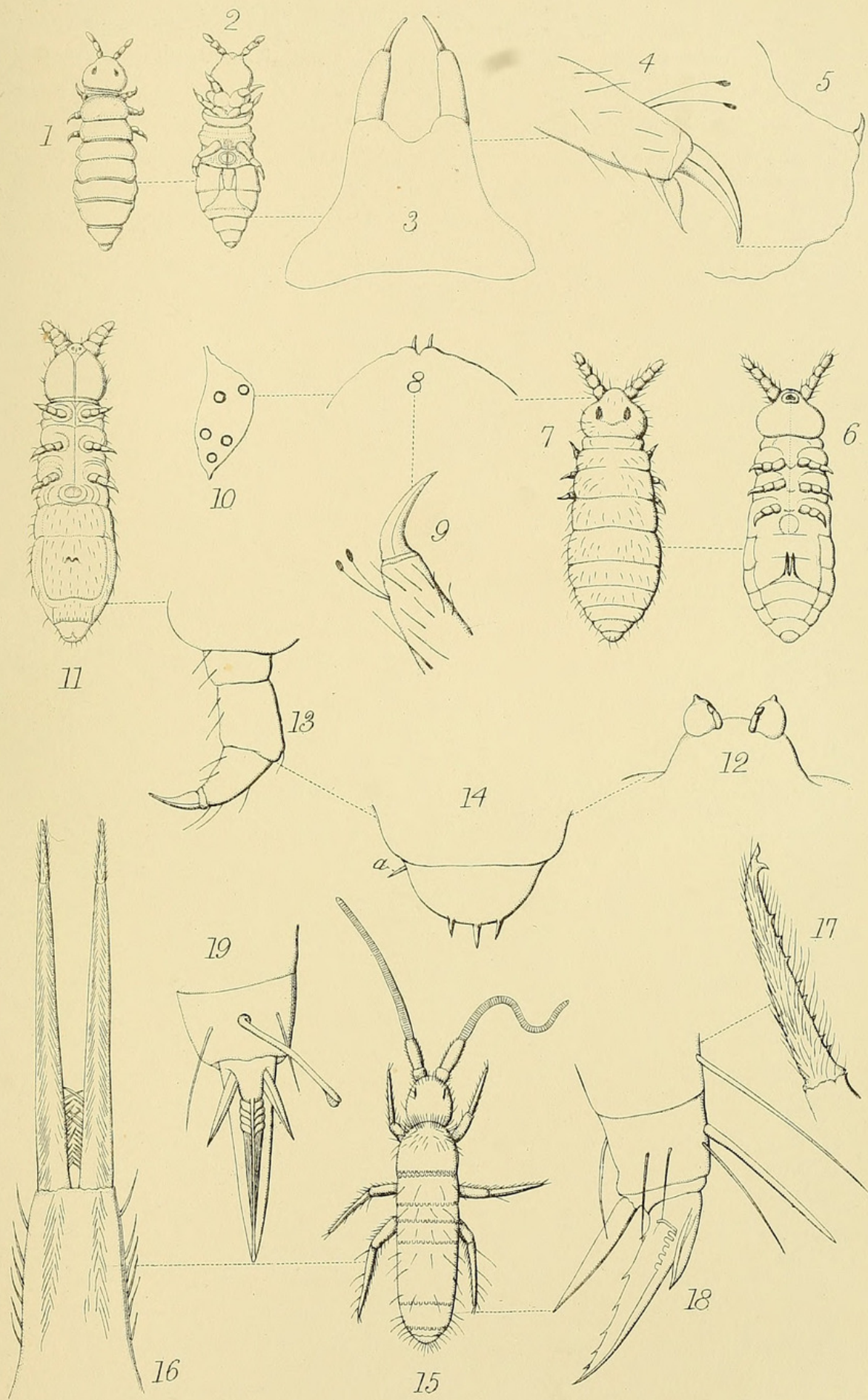
All the figures are given on an enlarged scale.

- Fig. 1. Dorsal view of *Achorutes manubrialis*, Tullb. From a photograph.
 2. Ventral view of the same.
 3. The spring of ditto.
 4. Claw of ditto.
 5. Anal spine of ditto.
 6. Dorsal view of *Xenylla maritima*, Tullb.
 7. Ventral view of the same.
 8. Anal spines of ditto.
 9. The claw of ditto.
 10. Eye-patch of ditto.
 11. Dorsal view of *Triena mirabilis*, Tullb. }
 12. The spring of ditto. } After Tullberg.
 13. The claw of ditto. }
 14. Abdominal segment showing spines, and at *a* the abnormal one.
 15. Dorsal view of *Tomocerus vulgaris*, Tull. }
 16. The spring of the same. } After Tullberg.
 17. The mucro of ditto. }
 18. A side view of the claw. }
 19. The claw from above. }

Note on the Type Specimen of *Carpophaga Finschii*, Ramsay.
 By E. P. RAMSAY, F.L.S., C.M.Z.S., &c., Curator of the
 Australian Museum, Sydney.

[Read November 16, 1882.]

IN a former paper, which this Society did me the honour to publish in their Journal (Zool. xvi. p. 129), I gave a description of this fine species, but unfortunately at that time was not in a position to give the measurements, which want I am now enabled to supply, the type, still unique, having been kindly presented to me by the Rev. George Brown. I find also that the locality from which it came is "Irish Cove," on the island of New Ireland.





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