

- X. *On the genera Liothrips and Hoodia.* By Dr. H. KARNY of Elbogen, Austria. Translated by G. A. ELLIOTT, F.Z.S., F.E.S. Communicated by R. S. BAGNALL, F.E.S., F.L.S.

[Read February 7th, 1912.]

IN my work on the *Thrips*-galls and the Gall-*Thripidae** I mentioned incidentally that Uzel's genus *Liothrips* could not be so sharply separated from the *Cryptothrips* group as is frequently assumed. In the *Cryptothrips* group, s. str., I include the genera *Mesothrips*, Zimmermann; *Smerinthothrips*, Schmutz; *Gynaikothrips*, Zimmermann; *Hoodia*, Karny; *Cryptothrips*, Uzel; and *Dermothrips*, Bagnall. All the above-named genera have the wings of equal width throughout, and are thus distinguished from the otherwise similar *Leptothrips*, Hood, and *Androthrips*, Karny, in which the wings are somewhat constricted near the middle.

According to Uzel's synoptic table, the essential difference between *Liothrips* and *Cryptothrips* lies in the formation of the mouth. In *Liothrips* the mouth-cone is "narrowed towards the apex and pointed"; in *Cryptothrips* and the allied genera it is "apically broadly rounded." These contrasts may, indeed, be easily recognised in extreme cases, but there are many intermediate types. Compare the three figures of *Gynaikothrips uzeli*, *G. chavicae* and *Mesothrips jordani*.† All three certainly have the mouth-cone "apically rounded," yet they show (especially in *Mesothrips*) a decided approach to the pointed type. It is evident that, in such cases, it is often difficult to define any distinct boundary between *Liothrips* and the *Cryptothrips* group.

Of all the European genera, *Hoodia*, Karny, is, in my opinion, undoubtedly the most closely allied to *Liothrips*, Uzel; I will therefore say a few words as to these two genera. The special inducement to this is found in the publication by R. S. Bagnall of an English species as *Liothrips hradezensis*,‡ whereas I consider it to be a new

* Centralbl. f. Bakteriöl. Parasit. u. Infektionskr., ii, Abt. xxx, 1911, pp. 556-572.

† l.c. p. 562.

‡ Ent. Mo. Mag., ii Ser., vol. xxi, 1910, p. 256; Journ. Econ. Biol., vi, 1911, p. 11.

species, belonging to the genus *Hoodia*. I will first give a tabular view of all the known species of both genera, and then add a few remarks upon them.

*Revision of the known species of Liothrips.**

1. Fore tarsi toothed in both sexes.
2. Third to fifth joints of antennae yellow; the latter often centrally brownish; sixth basally yellow; thence brown; seventh entirely brown. Tarsal tooth small, pointed, only visible in one position of the tarsus. *L. seticollis*, nov. spec. (Paraguay).
- 2'. Third to sixth joints of antennae entirely, seventh mostly yellowish. Tarsal tooth blunt, stout.
 1. *L. tarsidens*, Trybom (Madagascar).
- 1'. Fore tarsi without tooth in female.
 2. Wings entirely wanting. 2. *Liothrips*, sp. Trybom (Madagascar).
- 2'. Wings present.
3. Basal half of forewings black or light brown.
 3. *L. umbripennis*, Hood (North America).
- 3'. Forewings, at most, brown at extreme base, then hyaline, or with only a central dark stripe.
4. Antennae yellow; at most, joints, one, two and eight dark.
5. Eighth joint of antennae yellow.
 4. *L. citricornis*, Hood (North America).
- 5'. Eighth joint of antennae dark.
6. Fore tibiae dark 5. *L. major*, Buffa (Erithraea).
- 6'. Fore tibiae yellow 6. *L. setinodis*, Reuter (Europe).
- 4'. Seventh joint of antennae also entirely and at least the apical half of sixth dark.
5. First and second joints of antennae dark, third to fifth yellow, the sixth basally yellow, apically dark, seventh and eighth dark.
6. Fore tibiae entirely yellow; intermediate and hind tibiae black, apically suddenly yellow.
 7. *L. hradeensis*, Uzel (Central Europe).
- 6'. All tibiae uniform dark brown.
 8. *L. seticollis*, nov. spec.† (Paraguay).
- 5' Sixth joint of antennae entirely dark.
6. Fourth and fifth joints of antennae at least partly yellow.

* When this table was written I did not yet know the description of *Liothrips glycinicola*, Okamoto, from Japan.

† I have again inserted this species because the tarsal tooth is not visible in the normal position of the tarsus.

7. Third and fourth joints of antennae entirely and basal half of fifth yellow ; all the other joints brown.

9. *L. meconellii*, Crawford (Mexico).

7'. Third joint of antennae entirely yellow, fourth and fifth only centrally yellow ; all the other joints dark brown.

10. *L. ocellatus*, Hood (North America).

6'. Antennae dark, only third or also second joint yellow.

7. Cheeks divergent posteriorly.

11. *L. fasciculatus*, Crawford (California).

7'. Cheeks parallel or convergent posteriorly.

8. Cheeks almost parallel, or only constricted at the extreme base.
All the prothoracic bristles present.

9. Two large stout bristles in front of the eyes.

12. *L. intermedius*, Bagnall (Venezuela).

9'. No bristles in front of eyes . 13. *L. similis*, Bagnall (Venezuela).

8'. Cheeks distinctly convergent posteriorly. Prothorax with bristles only on the posterior angles and hind margin.

14. *L. elongatus*, Bagnall (Venezuela).

Revision of the known species of Hoodia.

1. Sides of head parallel, or slightly divergent posteriorly. Antennae yellow, except the two first joints ; the last two joints are dark only in the exceptionally dark-coloured individuals. Mouth-cone at first almost rectangularly convergent, apically broadly rounded. 1. *H. austriaca*, Karny (Austria).

2'. Sides of head distinctly convergent posteriorly. The last two joints of the antennae dark brown. Mouth-cone laterally acute-angularly convergent, but apically distinctly rounded.

2. *H. bagnalli*, nov. spec. (England).

Remarks.

Liothrips bakeri, Crawford, does not belong to *Liothrips*, but probably either to *Mesothrips* or *Smerinthothrips*. The fore tarsi are armed with a large setigerous tooth as in *Mesothrips* ; it agrees with the Javanese genus also in its mode of life, living in the leaf-galls of *Ficus*. On the other hand, the formation of the fore-femora inclines to *Smerinthothrips*.

Hoodia bagnalli, nov. spec.

Syn. *Liothrips hradeensis*, Bagnall, Ent. Mo. Mag., ii Ser., vol. xxi, 1910, p. 256 ; Journ. Econ. Biol., vi, 1911, p. 11 (nec Uzel, 1895).

Liothrips hradecensis, Bagnall, Journ. Econ. Biol., vi, 1911, p. 1 (*vitio typog.*).

Length of body in ♂ 2'7–3 mm.; in ♀ 3'3–3'8 mm.

Black-brown to black. Only the fore tibiae and the apices of the intermediate and hind tibiae and all tarsi yellow. Antennae yellow, only the two first, the two last, and often also the apices of fifth and sixth joints dark.

Head about half as long again as broad. Cheeks distinctly convergent posteriorly, very finely granulate and with several short, fine hairs; a long, stout bristle on each side behind the eyes, no such bristle in front. Mouth-cone rather long, reaching beyond the middle of the prosternum, at first laterally acute-angularly convergent, but apically distinctly rounded. Antennae about twice as long as the head; third joint as long as the first and second together; fourth joint as long as the third; all the following each shorter than the preceding one; eighth joint as long as the first.

Prothorax about half as long as the head, half as broad again as long, distinctly widened backwards; all bristles present and fully developed. Fore femora scarcely thickened. Fore tarsi without tooth. Pterothorax scarcely longer than broad. Wings extending to the apex of the sixth abdominal segment, of equal breadth throughout, the median vein often brownish. Forewings at the extreme base brownish and there furnished with three long, stout bristles; on the distal part of the hind margin 15–20 cilia are duplicated.

Wing retaining spines on second to sixth segments slender and weak, those on seventh still weaker and shorter than on the preceding; two on each side of each segment, the anterior very small and weak, about the middle of the segment, the posterior quite close to the hind margin; laterally from each of these a long, stout bristle, and then another, rather shorter and straight. Tube rather longer than the prothorax; its basal breadth is about one-third of its length and almost twice its apical breadth; the adjacent scale basally apparently withered (♂).

Piercebridge, near Darlington, and Gibside, co. Durham, England. On leaves of elm. Bagnall *leg.*

The colour of the antennae and of the legs in *Hoodia bagnalli* is similar to that of *Liothrips hradecensis*. The shape of the head is the same as in *Liothrips seticollis*;* it is laterally distinctly convergent posteriorly, but in *L. hradecensis* (also in *Hoodia austriaca*) almost parallel,

* The detailed description of this new species is reserved for future publication.

very slightly divergent posteriorly. On the basal third of the third to sixth joints of the antennae there is in *L. hradecensis* a transverse raised line, which is wanting in all the other species of *Liothrips* and *Hoodia* known to me. *H. bagnalli* has, in common with most of the allied species, a long bristle behind the eyes, which is wanting in *L. hradecensis*.

The arrangement of the prothoracic bristles is the same as in most species of *Liothrips* (e.g. *citricornis*, *ocellatus*, *seticollis*); in *L. hradecensis*, on the contrary, bristles are present only on the posterior angles. In *L. seticollis* all the wings are characterised by a distinct brown median longitudinal streak; in *H. bagnalli* this is ill-defined and indistinct; in *L. hradecensis* it is entirely wanting.

The duplication of the cilia on the posterior margin of the forewing, as far as known to me, is characterised by the following figures:—

SPECIES.	NUMBER OF INTERPOLATED CILIA.
<i>Hoodia austriaca</i> . . .	14–23 (coll. mea).
„ <i>bagnalli</i> . . .	15–20 (coll. mea).
<i>Liothrips seticollis</i> . . .	14–20 (Mus. Berol.).
„ <i>setinodis</i> . . .	12–14 (Agram, coll. mea).
„ „ <i>pragensis</i> . . .	15 (Bohemia, Mus. Vindob.).
„ <i>ocellatus</i> . . .	14 (teste Hood).
„ <i>tarsidens</i> . . .	15 (teste Trybom).
„ <i>umbripennis</i> . . .	13 (teste Hood).
„ <i>mcconellii</i> . . .	7 (teste Crawford).

I was unable to ascertain this with respect to *L. hradecensis* without endangering the unique specimen in the Vienna Hofmuseum.

Turning now to the generic character—the shape of the mouth-cone—it is to be noted first that *Liothrips* agrees in this respect with *Hoplothrips* and *Phloeothrips*, having therefore an apically pointed mouth-cone, as is apparent from Uzel's generic diagnosis. On the other hand, we find in *Hoodia* forms of the mouth-cone which occur also in *Gynaikothrips* and *Mesothrips*; the lateral margins of the cone first converge rectangularly or acute-angularly, but are then apically rounded. In this point the two species of *Hoodia* differ from all true *Liothrips*.* But

* It has been already pointed out that *Liothrips bakeri*, Crawford, has a differently formed mouth-cone, and therefore does not belong to *Liothrips*.

these two differ also considerably from each other in the shape of the mouth-cones. I have already briefly described this difference in the table, and think I can best visualise it by saying that, in this respect, *Hoodia austriaca* recalls *Gynaikothrips uzeli*, whereas *Hoodia bagnalli* recalls *Mesothrips jordani*.*

I believe that I have now demonstrated that *Liothrips hradeensis*, Bagnall, is not identical with Uzel's species, but represents a new species, which can be clearly differentiated from all known species of *Liothrips*, and is most closely allied to my *Hoodia austriaca*. I have allowed myself the pleasure of naming this interesting new species after its discoverer.

* Compare the figures Centralbl. f. Bakteriol., Parasit. u. Infektionskr. ii, in Abt. xxx, 1911, p. 562.

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