A REVIEW OF THE PTEROCOMMINI (APHIDIDÆ HOM.).

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A few years ago the writer undertook a study of the Pterocommini. In this he was helped, in her usual generous manner, by Doctor Patch, who sent slides of some different species, and by Professor Gillette, who loaned the writer slides of the specimens he had. The recent paper by Wilson (1915) on this tribe has called the writer's attention again to the species. It seems worth while, therefore, to publish a few notes on the group, since the writer's study showed some points at variance with the results published by Wilson, and since *Pterocomma populifoliæ* Fitch should be reinstated.

In regard to the genera, the writer believes Wilson's view correct, but in regard to species interpretation he is unable to agree with him. These points of difference will be noted under the species.

Pterocomma populea (Kalt.).

Two American species are made synonyms of this by Wilson. They are *beulahensis* Ckll., and *rufulus* Davidson. *Rufulus* as indicated by specimens from Davidson is quite a different species. The cornicles of *populea* from Spandau, Prussia, are about equal in length to the hind tarsi. In *rufulus*, however, the cornicles are nearly twice the length of the hind tarsi, bearing about the same ratio as do those of *bicolor* Oest. Although *rufulus* proves to be distinct from *populea*, it becomes a synonym of *populifoliæ* Fitch, a species not mentioned by Wilson.

Pterocomma populifoliæ (Fitch).

Populifoliæ was described in 1851, and Fitch's notes give the following numbers as representing the species: Nos. 6118-6121, Nos. 9292-9302 and No. 3712. These are Fitch's personal numbers; not the State Cabinet numbers. Of these numbers the following

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are now present in the National Museum collection: 9292, 9293, 9297, 9390 and 9301. A study of these specimens shows that *rufulus* agrees with *populifoliæ* Fitch. Oestlund (1887) considered Fitch's species to be a Chaitophorus, and so described his *populifoliæ*. Davis (1910) considered it an Aphis, and described another species under the name. Both of these writers expressed doubt as to their determination. In the writer's opinion, *populifoliæ* stands as a good species, easily distinguished from *populea* by the relative lengths of the cornicles and tarsi.

The measurements for the alate viviparous female of this species average: Antennæ III, 0.64 mm.; IV, 0.368 mm.; V, 0.336 mm.; VI, base and unguis (0.192 mm.+0.288 mm.); cornicle, 0.352 mm.; hind tarsus, 0.24 mm.

Specimens taken on Popof Island, Alaska, and determined as *populea* by Pergande, are certainly *populifoliæ*. Pergande concluded that both Kaltenbach and Koch were wrong in stating the cornicles of *populea* to be cylindrical, and he was of the opinion that, "in fact, they are clavate." So, indeed, they are in *populifoliæ*, but the cornicles of *populea* are very plainly cylindrical, and in this regard Koch's figure is excellent and the descriptions of Kaltenbach and Koch exact. The Pergande Alaska specimens, now in the collection of the Bureau of Entomology, show the following measurements for the alate viviparous female: Antennæ III 0.656 mm.; IV, 0.4 mm.; V, 0.384 mm.; VI (0.208 + 0.384 mm.); cornicles, 0.38 mm; hind tarsus, 0.25 mm.

It will be seen that these measurements agree almost exactly with those given by Wilson for *populea*. But he gives no measurements of the hind tarsus. It will be seen also that these specimens agree with *populifoliæ* Fitch, and it is the writer's opinion that the specimens measured by Wilson were specimens of *populifoliæ* Fitch. Specimens of American *populea* show that species to be very different from *populifoliæ*. This is most apparent in comparing the cornicles and hind tarsi. Measurements for the alate viviparous female of this species are as follows: Antennæ III, 0.608 mm.; IV, 0.256 mm.; V, 0.24 mm.; VI (0.128 mm. + 0.144) mm.; cornicles, 0.192 mm.; hind tarsus, 0.192 mm. These figures indicate clearly the striking difference between the two species.

Now specimens of *populea* from Europe agree exactly in measurements, etc., with American specimens, excepting that the unguis of segment VI is very slightly longer. Moreover, the examples of both species have a much more cylindrical cornicle than have the specimens of *populifoliæ*. The writer is therefore considering these American specimens to be *populea*. The European examples have segment VI usually about (0.128 mm. + 0.17 mm.).

In regard to *pilosa* Buckton, the writer has never had an opportunity to study forms supposed to be this species. From the description given by Buckton, it would seem very much as if he had two species before him. His apterous forms would very well agree with *populea*, whereas his alate form seems to be *populifoliæ*, or a species near it. This will be seen from the measurements he gives for the cornicles in the two forms. Since Pergande, who had seen the type, placed *pilosa* as perhaps the same as his *populea*, this would also tend to indicate that Buckton's alate form is *populifoliæ* Fitch.

Pterocomma beulahensis (Ckll.).

The measurements given for this species by Cockerell would make it very difficult to include it under *populea*. It has, however, the cornicles about equal in length to the hind tarsi. The type slide of the species is now in the National Museum collection, and on it are mounted four alate specimens. These show some variation in the sixth antennal segment. One antenna measures for (0.176 mm.+0.336 mm.), and one (0.16 mm.+0.32 mm.). It will be seen that this proportion is very different from that of *populea*. A more prominent character, however, is met with in the beak. In all our specimens of *populea* the beak is long, reaching beyond the hind coxæ, sometimes even to the base of the cornicles, or very near them. The beak in *beulahensis* is much shorter, extending hardly to the hind coxæ, sometimes not reaching them. The cornicles are somewhat swollen, a character which is not so evident in *populea*. Moreover, *beulahensis* is more elongate, having the general look of *populifoliæ*, whereas *populea* has a shorter, "bulkier" appearance.

Pterocomma salicis (L.).

Under this species Wilson discusses the forms determined as *salicis* L. in this country. He concludes that the species does not occur here, and considers the cornicle the distinguishing character. While the cornicles figured by him are very distinct, the writer has examined both American and European specimens in which the cornicles are almost identical. They are not only the same in shape, but the measurements are the same, and a range in variation between the two types is met with in European material. It is not probable that two European species are confused since the variation was seen in aphides collected from one colony in France. Another point of resemblance is the bright orange colour of the cornicles in both European and American forms. It is true that the cornicles of American forms seldom show the distinct bulging met with in *salicis*, but with the variation in the European form, and with the two forms showing the same measurements, it seems hardly possible to separate them on this character of the cornicles. Both European and American forms, moreover, show a more or less distinct dusky bordering to the wing veins.

In an attempt to find some other character to back up the variation in the European cornicle and so to separate the American form, the writer has measured a large series of apterous forms. These have shown no differences. The European form shows more variation in the antennal segments, the third segment particularly being sometimes longer in the European than in the American form. In others, however, they are exactly the same, and this is more often the case than otherwise. This variation in the antennal segments does not seem to be, therefore, any definite character upon which the two species can be separated with certainty. In the meantime, therefore, the writer prefers to hold *salicis* for the American forms.

Measurements of the alate viviparous female of both American and European specimens will show their remarkable similarity in this respect.

European: Antennæ III, 0.72 mm.; IV, 0.464 mm.; V, 0.432 mm.; VI, (0.224 mm.+0.224 mm.); cornicle, 0.56 mm.; hind tarsus, 0.256 mm.

American: Antennæ III, 0.7 mm.; IV, 0.448 mm.; V, 0.384 mm ; VI, (0.208 mm.+0.224 mm.); cornicle, 0.544 mm.; hind tarsus, 0.24 mm.

It will be seen from these measurements that the European and American forms are the same as far as proportions are concerned, and considering the great variation met with in the cornicles of the European, and even of the American examples, there does not seem sufficient basis in the writer's opinion for keeping the species distinct. Certainly the two forms are much more nearly alike than are the American form and *bicolor* Oestlund.

Pterocomma bicolor (Oest.)

The American specimens listed under this species by Wilson do not, the writer believes, belong here. Oestlund gives the length of cornicles as 0.35 mm., whereas Wilson gives them as 0.59 mm.; fully equal to those of *salicis*. The following measurements of the alate viviparous female made from specimens of *bicolor* collected by the writer in Ontario show that Wilson's *bicolor* measurements refer not to this species at all, but perhaps to variations of *salicis?* The cornicles of *bicolor* are quite distinctive and the same as given by Oestlund in his description.

Measurements of alate viviparous female: Antennæ III, 0.672; IV, 0.38 mm.; V, 0.36 mm.; VI, (0.16 mm.+0.352 mm.); cornicles, 0.352 mm.; hind tarsus, 0.22 mm.

It will be seen that this species is separated from *populifoliæ* by the proportions of segment VI of the antenna. The base is much shorter and the unguis much longer than in Fitch's species. This character may not be a constant one, and in such case *bicolor* will become a synonym. In the National Museum collection there are specimens determined as *bicolor* by Williams. According to Davis (1911) this determination has been confirmed by Oestlund. Williams' specimens in the collection are certainly *populifoliæ*. The measurements of segment VI, of the two alate specimens present are (0.176 mm.+0.288 mm.) and (0.176 mm.+0.27 mm.). Comparing these with measurements of one specimen in Fitch's collection, which measures (0.144 mm.+0.256 mm.), we see that

there is little difference in proportions. The Ontario material collected on the Karwatha Lakes is uniformly different from this, averaging as previously given (0.16 mm.+0.352 mm.). One specimen had the measurements (0.16 mm.+0.384 mm.) and one (0.176 mm.+0.352 mm.). These measurements agree in proportion with those given by Oestlund, and the writer, therefore, prefers to hold *bicolor* as distinct on this basis until large collections can be made and studied.

In regard to the species *flocculosa* Weed, *smithiæ* Mon., and *salicti* Harris, no remarks will here be made, since these species are fully dealt with by Wilson, and the writer has examined some of Weed's specimens, but a species described by Patch (1913) as *antennatum* should be mentioned. It cannot be definitely described in full until alate forms have been found. Another species has been described as *farinosus* by Del Guercio (1913). In this species the cornicles are cylindrical, but very much longer proportionately than those of *populea*.

Pterocomma steinheili (Mordwilko)

A third species, not mentioned by Wilson, is one named *steinheili* by Mordwilko. Through the kindness of Mr. J. J. Davis, I have been able to examine a slide of specimens received by him from Mordwilko. One alate form and several apterous ones are present. The species is very close indeed to *beulahensis* Ckll., and it is the writer's belief that the two are identical. There is one marked difference, however, between the alate specimen of *steinheili* and those of *beulahensis*. The lateral tubercles of the abdomen of *steinheili* are nearly twice the size of those of *beulahensis*. It is quite probable that this is a variable character and that the two species cannot be separated by means of it. Since, however, only one specimen of the alate form of *steinheili* is available for study, it is necessary on this basis to keep them distinct.

Measurements of the alate viviparous female: Antennæ III, 0.432 mm.; IV, 0.288 mm.; V, 0.32 mm.; VI (0.16 mm + 0.272 mm.). Cornicle, 0.256 mm.; hind tarsus, 0.224 mm.

This will then leave the species as follows:

Pterocomma populea (Kalt.)

Synonymy: *Aphis populea* Kaltenbach.
Cladobius populeus (Kalt) Koch.
Pterocomma pilosa Buckton (apterous form).

Pterocomma farinosa (Del Guercio).

Synonymy: *Cladobius farinosus* Del Guercio.

Pterocomma steinheili (Mordwilko).

Synonymy: *Cladobius steinheili* Mordwilko.

Pterocomma salicis (L).

Synonymy: *Aphis salicis* Linne.
Melanoxanthus salicis (L) Buckton, Weed, etc.
Melanoxantherium salicis (L) Schouteden.
Pterocomma salicis (L) Wilson.
? *Pterocomma bicolor* Wilson, *not* Oestlund.

Pterocomma populifoliæ (Fitch).

Synonymy: *Aphis populifoliæ* Fitch.
Pterocomma pilosa Buckton (alate form).
Cladobius populeus Pergande, *not* Kalt.
Cladobius rufulus Davidson.
Melanoxanthus bicolor Williams, *not* Oestlund.
Melanoxantherium rufulum (Davidson) Essig.
Pterocomma populea Wilson, *not* Kalt.
? *Melanoxantherium salicti* Patch.
Cladobius beulahensis Wilson, *not* Cockerell.

Pterocomma flocculosa (Weed).

Synonymy: *Melanoxanthus flocculosus* Weed.
Melanoxantherium flocculosum (Weed) Schouteden
Pterocomma flocculosa (Weed) Wilson.

Pterocomma smithiæ (Mon.).

Synonymy: ? *Aphis salicti* Harris.
? *Aphis salicicola* Uhler.
Chaitophorus smithiæ Monell.
? *Lachnus salicicola* (Uhler) Thos.
Melanoxanthus salicti Weed.
Melanoxantherium smithiæ (Mon.) Gillette.
Pterocomma smithiæ (Mon.) Wilson.

Pterocomma bicolor (Oest.)

Synonymy: *Melanoxanthus bicolor* Oestlund.
Melanoxantherium bicolor (Oestlund) Patch.

Pterocomma antennata (Patch)

Synonymy: *Melanoxantherium antennatum* Patch.

Pterocomma beulahensis (Ckll.)

Synonymy: *Cladobius beulahensis* Ckll.

A few misprints are noted in Wilson's paper. On page 347, in listing the described species, *beulahensis* and *salicicola* are misspelled. Cockerell, the author of *beulahensis*, is written as if it were part of the specific name. The citation of "*lanthaniæ*" is different on page 347 from the citation of the species on page 357. If *lantanæ* Koch is not a Pterocomma, as Wilson believes, and if the name is retained as he retains it, it must become *P. lantanæ* (Pass) based on the description of the oviparous female in Aphididæ Italicæ, p. 55. Passerini spelled the name *lantanæ*, but a new one would be required,

The names listed under *salicis* (Linn.) should be altered as follows: *Aphis salicis* should be in italics. In the lines following, Linn. should be in parenthesis, while the names of the other authors should not be. In the synonymy of *flocculosa* Weed, the first reference should read Melanoxanthus, and Weed should not be in parenthesis. In the synonymy of *bicolor* Oest., where the genus is cited as Melanoxanthus, Oestlund should not be in parenthesis.

In the synonymy of *populea* Kalt., the third reference, Cladobius should be omitted and Kalt. inserted in parenthesis after *populeus*. Whether or not the word was written thus, and not Cladobius, I have been unable to prove. The first edition of Passerini's Gli Afidi was published in 1857. I have not been able to see this nor the 1860 Parma edition. Wilson's reference, however, is incorrectly written. So also is his reference to Aphididæ Italicæ, 1863. *Pilosa* Buckton is cited twice. In the second citation it is indicated that the species was not described as a Pterocomma, but was referred to that genus by Wilson. In writing the name *populea* in connection with Pterocomma, Kalt. should be in parenthesis.

On page 355 *Aphis salicis* Harris is discussed. This is a misprint for *salicti* Harris, named on page 191 of the first edition of Harris' work. The same is seen in the citation of Oestlund, etc. In listing *smithiæ* as a Pterocomma, Monell, which is incorrectly spelled, should be in parenthesis.

In the list of species on page 347, the genera in which they were originally described are placed in parenthesis between Pterocomma and the specific name. This is the method given in the international code for the indication of subgenera.

All of these little details are very minor matters, but they are here mentioned for purposes of reference.

Key to the Species of Pterocomma

1. Cornicles without a distal flange and abruptly constricted at the distal extremity ..... *flocculosa.*
   Cornicles with a distal flange and not so abruptly constricted at their distal extremities ..... 2.
2. Cornicles about twice as long as their greatest diameter ..... *smithiæ.*
   Cornicles much more than twice as long as their greatest diameter ..... 3.
3. Cornicles about equal in length to the hind tarsi ..... 4.
   Cornicles much longer than the hind tarsi ..... 6.
4. Beak reaching to the cornicles or nearly to them ..... *populea.*
   Beak reaching only to the hind coxæ or not quite to them ..... 5.

5. Lateral tubercles of the abdomen about equal in length to the second antennal segment.....*steinheili.*
   Lateral tubercles of abdomen considerably shorter than the second antennal segment.....*beulahensis.*
6. Cornicles nearly twice as long as the hind tarsi.....7.
   Cornicles much more than twice as long as the hind tarsi.....8.
7. Unguis of segment VI of antennæ about equal in length to the cornicle and more than twice as long as base.....*bicolor.*
   Unguis of segment VI of antennæ usually shorter than the cornicle and less than twice as long as base.....*populifoliæ.*
8. Cornicles cylindrical or slightly tapering.....*farinosa.*
   Cornicles much swollen in the middle.....9.
9. Cornicles bright orange in colour.....*salicis.*

Literature.

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The remaining literature on the tribe is cited in Wilson's paper.