

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

NOTES ON AND A KEY TO SPECIES OF THE GENUS
CINARA (APHIDAE) WHICH HAVE *TSUGA* AND
PSEUDOTSUGA FOR HOST

BY F. C. HOTTES

Once again I am indebted to Miriam A. Palmer for her generous help and the loan of material in bringing this paper to fruition.

Cinara commatula Hottes and Essig

Cinara commatula Hottes and Essig, Proc. Biol. Soc. Washington, 67: 152-153. 1954. Figs. opposite p. 153. Original description apterous and alate viviparous females.

Holotype and morphotype in Essig collection.

Were it not for the fact that Essig may be expected to have correctly determined the host of this species as *Pseudotsuga* one might question the correct determination of the host of this species, for it is the only species thus far known from *Pseudotsuga* which has the cornicles on a well-developed conical base.

Cinara dubia Hottes and Essig

Cinara dubia Hottes and Essig, Proc. Biol. Soc. Washington, 67: 156-157. 1954. Figs. p. 154 (if numbered). Original description apterous viviparous female.

Holotype in Essig collection.

I have been informed that the holotype of this species cannot at this time be located in the Essig collection. However I have seen three slides with the same data as the holotype, which were unknown to me when the species was described. They carry the determination *C. pseudotaxifoliae* Palmer. They are *C. dubia* Hottes and Essig.

As indicated in the original description, this species is closely allied to *C. pseudotaxifoliae* Palmer; however, the tibial hairs are never so numerous as in the species described by Palmer.

Cinara pseudotsugae (Wilson)

Lachnus pseudotsugae Wilson, Canadian Ent., 44: 302-303. 1912. Original description stem mother, alate male, oviparous female and alate viviparous female. These descriptions were also published in the same volume but without name on pp. 191-193.

According to Palmer the type is in the Granovsky collection.

This species is characterized by having short, coarse, spinelike hairs on the dorsum of the abdomen; and coarse, spinelike hairs which are shorter than the width of the tibiae of the apterous viviparous female. The tibial hairs are much longer in the alate.

This species is common in Colorado; I have also taken it in Arizona.

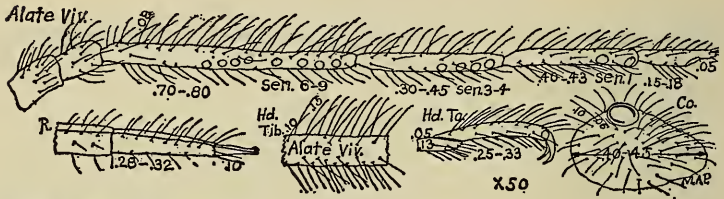
Cinara pseudotaxifoliae Palmer

Cinara pseudotaxifoliae Palmer, Aphids of the Rocky Mountain Region, pp. 42-43. 1952. Figs. Original description.

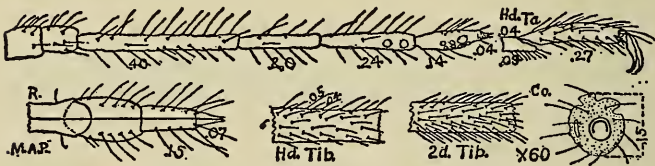
Lachnus taxifoliae Swain. Palmer, Annals Ent. Soc. America, 19: 304-307. 1926. Descriptions of all forms (misidentification).

Type in the United States National Museum.

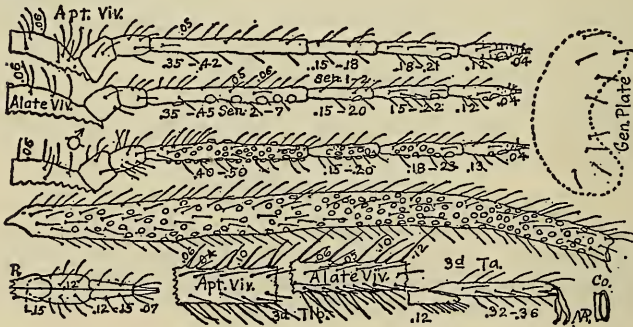
Apterous viviparous females of this species as determined by Palmer



CINARA COMMATULA H&E



CINARA DUBIA H & E



CINARA PSEUDOTSUGAE (W)

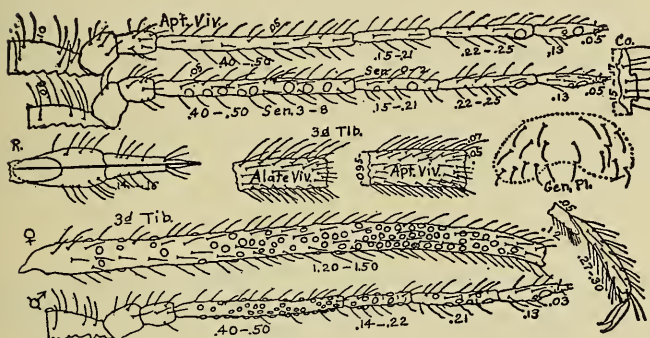
have the tibiae with two types of hairs: one most likely represented by the stem mothers or early spring generations with the hairs rather sparse and the tibiae dark; the other with the tibial hairs very numerous and more or less bunched at the apex. Palmer's figure of the tibiae (Fig. 14, Pl. XXV, Ann. Ent. Soc. America) appears to be in error.

Cinara splendens (Gillette and Palmer)

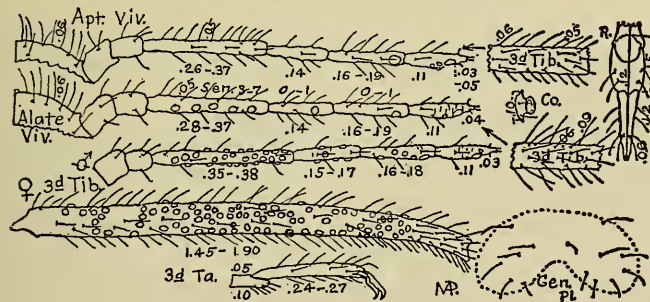
Lachnus splendens Gillette and Palmer, Ann. Ent. Soc. America, 17: 14-17. 1924. Figs. Plates V and VI. Original descriptions of all forms.

Type in U. S. National Museum.

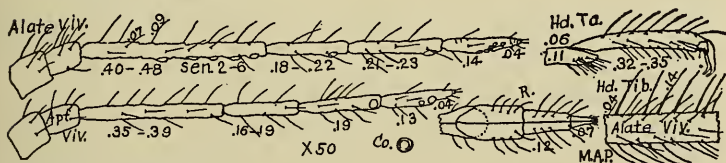
This species may be easily separated from other species of this group



CINARA PSEUDOTAXIFOLIAE P



CINARA SPLENDENS G & P



CINARA TAXIFOLIAE (S)

which have the cornicles reduced by the fact that only the apices of the tibiae are dusky. The hairs on the dorsum of the abdomen and on the tibiae are comparatively short and spinelike.

Cinara taxifoliae (Swain)

Lachnus taxifoliae Swain, Trans. American Ent. Soc., 44: 11-14. 1918.

Original description alate and apterous females. Figs. Pls. I and II.

Cinara taxifoliae (Swain), Hottes and Essig, Proc. Biol. Soc. Washington, 67: 94-95. 1954. Description of alate and apterous viviparous females. Figs. p. 96.

Specimens of this species may be easily differentiated from other species of *Cinara* with reduced cornicles, by the tibial hairs being almost at right angles and the longest hairs varying in length from .14-.15 mm in length. The dorsum of the abdomen has numerous hairs which are about .08 mm in length. On the tibiae the long hairs are intermixed with hairs which are much shorter.

Lectotype: Apterous viviparous female in the Essig collection.

Apparently this is a very rare species; I have never taken it. I have seen one slide of this species taken by Dickson in Arizona, the first recorded outside of California.

Cinara tsugae Bradley

Cinara tsugae Bradley, Canadian Ent., 92: 605-608. 1960. Figs. p. 607.

This species has for its host *Tsuga heterophylla*. I have not seen specimens. The base of the cornicles ranges from .20-.29 mm.

Cinara vagabunda Hottes and Essig

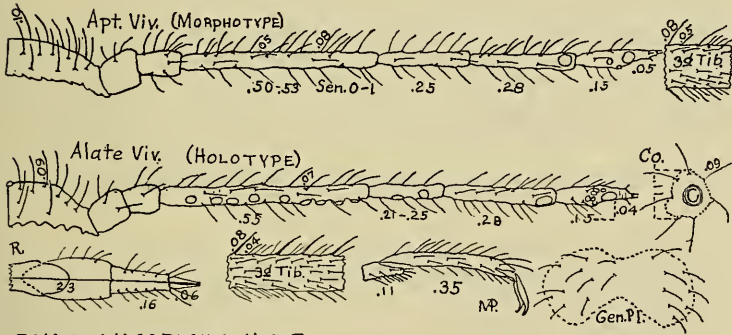
Cinara vagabunda Hottes and Essig, Proc. Biol. Soc. Washington, 66: 206-208. 1953. Original description alate viviparous female.

Holotype in Essig collection.

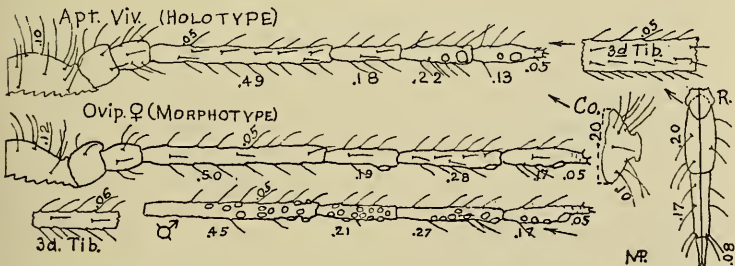
This species heretofore known only from the alate form may be easily differentiated from other species of *Cinara* by the fact that the hairs on the dorsum of the abdomen of both the alate and apterous viviparous females are longer than the hairs on the outer margin of the tibiae. In the original description the host of this species was given as *Pinus* sp., but questioned. It can now be stated that the host is *Pseudotsuga menziesii*, apterous viviparous females having been taken on this host 15 July 1954 on Mt. Graham (Graham County, Arizona).

Apterous viviparous female: Length 3.57 mm, width of head through the eyes .83 mm; length of prothoracic femora and tibiae 1.02 and 1.28 mm; length of metathoracic femora and tibiae 1.65 and 2.54 mm; length of first and second metatarsal segments .12 and .33 mm; length of antennal segments as follows: III .50 mm, IV .25 mm, V .28 mm, VI .15 + .05 mm. Color notes from life not available, as shown by cleared mounted specimen as follows: Head and thorax dark dusky brown; abdomen dark brown but not as dark as the head; cornicles dark brown, much darker

than the abdomen; transverse pigmented areas very dark brown; cauda and anal plate brown; prothoracic and mesothoracic femora dark brown; metathoracic femora almost entirely black, only extreme base brown. Pro- and mesothoracic tibiae with short region near base almost black, remainder of tibiae shading from light dusky to dark dusky brown at apex; metathoracic tibiae brownish black following black basal region. Ocular tubercles small. First and second antennal segments not quite as dark as head. Third antennal segment pale dusky except for darker apex. Fourth antennal segment like third, except for darker apex. Fifth antennal segment about half dark dusky. Sixth antennal segment uniform dusky brown. Third and fourth antennal segments without sensoria. Fifth antennal segment only with primary sensorium, or with one small secondary sensorium. Apex of fifth and all of sixth antennal segments coarsely imbricated. Hairs on vertex and dorsum of head numerous, about .10 mm in length. The rostrum on the morphotype is absent, on a second apterous form segments three, four and five extend beyond the coxae of the metathoracic legs. Neither apterous form shows a mesosternal tubercle. Hairs on metathoracic tibiae rather coarse but not spinelike, on the outer margin not all of the same length, the shorter hairs being intermixed among the longer. The tibial hairs are set at an angle of about 45 degrees or slightly more, and are not more numerous towards



CINARA VAGABUNDA H & E



CINARA WAHSUGAE H

the apex. Hairs on the dorsum of the abdomen varying from .07-.10 mm in length are fairly numerous. The hairs on the ventral surface of the abdomen vary from .06-.07 mm in length; they are more numerous than the hairs on the dorsum. Width of pigmented area of the cornicles about .10 mm; this area provided with a few hairs which are about .10 mm long.

Morphotype: Apterous viviparous female, mounted on a mixed slide with one other specimen of *vagabunda*. Deposited in the collection of the U. S. National Museum.

Apparently this species is most closely allied to *Cinara pseudotaxifoliae* Palmer. It differs from the species described by Palmer by having the second metatarsal segment longer, longer antennal segments in the alate, longer fourth and fifth antennal segments in the apterous form. It has longer hairs on the dorsum of the abdomen, longer femora and tibiae, and fewer coarser hairs on the tibiae.

Cinara wahsugae Hottes

Cinara wahsugae Hottes, Proc. Biol. Soc. Washington, 73: 197. 1960.

Since the description of this species was sent to press in June, Joe Schuh has sent me (November) apterous specimens of this species taken by him on *Tsuga mertensiae* in Oregon. I am led to believe that the host mentioned in the original description as *Pseudotsuga* is not correct. G. A. Bradley has sent me a reprint of his description of *Cinara tsugae*. There is no question that the two species are closely allied. I have not seen specimens of the species described by Bradley, but the species appear to differ in the total lack of a mesosternal tubercle in *wahsugae*, the tubercle not being slightly developed, the cornicles being higher, and in the oviparous female having fewer sensoria on the metathoracic tibiae.

KEY TO APTEROUS VIVIPAROUS FEMALES HAVING *PSEUDOTSUGA* AND
TSUGA FOR HOSTS

1. Cornicles on distinct conical base 2
 Cornicles not on distinct conical base 3
2. Cornicle base .40-.45 mm *C. commatula* Hottes and Essig
 Cornicle base .15-.20 mm *C. wahsugae* Hottes
3. Tibiae pale except for apices *C. splendens* (Gillette and Palmer)
 Tibiae with more than apices pigmented 4
4. Longest hairs on outer margin of metathoracic tibiae about .15
 mm, set at angle of about 90 degrees *C. taxifoliae* (Swain)
 Longest hairs on outer margin of metathoracic tibiae not longer
 than .12 mm, set at angle much less than 90 degrees 5
5. Hairs on dorsum of abdomen up to .105 mm in length
 *C. vagabunda* Hottes and Essig
 Hairs on dorsum of abdomen much less than .105 mm 6
6. Cornicle base .20-.29 mm *C. tsugae* Bradley
 Cornicle base about .15 mm or less 7
7. Hairs on metathoracic tibiae and dorsum of abdomen distinctly

- spinelike *C. pseudotsugae* (Wilson)
Hairs on metathoracic tibiae and dorsum of abdomen fine, not
distinctly spinelike 8
8. Almost one half of metathoracic tibiae paler than the rest, hairs
on metathoracic tibiae hardly numerous .. *C. dubia* Hottes and Essig
Much less than one half of metathoracic tibiae paler than the
rest, hairs on metathoracic tibiae numerous ..
..... *C. pseudotaxifoliae* Palmer