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Grand Junction, Colorado

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A REVIEW AND KEY OF NORTH AMERICAN CINARA
(HOMOPTERA: APHIDIDAE) OCCURRING ON PICEA

F. C. Hottes

This is the fourth of a series of papers on species of Cinara having Coniferae for hosts. It is probably the last of the series, which I have financed personally, and for which I am unwilling to sacrifice further.

Cinara acadiana Hottes Fig. 1


Holotype in the Canadian National Collection (apterous viviparous female).

Size range apterous viviparous females 2.92-3.15 mm.

Host *Picea glauca*.

The genital plate of this species suggests that of an oviparous female, but I find no sensoria on the metathoracic tibiae. The specimens have been cleared, and show no embryos. The cornicles vary greatly in size.

Cinara atripes Hottes Fig. 2


Holotype, apterous viviparous female in U. S. National Museum.

Size range apterous viviparous females 1.67 - 2.25 mm.

Host *Picea glauca*.

This species may be easily differentiated from other species in this group by the uniformly dark tibiae.

Cinara bonica Hottes Fig. 3


Holotype apterous viviparous female in U. S. National Museum.

The host is not indicated on the type slide.

Size range apterous viviparous females 3.38 - 3.60 mm.

The host of this species is presumed to be *Picea*.

Cinara bonita Hottes Fig. 4


1 Grand Junction, Colorado.
Fig. 1. *Cinara acadiana* Hottes

Fig. 2. *Cinara atripes* H.

Fig. 3. *Cinara bonica* H.

Fig. 4. *Cinara bonite* H.
Holotype apterous viviparous female in U. S. National Museum. The host is not indicated on the type slide.

Size apterous viviparous females 5.675 mm.
The host of this species is presumed to be Picea. The second metatarsal segment of this species is especially long.

_Cinara braggii_ (Gillette) Fig. 5


Type in the U. S. National Museum.
Fig. 6. *Cinara coloradensis* (Gillette)

Fig. 7. *Cinara caudelli* (Wilson)

Fig. 8. *Cinara costata* (Zetterstedt)
Host species given by Gillette in original description as *Picea parryana* which is a synonym of *Picea pungens*.

Size range apterous viviparous females 3.00 - 4.00 mm.

I have seen three slides from the type series in the U.S. National Museum and all of the type material left in the Colorado collection. As indicated by Palmer this species is very closely allied to *C. glehnia* (Essig) of which I have seen three slides of the original material.
Fig. 11. Cinara glehna (Essig.)

Fig. 12. Cinara hottest (G&P.)

Fig. 13. Cinara jucunda H.
The two species seem to differ most in the color of the tibiae, the pigmentation being more extensive and darker in *glehna*, and the longer third antennal segment in *braggi*, as well as the slightly longer second metatarsal segment. I am not sure that the lengths given for the fourth rostral segment hold in all cases.

I have taken what may be this species on *Picea engelmanni*; on these specimens metatarsal II is only .28 mm. long.

*Cinara caliginosa* Hottes Fig. 5a


Holotype in collection of F. C. Hottes.

Host *Picea engelmanni*.

*Cinara coloradensis* (Gillette) Fig. 6


Type in U.S. National Museum. Hosts given in original description as *Picea parryana* and *Picea engelmanni*. Palmer (1961) would restrict the host to *Picea pungens*.

I have not seen the type of this species. I have seen all of the remaining slides of the original material in the Colorado collection. Not all of the specimens of this material are in good condition, but they appear to me similar. All have the antennal segments comparatively short, all have the hairs on the cornicles, where they can be seen, confined largely to a band, the hairs on the tibiae are squarely cut at the apex.

I have seen other slides determined as *coloradensis*. They are to say the least a heterogeneous lot. They differ greatly in size, in shape of body, size of cornicles and distribution of hair on the cornicles, and have longer antennal segments. They do have short squarely cut hairs on the tibiae. All specimens determined as *coloradensis* lack crisscrossing hairs along the transverse suture. I do not pretend to know this species.

*Cinara caudelli* (Wilson) Fig. 7

*Lachniella caudelli* Wilson, 1919, Canadian Ent. 51: 43-44 (original description aperous and alate viviparous females).


Type in U.S. National Museum (recorded in original description as U.S. Bureau of Entomology Collection). It is recorded as having been taken on Spruce.

Size range recorded by Palmer 2.4 - 2.5 mm.

This species was keyed from the description by Palmer. I know of no record except the original one.

*Cinara costata* (Zetterstedt) Fig. 8

*Aphis costata* Zetterstedt, 1828. Insecta Lapponica, p. 599 (not seen) (original description. Re-described Insecta Lapponica 1840, p. 311. Apparently both descriptions are of an alate viviparous female taken for a male).
Fig. 14. Cinara mariana Bradley

Fig. 15. Cinara nepticula H.

Fig. 16. Cinara nimbuta H.
Location of type not known.
Host *Picea excelsa*, *Picea* sp.
Size of specimens taken in Europe 4.52 mm.
The only specimens I know of from the United States were taken
in a city park in Tacoma, Washington. The tibiae of this species are
short, they are provided with long upstanding hairs. The alate has
pigmented areas on the wings. The pigmented areas anterior to the
cauda are very wide.

* Cinara engelmanniensis * (Gillette and Palmer) Fig. 9

*Lachnus engelmanniensis* Gillette and Palmer. 1925 Ann. Ent. Soc. America 18:
527-530. figs. 528 plate XLIV (original description apterous viviparous
female, oviparous female, alate male).
68:74 fig. alate viviparous female.

Type and morphotype in the U. S. National Museum.
Size range apterous viviparous females 2.25 - 2.70 mm.
Host *Picea engelmannii*.
The cornicles of this species are very distinctive, often they are
provided with an irregular pigmented area anteriorly, which as a
rule has several clear areas. I note no mesosternal tubercle. The
genital plate has the lateral margins more or less serrate, with long
hairs confined largely to the lateral regions.
I have never taken this species in colonies, but Palmer records
doing so. It shows a decided preference for branches of its host which
are close to the ground.

*Cinara fornacula* Hottes Fig. 10

description apterous viviparous female); Hottes, 1933, Proc. Biol. Soc. Wash-
ington 46:1-4 (description stem mother. oviparous female, alate male);
all forms).

Type in collection of Prof. O. W. Oestlund, whose collection is
now in the collection of the University of Minnesota. Apparently it
is either lost or misplaced, a slide from the same collection is in the
U. S. National Museum. Morphotypes, and allotype in U. S. National
Museum.
Size apterous viviparous female 3.60 mm.
Host *Picea engelmannii*.
The mesosternal tubercle of this species is lacking.
I have never seen this species in colonies.
Palmer (1952) states that this species may be *C. picicola* var.
*viridescens* (Cholodkovsky). Börner regards *viridescens* as a species,
I have material of it sent me by him. It differs from *fornacula* in the
much darker cornicles, shorter hairs on the tibiae, and shorter meta-
tarsal II. The two species may be separated at once by the shape of
the sixth antennal segment.

*Cinara glehna* (Essig) Fig. 11

*Lachnus glehna* Essig, 1915, Pomona Jour. of Ent. and Zoo. 7:180-187 (original
description, figs. alate and apterous viviparous females).
PLATE NO. VII

Fig. 17. *Cinara obscura* Bradley

Apt. Vix. (HOLOTYPE)

Gen. Plate

M. A. Palmer

Fig. 18. *Cinara pallidipes* H.

Fundatrix Apt. Vix. (TYPE)


R. 3d Tib.

Fig. 19. *Cinara palmerae* (Gillette)
Lectotype in Collection of E. O. Essig.
Host *Picea glehni*.
Size range apterous viviparous females 2.92 - 3.45 mm.
Apparently this species is known only from the original collection. As indicated under *C. braggii* the two species are closely allied.

*Cinara hottesi* (Gillette and Palmer) Fig. 12

*Lachnus hottesi* Gillette and Palmer, 1924. Ann. Ent. Soc. America 17:22-23, pl. VI and VII (original description alate and apterous viviparous females);

Type, morphotype and allotype in U. S. National Museum.
Size range apterous viviparous females 2.5 - 3.8 mm.
Host *Picea engelmanni*.
The host of this species as indicated on the type slide is either Colorado or Blackhills spruce.
Size range 2.70 - 3.00 mm.

*Cinara jucunda* Hottes Fig. 13


Holotype apterous viviparous female in U. S. National Museum.
The host of this species as indicated on the type slide is either Colorado or Blackhills spruce.
Size range 2.70 - 3.00 mm.

*Cinara mariana* Bradley Fig. 14

*Cinara mariana* Bradley. 1956, Canadian Ent. 88: 706-707 figs. (original description apterous and alate viviparous females).

Holotype apterous viviparous female in Canadian National Collection.
Host *Picea mariana*.
Size apterous viviparous female 2.00 mm.
Specimens of this species were not available for the construction of the key.

*Cinara nepticula* Hottes Fig. 15


Holotype alate viviparous female in Canadian National Collection.
Host *Picea rubens*.
Size range alate viviparous females 3.45 - 3.60 mm.
This species known only from alate viviparous forms has been keyed in such a manner that it is thought that apterous females will apply.

*Cinara nimbata* Hottes Fig. 16

Holotype and other types in U. S. National Museum.
Host *Picea engelmanni*
Size range apterous females 3.76 - 4.22 mm.
This species is one of the most easily determined species in this group. The pigmentation of the tibiae is very characteristic, the darker portions being more or less spotted. I have never taken it in colonies. I have seen specimens collected in Arizona and from western Canada.

*Cinara obscura* Bradley Fig. 17

Holotype alate viviparous female in the Canadian National Collection.
Host *Picea glauca*.
Size apterous viviparous females 2.49 mm.
Specimens of this species were not available for the construction of the key.

*Cinara pallidipes* Hottes Fig. 18

Holotype and allotype in U. S. National Museum.
Host *Picea glauca*.
Size apterous viviparous females 2.18 mm.

*Cinara palmerae* (Gillette) Fig. 19

Type in U. S. National Museum.
Host *Picea pungens*. Palmer records it rarely on *Picea engelmanni*.
Size range 3.5 - 4.00 mm.
This species is widely distributed in the United States and Canada. Locally I have seen it a severe pest on nursery stock in the spring and early summer, after which it migrates to the roots, as first reported by Bradley. The mesosternal tubercle is about twice as broad as long.

*Cinara pilicornis* (Hartig) Fig. 20

Type presumed lost.
Host *Picea excelsa, Picea* sp.
Size apterous viviparous females. 3.00 mm.
This species has a number of synonyms, and has only recently been known under the name *pilicornis* in America. It has been recorded under the names, *piceicola* (Cholodkovsky), *hyalinus* (Koch), *pinicola* (Kaltenbach) as a rule in the genus *Lachnus*. Börner spells the specific name *pillicornis*. 
October 2, 1961 KEY TO CINARA OCCURRING ON PICEA

PLATE NO. VIII

Fig. 20. Cinara pilicornis (H.)

Fig. 21. Cinara sitchensis H.

Fig. 22. Cinara soplada H.

Cinara rara Bradley

Cinara rara Bradley, 1956, Canadian Ent. 88: 708, figs. 707 (original description oviparous female).

Holotype oviparous female in the Canadian National Collection. Host *Picea mariana*.

Size oviparous female 2.78 mm.

Specimens of this species were not available for the construction of the key.

Cinara sitchensis Hottes Fig. 21


Holotype in the collection of E. O. Essig.

Host *Picea sitchensis*.

Size range apterous viviparous females 2.55 mm.
Cinara soplada Hottes Fig. 22


Holotype and allotype in U. S. National Museum.

Host *Picea glauca*.

Size apterous viviparous female 3.07 mm.

*Cinara vandykei* (Wilson) Fig. 23


Type in Granovsky collection (according to Palmer, 1952.)

Host *Picea engelmannii*.

Size range apterous viviparous females 2.5 - 3.00 mm.

This species produces the sexual forms early, hence it has to be collected before the latter part of July or early August.

Key to apterous viviparous females of the genus *Cinara* (Family Aphidae) which have *Picea* sp. for host.

1. Longest hairs on outer margin of metathoracic tibiae as long as or longer than width of tibiae .............................. 2

   Longest hairs on outer margin of metathoracic tibiae shorter than width of tibiae .................................................. 20

2. Dorsum of abdomen with two rows of well defined pigmented areas .... *C. engelmanniensis* (Gillette and Palmer)

   Dorsum of abdomen without two rows of well defined pigmented areas ................................................................. 3
3. Hairs on tibiae coarse, almost spinelike, dark in color .......................... C. nimbata Hottes
Hairs on tibiae not coarse, not almost spinelike, not dark in color ......................... 4

4. Metathoracic tibiae uniformly pigmented ........................................... 5
Metathoracic tibiae with at least apices darker than middle ............................ 6

5. All tibiae uniformly dark brown ............................................. C. atripes Hottes
Only metathoracic tibiae uniformly dark brown ............................................. C. rara Bradley

6. Cornicles concolorous with abdomen .......................... C. fornacula Hottes
Cornicles darker than abdomen .......................................................... 7

7. Metatarsal II .50 mm. ......................................................... C. bonita Hottes
Metatarsal II not over .45 mm. ......................................................... 8

8. Metatarsal II .31 mm. or less ................................................. 11
Metatarsal II .32 mm. or more ........................................................... 9

9. Antennal IV without sensoria ................................................. C. bonica Hottes
Antennal IV with at least one sensorium ................................................. 10

10. Cornicles not over .30 mm., metatarsal II .35 - .43 mm.
............................... C. pilicornis (Hartig)
Cornicles not under .30 mm., metatarsal II not over .33 mm. ............................... C. braggi (Gillette)

11. Metathoracic tibiae 1.70 mm. or more ........................................ 12
Metathoracic tibiae 1.65 mm. or less ................................................... 15

12. Hairs on metathoracic tibiae .12 - .17 mm. ................................. C. palmerae (Gillette)
Hairs on metathoracic tibiae not over .12 mm. ........................................ 13

13. Base of cornicles .55 - .60 mm. .. C. hottesi (Gillette and Palmer)
Base of cornicles .30 - .50 mm. .......................................................... 14

14. Rostral IV .16 mm. ............................................................... C. vandykei (Wilson)
Rostral IV .22 - .23 mm. ............................................................... C. nepticula Hottes

15. Hairs on metathoracic tibiae .15 - .20 mm. ................................. C. costata (Zetterstedt)
Hairs on metathoracic tibiae .15 mm. or less ............................................. 16

16. Hairs on metathoracic tibiae .10 or more ........................................ 19
Hairs on metathoracic tibiae .10 or less .................................................. 17

17. Antennal V .20 - .25 mm. ....................................................... C. vandykei (Wilson)
Antennal V not over .18 mm. ......................................................... 18

18. Hairs on metathoracic tibiae .06 - .07, hairs on cornicles not uniformly distributed ........ C. pallidipes Hottes
Hairs on metathoracic tibiae .06 - .90, hairs on cornicles uniformly distributed .......... C. sitchensis Hottes

19. Metatarsal II .22 - .28 mm., Antennal IV .09 - .15 mm. .......................... C. mariana Bradley
Metatarsal II .30 mm., Antennal IV .15 mm. .. C. glehna (Essig)
20. Unguis .03 mm. or less .......................................................... 21
    Unguis more than .04 mm. .................................................. 22
21. Antennal IV not over .15 mm., rostral IV not over .16
    mm. .......................................................... C. obscura Bradley
    Antennal IV .15 - .20, rostral IV .19 mm. .... C. jucunda Hottes
22. Base of cornicles not over .35 mm. ................................. 23
    Base of cornicles over .35 mm. ....................................... 25
23. Rostral IV .28 mm or more ............................................. C. acadiana Hottes
    Rostral IV not over .25 mm. ........................................... 24
24. Rostral IV .23 - .25 mm. .............................................. C. coloradensis (Gillette)
    Rostral IV .17 mm. ................................................. C. caudelli (Wilson)
25. Metatarsal II .29 mm. ................................................. C. soplada Hottes
    Metatarsal II .33 mm. or more ....................................... 26
26. Dorsum of head with few hairs, almost none along trans-
    verse suture ................................................. C. coloradensis (Gillette)
    Dorsum of head with numerous hairs, hairs crisscrossing
    over transverse suture ...................................... C. caliginosa Hottes