Great Basin Naturalist

Volume 14
Number 3 – *Number 4*

Article 6

12-30-1954

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F. C. Hottes
Grand Junction, Colorado

SOME OBSERVATIONS ON THE ROSTRUM OF *CINARA PUERCA* Hottes (Aphidae)

F. C. HOTTES
Grand Junction, Colorado

In the original description of *C.puerca* I mention an interesting condition of the rostrum of this species, which I have since found in several other species of the genus. It is the purpose of this note to add additional information, and again call attention to this condition, in the hope that others more qualified than I will carry on a more complete investigation.

The interesting condition to which I have been unable to find a complete description in the Aphid literature in my library, may be best introduced by briefly describing the rostrum, which may also be refered to as the labium or proboscis. The rostrum in the genus *Cinara* consists of five segments. When the specimen is moving about or not feeding, the rostrum lies against the ventral surface of the body, extending between the coxae for various lengths, depending upon the age of the individual and the species to which it belongs. In the feeding position in the genus *Cinara* the rostrum extends forward from the body. It is common for specimens of this genus to form a sort of tripod, making use of the rostrum and prothoracic legs when feeding. When so doing the abdomen is elevated, moved from side to side and the meso and metathoracic legs kicked about. This reaction may be a response to temperature. It is more rapid when the temperature is high, and is not indulged in under cool conditions.

The proximal segment of the rostrum is pale, very thin, and flexible. In *Cinara* this segment appears to have an open groove along all but its most proximal dorsal region. It may be questioned if such a groove is for the reception of the stylets, for I have never seen them in it. I have not seen this groove in section, and it may not exist, if present, it is indicated by a pale line, bordered by light dusky.

It is possible that what I take for a groove, is a region along the dorsum of the segment where the chitin is very thin and hence paler. If present I suspect it is for the purpose of expansion of the segment. The second segment of the labium is somewhat longer than the first, smaller in diameter, and much more thickly chitinized. In *C. puerca* and many other species of *Cinara* the ground

color of this segment is pale, on this there are superimposed deeply pigmented areas, which vary in size and arrangement, the spots often becoming more or less confluent. The zone of junction between the first and second segments of the labium is clearly indicated, but it should be noted that the more highly chitinized lateral margins of the dorsal groove of the second segment continue within the first segment for a short distance. There appears to be a third highly chitinized rod within the second segment, perhaps in the mid ventral region of the dorsal groove. The dorsal groove extends the full length of the second segment and is open. The third segment of the rostrum is much shorter than the second, as a rule it is quite thick, and always highly chitinized, its dorsal groove is open throughout its length. The fourth segment of the rostrum is much like the third, in length, but it is narrower and tapers towards the apex, its dorsal groove is open throughout its length in *C. puerca*. The fifth segment of the rostrum is very short, highly chitinized and sharp pointed, its groove is inclosed. This segment has a few tactile hairs near the end.

Many specimens of *C. puerca* and some other species of the genus *Cinara* show the following interesting condition of the rostrum. The second segment of the labium, which it will be recalled is spotted, and therefore easily noted, telescopes within the first segment. This process which may be viewed in many stages, consists of the second segment being pushed into the first. To accomplish this the apical portion of the first segment is rolled inwards, as the second segment is pushed in. Thus for a time the second segment becomes in part surrounded by a double walled tube, formed from the first segment. This process may continue until the "posterior" ends of the two segments are in the vicinity of the metathoracic coxae. When this position is reached all of the first segment and a large portion of the second segment lie within the body. The two chitinous rod-like structures proximal to the zone of junction extend beyond the posterior limits of the first segment, and often appear to merge at a point, the third rod being median to them. When the ends of segments one and two lie in the vicinity of the metathoracic coxae, the entire surface of the first segment has been reversed. This is indicated not only by the position of the chitinous rods at the zone of junction, but by comparing the length of the extended first segment, with that pushed into the body.

Davidson, 1914 describes the withdrawal of the first segment of the rostrum within the body of *Schizoneura lanigera*, but he does

not state the extent to which this takes place. I assume that it is not far. He makes no mention of the invagination of the first segment by the second. Davidson mentions protractor muscles responsible

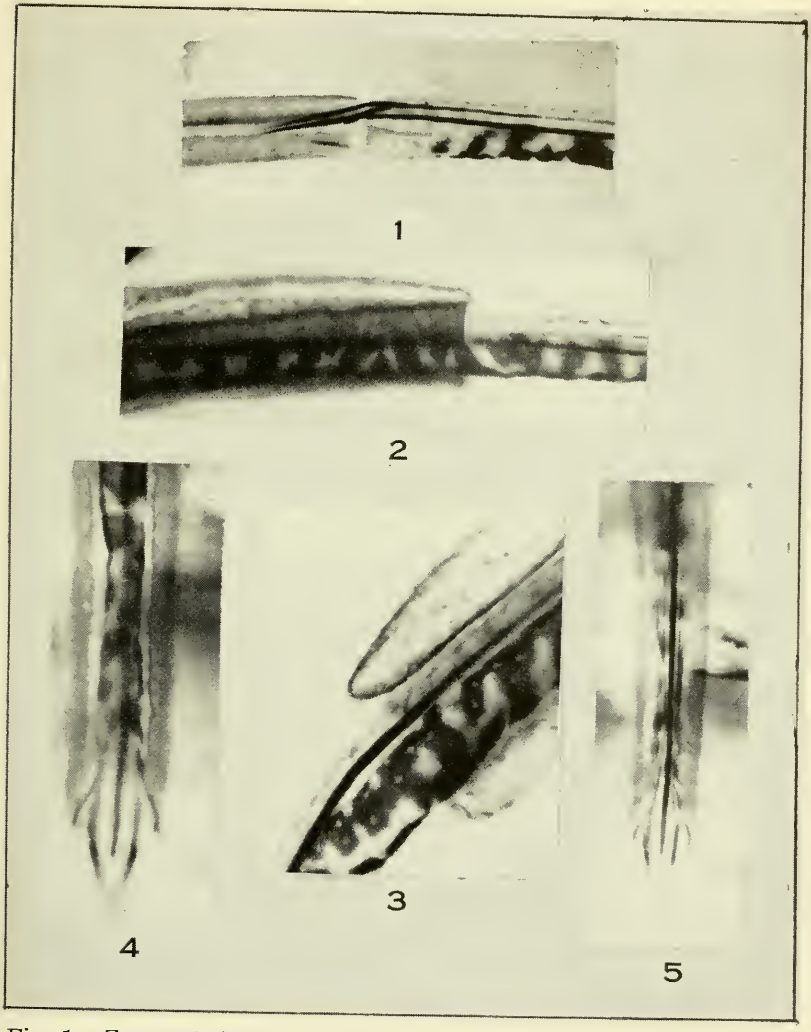

Fig. 1. Zone of junction between segment one and two. Note chitinous rods which extend within segment one, these form the lateral ridges of the open trough within the second segment on the dorsal side.
Fig. 2. A portion of the second segment is shown within the first.
Fig. 3. The second segment in process of being pushed within the first. The top section of the first segment is out of focus,

hence this shows a portion of the first segment as if it were in section. Note how the first segment is "rolled" in.

Fig. 4. Segment two of the rostrum has been pushed within the first segment, causing the surface of the first segment to be reversed, both segments are now within the abdomen, the first segment forming a sheath about the second, note how the citinous rods extend beyond the apex of the first segment.

Fig. 5. Same as figure four. In both figure four and five the top of the first segment has been made out of focus, so as to show the second segment better, both of these photos have been made through the body wall.

for the withdrawing of the phoboscis within the body. I have made no dissections, hence have not seen such, I do however question if they are present. This belief is strengthened by the knowledge that the entire surface of the first segment is reversed, when the second segment lies within it. If one may hazard a guess the process may be quite simple. The specimen by means of the tactile hairs at the end of the fifth segment of the proboscis may select a suitable location for penetration, establish a firm contact, and move the body forward. In so doing cause the second segment to carry back the first. This process would also serve to embed the apical segments, within the tissue of the host, the process reversed would free the rostrum, as well as extend it.

I first noted this telescoping effect in freshly killed alcoholic material of *C. puerca.* I have since noted it in living specimens in nature, so far as the unaided eye may be relied upon to note such a small feature. But it should be noted that the fully extended rostrum of *C. puerca* exceeds the length of the body, so that a reduction in length by half or more of the rostrum should not be too difficult to note. I have observed this condition under the binocular microscope in two specimens which I have been rearing, but I could observe only the third segment and a portion of the second. The specimens were feeding, and the fourth and fifth segments were embeded in the bark. This observation showed the stylets within the dorsal groove of the exposed segments, and raised the question as to their position in more proximal regions of the proboscis. Thus by partly answering a question another question is asked. Nor would I fail to ask the purpose of the telescoping. Can it be for the purpose of strengthening the first two segments, so that the fifth segment can be forced into the host tissue?

Dr. D. Hille Ris Lambers has called my attention to page 14 of Tullgren, 1909, where a similar condition is described for the genus *Stomaphis.*