

***DASYMUTILLA JALISCO*, A NEW SPECIES OF VELVET ANT
(HYMENOPTERA: MUTILLIDAE) PLUS NEW SYNONYMY FOR
DASYMUTILLA CANINA (SMITH)**

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Abstract.—*Dasymutilla jalisco*, a new species of velvet ant (Hymenoptera: Mutillidae) from Mexico, is described from both sexes. The female is similar in appearance to *Dasymutilla canina* (Smith), and the male is similar in appearance to *Dasymutilla intermixta* Mickel. A host for *D. jalisco* is the bee, *Diadasia knabiana* Cockerell (Hymenoptera: Apidae). *Sphaerophthalma philinna* Cameron and *Mutilla (Ephuta) varicolor* André are new synonyms of *D. canina* (Smith).

Key Words: *Dasymutilla jalisco*, Mutillidae, new species, *Dasymutilla canina*, new synonymy

A recognized problem in working with velvet ants (Hymenoptera: Mutillidae) is that strong sexual dimorphism makes sex associations extremely difficult. Color patterns and often overall body size of the two sexes can be quite different (Brothers 1989). Of more than 150 species of *Dasymutilla* Ashmead, only about one-third are known from both sexes (Krombein 1979, Nonveiller 1990).

Due to extreme sexual dimorphism, sex associations can be made only by catching pairs *in copula* (a very rare occurrence), through the use of caged females, or host data (Manley 1999). Although it is known that *Dasymutilla* species are parasitoids of other ground-nesting insects, primarily Hymenoptera, Mickel (1928) noted that host relationships are known for only a few species. The situation has not changed much since that time. This may be further complicated by the fact that mutillid males and females may develop on different hosts (Matthews 1997).

It is extremely rare to find evidence sup-

porting both sex association and host relationship within the same specimens, as is the case here. The specimens described here include seven females and three males, as well as two host bees.

MATERIALS AND METHODS

Specimens used in this study were included with material sent to me for identification by E. G. Riley from the Texas A & M University (TAMU) Insect Collection. All of these specimens were collected by William Godwin, and all were taken from cells of the same host in Jalisco, Mexico. The specimens have been compared with all known types of *Dasymutilla*, both males and females, and have been determined to be a new species. The two host bees were sent to Terry Griswold, Bee Biology and Systematics Laboratory, USDA, Utah State University, for identification.

***Dasymutilla jalisco* Manley, new species**
(Fig. 1A)

Diagnosis.—The female has the integument entirely black, with contrasting yel-

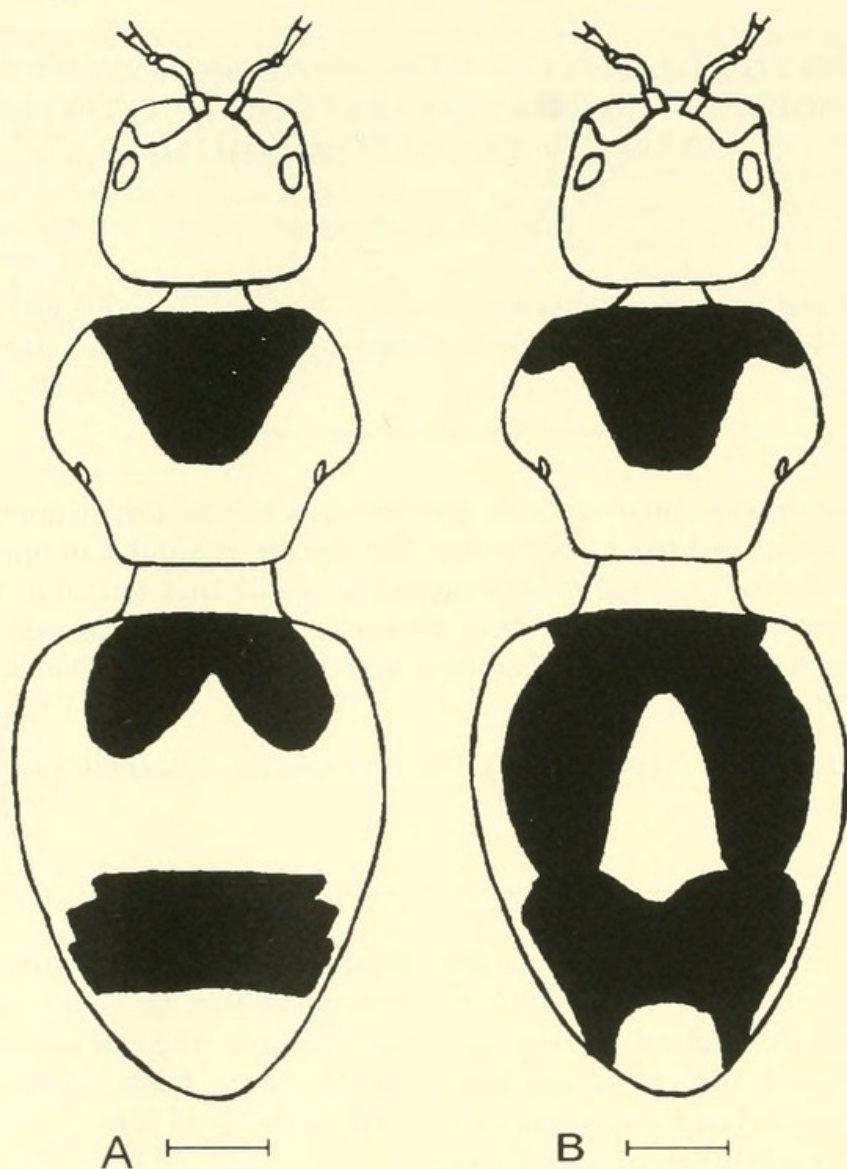


Fig. 1. Dorsum of females of *Dasyneutilla jalisco* and *D. canina* showing patterns of black pubescence. A, *D. jalisco*. B, *D. canina*. [Scale lines = 0.8 mm.]

lowish/golden and black pubescence. The thorax is as broad or broader than long, and is lacking a scutellar scale. The antennal scrobes are distinctly, although feebly, carinate. A genal carina is lacking. The pygidium is rugose. The male has the integument of the head, thorax and legs entirely black. Integument of the abdomen is reddish except the terminal segment(s) black. Pubescence of the head and thorax is pale, contrasted with black. The abdominal tergites are clothed with brilliant red pubescence, except the terminal segment(s) with black. Sternite II has a small, oval pit filled with pale setae. The antennal scrobes are dis-

tinctly carinate. The last tergite lacks an apical fringe of setae.

Description.—*Female*: Length, 13.5–16 mm. Head black, vertex with dense, recumbent, yellowish/golden pubescence, remainder of head with paler pubescence; mandible acute at tip, each with conspicuous inner tooth about one-quarter distance from tip; clypeus truncate on anterior margin, but concealed by long, pale setae; scape weakly carinate, the carina concealed by short, appressed, pale pubescence; flagellomere I long, about as long as II and III united, remaining flagellomeres subequal in length to second; antennal scrobe distinctly, although

feebly, carinate; front and vertex coarsely punctate, but with dense yellowish/golden pubescence concealing sculpture; gena not as coarsely punctate as front and vertex, lacking genal carina, covered with appressed pale pubescence; head almost as broad as thorax ($3.3 \text{ mm} \times 3.5 \text{ mm}$).

Thorax black; dorsum of thorax approximately $1.1\times$ as long as broad ($\sim 3.5 \text{ mm} \times 3.3 \text{ mm}$); scutellar scale absent; cephalic margin of pronotum evenly rounded, not emarginate medially; posterior face at sharp ($\sim 90^\circ$) angle to dorsal surface; dorsum of thorax with posterior V-shaped area of dense, appressed, yellowish/golden pubescence, concolorous with front and vertex, and anterior triangle of dense, appressed, black pubescence; posterior face of propodeum, pleura, and sternum with appressed, pale yellow pubescence.

Abdomen black; tergite I, including apical fringe, with appressed, pale yellow pubescence; tergite II with inverted V-shaped area of dense, appressed, black pubescence on anterior half; remainder of tergite II with dense, appressed, yellowish/golden pubescence, concolorous with front and vertex, except median half of apical fringe black; felt lines about $0.4\times$ length of segment, consisting of appressed, pale yellow setae; tergites III–IV largely with dense, appressed, black pubescence, except lateral fringes of both tergites and apical fringe of tergite IV pale yellow; tergites V–VI entirely pale yellow pubescent; sternum, including apical fringes, pale yellow pubescent, except last sternite with long, black setae; sternite I with short, blunt carina, about $0.4\times$ length of segment; pygidium coarsely rugose.

Legs black, clothed with dense, pale yellow setae.

All specimens (7) similar in size and coloration.

Male: Length, 13–14 mm. Head black, with long, appressed, white pubescence, dense on front and vertex, sparser elsewhere; mandible edentate, but each with strong dorsal carina ending about $0.1\times$

length from tip; clypeus flat, bidentate medially on anterior margin; scape bicarinate beneath, lower carina stronger than the upper, thinly clothed with white pubescence; flagellomeres subequal in length; antennal scrobe conspicuously carinate; eye normal, distance behind eye about equal to its greatest diameter; ocelli small, ocellocular distance at least $3\times$ greatest diameter of ocelli; head about as broad as thorax.

Thorax black, pronotum and scutellum clothed with dense, appressed, white pubescence, mesonotum with dense, appressed, black pubescence, remainder of thorax with long, sparse, erect, white setae; cephalic margin of pronotum not emarginate medially; tegula glabrous, impunctate, with sparse, appressed, black setae originating anteriorly.

Abdomen reddish dorsally, ferruginous ventrally, except first and last segments black; tergites II–VI with dense, appressed, red pubescence; first segment with long, sparse, white setae; last segment with long, sparse, black setae; felt line long, about $0.6\times$ length of second segment, comprised of appressed, white setae; sternite I with median, longitudinal carina, not produced on either end into tooth; sternite II approximately 3 mm long, with small, round pit densely filled with appressed white setae, situated about one-third distance from anterior margin; sternites clothed with long, sparse, erect, white setae except as otherwise noted; pygidium finely rugose; pygidium lacking apical fringe of setae.

Legs black, with white setae; apices of middle and hind femora rounded, neither squarely truncate nor sulcate.

Apical half of forewing black, basal half infuscated but translucent; hindwing entirely translucent.

Holotype.—♀, MEXICO, Jalisco, Mpio. LaHuerta, Chamela Biol. Sta., VII-26-1996, Wm. Godwin, collector, deposited in the Texas A & M University (TAMU) Insect Collection.

Allotype.—♂, same data and deposition as holotype.

Paratypes.—6 ♀, 2 ♂, same data as holotype, 2 ♀ and 1 ♂ in the author's collection, remainder in TAMU collection.

Host.—*Diadasia knabiana* Cockerell (Apidae), same data as holotype, determined by Terry Griswold, Bee Biology and Systematics Laboratory, USDA, Utah State University, deposited in the TAMU collection.

Etymology.—Named for the Mexican state in which the specimens were collected.

DISCUSSION

Although no additional biological information is known, the fact that these 12 specimens (10 mutillids and two host bees) were all collected from the same host cell complex provides substantial evidence of both the conspecificity of the mutillids and the host relationship. *Diadasia* Patton is a known host for some species of *Dasymutilla* (Krombein 1979).

As is often the case with mutillids, the male and female differ in color pattern, although they are approximately the same size. The female goes to couplet 11 in Mickel's (1928, 1936) keys. It can be distinguished easily from all Nearctic *Dasymutilla* strictly by the color pattern.

The taxonomy of Neotropical *Dasymutilla* is clearly in a state of confusion. *Dasymutilla jalisco* is very similar both visually and morphologically to *D. canina* (Smith) (Fig. 1B). In *D. jalisco*, the black pubescent pattern of the thorax is more nearly triangular in shape, the inverted V-shaped black pattern on tergum II extends only to about the midline of the segment, and the pale pubescence of the abdominal tergum is yellowish/golden, concolorous with the pale pubescence of the head and thorax (Fig. 1A). In *D. canina*, the black pubescent pattern of the thorax extends anterolaterally to the humeral angles, thus giving more of a T-shaped appearance, the inverted V-shaped black pattern on tergum II extends past the midline, sometimes almost joining the black pubescence on the apical margin, and

the pale pubescence of the abdominal tergum is almost white, much lighter than that of the head and thorax (Fig. 1B). Considering the within-species color variation in mutillids, it is possible that the females are color variants of the same species. However, there is no evidence to support that at this time.

Dasymutilla canina was described as *Mutilla canina* by Smith (1855) from the female only. The holotype is in The Natural History Museum (London). Saussure (1867) described both the male and female of *M. sumichrasti*. Mickel apparently could find neither in 1930–31 and designated a lectotype. The female lectotype designated by Mickel is in the Musée d'Histoire Naturelle (Genève). Mickel synonymized the two (1964) without explanation. I have examined both female types and am in agreement with Mickel. No male type specimens were found by me in 1991.

Dasymutilla philinna (Cameron) was described in 1895 from the female only. The holotype is in The Natural History Museum (London). *Mutilla (Ephuta) variicolor* was described by André (1898) from the female only. The lectotype designated by Mickel in 1930–31 is in the Muséum National d'Histoire Naturelle (Paris). Mickel synonymized the two (1964), again without explanation. I have examined both of these types and again am in agreement with Mickel. Having examined all four female types, it is apparent that these are all the same species. New synonymy follows at the end of this paper.

I have examined male specimens identified as *D. sumichrasti*. I have not, however, come across any male types. Males of *D. sumichrasti* that I have examined are clearly (morphologically) different from the male of *D. jalisco*. *Dasymutilla sumichrasti*, as described by Saussure, appears to be a conglomerate of at least four different species, those being *D. personata* (Cameron), *D. terminata* (Smith), *D. deyrollesi* Mickel, and *D. thalia* (Cameron). It appears to be, in part, the male of *D. canina*, *D. person-*

ata, and *D. terminata*. *Dasymutilla thalia* is synonymous with *D. intermixta* Mickel, and is the male of *D. sicheliana* (Saussure) (Manley and Radke, 2002). *Dasymutilla deyrollesi* is clearly distinct.

Males of all of the above species, as well as *D. jalisco*, are very similar (almost identical) in appearance. They can, however, be distinguished morphologically. *Dasymutilla personata* can be distinguished easily from the others as it lacks a sternal pit filled with hairs. *Dasymutilla deyrollesi* can be distinguished from the remaining species by the presence of an apical fringe of setae on the last tergite. *Dasymutilla terminata* and *D. thalia* are the most difficult to distinguish. However, *D. terminata* has the sides of the propodeum smooth and polished, while in *D. thalia* the sides are punctate.

The male of *D. jalisco* keys to *D. intermixta* Mickel in Mickel's (1928, 1936) keys. It is distinguished easily from *D. intermixta* as well as the above species by its broad head, somewhat truncate on the posterior margin, by lacking an anterior emargination on the pronotum, by the anterior position of the pit on sternum II, and by the sculpture of the pygidium. *Dasymutilla intermixta* has the head narrowed posteriorly, has a median emargination on the pronotum, has the sternal pit more median in position, and has the pygidium glabrous and shining.

Although subsequent molecular and biological studies may change the taxonomic relationships of some (or all) of the species mentioned, it is clear that the specimens described herein represent male and female of the same species, and that the bee genus *Diadasia* serves as a host for this species.

Dasymutilla canina (Smith),
new combination

Mutilla canina Smith 1855: 58. Holotype ♀ in The Natural History Museum (London).
Mutilla sumichrasti Saussure 1867: 357. Lectotype ♀ in the Musée d'Histoire Naturelle (Genève).

Mutilla (Sphaerophthalma) sumichrasti: Blake 1871: 236, ♀ (nec ♂).
Sphaerophthalma philinna Cameron 1895: 354. Holotype ♀ in The Natural History Museum (London). **New synonym.**
Sphaerophthalma sumichrasti: Cameron 1895: 359, ♀ (nec ♂).
Mutilla transmarina: Dalla Torre 1897: 92, ♀ (nec ♂).
Mutilla (Ephuta) variicolor André 1898: 56. Lectotype ♀ in The Museum National d'Histoire Naturelle (Paris). **New synonym.**

ACKNOWLEDGMENTS

I thank Cl. Besuchet of the Musée d'Histoire Naturelle (Genève), Tom Hudleston, Suzanne Lewis, and Christine Taylor of The Natural History Museum (London), Janine Casevitz-Weulersse of the Muséum National d'Histoire Naturelle (Paris), Antonio Rolando of the University of Torino (Italy), and Phil Clausen of the University of Minnesota for access to their collections, including type specimens; and I thank Terry Griswold, Bee Biology and Systematics Laboratory, USDA, Utah State University, for identification of the host bees. This is technical contribution number 4773 of the South Carolina Agricultural Experiment Station, Clemson University.

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