

Revision of Nearctic *Heterischnus* Wesmael, 1859 (Hymenoptera, Ichneumonidae, Ichneumoninae, Phaeogenini)

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Abstract

The Nearctic species of *Heterischnus* Wesmael are revised. Redescriptions are provided of the three known species, *H. bicolorator*, *H. huardi* and *H. coloradensis*. *Heterischnus mexicanus* **sp. nov.** is newly described and *H. bicolorator* is recorded for the first time from the Nearctic region. The first key to the Nearctic species is provided along with species images and distribution maps.

Keywords

Ichneumoninae, Phaeogenini, new species, taxonomy

Introduction

Heterischnus Wesmael (Hymenoptera: Ichneumonidae: Ichneumoninae) is a morphologically well-defined genus in the tribe Phaeogenini and is comprised of 30 described species in the Holarctic and Afrotropical regions (Yu et al. 2016). *Heterischnus* was formerly placed in the subtribe Heterischina (Diller 1981; Selfa and Diller 1994). However, Santos et al. (2021) found that the majority of the Phaeogenini subtribes were non-monophyletic and are therefore not recognized here. *Heterischnus* species are parasitoids of microlepidoptera, especially Pterophoridae (Bragg 1970; Sedivy 1986; Diller and Shaw 2014). Rearing records from other groups, such as noctuids (Rudow

1917; Meyer 1934) or even bark beetles (Scolytinae) (Uchida 1956), are suspect. Females of at least some species overwinter as adults (Diller and Shaw 2014; Longu-Constantineanu and Constantineanu 2014), and as in nearly all ichneumonines, adults emerge from the host pupa (Diller and Shaw 2014).

Species richness for *Heterischnus* is concentrated in the Palearctic with only five described species known from the Afrotropical region and three from the Nearctic (Yu et al. 2016). Unlike the Palearctic and Afrotropical regions, which have been the subject of more recent taxonomic works (Perkins 1959; Aubert 1965; Diller 1995; Selfa and Diller 1997; Rousse et al. 2013; Valemberg 2014), research on the Nearctic *Heterischnus* ended in the early twentieth century (Cushman 1927). The purpose of the current paper is to revise the Nearctic species. One new species is described and *Heterischnus bicolorator* (Aubert) is newly recorded from the Nearctic region. A species key is provided, along with images and distribution maps to aid in identification.

Materials and methods

Morphological terminology follows Bennett et al. (2019). “MS1” refers to the first metasomal segment and “T2”, “T3”, ect. refer to the corresponding metasomal tergites. Females are described in full, while only deviations in structure and color are noted for males. Specimen images were taken with a Canon EF-S 60mm macro lens for habitus images and a Venus Optics Laowa 25mm Ultra-Macro lens for higher magnification images mounted on a Canon 1200D camera body. Image stacking was performed with Helicon Focus and further processed in the web-based photo editor Photopea (photopea.com). Figures were assembled in LibreOffice Draw 5.4.4.2. Distribution maps were generated in the open-source software QGIS 3.6.2.

Specimens examined are deposited in the following collections:

- CNCI** Canadian National Collection of Insects, Arachnids and Nematodes Agriculture Canada: Ottawa, Ontario, Canada;
- EMUS** Entomology Museum, Utah State University: Logan, Utah, USA;
- UCDC** Bohart Museum of Entomology: University of California, Davis: Davis, California, USA;
- USNM** National Museum of Natural History, Smithsonian Institution: Washington D.C., USA;

Results

Heterischnus Wesmael, 1859

Heterischnus Wesmael, 1859: 83. Type species: *Ichneumon pulex* Müeller. Monotypic.
Rhexidermus Förster, 1869: 192. Type species: *Rhexidermus japonicus* Ashmead. Monotypy by inclusion in Ashmead (1906).

Posocentrus Provancher, 1875: 273. Type species: *Posocentrus huardi* Provancher.

Monotypic.

Ischnopsidea Viereck, 1914: 77. Type species: *Ichneumon thoracicus* Gravenhorst.

Monotypic and original designation.

Aethiopsischnus Heinrich, 1938: 127. Type species: *Aethiopsischnus olsoufieffi* Heinrich.

Monotypic and original designation.

Generic diagnosis. Among Phaeogenini genera, *Heterischnus* is easily recognized by a combination of the following: unidentate, falciform mandible; epistomal suture distinct; basal flagellomeres slender and elongate (Fig. 1); scutellum moderately narrow, convex, and distinctly elevated above metanotum; areolet (cell 1-2Rs) of the fore wing is closed (Fig. 1); hind coxa simple; thyridium wide. In some species, notably *Heterischnus huardi* (Provancher), the clypeus is medially truncate with acute sublateral projections making such species instantly recognizable as *Heterischnus*. However, the ventral clypeal margin varies between the aforementioned morphology and being medially straight without acute sublateral projections. The majority of species tend toward the latter condition. Additionally, the tarsal claws of *Heterischnus pulex* (Müller) are pectinate which is unique among Phaeogenini, although the tarsal claws are simple in the remaining species.

Key to the Nearctic species of *Heterischnus*

- 1 Coxae black (Fig. 2A). No trace of white markings on head or mesosoma (Fig. 2A–C). Gena rugulose-punctate, sculpture becoming denser ventrally ***H. bicolorator***
- Coxae light brownish-red or yellowish-white (e.g. Fig. 7A). Yellowish-white markings on mesosoma or head (e.g. Figs 7A, 8B). Gena punctate without rugosity..... **2**
- 2 Propodeum densely and coarsely punctate (Fig. 10E). Propodeum with longitudinal carinae reduced or obsolete and at least lateral longitudinal carina obsolete posteriorly (Fig. 10E). Female with flagellomeres 7–8 to 11–12 white dorsally (Fig. 10A)..... ***H. mexicanus* sp. nov.**
- Propodeum smooth (Fig. 7E) or rugulose-punctate (Fig. 4E). Propodeal longitudinal carinae well-developed (Figs 4E, 7E). Female with flagellomeres 10–12 dorsally white (Fig. 4A) or antennae entirely dark-brown (Fig. 7A)..... **3**
- 3 Supra-antennal area densely rugulose-punctate (Fig. 4D). Supraclypeal area densely rugulose-punctate (Fig. 4C). Females with flagellomeres 10–12 dorsally white. Male clypeus black or dark reddish-brown (Fig. 5B) ***H. coloradensis***
- Supra-antennal area smooth with fine and sparse punctation (Fig. 7D). Supraclypeal area punctate or moderately rugulose-punctate (Fig. 7C). Females with no trace of white markings on flagellomeres (Fig. 7A). Male clypeus primarily white with ventral margin black to dark reddish brown (Fig. 8B) ***H. huardi***

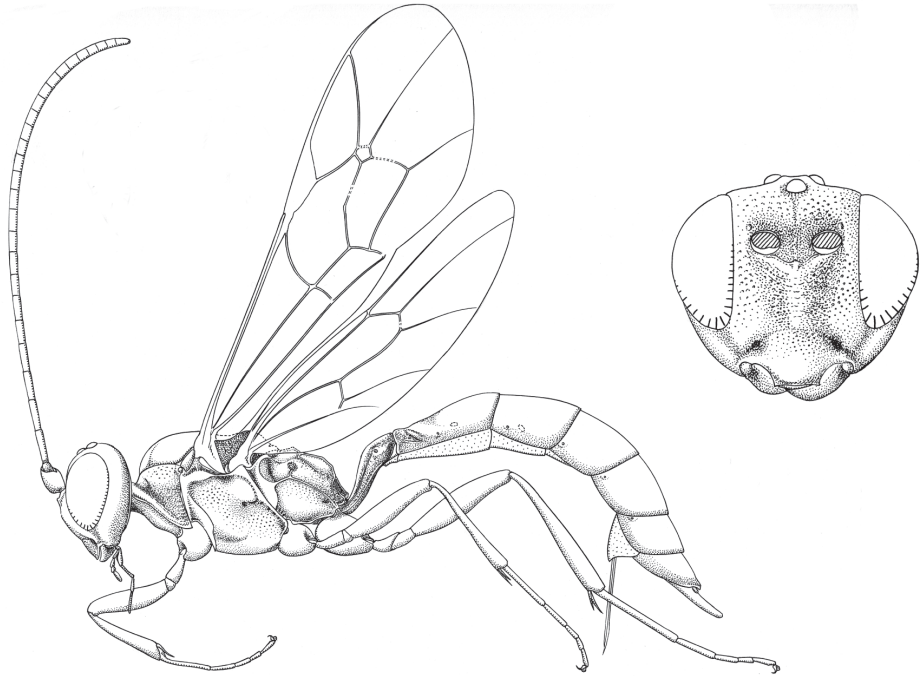


Figure 1. Unpublished illustration of *Heterischnus huardi* (Provancher) lateral habitus and frontal view of head by Professor Masaaki Tokunaga or his assistants, commissioned by Dr. Henry Townes.

***Heterischnus bicolorator* (Aubert)**

Figs 2, 3

Rhexidermis bicolorator Aubert, 1965: 16. Syntype series of 14 specimens [Musée de Zoologie, Lausanne, Switzerland]. Images of syntype (GBIFCH00759357) examined.

Diagnosis. *Heterischnus bicolorator* can be distinguished from other Nearctic *Heterischnus* species by a combination of the following: 1) flagellum, clypeus, and mesosoma without white markings; 2) coxae black to dark brown; 3) gena rugulose-punctate; and 4) T2–3 brownish-red.

Description. Female (Fig. 2). Body length: 7.7–8.2 mm. Fore wing length: 5.0–5.4 mm.

Color. Head black, except brownish-red mandibular apex. Antenna brown. Mesosoma black. Legs brownish-red with coxae and trochanters varying from black to dark brown, except for brown tarsomere 5. MS1 varying from 0.5 anterior black to dark brown with 0.5 posterior brownish-red, to entirely black; T2 varying from entirely brownish-red, to brownish-red with 0.1 posterior brown; T3 brownish-red with posterior 0.1 brown to dark brown; T4–7 dark brown to black. Wing membrane clear; veins light brown.

Head. Clypeus smooth with dorsal 0.6 punctate with punctures separated by 0.5–1.0× their diameter becoming less dense apically; apical margin medially concave

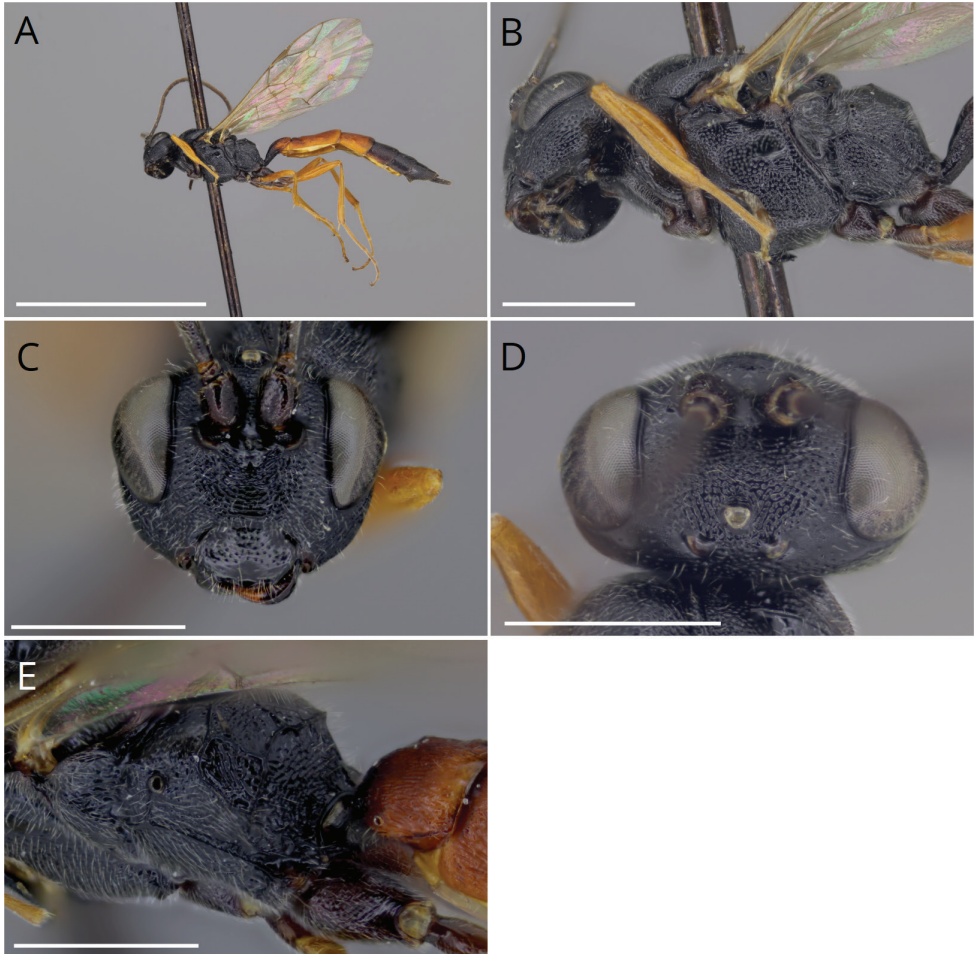


Figure 2. *Heterischnus bicolorator* (Aubert), female **A** habitus **B** mesosoma, lateral view **C** head, frontal view **D** head, dorsal view **E** propodeum, dorsolateral view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B–E**).

to nearly straight with blunted sublateral apices. Supraclypeal area rugulose-punctate. Gena rugulose-punctate ventrally, dorsally smooth with coarse punctures $0.5\text{--}1.0\times$ their diameter. Malar space $1.5\text{--}1.8\times$ basal mandibular width. Supraclypeal area rugulose-punctate. Vertex smooth with coarse punctures separated by $0.5\text{--}1.0\times$ their diameter. Antenna with 34 flagellomeres.

Mesosoma. Mesonotum smooth with coarse punctures separated by $0.1\text{--}0.5\times$ their diameter. Scutellum smooth with dense, coarse punctures separated by $0.2\text{--}1.0\times$ their diameter. Mesopleuron varying from densely, coarsely punctate to rugulose-punctate. Speculum coarsely punctate dorsally. Ventral division of metapleuron densely, coarsely punctate to rugulose-punctate. Dorsal division of metapleuron finely punctate. Propodeum rugulose. Propodeal carination complete, except lateral longitudinal carina obsolete anteriorly. Tarsal claws simple.



Figure 3. Nearctic distribution of *Heterischnus bicolorator* (Aubert).

Metasoma. Postpetiole varying from granulate to rugulose. T2 length 1.4–1.5× posterior width. T2–7 granulate with dense, shallow, punctation becoming sparser and indistinct posteriorly. Gastrocoelus longitudinally rugulose. Thyridium distant from T2 anterior margin by 2.0–3.0× thyridial length.

Male. Not examined (not known from Nearctic region).

Material examined. Non-type material: CANADA • 1♀; British Columbia, Stone Mountain Park; 5500 ft; 20.vii.1973; H. & M. Townes; EMUSENT00000302 • 1♀; same collection data as preceding; 22.viii.1973; H. & M. Townes; EMUS00000151. USA • 1♀; Alaska, Umiat; 20.vii.1947; C. Schultz; USNM.

Distribution and biology. *Heterischnus bicolorator* is known from western Europe and as far east as Chita Oblast in Russia (Yu et al. 2016). In the Nearctic, it is known only from two localities in Alaska and British Columbia (Fig. 3), but is likely present throughout the intervening areas, including the Yukon Territory. No host information is known.

Comments. The three Nearctic specimens examined agree with both the original description (Aubert 1965) and images of a syntype specimen. No significant color or morphological differences could be found that would indicate that the examined Nearctic specimens are not conspecific with Palearctic specimens of *H. bicolorator*.

***Heterischnus coloradensis* (Cushman)**

Figs 4–6

Ischnopsidea coloradensis Cushman, 1920: 253. Holotype: ♀ [USNM]. Not examined.

Diagnosis. *Heterischnus coloradensis* (Cushman) is chromatically and morphologically similar to *H. huardi* but can be distinguished from the latter and other Nearctic species

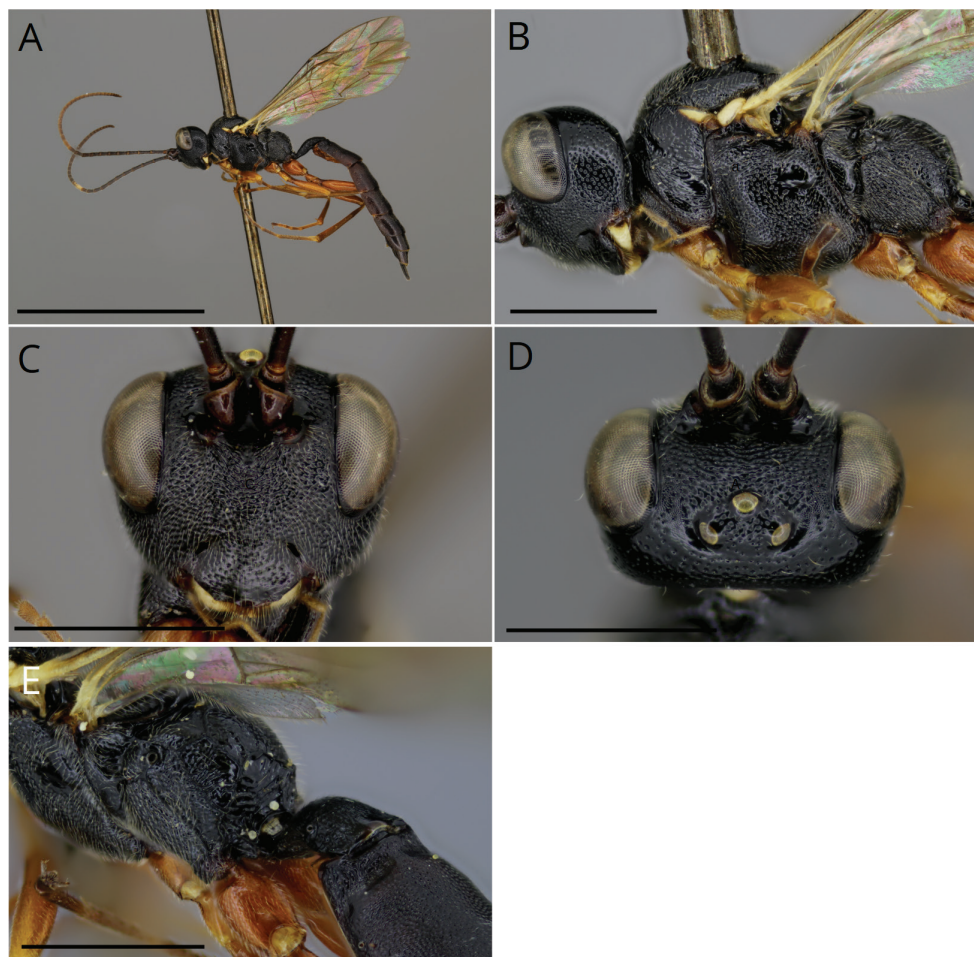


Figure 4. *Heterischmus coloradensis* (Cushman) female **A** habitus **B** mesosoma, lateral view **C** head, frontal view **D** head, dorsal view **E** propodeum, dorsolateral view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B–E**).

by a combination of the following: 1) male clypeus dark reddish-brown to black; 2) flagellomeres 10/11–12/13 dorsally white in female; 3) supra-antennal area rugulose-punctate; and 4) first lateral area of propodeum rugulose-punctate.

Description. Female (Fig. 4). Body length: 6.8–8.7 mm. Fore wing length: 4.2–5.1 mm.

Color. Head black. Mandible yellowish-white with brown apex. Antenna dark brown with flagellomeres 10/11–12/13 dorsally white. Mesosoma black with following areas white: occasionally anterior margin of pronotum (25% of specimens), posterior 0.2 of dorsal margin of pronotum, usually subalar prominence (60% of specimens), and tegula. Fore and middle legs light brownish-red except for tarsomere 5 brown. Hind leg brownish-red except for basal 0.1 of tibia white, apical 0.2 of tibia brown, tarsomeres brown. Metasoma black to dark brown. Wing membrane clear; basal 0.1–0.2 of wing with veins white, remaining sections brown.

Head. Clypeus smooth, basally with fine punctures separated by 0.5–1.0× their diameter becoming less dense apically; ventral margin with sublateral apical projections subobsolete to obsolete. Malar space 1.5–2.0× basal mandibular width. Supraclypeal area rugulose-punctate. Gena smooth, coarsely punctate with punctures separated by 0.2–1.5× their diameter. Supra-antennal area rugulose-punctate. Vertex smooth, finely punctate with punctures separated by 0.5–2.0× their diameter. Antenna with 32–34 flagellomeres.

Mesosoma. Mesonotum smooth, with punctures separated by 0.5–2.0× their diameter. Scutellum smooth, finely punctate with punctures separated by 1.0–2.0× their diameter. Mesopleuron densely, coarsely punctate with punctures confluent to separated by about 0.5× their diameter becoming more sparse dorsally; tendency in some specimens to form lateral rugulae. Speculum coarsely punctate dorsally, smooth ventrally. Ventral division of metapleuron rugulose-punctate. Dorsal division of metapleuron with a few scattered punctures. Propodeum overall rugulose-punctate with areola and posterodorsal face rugulose; carination complete. Tarsal claws simple.

Metasoma. Postpetiole rugulose-punctate. T2 length 1.0–1.2× posterior width. T2–7 granulate with dense, shallow punctures; punctation becoming sparser and indistinct posteriorly. Gastrocoelus rugulose-granulate. Thyridium distant from T2 anterior margin by 0.5–2.0× thyridial length.

Male (Fig. 5). Body length 6.8–9.1 mm. Fore wing length: 4.3–5.6 mm. As in female except for: yellowish-white markings on mesosoma more extensive.

Material examined. Paratype: USA • 1♀; Colorado, Larimer Co., Forrester's; 19.vii.1895; C. F. & N. E. Baker; USNM paratype 22850.

Non-type material: USA • 1♀; California, Modoc Co. 1 mile N of Stough Reservoir; [41.5767, -120.2538], 15.vi.1963; UCDC • 1♀; California, Modoc Co., Cedar Pass; [41.5623, -120.2688]; 29.vi.1955; D. L. Dahlsten; UCDC • 1♀; California, Nevada Co., Sagehen Cr. near Hobart Mills; [39.4342, -120.2048]; 15.vii.1964; M. E. Irwin; UCRCENT529785 • 1♀; Colorado, Grand Co., Phantom Valley, Rocky Mountain National Park; 9400 ft; [40.2833, -105.8505]; 16.vi.1948; H., M., G., D. & J. Townes; EMUSENT00000417 • 1♀, 3♂♂; Colorado, Routt Co., Steamboat Springs; [40.4857, -106.8309]; 6.viii.1948; H., M., G., D. & J. Townes; EMUSENT00000722, EMUSENT00000132, EMUSENT00000207, EMUSENT00000073 • 1♂; same collection data as preceding; 5.viii.1948; EMUSENT00000345 • 1♂; Idaho, Oneida Co., 3 mi. S of Roy Summit; [42.2635, -112.7653]; 6.vii.1972; G. F. Knowlton; EMUSENT00000137 • 1♂; Idaho, Blaine Co., 9 mi. SW Bellevue; [43.3353, -114.2901]; 28.viii.1965; J. S. Buckett; UCDC • 1♀; Idaho, Boise Co., Idaho City; [43.82813, -115.8341]; 9.vi.1978; H. & M. Townes; EMUSENT00000777 • 3♀♀; same collection data as preceding; 13.vi.1978; EMUSENT00000258, EMUSENT00000317, EMUSENT00000225 • 1♀♀; same collection data as preceding; 14.vi.1978; EMUSENT00000192 • 2♂♂; Idaho, Custer Co., nr. Stanley; [44.2161, -114.9353]; 2.viii.1978; H. & M. Townes; EMUSENT00000253, EMUSENT00000206 • 1♂; same collection data as preceding; 7.viii.1978; EMUSENT00000288 • 2♂♂; same collection data as preceding; 8.viii.1978; EMUSENT00000719, EMUSENT00000297 • 1♀; Idaho, Oneida Co., Rock Creek; [42.4320, -114.3054]; 17.vii.1972; G. F.

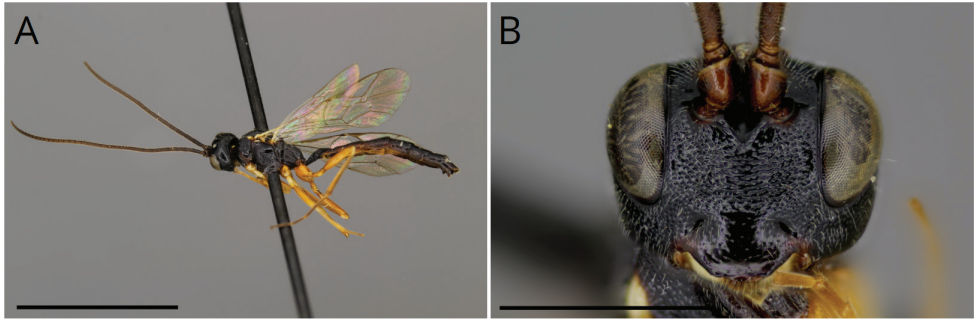


Figure 5. *Heterischnus coloradensis* (Cushman) male **A** habitus **B** head, frontal view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B**).

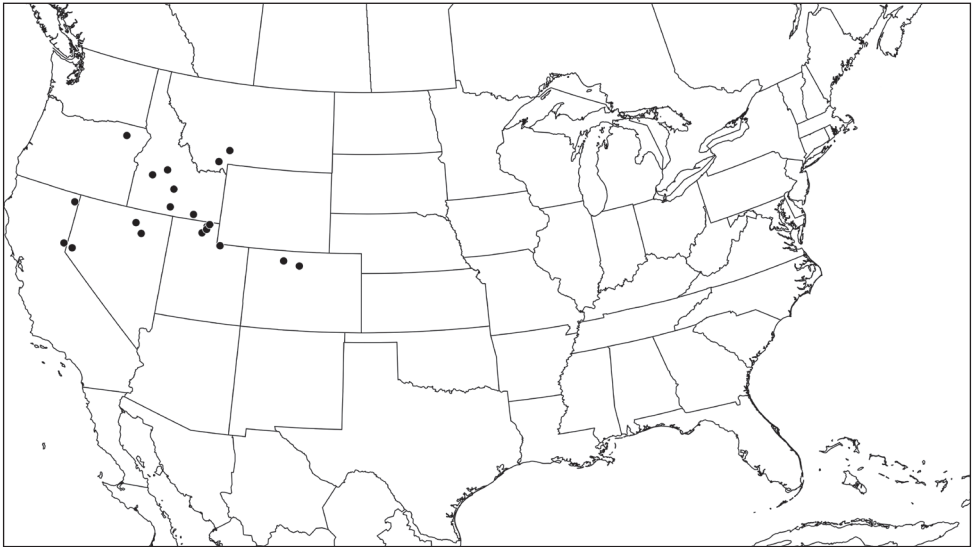


Figure 6. Distribution of *Heterischnus coloradensis* (Cushman).

Knowlton; EMUSENT00000138 • 1♂; same collection data as preceding; 6.vii.1972; EMUSENT00000224 • 1♂; Montana, Madison Co., 16 miles S. of Cameron; [45.0604, -111.6656]; 18.vii.1971; UCDC • 3♀♀; Montana, Gallatin Co., Bozeman; [45.6771, -111.0428]; 30.vi.1978; R., B. & C. Dasch; EMUSENT00000629, EMUSENT00000056, EMUSENT00000194 • 4♀♀; same collection data as preceding; 7.vii.1978; EMUSENT00000193, EMUSENT00000077, EMUSENT00000566, EMUSENT00000357 • 1♂; Nevada, Elko Co., Elko; [40.8385, -115.7628]; 21.viii.1964; F. S. Buckett; UCDC • 1♀; Nevada, Elko Co., Tuscarora; [41.3146 -116.2233]; 5.vi.1978; H. & M. Townes; EMUSENT00000393 • 1♀; Nevada, Storey Co., Virginia City; [39.3093, -119.6499]; 14.vi.1951; W. J. Wall; UCDC • 1♀; Oregon, Union Co., Mt. Emily; [45.4379, -118.0913]; 03–11.vi.1987; T. R.

Torgersen, EMUSENT00000420 • 1♀; Utah, Box Elder Co. Willard Peak.; 9000 ft; [41.4210, -112.0561]; 25.vii.1960; G. E. Bohart; EMUSENT00000347 • 2♀♀; Utah, Cache Co., Black Smith Fork Canyon; [41.6278, -111.8040]; 1–6.vii.1964; W. J. Hanson; EMUSENT00000391, EMUSENT00000108 • 1♀; Utah, Cache Co., North Logan; [41.7706, -111.8045]; 25–31.v.1983; C. R. Nelson; EMUSENT00000030 • 1♂; Utah, Cache Co., Tony Grove; 2290 m; 41.8884, -111.6571; 18.v.–1.vi.2019; B. Claridge; Malaise trap; EMUSENT00000547 • 1♀; Utah, Cache Co., Tony Grove Canyon; [41.8902, -111.6371]; 25.viii.–2.ix.1976; W. J. Hanson; EMUSENT00000026 • 1♂; Wyoming, Albany Co., Pole Mountain; 41.22, -105.45; 13–20.vii.2013; Malaise trap, ungrazed short grass prairie; L. Haimowitz, H, Aguirre; EMUSENT00004739.

Distribution and biology. Collecting dates span mid-May to early September, although the greatest number of records are from July and August. *Heterischnus coloradensis* occurs from the Rocky Mountains west to the eastern slopes of the Sierra Nevada Range (Fig. 6). Throughout its range, *H. coloradensis* is sympatric with *H. huardi*. No host information is known.

Comments. In addition to the examined paratype, a specimen that was compared with the holotype by Henry Townes was examined.

Heterischnus huardi (Provancher)

Figs 7–9

Posocentrus huardi Provancher, 1875: 273. Lectotype: ♀ [University of Laval Entomology Collection, Quebec, Canada]: designated by Townes (1939). Not examined.
Phaeogenes recticaudus Provancher, 1886: 42. Holotype: ♀ [University of Laval Entomology Collection, Quebec, Canada]: Synonymized by Townes (1944). Not examined.
Ischnopsidea alberta Cushman, 1927: 1. Holotype: ♀ [USNM]: Synonymized by Townes (1944). Not examined.

Diagnosis. *Heterischnus huardi* can be distinguished from other Nearctic species by the combination of the following: 1) clypeus yellowish-white in males; 2) female flagellum without any trace of yellowish-white banding; 3) supra-antennal area smooth with fine, shallow punctures; 4) and first lateral area of propodeum varying from entirely smooth to smooth and rugulose, but never rugulose-punctate as in *H. coloradensis*.

Description. Female (Fig. 7). Body length: 5.5–8.8 mm; fore wing length: 3.8–5.6 mm.

Color. Head usually black, infrequently varying from dark reddish-brown to dark brown. Mandible yellowish-white except for dark brown apex. Antenna brown. Mesosoma overall black to dark brown, with the following areas yellowish-white: dorsal margin of pronotum, subalar prominence, and tegula; specimens from California and Oregon usually with mesonotum, scutellum, mesopleuron, and ventral division of metapleuron brownish-red to varying extents. Fore and middle legs with coxae,

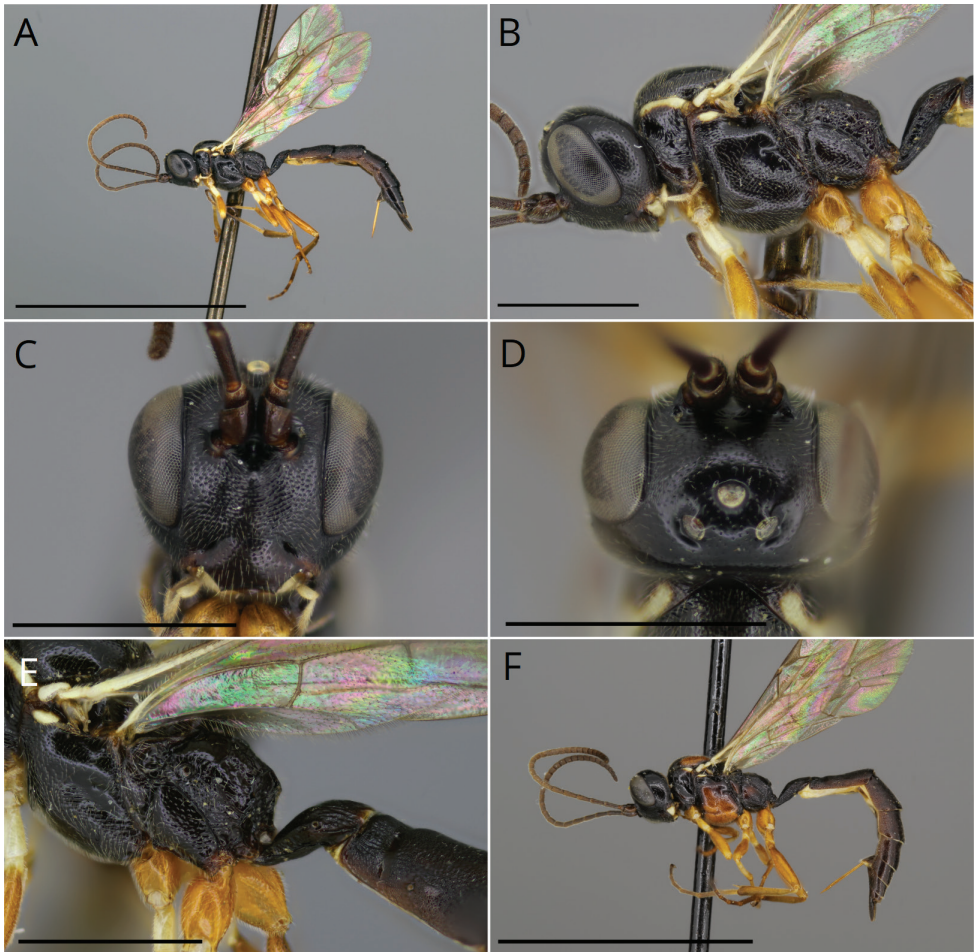


Figure 7. *Heterischmus huardi* (Provancher) female. Eastern and western Nearctic dark phase (A–E) **A** habitus **B** mesosoma, lateral view **C** head, frontal view **D** head, dorsal view **E** propodeum, dorsolateral view **F** western Nearctic reddish phase *H. huardi* female habitus. Scale bars: 5.0 mm (A, F); 1.0 mm (B–E).

trochanters and trochantelli white to light reddish-brown; tibiae and femora light reddish-brown; tarsomeres 1–4 light reddish-brown; tarsomere 5 brown. Hind leg with coxa and trochanter light reddish-brown; trochantellus white to light reddish-brown; femur light reddish-brown; tibia light reddish brown with apical 0.5 dorsally brown; tarsomere 1 brown with basal 0.3 varying from light reddish-brown to brown; tarsomeres 2–5 brown. Metasoma varying from dark brown to black; one specimen from Nojoqui Falls Park, California with T1 medially brownish-red. Wing: membrane clear; basal 0.2 of wing with veins white, remaining vein sections brown.

Head. Clypeus smooth, dorsally with fine punctures separated by 0.5–1.0× their diameter becoming less dense ventrally; ventral margin truncate medially and with sublateral projections varying from blunt to sharp. Supraclypeal area rugulose-punc-

tate with punctures separated by 0.5–1.5× their diameter, becoming less dense laterally. Gena smooth, finely punctate with punctures separated by 3.0–5.0× their diameter. Malar space 1.0–1.2× basal mandibular width. Supra-antennal area smooth and finely punctate with punctures separated by 1.0–3.0× their diameter. Vertex smooth and finely punctate with punctures separated by 1.0–3.0× their diameter. Antenna with 25–29 flagellomeres.

Mesosoma. Mesonotum smooth and finely punctate with punctures separated by 0.5–2.0× their diameter. Scutellum smooth and finely punctate with punctures separated by 2.0–3.0× their diameter. Mesopleuron punctate with punctures separated by 0.2–1.0× their diameter, tendency in some specimens to form lateral rugulae. Speculum smooth with several scattered punctures. Ventral division of metapleuron punctate with punctures separated by 0.2–1.0× their diameter. Dorsal division of metapleuron finely punctate separated by 0.4–1.0× their diameter. Propodeum overall smooth, pleural area rugulose-punctate; carination complete, except lateral longitudinal carina absent anteriorly. Tarsal claws simple.

Metasoma. MS1 with postpetiole smooth anteriorly, posteriorly longitudinally rugulose laterally. T2 length 1.3–1.4× posterior width. T2–7 granulate with dense shallow punctation becoming sparser and indistinct posteriorly. Gastrocoelus longitudinally rugulose. Thyridium distant from T2 anterior margin by 2.5–4.0× thyridial length.

Male (Fig. 8). Body length: 5.4–8.9 mm; fore wing length: 3.8–5.6 mm. As in female except for: clypeus usually (90% of specimens) white except for dark brown to black apical margin and medial mark extending from apical 0.1 up to 0.3; infrequently most of clypeus dark brown to black with white area only present medially or as dorso-lateral markings; very rarely clypeus entirely dark brown. Malar space shorter (0.8–1.0 basal mandibular width.)

Material examined. Non-type material: CANADA • 1♀; Alberta, Edmonton; [53.5487, -113.4927]; 1.iv.1924; Owen Bryant; USNM • 1♀; Alberta, Seebe, K.F.E.S; 29.viii.1958; “ex Pterophoridae willow”; 57-A-1575-047; 314; CNCI • 3♀♀; Alberta, Sturgeon, L. Rt. 34; [53.6316, -113.6161]; 26.vi.1977; B. & C. Dasch; EMUSENT00000163, EMUSENT00000567, EMUSENT00000254 • 1♂; British Columbia, Craigallachie, 22 km E Sicamous; 350 m; [50.8397, -118.9738]; 28.vi.–14.viii.1988; S. & J. Peck; EMUSENT00000453 • 5♂♂; British Columbia, Dome Creek; [53.7503, -121.1034]; 27.viii.1973; H. & M. Townes; EMUSENT00000092, EMUSENT00000178, EMUSENT00000088, EMUSENT00000268, EMUSENT00000718 • 1♂; British Columbia, Fort Nelson; [58.8040, -122.6981]; 25.viii.1973; H. & M. Townes; EMUSENT00000538 • 11♀♀; British Columbia, Mt. Robson Provincial Park; [53.0352, -119.2310]; 23.vii.1977; B. & C. Dasch; EMUSENT00000477, EMUSENT00000195, EMUSENT00000568, EMUSENT00000213, EMUSENT00000479, EMUSENT00000027, EMUSENT00000343, EMUSENT00000447, EMUSENT00000358, EMUSENT00000122, EMUSENT00000536 • 1♂; British Columbia, Stone Mountain Peak; 3800 ft; [58.5862, -124.7642]; 13.vii.1973; H. & M. Townes; EMUSENT00000628 • 1♀; same collection data as preceding; 17.vii.1973, EMUSENT00000241 • 1♀; British Columbia, Y.N.P, “End of



Figure 8. *Heterischnus huardi* (Provancher) male **A** habitus **B** head, frontal view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B**).

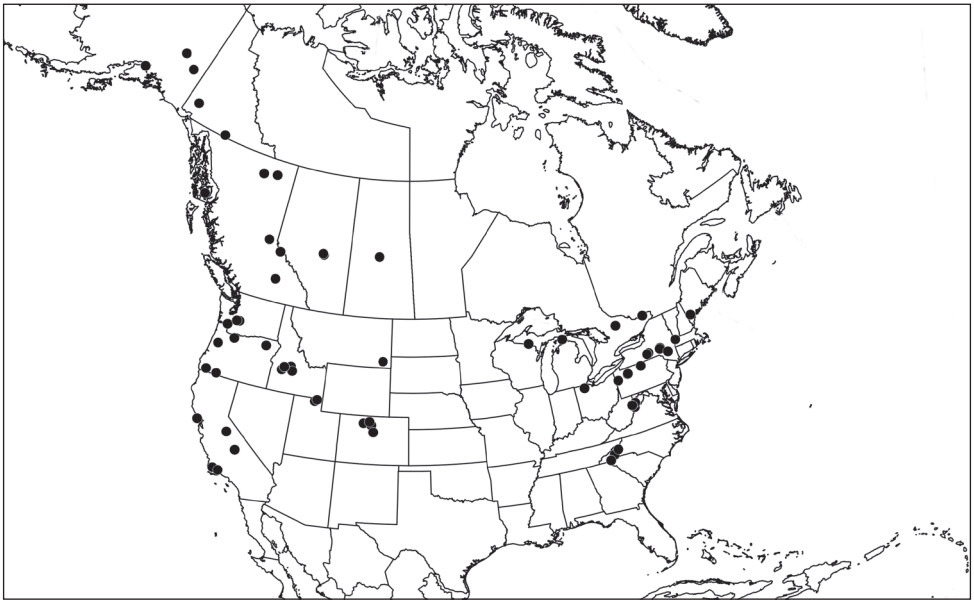


Figure 9. Distribution of *Heterischnus huardi* (Provancher).

Ire River Road”; 10.viii.1956; “ex. *Platyptilia* sp. A. fir.”; 56-18-1148-01; 406; CNCI • 2♀♀; Ontario, Algonquin Provincial Park; [45.5539, -78.5965]; 08.viii.1983; B. & C. Dasch; EMUSENT00000344, EMUSENT00000328 • 1♀; Ontario, Cumberland; [45.5163, -75.4060]; 3.v.1975; L. Ling; EMUSENT00000752 • 1♀; same collection data as preceding; 8.v.1975; EMUSENT00000541 • 1♀; same collection data as preceding; 10.v.1975; EMUSENT00000661 • 1♀; same collection data as preceding; 11.v.1975; EMUSENT00000032 • 1♀; same collection data as preceding; 6. vi.1975; EMUSENT00000033 • 1♀; same collection data as preceding; 8.vi.1975; EMUSENT00000063 • 1♂; same collection data as preceding; 9.vii.1975; EMUSENT00000631 • 2♂♂; same collection data as preceding; 13.vii.1975; EMUSE-

NT00000482, EMUSENT00000061 • 2♂♂; same collection data as preceding; 18.vii.–10.viii.1975; EMUSENT00000121, EMUSENT00000512 • 1♀; Saskatchewan, Prince Albert National Park; [53.9143, -75.4060]; 19.vii.1941; J. G. Rempel; EMUSENT00000508 • 1♀; same collecting data as preceding; 20.vii.1941; EMUSENT00000418 • 1♀; Yukon Territory, Burwash Flats Mi. 1105 Alcan Hwy.; [61.3536, -138.9976]; 4.vii.1977; B. & C. Dasch; EMUSENT00000506 • 1♀; Yukon Territory, Teslin L. Mi. 820 Alcan Hwy.; [60.1745, -132.7143]; 30.vi.1977; B. & C. Dasch; EMUSENT00000603 • 1♀; same collecting data as preceding; 1.vii.1977; EMUSENT00000167. USA • 4♀♀; Alaska, Municipality of Anchorage, Anchorage; [61.1993; 149.8533]; 6–12.vii Peter A. Rush; EMUSENT00000028, EMUSENT00000720, EMUSENT00000058, EMUSENT00000690 • 2♀♀; same collection data as preceding; 16–20.vii.1976; EMUSENT00000089, EMUSENT00000118 • 1♀; same collection data as preceding; 20–23.vii.1976; EMUSENT00000390 • 3♀♀; Alaska, Delta Junction; [64.0377; -145.7301]; 7.vii.1977; B. & C. Dasch; EMUSENT00000228, EMUSENT00000136, EMUSENT00000633 • 1♂; Alaska, Ketchikan Gateway Borough, Ketchikan; [55.3465; -131.643] 16.viii.1959; R. H. Washburn • 1♀; Alaska, Tok; [63.3361; -142.9855]; 5.vii.1977; B. & C. Dasch; EMUSENT00000717 • 1♀; California, Big Oak Flat Road, nr. Crane Crk., Yosemite National Park; [37.7517; -119.8004]; 28.vi.1959; D. W. Price; UCDC • 2♂♂; California, Marin County, Inverness; [38.0998; -122.8619]; 6.x.1946; H. K. Townes; EMUSENT00000287, EMUSENT00000389 • 1♀; California, Tulare County, Mineral King Road; [36.4500; -118.5945]; 16.v.1970; B. Knapp; EMUSENT00000449 • 1♀; California, Santa Barbara County, Montecito; [34.4368; -119.6321]; 08.iv.1997–13.iv.1997; A. Calderwood, R. Doust; EMUSENT00000078 • 1♀; California, Santa Barbara County, Nojoeui Falls Park; [34.5344; -120.1776]; 3.vii.1959; R. M. Bohart; UCDC • 1♀; Colorado; Doolittle Ranch, Mt. Evans; [39.6752; -105.6011]; 9800 ft; 20.vii.1964; B. & C. Dasch; EMUSENT00000688 • 1♀; same collection data as preceding; 12.vii.1973; EMUSENT00000753 • 2♀; Colorado, Jackson County, Gould; [40.5271; -106.0300]; 6.viii.1974; H. & M. Townes; EMUSENT00000212, EMUSENT00000062 • 1♀; Colorado, Grand County, Grand Lake; [40.2518; -105.8301]; 2.viii.1948; H. & M. Townes; EMUSENT00000510 • 1♀; same collecting data as preceding; H., M., G., D. & J. Townes; EMUSENT00000658 • 1♀; Colorado, Rabbit Ears Pass; [40.3847; -106.6117]; 9500 ft; 7.viii.1948; H., M., G. & D. Townes; EMUSENT00000422 • 1♀; Idaho, Galena Summit, nr. Stanely; [43.8702; -114.7134]; 8700 ft; 4.viii.1978; H. & M. Townes; EMUSENT00000778 • 2♀♀; Idaho; Boise County; Idaho City; [43.82813; -115.8341]; 13.vi.1978; H. & M. Townes; EMUSENT00000299, EMUSENT00000269 • 1♀; Idaho; Boise County, Lowman; [44.0807; -115.6202]; 4000 ft; 11.vi.1978; H. & M. Townes; EMUSENT00000723 • 2♀♀; same collection data as preceding; 12.vi.1978; EMUSENT00000331, EMUSENT00000211 • 3♀♀; same collection data as preceding; 6000 ft; 13.vi.1978; EMUSENT00000180, EMUSENT00000242, EMUSENT00000751 • 1♀; same collection data as preceding; 4000 ft; 14.vi.1978; EMUSENT00000090 • 1♂, 2♀♀; Idaho, Boise County, Lowman; [44.0807; -115.6202]; 6.viii.1978; H. & M. Townes; EMUSENT00000478, EMUSENT00000450, EMUSENT00000029 •

1♂; same collection data as preceding; 3.viii.1978 • 1♀; Idaho, nr. Stanley; [44.2159; -114.9352]; 5.viii.1978; H. & M. Townes; EMUSENT00000570 • 1♀; Maine, 4.5 mi. W Bangor; [44.7994; -688326]; 12.viii.1986; B. & C. Dasch; EMUSENT00000416 • 1♀; same collection data as preceding; 13.viii.1986; EMUSENT00000086 • 2♀♀; Maine, Cumberland County, Sebado Lake; [43.9303; -70.5678]; 12.v.1919; B. W. Hall; EMUSENT00000093, EMUSENT00000183 • 2♀♀; Massachusetts; Mt. Greylock; [42.6375; -73.1663]; 02.viii.1958; B. & C. Dasch; EMUSENT00000283, EMUSENT00000282 • 1♀; Michigan, Emmet County, Mackinaw City; [45.7776; -84.7283]; 04.viii.1980; B. & C. Dasch; EMUSENT00000313 • 1♂, 1♀; Michigan, Iron County, Pentoga Park; [46.0387; -88.5105]; 01.viii.1980; B. & C. Dasch; EMUSENT00000689, EMUSENT00000749 • 1♀; New York, Ithaca; [42.4443; -76.5017]; 12.vi.1952; C. Dasch; EMUSENT00000107 • 1♀; same collection data as preceding; 15.vii.1950; EMUSENT00000315 • 1♀; same collection data as preceding; 22.vii.1950; EMUSENT00000256 • 2♂♂; same collection data as preceding; 7.vii.1951; EMUSENT00000597, EMUSENT00000569 • 1♀; New York, McLean Bogs; [42.4911; -76.2971]; 22.v.1953; B. & C. Dasch; EMUSENT00000476 • 2♂♂; New York, Otsego County, Milford Center; [42.5241; -74.9887]; 13.vii.1935; H. K. Townes; EMUSENT00000662, EMUSENT00000452 • 1♀; New York, Oneonta County, Oneonta; [42.4584; -75.0602]; 1900 ft; 18.viii.1935; H. K. Townes; EMUSENT00000183, EMUSENT00000721 • 1♀; New York, Ulster County, Slide Mountain, [41.9996; -74.3854]; 2800–4000 ft; 25.viii.1936; H. & C. Townes; EMUSENT00000481 • 2♂♂, 2♀♀; North Carolina, Macon County, Highlands; [35.0536; -83.1969]; 21.vi.1977; H & M Townes; EMUSENT00000359, EMUSENT00000573, EMUSENT00000660, EMUSENT00000148 • 1♂, 2♀; same collection data as preceding; 22.vi.1977; EMUSENT00000208, EMUSENT00000633, EMUSENT00000240 • 3♀♀; same collection data as preceding; 23.vi.1977; EMUSENT00000119, EMUSENT00000633 • 1♀; same collection data as preceding; 24.vi.1977; EMUSENT00000210 • 1♂; same collection data as preceding; 26.vi.1977; EMUSENT00000598 • 1♀; North Carolina, Mt. Mitchell; [35.7668; -82.2653]; 5500 ft; 25.vii.1968; C. Dasch; EMUSENT00000542 • 1♀; North Carolina, Buncombe County, Pisgah Mountain; [35.4197; -82.7484]; 4800–5300 ft; 21.vi.1940; H & M Townes; EMUSENT00000513 • 1♂; Ohio, McAllister Biological Station; [41.4478; -83.7789]; 18–21.vi.1986; B. & C. Dasch; EMUSENT00000198 • 1♀; Oregon, Benton County, Corvallis; [44.5630; -123.2644]; 02.vi.1978; H. & M. Townes; EMUSENT00000043 • 1♀; same collection data as preceding; 11.v.1987; EMUSENT00000045 • 1♀; same collection data as preceding; 19–20.vi.1965; C. Dasch; EMUSENT00000329 • 1♀; Oregon; Jackson County, Hyatt Reservoir; [42.1683; -122.4634]; 29.vi.1978; H. & M. Townes; EMUSENT00000252 • 1♂; Oregon, Pierce County, Hyatt Reservoir; [42.1683; -122.4634]; 29.vi.1978; H. & M. Townes; EMUSENT00000356 • 1♂; Oregon, Union County, Mt. Emily; [45.4379; -118.0913]; 06–21.viii.1987; T. R. Torgersen; EMUSENT00000166 • 4♀♀; Oregon, Mt. Hood; [45.3269; -121.7136]; 3500 ft; 19.vii.1978; H. & M. Townes; EMUSENT00000177, EMUSENT00000342, EMUSENT00000296, EMUSENT00000327 • 1♀; same collection data as preceding; 20.vii.1978; EMUSENT00000165 • 1♀;

same collection data as preceding; 24.vii.1978; EMUSENT00000223 • 1♀; same collection data as preceding; 26.vii.1978; EMUSENT00000227 • 3♀♀; same collection data as preceding; 30.vii.1978; EMUSENT00000386, EMUSENT000000386, EMUSENT00000133, EMUSENT000000226 • 1♀; Oregon, Josephine County, Selma; [42.2787; -123.6152] 20.v.1978; H. & M. Townes; EMUSENT00000480 • 2♀♀; same collection data as preceding; 27.v.1978; EMUSENT00000075, EMUSENT00000656 • 1♀; Pennsylvania, Forest County, 1 mi. N Marienville; [41.4794; -79.1101]; ; 3.vii.1980; C. Dasch; EMUSENT00000236 • 1♀; Pennsylvania, Forest County, 4 mi. N Marienville; [41.5104; -79.0688]; 03.vii.1980; C. Dasch; EMUSENT00000419 • 2♀♀; Pennsylvania, Tioga County, Gaines; [41.7520; -77.5572]; 23–26.vii.1994; B. & C. Dasch; EMUSENT00000059, EMUSENT00000179 • 1♀; same collection data as preceding; 26.vii.1994; EMUSENT00000239 • 1♂; same collection data as preceding; 30.vi.1980; EMUSENT00000338 • 1♀; Pennsylvania, Mercer County, Mercer; [41.2265; -80.2393]; 12–15.vi.1995; B. & C. Dasch; EMUSENT00000149 • 1♂; Utah, Cache County, Logan, USU campus; 41.74194; -111.81183; 1460 m; 8.vii.2019; B. Claridge; EMUSENT00000021 • 2♀♀; Utah, Cache County, Uinta-Wasatch-Cache National Forest, Tony Grove; 41.8876; -111.6009; 2290 m; 03–17.viii.2019; B. Claridge; EMUSENT00000202, EMUSENT00000232 • 1♀; Utah, Cache County, UWC National Forest, Tony Grove; 41.8884; -111.6299; 17–31.viii.2019; B. Claridge; EMUSENT000003712 • 1♂, 1♀; Washington, Pierce County, Ashford; [46.7579; -122.0304]; 6.vii.1940; H. & M. Townes; EMUSENT00000483, EMUSENT00000630 • 1♀; same collection data as preceding; 11.vii.1940; EMUSENT00000360 • 1♀; same collection data as preceding; 20.vii.1940; EMUSENT00000540 • 1♀; Washington, Barnes State Park; [46.2724; -122.909]; 12.viii.1940; H. & M. Townes; EMUSENT00000060 • ♀; Washington, Mt. Rainier; 2900 ft; 12.vii.1940; H. & M. Townes; EMUSENT00000750 • 1♀; same collecting data as preceding; 7.vii.1940; EMUSENT00000693 • 1♀; same collecting data as preceding; 4200 ft; 15.vii.1940; EMUSENT00000301 • 1♀; same collecting data as preceding; 4700 ft; 21.vii.1940; EMUSENT00000330 • 1♀; same data as preceding; 5000 ft; 14.vii.1940; EMUSENT00000543 • 1♀; same data as preceding; 9.vii.1940; EMUSENT00000120 • 1♀; same data as preceding; 5300 ft; 16.viii.1940; EMUSENT00000332 • 1♀; same data as preceding; 17.viii.1940; EMUSENT00000571 • 1♀; same data as preceding; 5700 ft; 8.vii.1940; EMUSENT00000362 • 1♀; Washington, Mt. Rainier National Park, Paradise; [46.7853; -121.7349]; ; 26–27.vi.1987; B. V. Brown; EMUSENT00000600 • 2♂♂, 2♀♀; West Virginia, Bickle Knob; [38.9343; -79.7314]; 4020 ft; 15.vii.1979; B. & C. Dasch; EMUSENT00000691, EMUSENT00000103, EMUSENT00000314, EMUSENT00000687 • 5♂♂, 1♀; same data as preceding; 17.vii.1979; EMUSENT00000316, EMUSENT00000599, EMUSENT00000284, EMUSENT00000057, EMUSENT00000042, EMUSENT00000147 • 1♀; West Virginia; Randolph County, Bowden; [38.9088; -79.7098]; 14–17.vii.1992; B. & C. Dasch; EMUSENT00000146 • 1♀; same collection data as preceding; 21–22.vii.1982; EMUSENT00000104 • 1♀; same collection data as preceding; 23–24.vii.1982; EMUSE-

NT00000044 • 1♂, 1♀; same collection data as preceding; 25.vii.1982; EMUSENT000000387, EMUSENT000000776 • 1♀; same collection data as preceding; 7-9.v.1993; EMUSENT000000238 • 1♀; same collection data as preceding; 16.vii.1979; C. Dasch; EMUSENT00000117 • 2♂♂, 1♀; West Virginia, Dolly Sods Area; [39.0447; -79.3438]; 26.vii.1982; B. & C. Dasch; EMUSENT00000255, EMUSENT00000392, EMUSENT00000627 • 1♂; West Virginia, Pendleton County, Spruce Knob; [38.7001; -79.5328]; 4862 ft; 18.vii.1979; B. & C. Dasch; EMUSENT00000209 • 4♀♀; same collection data as preceding; 19.vii.1979; B. & C. Dasch; EMUSENT00000537, EMUSENT00000747, EMUSENT00000659, EMUSENT00000074

Distribution and biology. *Heterischnus huardi* is the most widely distributed North American *Heterischnus* species. It ranges from the eastern US and throughout Canada to western North America, where it extends north to Alaska, centrally south through the Rocky Mountains, and south along the Pacific Coast through the Sierra Nevada and outer California Coast Ranges. In the California Coast Ranges, it is associated with mixed hardwood forests in the north near Inverness and coastal woodland near Nojoqui Falls Park and Montecito in the south (Küchler 1978).

Bragg (1970) reared five *H. huardi* specimens from the plume moth, *Amblyptilia pica* (Walsingham) (Pterophoridae) on *Pelargonium* (Geraniaceae). Females oviposited into fourth instar prepupae (Bragg 1970). Additionally, two specimens from the CNCI were reared from pterophorids. The first was reared from a *Platyptilia* pupa collected from *Abies* (Pinaceae) in British Columbia. The second record was from an unidentified pterophorid pupa collected from *Salix* (Salicaceae) in Seebe, Alberta.

Comments. The color pattern of *H. huardi* varies throughout its range. The usual color pattern consists of a dark brown to black head, mesosoma, and metasoma, excluding white markings. Along the Pacific coast in Oregon and California, specimens exhibit varying degrees of brownish-red color on the mesonotum, scutellum, mesopleuron, and ventral division of the metapleuron.

Without stating any supporting evidence, Valemborg (2014) listed *Ischnopsidea alberta* Cushman and *Phaeogenes recticaudus* Provancher as subspecies of *H. huardi*. The elevation of these names from synonymy to subspecific status is unwarranted. There is no indication from the material examined in this study that any subspecies of *H. huardi* can be delimited.

The lectotype of *H. huardi* was not examined, although a specimen that was compared with the lectotype by Townes was examined.

***Heterischnus mexicanus* sp. nov.**

<http://zoobank.org/C665E98C-D2E7-4EDB-A6AF-181C26B1DB50>

Figs 10–12

Diagnosis. *Heterischnus mexicanus* sp. nov. can be distinguished from all congeners by a combination of the following: 1) flagellomeres 7/8–11/12 dorsally white in female;

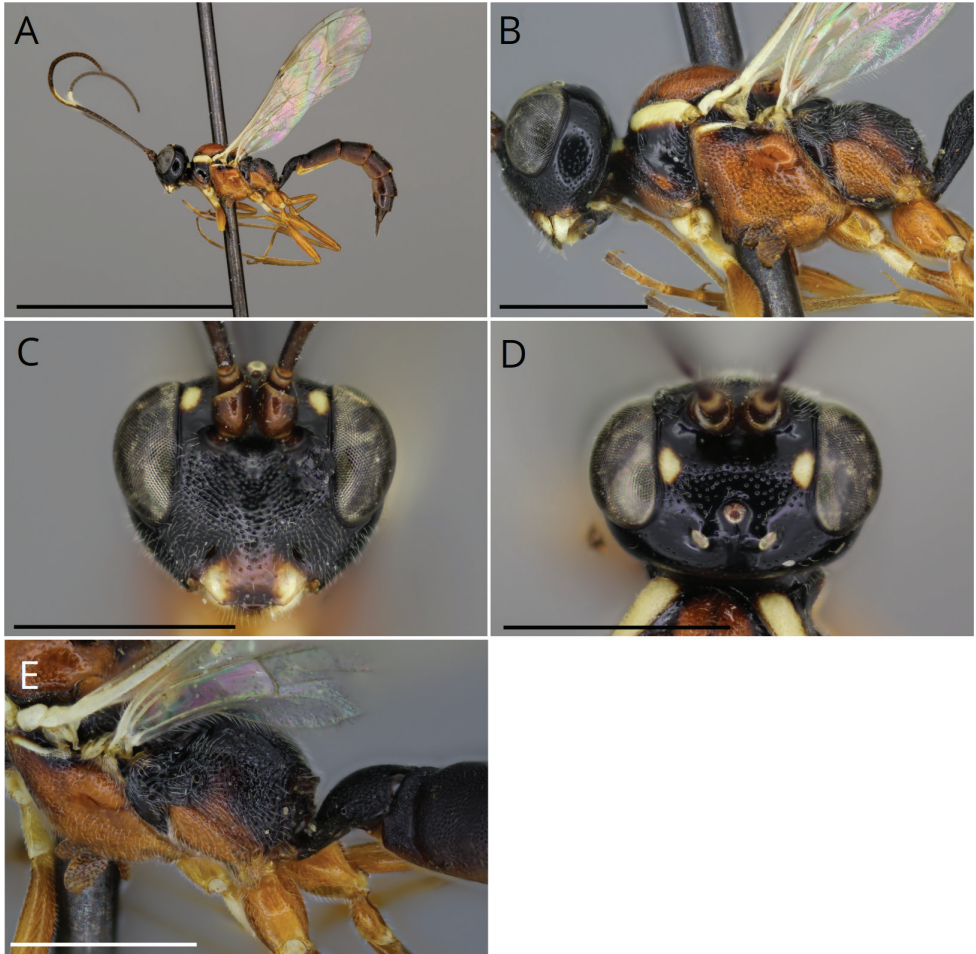


Figure 10. *Heterischmus mexicanus* sp. nov., holotype female **A** habitus **B** mesosoma, lateral view **C** head, frontal view **D** head, dorsal view **E** propodeum, dorsolateral view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B–E**).

2) propodeum densely and coarsely punctate; and 3) longitudinal carinae of propodeum reduced or obsolete with at least lateral longitudinal carina posteriorly obsolete.

Description. Female (Fig. 10). Body length: 7.7–8.4mm; fore wing length: 4.4–4.5 mm.

Color. Head black, except following areas white: mandible except for brown apex, venterolateral corners of clypeus, and small ovoid adjacent to eye in supra-antennal area; clypeus varying from black to brownish-red; supraclypeal area brown in one specimen; flagellum brown, flagellomeres 7/8–11/12 with ventral surfaces white. Mesosoma overall brownish-red; anterior margin of pronotal collar, dorsal margin of lateral area of pronotum, subalar prominence, and tegula, white; following areas can be dark brown to fuscous: dorsal 0.5 of propleuron, more or less all of remaining non-white areas of pronotum, dorsal region of mesopleuron immediately below tegula, posterior margin of mesoscutum, metanotum, dorsal division of metapleuron, and propodeum.

Fore and middle legs with coxae, trochanters, and trochantelli white except for: basal 0.5–0.7 of coxae brownish-red ventrally; femora and tibia brownish-red; tarsomeres light brown to brown. Hind leg brownish-red except for: narrow white apical margin of trochanter; tibia dorsally with irregular light brown maculations; and brown tarsomeres. Metasoma varying from completely brown to dark brown, to having median section of T1, and lateral margins of remaining tergites, brownish-red and remaining areas dark brown. Wing: membrane clear; basal 0.2 of wing with veins white, remaining vein sections brown.

Head. Clypeus smooth, dorsally with fine punctures separated by 1.0–1.5× their diameter becoming less dense ventrally; ventral margin medially straight and with blunted or obsolete sublateral apices. Supraclypeal area rugulose-punctate with punctures separated by 0.5–1.2× their diameter becoming sparser laterally. Gena smooth, finely punctate with punctures separated by 0.5–1.5× their diameter. Malar space 1.5–1.8× basal mandibular width. Supra-antennal area smooth, coarsely punctate with punctures separated by 0.2–0.5× their diameter. Vertex smooth, with coarse punctures separated by 0.5–2.0× their diameter. Antenna with 31–33 flagellomeres.

Mesosoma. Mesonotum smooth with coarse punctures separated by 0.5–1.0× their diameter. Scutellum smooth, coarsely punctate with punctures separated by 0.5–1.0× their diameter. Mesopleuron coarsely punctate with punctures separated by 0.2–0.5× their diameter. Speculum smooth, punctation varying between impunctate to coarsely punctate dorsally. Ventral division of metapleuron coarsely punctate with punctures separated by 0.1–0.3× their diameter. Dorsal division of metapleuron varying from smooth to sparsely and finely punctate. Propodeum coarsely punctate with punctures separated by 0.1–0.3× their diameter. Posterior transverse carina and pleural carina present; lateral longitudinal carina absent; remainder of carinae reduced and varying from obsolete to subobsolete medially. Tarsal claws simple.

Metasoma. Postpetiole varying from punctate to granulate. T2 length 1.3–1.4× posterior width. T2–7 granulate with dense shallow, punctures becoming sparser and indistinct posteriorly. Gastrocoelus granulate. Thyridium distant from T2 anterior margin by 0.8–1.2× thyridial length.

Male (Fig. 11). Body length 7.0–7.3 mm; fore wing length: 3.9–4.4 mm. As in female, except for: UCDC specimen with small yellowish-white triangular mark between clypeus and ventral corner of eye; clypeus yellowish-white except dark brown ventral margin; apical 0.3 of hind tibia brown. In the Big Bend, Texas specimen hind tibia entirely brown.

Material examined. *Holotype*: MEXICO • ♀; Coahuila, 6 mi. west of Saltillo; 21.vii.1972; B. & C. Dasch; EMUSENT00000197.

Paratypes: MEXICO • 4♂; same collection data as holotype; 20–22.vii.1972; B. & C. Dasch; EMUSENT00000162, EMUSENT00000346, EMUSENT00000326, EMUSENT00000509 • 1♀; Puebla, 30 mi. SW of Tehuacán; 6800 ft; 12.x.1968; R. H., E. M. Painter; EMUSENT00000692. USA • 1♀; Arizona; Portal, 28.viii.1974; H. & M. Townes; EMUS0000273 • 1♀; same data as preceding; 6.ix.1987; EMUSENT00000272 • 1♂; Texas Big Bend; 5000 ft.; 10.viii.1975; S. & J. Peck; EMUSENT00000361 • 1♂, 1♀; Texas, Government Springs, Grapevine Hills, Big Bend Na-

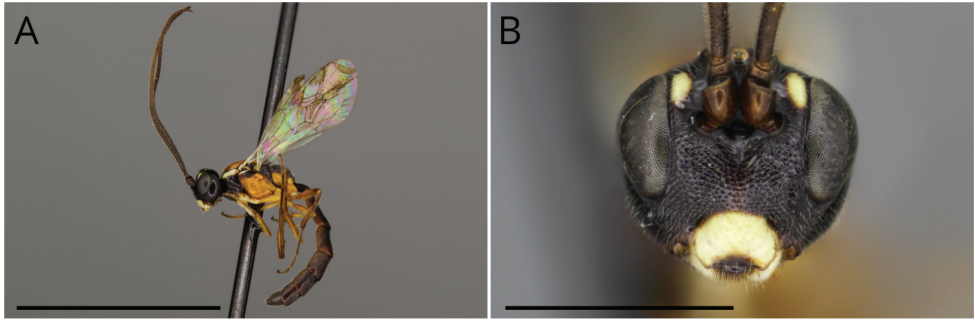


Figure 11. *Heterischnus mexicanus* sp. nov., paratype male (Mexico: Saltillo) **A** habitus **B** head, frontal view. Scale bars: 5.0 mm (**A**); 1.0 mm (**B**).



Figure 12. Distribution of *Heterischnus mexicanus* sp. nov.

tional Park; 5000 ft.; 1.ix.1971; E. E. Grissell & R. F. Denno; UCDC • 1♀; “Ex-chrysanthemum cut flws. fr. Mexico at El Paso”; 1.xi.1963; C. Overmiller; USNM.

Distribution and biology. *Heterischnus mexicanus* sp. nov. is the southernmost ranging *Heterischnus* species in the New World. Its range spans from the southern border of the USA in Arizona and Texas south to central Mexico in Tehuacán (Fig. 11). Records indicate that adults are active from late July to October and are likely active later in the year in the southern portion of its range as the latter date is from Tehuacán, Mexico. No host records are known for *H. mexicanus*.

Comments. As in *H. coloradensis* and *H. huardi*, a few specimens of *H. mexicanus* sp. nov. show an overall lighter coloration.

Etymology. This species epithet refers to its distribution, the majority of which is in Mexico.

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Supplementary material I

Nearctic *Heterischmus* material examined

Author: Brandon Claridge

Data type: occurrences

Explanation note: The .csv file contains the material examined section in table format and follows the Darwin Core guidelines. This file is intended to help readers better use the material examined section and for uploading the occurrence data to GBIF.

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