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A review and clarification of the alticine genera
Hemiphrynus Horn 1889 and *Phrynocephala* Baly 1861
(Coleoptera: Chrysomelidae: Galerucinae: Alticini)

Arthur J. Gilbert
California Department of Food and Agriculture
Plant Health and Pest Prevention Services, Pest Detection/Emergency Projects
2895 N. Larkin, Suite B
Fresno, California 93727

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A. J. Gilbert

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A review and clarification of the alticine genera *Hemiphrynus* Horn 1889 and *Phrynocephala* Baly 1861 (Coleoptera: Chrysomelidae: Galerucinae: Alticini)

Arthur J. Gilbert

California Department of Food and Agriculture
Plant Health and Pest Prevention Services, Pest Detection/Emergency Projects
2895 N. Larkin, Suite B
Fresno, California 93727
agilbert@cdfa.ca.gov

Abstract. The alticine genera *Hemiphrynus* Horn 1889 and *Phrynocephala* Baly 1861 (Coleoptera: Chrysomelidae) are reviewed and their status clarified. Both genera and all previously known species are redescribed. Four **new species** of *Hemiphrynus* are described: *H. barri*, *H. corrugatus*, *H. smithi*, and *H. sydneyae*. Six **new species** of *Phrynocephala* are described: *P. australis*, *P. kendrae*, *P. marciae*, *P. nataliae*, *P. pseudocapitata*, and *P. pueblae*. The following **new combination** is proposed: *Hemiphrynus elongatus* (Jacoby 1884) **transferred** from *Phrynocephala*. *Hemiphrynus sulcatipennis* Jacoby 1891 and *H. tenuicornis* Jacoby 1891 are **reinstated** in *Hemiphrynus*, *incertae sedis*. *Hemiphrynus elongatus* is recorded from New Mexico, a **new record** for the United States. **Lectotypes** are here designated for the following species: *H. elongatus*, *H. intermedius* (Jacoby 1884), *H. sulcatipennis*, *H. tenuicornis*, *P. capitata* Jacoby 1884, *P. deyrollei* Baly 1876, and *P. pulchella* Baly 1861. A key to differentiate the two genera and keys to the species in both genera are provided. Host records are given for a few species of both *Hemiphrynus* and *Phrynocephala*. Distribution maps are presented for all species.

Introduction

Some confusion concerning the validity of *Hemiphrynus* Horn 1889 and the systematic placement of the species in the genus has existed since Horn first described the genus. On the other hand, the placement of species within *Phrynocephala* Baly 1861 has been rather stable, but not deservedly so. Why the two genera should be confused is unknown. The general similarity of the species in the genera could have contributed. All of the species are of similar body shape, they are all dark bluish or greenish black with orange heads and prothoraces (Fig. 1-4, 39-42). The two genera have not been intensively studied since they were described.

Both *Hemiphrynus* and *Phrynocephala* belong to “group 5” in Scherer’s (1983) key to the Neotropical alticine genera and readily key to this group, although *Hemiphrynus* was treated as a junior synonym of *Phrynocephala*. When attempting to further key out a specimen, at least two couplets are ambiguous. In the “group 5” key, couplet 1 (54) states, “Pronotal transverse prebasal impression extends to lateral margins or runs into posterior angles, not delimited laterally by any longitudinal folds.” The other half of the couplet is the reverse of this. However, the prebasal impression varies from distinct to obsolete, and in some instances the prebasal impression ends in vague to distinct lateral depressions, and in one instance only the lateral depressions are distinguishable. Couplet 40 (49) states, “Antennal calli transverse, touching on their shortest sides; also rounded to angular forms lying side by side.” The other half, couplet 49 (40), states, “Antennal calli upright, acute- or blunt-angled triangles; longitudinally contiguous.” Both characters are ambiguous when trying to key *Phrynocephala* and *Hemiphrynus*. The antennal calli (tubercles) are raised and vary from round to square to vertically longitudinal. They do lay “side by side” but they are not “longitudinally contiguous.” In all cases, they are separated by the coronal suture. But to get to the correct generic placement, couplet 49 (40) is the correct choice.

Beyond the limited similarities and the fact that both genera will key to a single genus in the only key available, there are numerous significant morphological features that distinguish the genera (see “Remarks” for both genera). Except for the aforementioned ambiguities in Scherer’s key, all other characters in the key will suffice to separate both *Hemiphrynus* and *Phrynocephala* from all other genera in

“group 5,” as well as any of the other Neotropical alticine genera. An additional couplet to separate the two genera is provided below.

Blackwelder (1946) listed three species in the genus *Hemiphrynus* and six species in *Phrynocephala*. More recent checklists have placed *Hemiphrynus* in synonymy within *Phrynocephala* (see “Remarks” for *Hemiphrynus*). Currently, *Hemiphrynus* is composed of one species and *Phrynocephala* nine species (See “Remarks” for both *Hemiphrynus* and *Phrynocephala*.). All but one species of *Phrynocephala* occur in Central America, primarily Mexico. The single exception is *P. heydeni* (Harold 1876) from Paraguay. Neither the type for this species, nor any specimens, could be located for this study. In addition to the museums cited under “Specimen Depositories,” the type could not be located at either the Zoologische Staatssammlung, München (Michael Balke, personal communication) or the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt (Andrea Hastenpflug-Vesmanis, personal communication).

The distribution for most species of *Hemiphrynus* is limited to Mexico, except for one species that is found primarily in the southwestern United States and another species that occurs in the border states of both Mexico and the United States (Fig. 81-82). The single species currently included in *Hemiphrynus*, *H. intermedius* (Jacoby 1884), occurs primarily in the southwestern United States and extends into the Mexican states of Chihuahua, Durango and Sonora. Some of the species included in *Phrynocephala* are reinstated in *Hemiphrynus* below, although two as *incertae sedis*. Additionally, one species is transferred from *Phrynocephala* to *Hemiphrynus*, and four new species of *Hemiphrynus* and six new species of *Phrynocephala* are described below. *Hemiphrynus* now consists of eight species and *Phrynocephala*, eleven. Additional information on the taxonomic history of each genus is discussed separately under the remarks for each genus.

Methods

From the collections listed below, 729 specimens of *Phrynocephala* and 440 specimens of *Hemiphrynus* were borrowed and studied. These include the type specimens for all species, except *P. heydeni*. Genal distance was measured from the eye to the nearest point on the front edge of the gena, before the mandibles. The genal ratio was determined using the genal distance divided by the maximum length of the eye. The interantennal distance was measured from the inside of the ridges surrounding the antennal fossae, and the interocular distance was measured viewing the specimen from the front of the face. The interocular ratio was determined using the interocular distance divided by the combined width of the eyes. The length and width of the body were measured from the dorsal aspect, with the width taken at the edge of the elytra at the humeri. The width of the fourth antennomere was measured at the widest point. The ratio of the fourth antennomere was determined by dividing the length of the fourth antennomere by the width. Morphological terminology for the head and aedeagus follows Konstantinov (1994) and LeSage (1995). The aedeagi described and pictured were not dissected from holotype or lectotype specimens. In all cases, a male paratype specimen from the exact locality as the holotype was used for dissection. In the case of lectotypes, male specimens that agree extremely well with the lectotype were used. Although there is the possibility of dissecting a specimen not conspecific with the holotype, this possibility is extremely unlikely. In the case of lectotypes, the odds of dissecting a specimen not of the same species are greater. However, the information obtained without damage to the lectotype justifies the use of such specimens.

Items enclosed in brackets under “Specimens Examined” and “Type Specimens” are comments by the author for clarity. Estimated altitudes in brackets were obtained using Google Earth™. Obscure collection localities in the “Biologia Centrali-Americana” were identified using Selander and Vaurie (1962).

Specimen Depositories. Arthur J. Gilbert collection [AJGC]; American Museum of Natural History [AMNH]; Natural History Museum, London [BMNH]; Monte L. Bean Life Science Museum, Brigham Young University [BYUC]; California Academy of Sciences [CASC]; California State Collection of Arthropods [CSCA]; Edward G. Riley collection [EGRC]; Florida State Collection of Arthropods [FSCA]; The University of Kansas, Kansas University Biodiversity Institute [KSBS]; Museo Entomológico León, Nicaragua [MELN]; Museum of Comparative Zoology, Harvard University [MCZC]; Museum für

Naturkunde, Berlin [ZMHB]; Naturhistorisches Museum, Basel, Switzerland [NHMB]; Robert Turnbow collection [RHTC]; Texas A&M University [TAMU]; Museum of Texas Tech University [TTUZ]; Entomology Research Museum, University of California, Riverside [UCRC]; United States National Museum [USNM]; WFBARR Entomological Museum, University of Idaho [WFBM].

Key to the genera

1. Head capsule rounded; eyes large; genal length less than maximum length of eye (Fig. 5); prosternal intercoxal process level with plane of prosternum and indistinctly separating procoxae; fourth antennomere longer than third antennomere (Fig. 11); antennae inserted at bottom of eye (Fig. 5-6, 11).....***Hemiphrynus* Horn**
- Head capsule elongate; eyes small; genal length greater than maximum length of eye (Fig. 7-10); prosternal intercoxal process elevated ventrally over plane of prosternum, between procoxae and distinctly separating procoxae; third antennomere longer than fourth antennomere (Fig. 12); antennae inserted below eye (Fig. 7, 9-10, 43-54).....***Phrynocephala* Baly**

***Hemiphrynus* Horn 1889**

(Fig. 1-6, 11, 13-38, 81-82)

Hemiphrynus Horn 1889: 212. Type Species. *Phrynocephala intermedia* Jacoby 1884, by monotypy.

Redescription. Body elongate; head, pronotum, legs yellow-orange; elytra dark bluish, greenish, or purplish. **Head** rounded; eyes large, maximum length of eye greater than genal length; clypeus truncate; frontogenal suture not evident; maxillary palpi not stout, last palpomere smallest, narrow, attenuate; antennae inserted at the bottom of eye, filiform, extending 2/3 to 3/4 length of body; antennomere 3 shorter than 4, slightly longer than antennomere 2; antennomere 5 as long as or longer than antennomere 4; antennomere 11 subequal in length to 4; ventral side of face from the eye to the front of the clypeus straight, without a “jowl-like” appearance; antennal fossae separated by distance equal to or slightly wider than antennal fossa. **Pronotum** transverse, laterally margined, without a distinct medial, basal depression across central half; basal margin straight to vaguely sinuate. **Elytra** reticulate and impunctate or reticulate and irregularly, shallowly punctate, with or without vague carinae. **Prosternal intercoxal process** level with plane of prosternum, projecting backwards, indistinctly separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavity** open. **Legs** with metafemora enlarged, larger than pro- or mesofemora; tibiae slender, scarcely wider toward apex, not sulcate, with a single carina; protarsi with tarsomere 1 enlarged, as wide as or wider than tarsomere 3; tarsal claws appendiculate. Sexes dimorphic in body size, size and shape of pro- and mesotarsi, shape of last abdominal ventrite.

Remarks. The genus *Hemiphrynus* was described by Horn in 1889. He transferred into this new genus a single species, *Phrynocephala intermedius*. Jacoby (1891) added two new species to the genus, *H. sulcatipennis* Jacoby 1891 and *H. tenuicornis* Jacoby 1891. Leng (1920) listed *H. intermedius* from southern Arizona. Subsequently, Scherer (1962, 1983) placed *Hemiphrynus* in synonymy with *Phrynocephala*. In checklists by Wilcox (1975), Seeno and Wilcox (1982), and Furth and Savini (1996), this synonymy was maintained. Riley et al. (2001) reinstated *Hemiphrynus* as a valid genus for *H. intermedius*, citing significant and obvious morphological differences between *Hemiphrynus* and *Phrynocephala*. These differences included a short lower frons and genae (Fig. 5) and a narrow, depressed prosternal intercoxal process in *Hemiphrynus*, whereas *Phrynocephala* possesses long and frequently carinate genae (Fig. 9) and the prosternal intercoxal process is a broad flat plate. Recent publications, Riley et al. (2002), Riley et al. (2003) and Furth (2006), have maintained the validity of *Hemiphrynus*. *Phrynocephala elongatus* Jacoby 1884 is here transferred from *Phrynocephala* to *Hemiphrynus* (as *H. elongatus*). Two additional species, *H. sulcatipennis* and *H. tenuicornis* are reinstated below to *Hemiphrynus*, although placed as *incertae sedis*. Four species are described below as new. These new species possess all of the characteristics of *Hemiphrynus*. The genus now consists of eight species.

Horn (1889) also cited an obvious character difference that would justify his new genus. He noted that the metatibiae of *Phrynocephala* were “broadly sulcate and bicarinate.” His new genus did not possess this character. While it is true that the metatibia of *Hemiphrynus* is not sulcate or bicarinate, some species of *Phrynocephala* appear similar with respect to having a single carina. Species such as *P. deyrollei* Baly 1876 and *P. natalieae* (new species below) have a strong carina on one side of the tibia along the outer edge, along with a row of setae (almost spine-like on some species) on each side. Towards the apical end of the metatibia, the carina gradually curves inward to the central portion of the metatibia, leaving rows of setae along both sides of the tibia to continue forward to the apex. As a result, the metatibia of these species, although sulcate, appears to have only a single carina similar to *Hemiphrynus*. In these instances, appearance of a single carina is more of an illusion. Other species of *Phrynocephala*, such as *P. pulchella* Baly 1861 and *P. kendrae* (new species below), are clearly sulcate and bicarinate. However, the strength of the carina can vary between individuals of a species. All species of *Hemiphrynus* are clearly not sulcate or bicarinate. Morphological differences are also discussed under the remarks for *Phrynocephala*.

Biological differences, with relation to adult host associations, also support the separation of the two genera. Clark et al. (2004) list *Quercus* sp. (Fagaceae) as a host for *H. intermedius* in Arizona. Label data for some specimens examined also list *Quercus gambelii* Nutt., *Q. undulata* Torr., *Quercus* sp. and silver oak [silverleaf oak (*Quercus hypoleucoides* A. Camus)?]. Five of the eleven species of *Phrynocephala* are associated with plant genera in the Fabaceae.

At the species level, specimens of *Hemiphrynus* are more readily identifiable than are individual specimens of *Phrynocephala*. Each species possesses unique external morphological characters eliminating the need to dissect specimens for proper determination. However, if necessary, the aedeagi for each species are also very distinctly different.

Key to the described species of *Hemiphrynus*

1. Elytra shining, not reticulate, distinctly punctate (Fig. 3); length to width ratio of fourth antennomere in either the male or the female greater than 5.0x.....2
- Elytra reticulate, at best vaguely punctate (Fig. 1-2, 4); length to width ratio of fourth antennomere in either the male or the female less than 5.0x.....3
- 2(1). Each elytron with forked costa behind humerus (Fig. 3), with distinct sulcus behind humerus between costa; mesosternum black; first tarsomere of male protarsi enlarged, but not wider than third tarsomere; aedeagus as in Fig. 29, 36.....*H. sulcatipennis* Jacoby
- Each elytron with five vague to distinct costae; mesosternum yellow-orange; first tarsomere of male protarsi enlarged, wider than third tarsomere.....*H. tenuicornis* Jacoby
- 3(1). Pronotum flat, without obvious depressions, ridges or callosities, widest basally, lateral margins tapering to anterior margin (Fig. 19); sternum entirely orange; aedeagus as in Fig. 25, 32.....*H. barri* Gilbert sp. nov.
- Pronotum slightly convex, with obvious depressions, ridges or callosities, widest at middle; sternum not entirely orange; mesosternum orange to black.....4
- 4(3). First tarsomere of male prothoracic leg not wider than third tarsomere; aedeagus as in Fig. 28, 35.....*H. intermedius* (Jacoby)
- First tarsomere of male prothoracic leg enlarged, as wide as or wider than third tarsomere.....5
- 5(4). Size larger, 4.6 to 6.5 mm long; both sexes with stout antennomeres (fourth antennomere approximately 2.4x longer than wide); aedeagus as in Fig. 27, 34.....*H. elongatus* (Jacoby)
- Size smaller, 3.5 to 5.6 mm long; antennae slender in both sexes, more so in the female (fourth antennomere 3.7x - 4.3x longer than wide) than male (2.8x - 3.6x longer than wide).....6

- 6(5). Size generally smaller, 3.5 to 4.7 mm long; antennomeres 2-3 subequal in length; elytra impunctate; aedeagus as in Fig. 30, 37.....*H. smithi* Gilbert sp. nov.
 — Size generally larger, 4.2 to 5.6 mm long; antennomere 3 distinctly longer than 2; elytra indistinctly punctate.....7
- 7(6). Vertex with “v-shaped” ridge; postclypeus abruptly elevated into anterolateral ridge; pronotal posterolateral angles acute, distinct; aedeagus as in Fig. 31, 38.....*H. sydneyae* Gilbert sp. nov.
 — Vertex without “v-shaped” ridge; postclypeus not elevated into anterolateral ridge; pronotal posterolateral angles indistinct to absent; aedeagus as in Fig. 26, 33.....*H. corrugatus* Gilbert sp. nov.

***Hemiphrynus barri* Gilbert sp. nov.**

(Fig. 13, 19, 25, 32, 82)

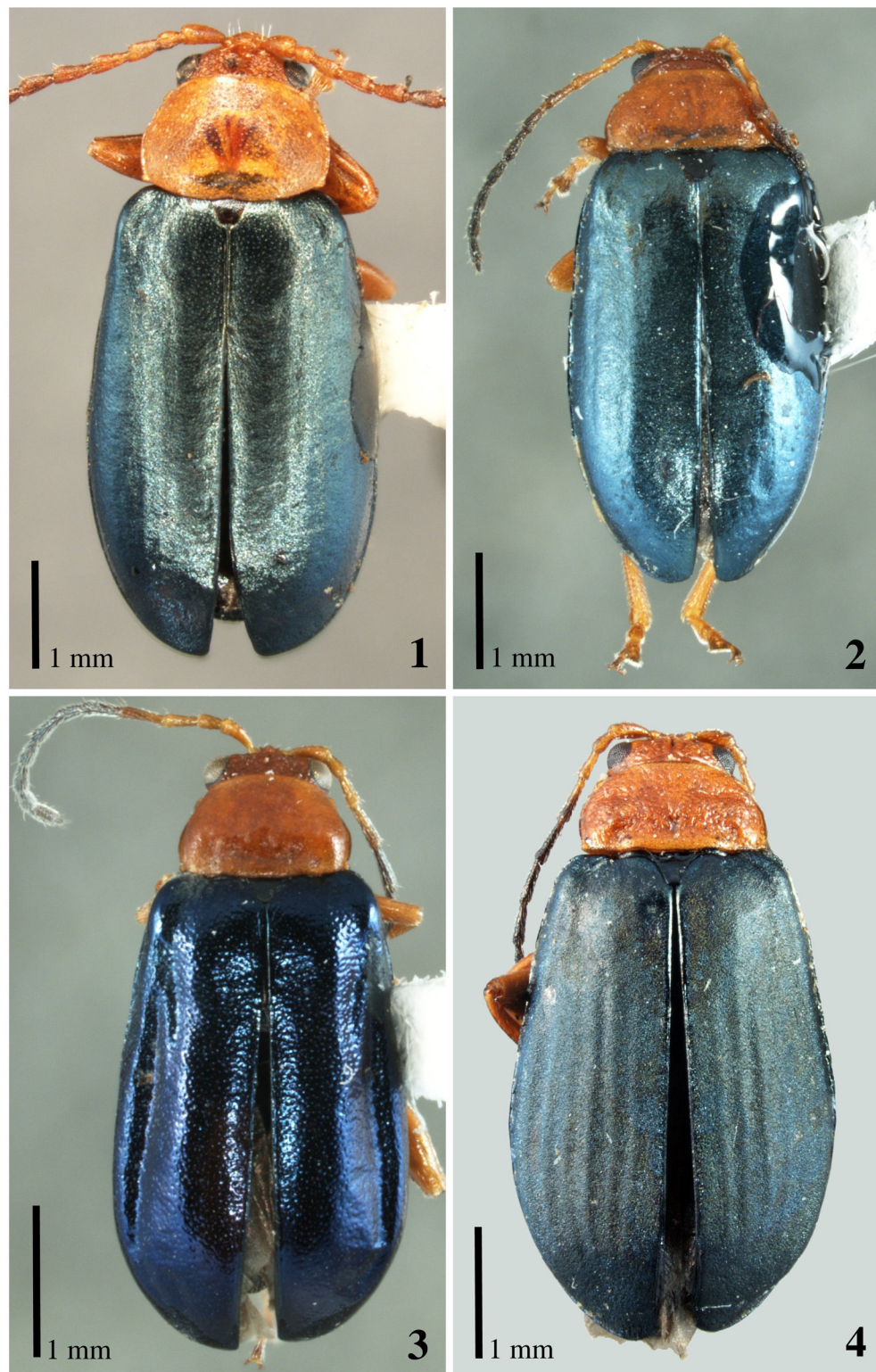
Type Specimens. **Holotype** (male) [CASC # 18540] and **allotype** (female). **MEXICO. SINALOA:** 38 miles NE Concordia nr. Loberas, 3 July 1982, A. J. Gilbert Collector [6,500ft.]. Holotype and allotype deposited in the California Academy of Sciences.

Paratypes (1 male and 3 females) – same data as holotype except Fred G. Andrews (1) [CSCA]; Hwy. 40, 6.5 mi. E. Potrerillos, 20 August 1964, E. Schlinger; 1870m [5,600ft.] (2) [UCRC]; 6.5 mi. E. Potrerillos, 21 August 1964, P. A. Rauch (1) [UCRC].

Description. Male (holotype). Body length 4.47 mm; width at elytral humeri 1.76 mm; form elongate. Elytra shining, bluish-brown; head, pronotum, thoracic sterna, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.54x length of eye; vertex dull, reticulate, irregularly, indistinctly punctate; anterior margin of postclypeus truncate, flat, without anterolateral ridge; frontal carina acute, raised in lateral view; antennal fossae separated by distance slightly more than width of antennal fossa (fossal width measured from inside edges); labrum orange, rectangular with corners rounded, shining, impunctate; labral notch indistinct; frontal tubercles distinct, elevated, separated by coronal suture; area in front of antennal fossa with slightly sunken appearance, with frontogenal suture, without lateral carina; interocular distance 1.24x wider than width of both eyes combined; antennae slender, 0.88x length of body; antennomeres orange; antennomere 2 shortest; 4 longer than 3; antennomeres 1 and 4-11 nearly equal in length. **Pronotum** transverse, with few irregularities and inconspicuous punctures, shining; lateral margins tapering to anterior margin; with indistinct basal depression; basal margin straight; anterolateral projections distinct, rectangular, with corners rounded; posterolateral angles distinct, acute. **Scutellum** orange, shining, obtusely triangular, impunctate. **Elytra** reticulate, with scattered very indistinct punctures; humeri poorly developed. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly, inconspicuously separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi enlarged, as wide as 3, longer than 2-4 combined; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, not as wide as tarsomere 3 of mesotarsi, longer than 2-4 combined; tarsomere 1 of metatarsi not enlarged, much longer than 2-4 combined, not wider than tarsomere 3 of metatarsi; all tibiae with a central longitudinal carina entire length. **Abdomen** brownish-orange, shiny, impunctate, sparsely pubescent. **Aedeagus** stubby, sharply bent nearly 90 degrees ventrally near point 1/3 from tip (Fig. 13); basal piece about 36% total length of aedeagus; ventral end narrowed into squared tip with shallow apical notch (Fig. 32).

Female (allotype). Similar to holotype, differing in the following characters: size slightly larger (length 4.76 mm; width 1.88 mm); tarsomere 1 not enlarged or overly elongate on all legs; fifth abdominal ventrite truncate.

Variation. The single male paratype measures 4.00 mm in length and 1.65 mm in width. Females vary in length from 4.76 – 5.29 mm and in width from 1.88 – 2.00 mm. In both the male and female, the



Figures 1-4. Habitus of adult *Hemiphrynus*. 1) *Hemiphrynus elongatus*, male. 2) *H. intermedius*, male. 3) *H. sulcatipennis*, male. 4) *H. sydneyae*, female.

color of the abdomen varies from brownish-orange to nearly black. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In specimens selected, the male fourth antennomere is slender, approximately 3.5x longer than wide and in the female, even more slender, approximately 4.3x longer than wide.

Remarks. *Hemiphrynus barri* can be distinguished from all other *Hemiphrynus* by the entirely orange thoracic sterna, a prothorax that is distinctly widest basally and tapers to the anterior angles (Fig. 19) and by the indistinctly punctate vertex (Fig. 13, 19). See the remarks for the other species for additional differences.

Distribution. Known only from the type locality in the Mexican state of Sinaloa at elevations between 5,600 and 6,500 feet.

Host. Unknown.

Etymology. Named for Dr. William F. Barr, University of Idaho, for the many interesting chrysome-lids that either he or his students have collected over the years. Many of these specimens, including the *Hemiphrynus* cited in this paper from Alto, New Mexico, have been brought to my attention and resulted in new species descriptions, new localities or host records, and in this case a review of two alticine genera.

Specimens Examined. See “Type Specimens.”

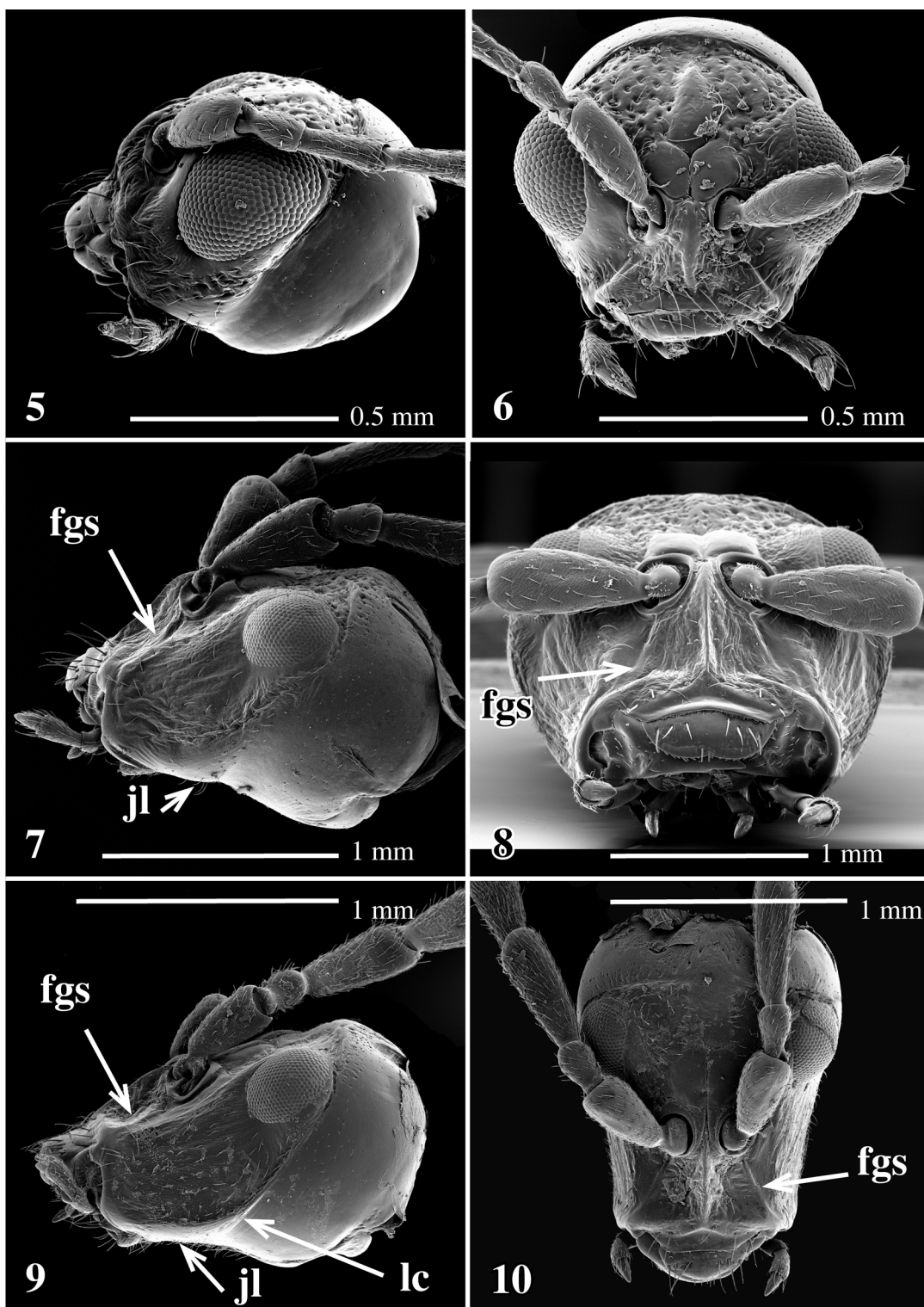
***Hemiphrynus corrugatus* Gilbert sp. nov.**

(Fig. 14, 20, 26, 33, 82)

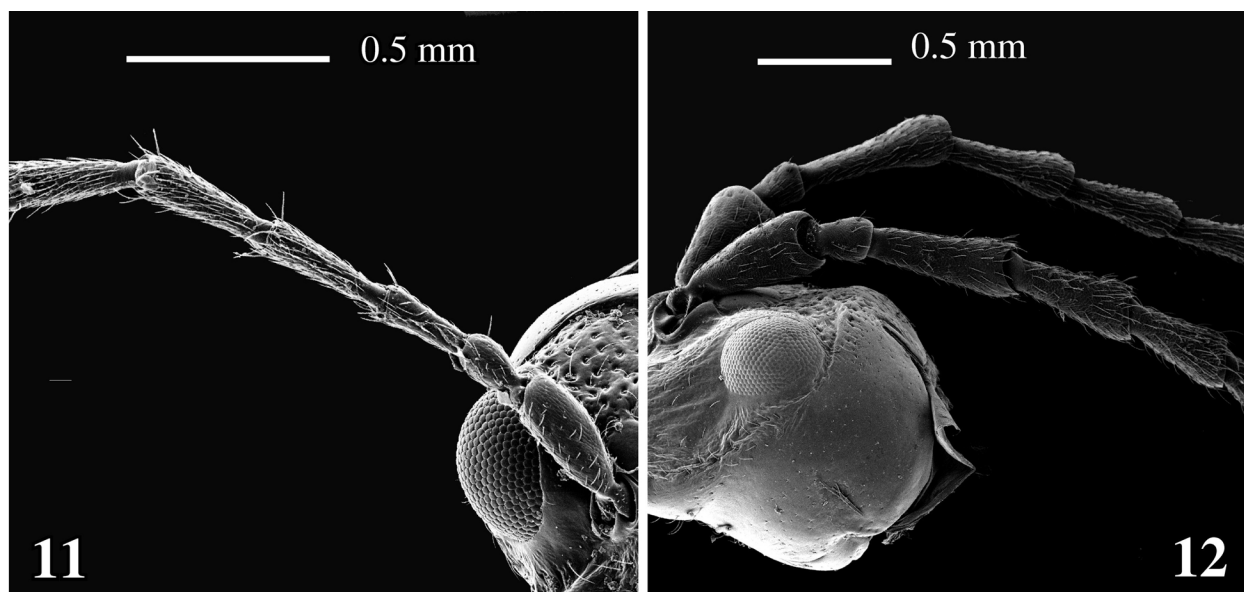
Type Specimens. **Holotype** (male) and **allotype** (female). **MEXICO. OAXACA:** Hoege. 1st Jacoby Coll., Syntype [written on red, label folded] Holotype and allotype deposited in the Museum of Comparative Zoology, Harvard type collection.

Paratypes (3 males and 7 females) – **OAXACA:** same data as holotype (1) [MCZC]; Oaxaca, Hoege. (3) [BMNH]; **PUEBLA:** Salle Coll., 864 (1) [BMNH]; **TLAXCALA:** 8 mi. W. Apizaco, 17 June 1961, 8,500ft., Univ. Kans. Mex. Exp. (2) [KSBS], (2) [AJGC]; same data as previous, except on flowers of *Heteratheca chrysopidis* [*Heterotheca* (= *Chrysopsis*)] (1) [KSBS].

Description. Male (holotype). Body length 5.59 mm; width at elytral humeri 2.18 mm; form elongate. Elytra shining, bluish-black; head, pronotum, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.39x length of eye; vertex shining, coarsely, densely punctate; anterior margin of postclypeus truncate, without anterolateral ridge; anteclypeus truncate, lighter in color than postclypeus or labrum; frontal carina broad, raised in lateral view, peaking between antennal fossae; antennal fossae separated by distance slightly more than width of antennal fossa (fossal width measured from inside edges); labrum orange, rectangular with corners rounded, shining, impunctate, with eight distinct setae; labral notch indistinct; frontal tubercles distinct, not elevated over arc of head viewed laterally, separated by coronal suture; frontogenal suture and lateral carina absent; interocular distance 1.66x wider than width of both eyes combined; antennae slender, 0.63x length of body; antennomeres orange basally, gradually darkening to brown; antennomere 2 shortest; 4 longer than 3; 4-11 nearly equal in length. **Pronotum** transverse, reticulate, distinctly, uniformly punctate, widest at middle; lateral margins rounded; with two indistinct basolateral depressions; basal margin vaguely sinuate; anterolateral projections distinct, rectangular with corners rounded; posterolateral angles indistinct to absent. **Scutellum** bluish-black, shining, obtusely triangular, impunctate. **Elytra** reticulate, indistinctly punctate; humeri obvious. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi very enlarged, wider than 3, as long as 2-4 combined; tarsomere 1 of mesotarsi



Figures 5-10. Male heads (fgs = frontogenal suture, jl = jowl, lc = lateral carina). **5)** *Hemiphrynus intermedius*, lateral view. **6)** *H. intermedius*, frontal view. **7)** *Phrynocephala deyrollei*, lateral view. **8)** *P. deyrollei*, frontal view. **9)** *P. pseudocapitata*, lateral view. **10)** *P. pseudocapitata*, frontal view.



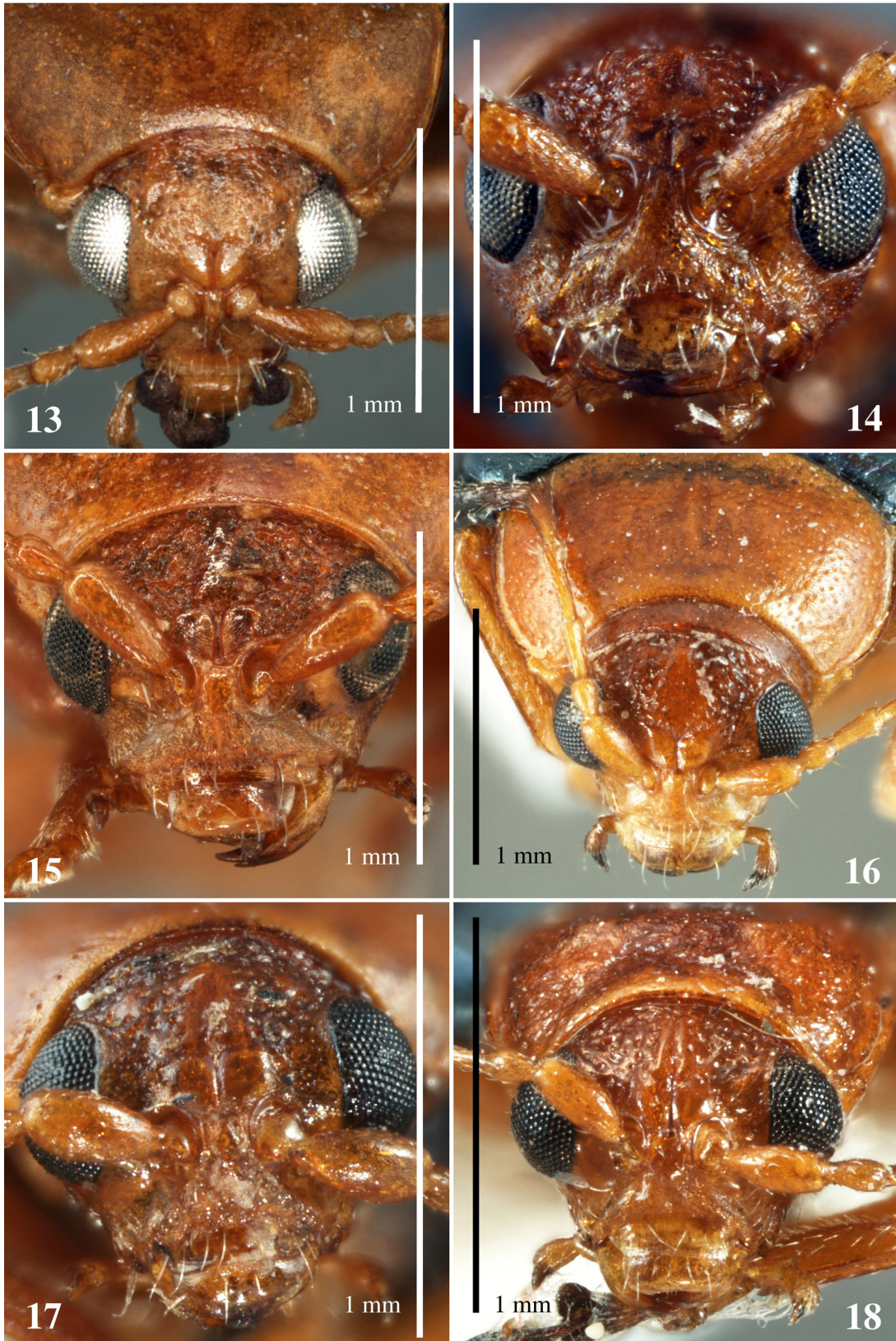
Figures 11-12. Male third and fourth antennomeres. 11) *H. intermedius*. 12) *P. deyrollei*.

enlarged, wider than tarsomere 3 of mesotarsi, as long as 2-4 combined; tarsomere 1 of metatarsi not enlarged, much longer than 2-4 combined, not wider than tarsomere 3 of metatarsi; all tibiae stout, gradually expanding distally with strong central longitudinal carina along entire length. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth ventrite with small central projection (concealed by pygidium on most specimens), orange at tip. **Aedeagus** sharply bent nearly 90 degrees ventrally near mid-point, with dorsal transverse undulations behind ostium (Fig. 26), with strong ventral wrinkles (Fig. 26, 33); basal piece about 27% total length of aedeagus; ventral end beyond wrinkles, abruptly narrowed, continuing to blunt tip as strong, broad median carina (Fig. 33).

Female (allotype). Similar to holotype, differing in the following characters: size slightly smaller (length 4.12 mm; width 1.76 mm); each elytron with four vague costae; tarsomere 1 not enlarged or overly elongate on all legs; all tibiae similar, slender, gradually expanding distally; fifth abdominal ventrite truncate, without orange tip.

Variation. Male: length 4.82 – 6.05 mm; width at humeri 1.82 – 2.41. Female: length 4.12 – 5.35 mm; width 1.76 – 2.06 mm. The stout or slender appearance of the antennae varies as represented by the fourth antennomere (length to width ratio). In the specimens selected, the male fourth antennomere is relatively stout, approximately 2.8x longer than wide, and in the female, more slender, approximately 3.7x longer than wide.

Remarks. One feature that distinguishes this species from all other *Hemiphrynus* is the lack of, or near lack of, posterolateral angles on the prothorax (Fig. 20). This species also lacks an anterolateral ridge on the postclypeus, a character also missing on *H. intermedius* and *H. barri*. However, locality and the enlarged first tarsomere on the pro- and mesothoracic leg of the male, that is as wide as or wider than the third tarsomere, will separate this species from *H. intermedius*. Locality, the black thoracic sterna, and the curved lateral margins of the prothorax will also separate this species from *H. barri*. *Hemiphrynus barri* is known only in Sinaloa, has orange thoracic sterna and a prothorax with a lateral margin that tapers from the posterior margin to the anterior angles (Fig. 19). The ratio of the fourth antennomere in the male of *H. corrugatus* is 2.8x longer than wide, which is close to that of the male of *H. elongatus* (Jacoby 1884) (2.4x). However, the female of *H. corrugatus* has a much greater ratio (3.7x) for the fourth antennomere than the female of *H. elongatus* (2.4x). See the remarks for the other species for additional differences.



Figures 13-18. Frontal view of faces of *Hemiphrynus*. 13) *H. barri*. 14) *H. corrugatus*. 15) *H. elongatus*. 16) *H. intermedius*. 17) *H. smithi*. 18) *H. sydneyae*.



Figures 19-24. Pronota of *Hemiphrynus*. 19) *H. barri*. 20) *H. corrugatus*. 21) *H. elongatus*. 22) *H. intermedius*. 23) *H. smithi*. 24) *H. sydneyae*.

Three specimens in the MCZC labeled as “syntypes” of *H. elongatus* were examined. Two are males and one is a female. The three specimens represent a single species, but, although similar in general appearance to the lectotype and paralectotypes of *H. elongatus*, they do not agree well enough with to be considered as specimens of *H. elongatus*. The lectotype and paralectotypes of *H. elongatus* and the three “syntypes” were collected from different Mexican states. The lectotype and paralectotypes were collected in Cordova [Cordoba], Veracruz and the three “syntypes” were collected in Oaxaca, Oaxaca. All three “syntypes” are smaller than the types. The two male “syntypes” are 5.29 mm and 5.59 mm in length, while the male lectotype for *H. elongatus* is 6.29 mm in length. The “syntype” female is 4.12 mm, while the length for females of *H. elongatus* varies between 4.76 and 6.47 mm. The relative size of the eyes for the “syntypes” is larger making the genal ratio and the interocular ratio smaller. The genal ratio is 0.46x and 0.39x for the male specimens while the genal ratio for the lectotype of *H. elongatus* is 0.52x. The interocular ratios are 1.66x for both male “syntypes,” while the interocular ratio for the lectotype of *H. elongatus* is 1.70x. The pronotum of the female “syntype” is more obviously transverse and reticulate, with many of the coarse punctures coalescing and the lateral margins nearly parallel in the basal half than that of the female paralectotypes of *H. elongatus*. The female “syntype” also has two vague elytral carinae that fork from a single point behind the humeri and extend most of the length of each elytron. Three other vague carinae are also present. One is central between the forked carina, and the other two occur more dorsally on the distal half of the elytron. All of these carinae are vague and only obvious as the specimen is exposed to light at different angles. Elytral carinae are not evident on specimens of *H. elongatus*. In view of the above mentioned differences, the three “syntypes” are herein described as *H. corrugatus* along with nine additional specimens.

Distribution. Known only from the Mexican states of Oaxaca, Puebla, and Tlaxcala. The Tlaxcala collection was at 8,500 feet elevation.

Host. Unknown. A single specimen was collected from *Heteratheca chrysopidis* [*Heterotheca* (= *Chrysoptis*) Asteraceae].

Etymology. Derived from “corrugated” meaning wrinkled with furrows or with alternate ridges and channels. This is in reference to the highly wrinkled structure of the aedeagus.

Specimens Examined. See “Type Specimens.”

Hemiphrynus elongatus (Jacoby 1884) NEW COMBINATION

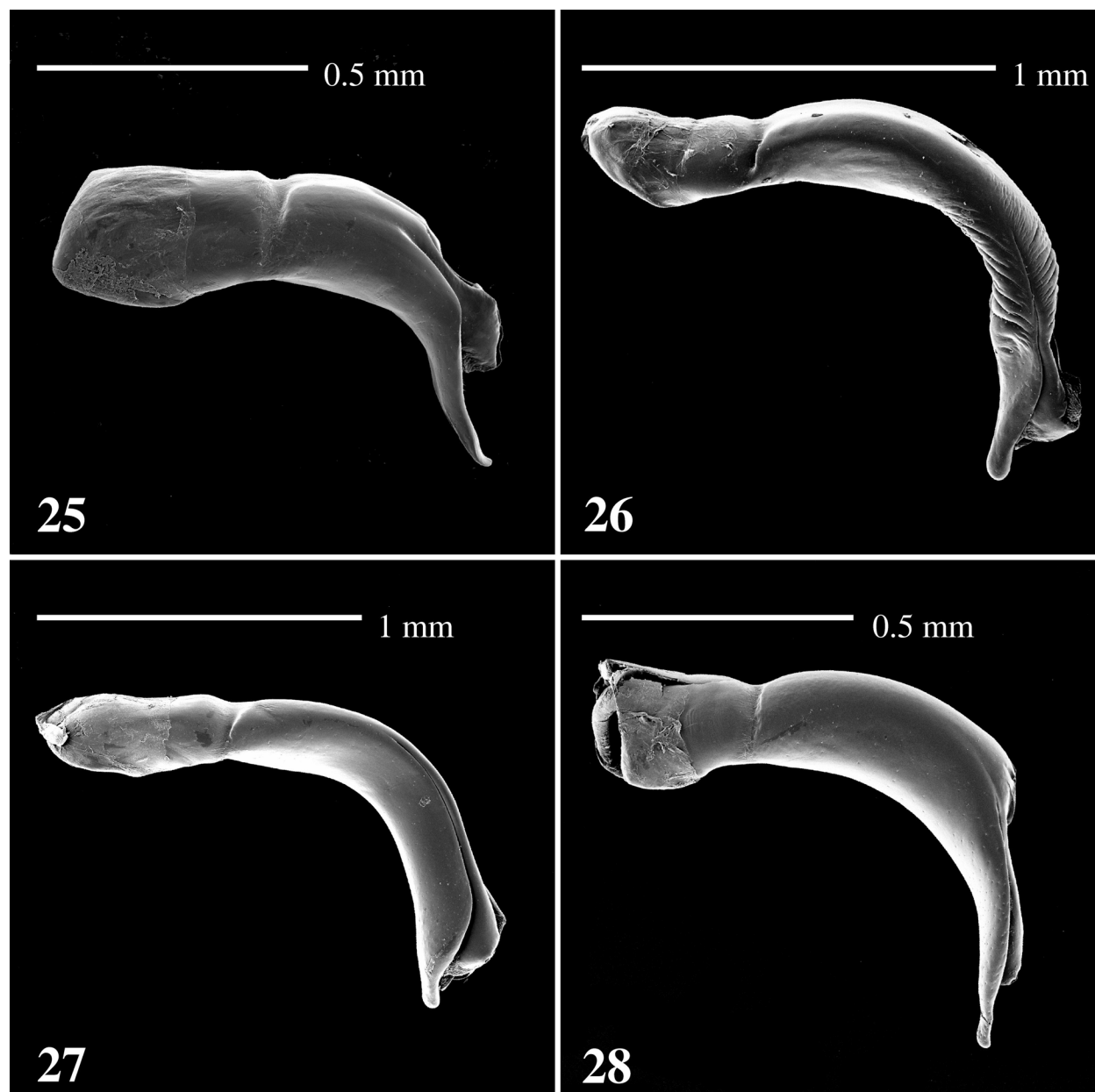
(Fig. 1, 15, 21, 27, 34, 81-82)

Phrynocephala elongata Jacoby 1884: 292 (tab. 18, Fig. 1, 2). Heikertinger and Csiki 1939: 215. Blackwelder 1946: 699. Wilcox 1975: 107. Furth and Savini 1996: 64. Furth 2006: 233.

Type Specimens. Lectotype (here designated and labeled). **Male** [BMNH] labeled: “Cordova” [printed on white], “Mexico./ Salle Coll.” [printed on white], “*Phrynocephala elongata* Jac./ [male symbol]” [handwritten on blue], “B. C. A., Col. VI, 1./ *Phrynocephala elongata*,/ Jac.” [printed on white], *Phrynocephala elongata* Jac./ Det. D. G. Furth [handwritten and printed on white], BMNH ‘05/#12901 [printed on white].

Paralectotypes (two here designated and labeled). **Female** [BMNH] labeled: “Type/H. T.” [printed on circular white with red border], “Cordova” [printed on white], “Mexico./ Salle Coll.” [printed on white], “935” [printed on blue], “Type./ Sp. figured.” [printed on white], “B. C. A., Col. VI, 1./ *Phrynocephala elongata*,/ Jac.” [printed on white], “*elongata*/ [female symbol]/ Jac.” [handwritten on blue]. **Female** [MCZC] labeled: “Cordova” [printed on white], “Mexico/ Salle Coll.” [printed on white], “1st Jacoby/ Coll.” [printed on white], “*elongata* Jac./ cotype” [handwritten on blue], “Type/18746” [printed and handwritten on red].

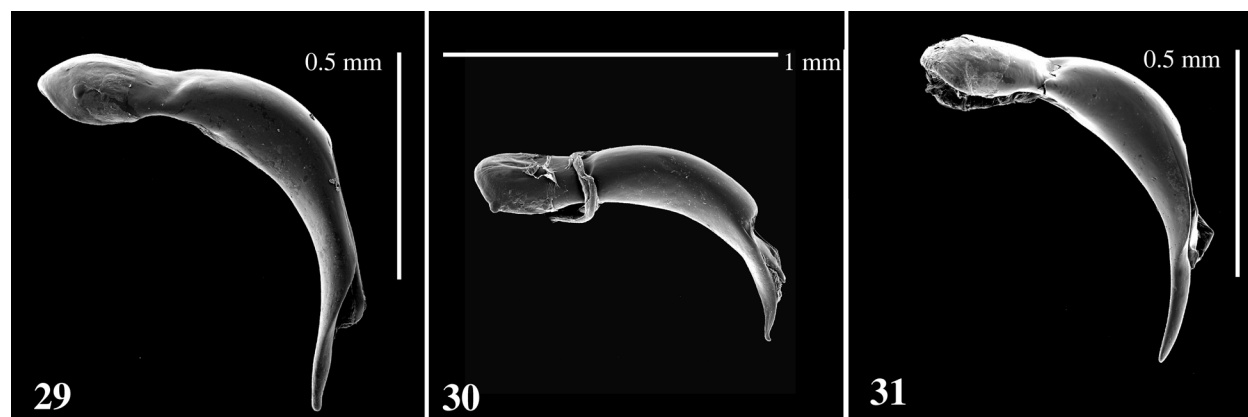
Of the two specimens figured in the “Biologia Centrali-Americana” (Jacoby 1884), the first appears to be the male. Since this specimen is figured first and, as a male specimen, has most of the defining characters of the species, this specimen is designated as the lectotype. The other specimens in the



Figures 25-28. Aedeagi, lateral view. **25)** *Hemiphrynus barri*. **26)** *H. corrugatus*. **27)** *H. elongatus*. **28)** *H. intermedius*.

BMNH and the MCZC become paralectotypes. Three other specimens in the MCZC from Oaxaca labeled as “syntypes” and cited by Jacoby in the original description actually represent *H. corrugatus* (see “Remarks” for *H. corrugatus*). Another specimen included with non-type material was found in the BMNH collection and was labeled as a “syntype” of *P. elongate* [*elongatus*]. Although the collection labels are the original labels and match the data presented in the “Biologia Centrali-Americana” (Jacoby 1884), the “syntype” label is of a more recent origin. This specimen from Cordova [Cordoba], Veracruz is actually a female specimen of *H. sydneyae*, new species below. Four additional specimens in the BMNH collection labeled as B. C. A. specimens from Oaxaca are also specimens of *H. sydneyae* (see “Type Specimens” for *H. sydneyae*).

Redescription. Male [BMNH, lectotype]. Body length 6.29 mm; width at elytral humeri 2.24 mm; form elongate. Elytra dark blue; head, pronotum, legs yellow-orange. **Head** not elongate, without a



Figures 29-31. Aedeagi, lateral view. 29) *Hemiphrynus sulcatipennis*. 30) *H. smithi*. 31) *H. sydneyae*.

ventral “jowl-like” area; genal length 0.52x length of eye; vertex reticulate, deeply, coarsely punctate, central portion with deep, inverted “v-shaped” pit, sides of pit ridged, ridges continuing forward to lateral margins of frontal tubercles; postclypeus truncate anteriorly, elevated, broadly triangular; frontal carina narrowing between antennal fossae, smooth, impunctate; labrum orange, rectangular with corners rounded, shining, impunctate with 6 long setae; frontal tubercles distinct, elevated, separated by coronal suture; area in front of antennal fossa without sunken appearance, without lateral, obtuse carina; antennal fossae separated by distance approximately equal to width of antennal fossa (fossal width measured from inside edges); interocular distance 1.70x wider than width of both eyes combined; antennae stout, 0.65x length of body; antennomeres 1-4 orange; 5-6 brownish-orange; 7-11 dark brown; antennomere 2 shortest; antennomere 3 slightly shorter than 4, although nearly equal; other antennomeres approximately equal in length. **Pronotum** transverse, densely, coarsely punctate with punctures not coalescing, widest at middle; lateral margin evenly curving anteriorly to rectangular lateral tooth; basal margin vaguely sinuate, gradually curving forward to lateral margins; posterolateral tooth blunt, rounded, indistinct; basal depression obsolete, with only vague lateral depressions where basal depression would end if present. **Scutellum** elongate, dark brown, shining, obtusely triangular, impunctate. **Elytra** strongly reticulate, impunctate; humeri distinct. **Prosternal intercoxal process** slightly elevated ventrally above plane of prosternum, but not to level of ventral tip of procoxae, narrowly, inconspicuously separating procoxae. **Procoxae** conical, nearly contiguous. **Procoxal cavities** open. **Mesosternum** black. **Legs** including tarsi, orange; pro- and mesofemora not as enlarged as metafemora; tarsomere 1 of protarsi expanded, wider than 3, about equal in length to 2-4 combined; mesotarsi similar to protarsi; tarsomere 1 of metatarsi longer than 2-4 combined, longer than tarsomere 1 of pro- or mesotarsi; all tibiae with a central longitudinal carina along entire length. **Abdomen** black, reticulate, impunctate, sparsely pubescent, not shining; last ventrite shallowly emarginate, with tip orange. **Aedeagus** sharply bent nearly 90 degrees ventrally near point two-fifths from tip (Fig. 27); basal piece about 36% total length of aedeagus; ventral end widened subapically, narrowing uniformly to obtuse tip (Fig. 34).

Female. Female characters were obtained from paralectotype specimens. The size is similar to that of the male (see “Variation”). The tarsomere 1 of all tarsi in the female is not enlarged. In the male, the femora and tibiae of all legs are stout and the fifth abdominal ventrite has an orange patch at the tip. The female has femora and tibiae that are less stout and the fifth abdominal ventrite is entire and completely dark.

Variation. Male: length 4.59 – 6.29 mm; width at humeri 1.88 – 2.24 mm. Female: length 4.76 – 6.47 mm; width 1.88 – 2.53 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected for this species, the male and female antennae are stout and the ratio of the fourth antennomere is about 2.4x longer than wide for both sexes.

Remarks. When Horn (1889) described his new genus *Hemiphrynus* for *H. intermedius*, he also suggested that *Hemiphrynus* was the proper placement for *H. elongatus*. With the exception of the stout antennae, *H. elongatus* does possess all of the characteristics of the genus and should be included in *Hemiphrynus*. The stout antennae of both the male and female will separate this species from all other *Hemiphrynus*. In addition, the enlarged first tarsomere in the male will further separate this species from *H. intermedius*. *Hemiphrynus intermedius* is the only other species of *Hemiphrynus* that shares the same geographical area and is possibly an adult feeder on the same plant genus. See the remarks for the other species for additional differences.

Three specimens labeled as “syntypes” of *H. elongatus* in the MCZC are not conspecific with the lectotype of *H. elongatus* and are herein described as *H. corrugatus* (see “Remarks” for *H. corrugatus*). The stout antennomeres of the male constitute the only character that could have led anyone to believe that these three specimens were “syntypes” of *H. elongatus*. The stout male antennomeres may also be the reason *H. elongatus* was originally described as a species of *Phrynocephala*.

The species name is changed herein from *elongata* to *elongatus* to agree with the gender of the new genus in which it is placed.

Distribution. Known from the Mexican states of Chihuahua, Durango, and Veracruz and in the U.S.A. from southern New Mexico. Furth (2006) reports this species from Tlaxcala. Specimens from the Chihuahua and Durango localities were collected above 6,000 feet elevation.

A series of 22 identically labeled specimens collected three miles south of Alto, New Mexico in the W. F. Barr Entomological Museum Collection at the University of Idaho is a mix of both *H. elongatus* (10 males and 8 females) and *H. intermedius* (2 males and 2 females). The adult host for *H. elongatus* is unknown. The adult host for *H. intermedius* is oak (see “Host” for *H. intermedius* below). Similar situations exist with these two species in Chihuahua, Mexico (see “Distribution” for *P. deyrollei* below) and at the Ventanas locality in Durango (see “Specimens Examined” for both *H. elongatus* and *H. intermedius*). The occurrence of *H. elongatus* in New Mexico represents a new record for the United States. Three attempts were made by the author to collect this species at the Alto/Ruidoso site (Alto and Ruidoso are contiguous localities), once each in May, July and August of different years. No *Hemiphrynus* were collected during the May and August visits. In July of 2010, *H. intermedius* was very abundant but no specimens of *H. elongatus* could be found. It is unlikely that the WFBM specimens are mislabeled, as these two species were also collected in Santa Clara, Chihuahua, Mexico inhabiting the same locality at the same time. The WFBM specimens were collected in mid-June and *H. elongatus* was more abundant than *H. intermedius* (18 specimens compared to 4 specimens). It is possible that *H. elongatus* emerges earlier than *H. intermedius* and there is a brief period of overlap.

Host. Unknown.

Specimens Examined. In addition to the lectotype and the paralectotypes from Cordova [Cordoba] [VERACRUZ], other specimens examined included 29 males and 29 females. **MEXICO. CHIHUAHUA:** Santa Clara, 2 July 1947, D. Rockefeller Exp. Cazier [6,000ft.] (20) [AMNH]; same data as previous except D. Rockefeller Exp. Gertsch (8) [AMNH]; Santa Clara, Namiquipa Dist., 6,500ft., 3 July 1947, D. Rockefeller Exp. Michener (1) [AMNH]; Pinos Altos, Hepburn (1) [BMNH]; **DURANGO:** Ciudad, Durango Höge. (3) [ZMHB], (4) [BMNH]; Canelas (1) [ZMHB]; Ventanas, Höge (1) [NHMB]; **USA. NEW MEXICO:** Lincoln Co.; 3 mi. S Alto, 20 June 1968, S. M. Hogue, R. L. Penrose collectors [8,500ft.] (14) [WFBM], (4) [AJGC]; Otero County, Mayhill, 28 June 1969, W. F. Chamberlain [6,700ft.] (1) [TAMU].

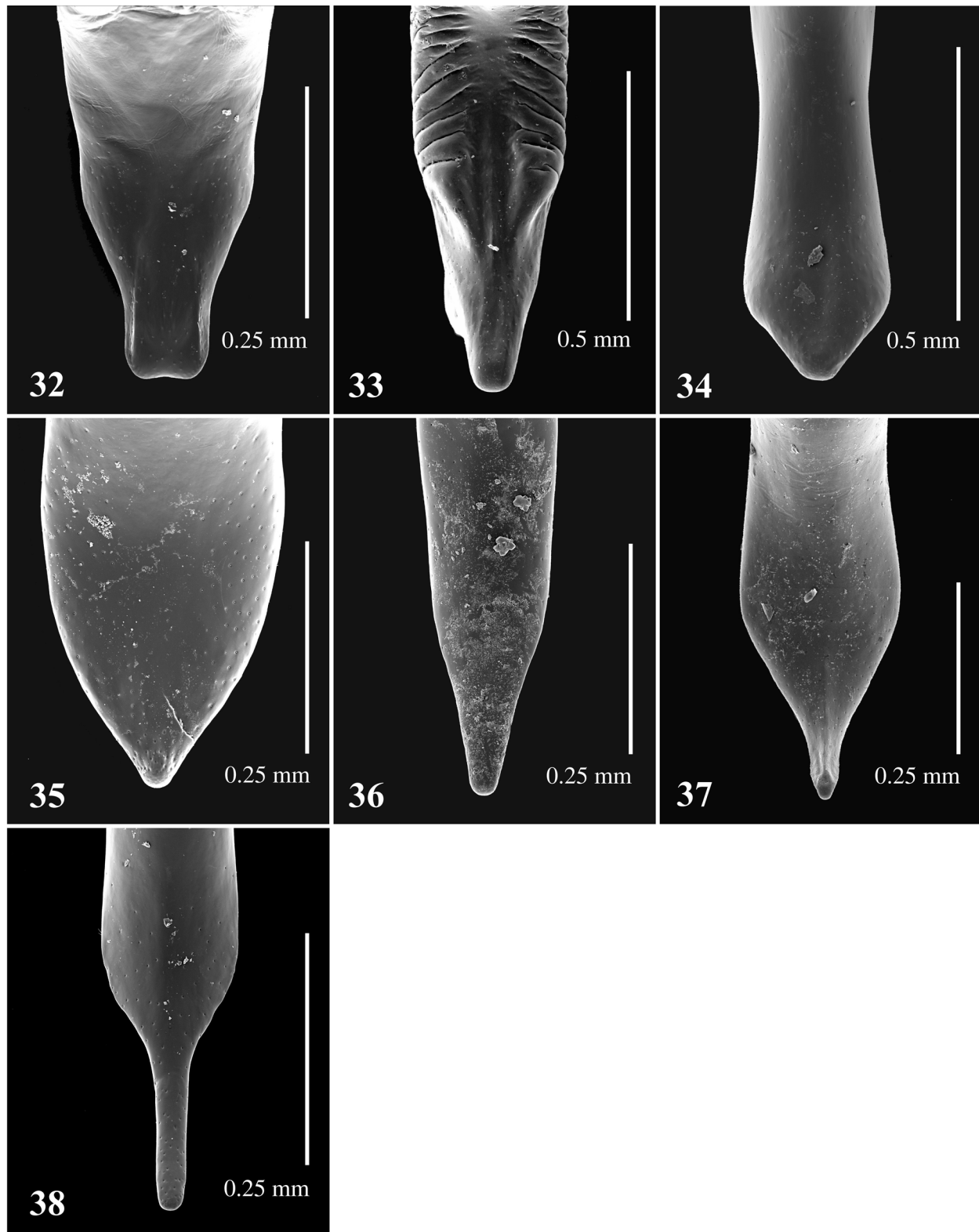
***Hemiphrynus intermedius* (Jacoby 1884)**

(Fig. 2, 5-6, 11, 16, 22, 28, 35, 81-82)

Phrynocephala intermedia Jacoby 1884: 293.

Hemiphrynus intermedius: Horn 1889: 213. Jacoby 1891: 265. Leng 1920: 300. Heikertinger and Csiki 1939: 214. Blackwelder 1946: 699. Riley et al. 2001: 7. Riley et al. 2002: 662. Riley et al. 2003: 123. Furth 2006: 230.

Phrynocephala intermedius: Wilcox 1975: 107. Furth and Savini 1996: 64.



Figures 32-38. Tips of aedeagi, ventral view. 32) *H. barri*. 33) *H. corrugatus*. 34) *H. elongatus*. 35) *H. intermedius*. 36) *H. sulcatipennis*. 37) *H. smithi*. 38) *H. sydneyae*.

Type Specimens. Lectotype (here designated and labeled). **Male** [MCZC] labeled: “N. Sonora/ Mexico./ Morrison.” [printed on white], “1st Jacoby/ Coll.” [printed on white], “*intermedia* Jac./ cotype” [handwritten on blue], “Type/ 18748” [printed and handwritten on red]; “LECTOTYPE/ *Hemiphrynus/ intermedius* Jac./ by E. G. Mignot, 1969” [printed and handwritten on red].

Paralectotypes [two specimens on the same pin], (here designated and labeled). **Male/Female** [BMNH] labeled: “TYPE/ H.T.” [printed circular white with red border], “N. Sonora./ Mexico./ Morrison.” [printed on white], “N. Sonora./ Mexico./ Morrison.” [printed on white], “B. C. A., Col. VI, 1./ Suppl./ *Hemiphrynus/ intermedius/ Jac.*” [printed on white], “*Phrynocephal/ intermedia/ Jac.*” [handwritten on blue], “*Hemiphrynus/ intermedius* Jac./ BM(NH)” [printed on white].

The specimen in the collection at the Museum of Comparative Zoology, Harvard bears a lectotype label. This designation was given to this specimen by Mignot (1970) in a thesis that was never published. This specimen bears a handwritten cotype label, a first Jacoby collection label and the same collection data as the two specimens on the same pin from the British Museum of Natural History labeled “TYPE/H.T.” Because the specimen from the MCZC bears an original handwritten cotype label and the first Jacoby collection label, it is designated the lectotype.

Redescription. Male [MCZC type 18748]. Body length 4.76 mm; width at elytral humeri 1.94 mm; form elongate. Elytra blue-black; head, pronotum, mesosternum, antennae, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.57x length of eye; vertex shining, coarsely, densely punctate; postclypeus with eight long setae, with anterior margin broadly curved; anteclypeus truncate; frontal carina raised between antennal fossae into broad, obtuse ridge extending from near top of antennal fossae to well below antennal fossae, abruptly ending before flattened anterior margin of postclypeus; antennal fossae separated by twice width of antennal fossa (fossal width measured from inside edges); labrum orange, rectangular, with corners rounded, shining, impunctate with 5 long setae; without labral notch; frontal tubercles distinct, elevated, separated by coronal suture; area in front of antennal fossa without sunken appearance, without lateral carina; interocular distance 1.47x wider than width of both eyes combined; antennae relatively slender, 0.72x length of body; antennomeres orange; antennomere 2 shortest; antennomere 3 shorter than 1, 4-11; antennomere 5 longer than 4; antennomeres (except 11) gradually shorter towards apex. **Pronotum** transverse, shining, reticulate, coarsely, shallowly punctate, widest at center; lateral margins uniformly arcuate; a vague depression along 2/3 of basal margin, basal margin vaguely sinuate, gradually curving forward to side margins; anterolateral projections rectangular, with corners rounded; posterolateral angles distinct. **Scutellum** elongate, brown, shining, acutely triangular, impunctate. **Elytra** reticulate, impunctate; humeri distinct, without trace of humeral costa. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly, inconspicuously separating procoxae, expanded behind procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Mesosternum**, orange, shining, impunctate. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi expanded, but not wider than tarsomere 3, shorter than 2-4 combined; tarsomere 1 of mesotarsi expanded, but not wider than tarsomere 3, shorter than 2-4 combined; tarsomere 1 of metatarsi about equal in length to 2-4 combined, longer than tarsomere 1 of pro- or mesotarsi; all tibiae with strong central longitudinal carina along entire length. **Abdomen** dark brown, shiny, impunctate; fifth abdominal ventrite orange apically, broadly, shallowly emarginate, with small central projection. **Aedeagus** (from non-type specimen) sharply bent nearly 90 degrees ventrally before mid-point (Fig. 28); basal piece about 29% total length of aedeagus; ventral end uniformly narrowed to acute tip (Fig. 35).

Female. Similar to male except size slightly larger (see “Variation”); tarsomere 1 of pro- and mesotarsi not enlarged; fifth abdominal ventrite shallowly, broadly emarginate.

Variation. Male: length 3.76 – 4.41 mm; width at humeri 1.53 – 1.76 mm. Female: length 3.94 – 5.12 mm; width 1.65 – 2.12 mm. Mesosternum varying from entirely orange to entirely dark brown. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the male fourth antennomere is relatively slender, approximately 3.0x longer than wide, while the female fourth antennomere is even more slender, approximately 3.7x longer than wide.

Remarks. Although the first tarsomeres of the male pro- and mesothoracic legs are expanded, this species and *H. sulcatipennis* are the only species in the genus that do not have the first tarsomere expanded, such that it is wider than the third tarsomere. Both male and female specimens have a broad flat frontal carina extending between the antennal fossae (Fig. 16). This is a character shared only with *H. smithi* (new species below) (Fig. 17) and *H. corrugatus* (Fig. 14). However, the less expanded first tarsomere, male genitalia and distribution will readily separate *H. intermedius* from these two species. See the remarks for the other species for additional differences.

Distribution. Known from the Mexican states of Chihuahua, Durango, and Sonora and the southwestern U. S. A. from Arizona to western Texas. Selander and Vaurie (1962) and Mignot (1970), both indicate that specimens collected by Morrison in Sonora may actually have been collected in what is present day extreme southern Arizona. If this is correct, then there are no collection records for present day Sonora, Mexico. However, considering that this species ranges at higher elevations throughout Arizona, New Mexico, and western Texas and in Chihuahua and Durango, Mexico, it is extremely probable that this species also occurs at higher elevations in similar plant communities in Sonora. With this in mind, Sonora is included in the known distribution. All specimens were collected between 4,600 and 9,000 feet elevation. Furth (2006) records this species from the state of Chiapas. The location of the Chiapas specimen is unknown. *Hemiphrynus intermedius* is the most commonly collected species in the genus and the lack of collection data between Durango, the southern most collection localities for this species, and the Chiapas record is so great, the Chiapas record is considered dubious and therefore not included on the distribution map.

Host. A series of 48 specimens was collected from *Quercus gambelii* Nutt. (Fagaceae) and 25 specimens were collected from *Q. undulata* Torr. near Ruidoso, New Mexico. An additional fourteen specimens collected near Prescott, Arizona on *Quercus* sp. (Fagaceae), a single specimen collected from silver oak [silverleaf oak (*Quercus hypoleucoides* A. Camus)?] in the Chiricahua Mountains by W. F. Barr and a single specimen collected from *Quercus* by C. W. O'Brien would validate *Quercus* as the adult host for this beetle. Single specimens collected from *Fallugia paradoxa* Endl. (Rosaceae), *Cowania* [= *Purshia*] (Rosaceae), flowers of desert willow [*Chilopsis linearis* (Cav.) Sweet] (Bignoniaceae), and at UV light are most likely inadvertent associations.

Specimens Examined. In addition to the lectotype and the two paralectotypes, other specimens examined included 135 males and 163 females and 18 with sex undetermined. **MEXICO. CHIHUAHUA:** Santa Clara, 2 July 1947, D. Rockefeller Exp. Cazier (17) [AMNH]; same data as previous except D. Rockefeller Exp. Gertsch (8) [AMNH]; **DURANGO:** Palos Colorados, 8000ft., 5 August 1947, D. Rockefeller Exp. Cazier (1) [AMNH]; Canelas [6,950ft.] (7) [ZMHB]; Ventanas Höge (1) [ZMHB], (3) [BMNH]; Ventanas Höge, F. Monros Collection 1959 (1) [USNM]; **SONORA:** N. Sonora, Morrison (2) [BMNH]; **USA. ARIZONA:** Apache County; 1 mi. S. Greer, 14 June 1968, S. M. Hogue, R. L. Penrose Collectors (1) [WFBM]; Greer, 8 July 1933, Owen Bryant (18) [CASC]; Cochise County; Cochise, 2 July 1964, Berrios (2) [USNM]; Chiricahua Mts., elev. 6,000 ft., 29 June 1968 (1) [FSCA]; Chiric Mts, 2 June [label is 2-6, no year], Coll Hubbard and Schwarz (2) [FSCA]; 5 mi. W. Portal, 17 June 1960, W. F. Barr Collector (4) [WFBM], (1) [AJGC]; Onion Saddle, Chiricahua Mts., 30 June 1958, W. F. Barr Collector (1) [WFBM], (1) [AJGC]; Chiricahua Mts., Onion Saddle, 4 June 1989, on silver oak, W. F. Barr (1) [WFBM]; Huachuca Mtns., Coronado Canyon, 8 July 1984, A. J. Gilbert, R. A. Clark, J. C. Ball Collectors (1) [AJGC]; Huachuca Mts., Copper Cn, 1882M [6,210ft.], 10 June 1978, at light, S. McCleve (2) [TAMU]; Huachuca Mts., Copper Cn., 14 June 1977, at light, S. McCleve (2) [TAMU]; Chiricahua Mts., Pridham Canyon, 5 June 1978, 1758M [5,801ft.], Scott McCleve (1) [TAMU]; same data as previous except at lite, S. McCleve (1) [TAMU]; Huachuca Mts, Copper Cyn, 1882M [6,210ft.], 18 June 1978, at lite, S. McCleve (1) [TAMU]; SW Res. Sta., 5 mi. W. of Portal, Chiricahua Mts., 14 June 1968, 5,400ft., C. D. MacNeill (6) [CASC]; Carr Cyn., Huachuca Mts., 7 July 1930, J. O. Martin (2) [CASC]; Chiricahua Mts., 9 July 1908, Van Dyke Collection (1) [CASC]; Chiricahua Mts, 9 July 1919, Rucker Canyon, 5,500 ft, A. Weimore Collector (1) [USNM]; Huach Mts (2) [USNM]; Chiric Mts, 2 June [2 – 6], Collection F. Knab (3) [USNM]; Chiric Mts, 9 June [9 – 6] (4) [USNM]; Chiric Mts, 6 June [6 – 6], Coll Hubbard and Schwarz (2) [USNM]; same data as previous, except 1446 (1) [USNM]; Chiric Mts, 2 June

[2 – 6] (11) [USNM]; same data as previous, except Coll Hubbard and Schwarz (5) [USNM]; same data as previous, except 3 June [3 – 6] (2) [USNM]; Douglas, 4 July 1936 [7/4/36], W. W. Jones (1) [USNM]; Coconino County; Flagstaff, 1 July 1891? [pin obscures the year] (1) [AMNH]; Gila County; Pinal Mts., Wickham (1) [KSBS]; Sierra Ancha Mts., July, D. K. Duncan, Coll. (1) [CASC]; Graham County; Galiuro Mts., Ash Creek, 20 June 1979, 1530m [5,049ft.], Scott McCleve (1) [TAMU]; Pima County; S. Catalina Mts, Bear Wallow, 13 June 1947, A. T. McClay Collector (2) [USNM]; Sabino Canyon, Nr. Tucson, on desert, Lot No. 385, 30 June 1959, R. H. Arnett, Jr. (1) [FSCA]; Pena Blanca, 5 June 1963, 3,940ft., Collected by J. D. Marshall (2) [AJGC]; Santa Rita Mtns., Madera Canyon, 8 July 1984, A. J. Gilbert, R. A. Clark, J. C. Ball Collectors (1) [AJGC]; S. Catalina Mts., Bear Wallow, 13 June 1947, A. T. McClay collector (1) [CASC]; Sta. Catalina Mts., 15 June 1940, Bryant, Lot 23 (2) [CASC]; Santa Cruz County; Sta. Rita Mts., Josephine Saddle Trail above Madera Canyon, 25 June 1985, R. L. Westcott (1) [WFBM]; Santa Rita Mts., 5 to 8,000ft., June, F. H. Snow (4) [KSBS]; Yavapai County; 7 mi. S Prescott, 20 June 1985, 6,000ft., on *Quercus*, Collector W. F. Barr (11) [WFBM], (3) [AJGC]; 7.5 mi S Prescott, 5,800ft., 20 June 1985, R. L. Westcott (2) [WFBM]; 10 miles SW of Prescott, 17 June 1973, W. F. Chamberlain (2) [TAMU]; 5 mi. above Jerome, alt. hwy. 94, 15 June 1947, on *Cowania*, B. E. White (1) [CASC]; Unknown County; C. U. Lot 31, Van Dyke Collection, 10420 (1) [CASC]; Morrison, Coll Hubbard and Schwarz (5) [USNM]; Morrison (6) [USNM]; Coll. Chittenden (1) [USNM]; Morrison? (2) [USNM]; Morrison, Sharp Coll. 1905-313 (1) [BMNH]; **NEW MEXICO:** Colfax County; 5 mi. e Eagle's Nest, 8 August 1969, J. C. Schaffner (1) [TAMU]; Bernalillo County; North of Albez, Sandia Natl. For, 31 May 1969 (9) [BYUC] [This locality could not be located on a map. Sandia National forest does not exist. There is a Cibola National Forest, with the Sandia Mountains and numerous other sites with the name Sandia in the portion of the forest in Bernalillo County. This area is the most probable locality. No location for Albez could be found.]; Grant County; Cherry Creek Camp, Pinus Altos, 1 June 1962, W. F. Chamberlain (4) [TAMU]; Sapillo Crk., 28 mi N Silver City, 20 June 1973, 6,000ft., Scott McCleve (2) [TAMU]; Hidalgo County; Animas Mts., Indian Cr., 6 June 1980, 1828m [6,032ft.], Scott McCleve (1) [TAMU]; Lincoln County; 3 mi. S Alto, 20 June 1968, S. M. Hogue, R. L. Penrose collectors (4) [WFBM], (3) [AJGC]; Ruidoso, 31 July 1983, *Fallugia paradoxa*, W. F. Barr Collector (1) [WFBM]; 3.2 mi. W. Hwy 48, 7,613 ft., Ruidoso, 9 July 2010, N. 33.39038/W 105.73537, A. J. Gilbert/N. J. Smith, collected from *Quercus undulata* Torr., wavyleaf oak (25) [AJGC]; same data as previous except collected from *Quercus gambelii* Nutt., Gambel oak (48) [AJGC]; Oak Grove CG, 8,275 ft., 5.1 mi. W. Hwy 48, 10 July 2010, Ruidoso, N33.39279/W105.74936, A. J. Gilbert/N. J. Smith (1) [AJGC]; Otero County; Timberon, 15 May 1972, on *Quercus*, C. W. O'Brien (1) [FSCA]; 1 mi. W. Mayhill, 12 June 1972, C. W. O'Brien (4) [FSCA]; James Cyn. Cpgd, 12 July 1984, sweeping grass, W. F. Barr Collector (1) [WFBM]; Mayhill, 28 June 1969, W. F. Chamberlain (5) [TAMU]; James Canyon Cmpgd., Lincoln Nat'l Forest, 17 June 1992, Baumann and Liu (2) [BYUC]; 2.5 mi. S Hwy 70 on Hwy 244, Nr. Mescalero, 7,254 ft., 11 July 2010, N 33.18387/W 105.70938, N. J. Smith/A. J. Gilbert (2) [AJGC]; 3.5 mi. S Hwy 70 on Hwy 244, Nr. Mescalero, 7,953 ft., 11 July 2010, N 33.14842/W 105.67747, N. J. Smith/A. J. Gilbert (1) [AJGC]; 4 mi. W Hwy 48, 8,089 ft., Ruidoso, 10 July 2010, N 33.39483/W 105.73930, A. J. Gilbert/N. J. Smith (2) [AJGC]; 4.1 mi. S. Hwy 70 on Hwy 244, Nr. Mescalero, 7,977 ft., 11 July 2010, N33.14734/W105.67537, N. J. Smith/A. J. Gilbert (2) [AJGC]; 9 mi. S Hwy 70 on Hwy 244, Nr. Mescalero, 7,532 ft., 11 July 2010, N 33.01823/W 105.62286, N. J. Smith/A. J. Gilbert (7) [AJGC]; San Miguel County; Las Vegas HS, 3 August [3 – 8], Barber and Schwarz Coll (1) [USNM]; Santa Fe County; 92 Aug., A. Fenyes Collection (1) [CASC]; Socorro County; Upper Water Cyn., Magdalena Mts., 10 June 1984, 9,000ft., W. F. Barr Collector (1) [WFBM]; **TEXAS:** Dawson County; 15 mi. E La Mesa [Lamesa?], 5 June 1970, Wharton (1) [TAMU]; Jeff Davis County; Davis Mts., 24 June 1956, D. J. and J. N. Knull Collrs. (3) [BYUC]; Davis Mts. Resort, (Marqua residence), 5,800ft., 26 June 1994, UV light, E. G. Riley (2) [TAMU]; Davis Mts., Madera cyn., 25 June 1994, UV, E. G. Riley (1) [TAMU]; Mt. Locke, 6,790ft., 24 June 1994, on flowers of desert willow, E. G. Riley (1) [TAMU]; Sawtooth Mt. Pk. (Rockpile), 29 May 1973, Gaumer and Clark (1) [TAMU]; H. O. Canyon, Davis Mts., 5 July 1968, 6,200ft., J. E. Hafernik (1) [TAMU]; **UNKNOWN LOCALITY:** 4270 (1) [FSCA]; Sharp Coll. 1905-313 (2) [BMNH].

***Hemiphrynus smithi* Gilbert sp. nov.**

(Fig. 17, 23, 30, 37, 82)

Type Specimens. **Holotype** (male) and **allotype** (female). **MEXICO. MICHOACAN:** hwy. 15; 4 mi. W. Zacapa [Zacapu?], 7,700ft., 8 August 1982, C. W. and L. O'Brien and Wibm. Holotype and allotype deposited in the Texas A&M University type collection.

Paratypes (3 males and 1 female) – same data as holotype (2) [AJGC], (2) [TAMU].

Description. Male (holotype). Body length 3.47 mm; width at elytral humeri 1.47 mm; form elongate. Elytra shining, bluish-black; head, pronotum, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.50x length of eye; vertex dull, reticulate, coarsely punctate; anterior margin of postclypeus truncate, abruptly elevated to anterolateral ridge; frontal carina broad, raised in lateral view, peaking between antennal fossae; antennal fossae separated by distance slightly more than width of antennal fossa (fossal width measured from inside edges); labrum orange, rectangular, with corners rounded, shining, impunctate; labral notch indistinct; frontal tubercles distinct, not elevated over arc of head viewed laterally, separated by coronal suture; area in front of antennal fossa without slightly sunken appearance, without frontogenal suture, without lateral carina; interocular distance 1.35x wider than width of both eyes combined; antennae slender, 0.84x length of body; antennomeres orange; antennomeres 2-3 shortest; 4 longer than 3; antennomeres 4-11 nearly equal in length. **Pronotum** transverse, reticulate, moderately punctate, widest at middle; lateral margins tapering to anterior margin; with two indistinct basolateral depressions; basal margin nearly straight; anterolateral projections distinct, rectangular, with corners rounded; posterolateral angles distinct, acute. **Scutellum** black, shining, obtusely triangular, impunctate. **Elytra** reticulate, impunctate; humeri poorly developed. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly, inconspicuously separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi enlarged, wider than 3, as long as 2-4 combined; tarsomere 1 of mesotarsi enlarged, wider than 3, as long as 2-4 combined; tarsomere 1 of metatarsi not enlarged, much longer than 2-4 combined, not wider than tarsomere 3; all tibiae with central longitudinal carina along entire length. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth ventrite entire, orange at tip. **Aedeagus** gradually bent nearly 90 degrees ventrally, dorsal aspect abruptly cut to center of aedeagus posterior to ostium (Fig. 30); basal piece about 29% total length of aedeagus; ventral end broadened subapically, narrowing to acute tip; tip with short median, ventral carina (Fig. 37).

Female (allotype). Similar to holotype, differing in the following characters: size slightly larger (length 4.65 mm; width 2.06 mm); tarsomere 1 not enlarged or overly elongate on all legs; fifth abdominal ventrite truncate, without orange tip.

Variation. Male: length 3.47 – 3.53 mm; width at humeri 1.41 – 1.71. The single female paratype measures 4.47 mm in length and 1.88 mm in width. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. The male fourth antennomere is slender, approximately 3.1x longer than wide, and in the female the fourth antennomere is even more slender, approximately 4.3x longer than wide.

On a male specimen where the abdomen was dissected and cleared, the fifth ventrite has an anvil shaped, sclerotized structure that curves inward. This is covered by the emarginate pygidium and concealed on most specimens.

Remarks. The second and third antennomeres are subequal in length in this species, a character shared by no other species in the genus. This is also one of the smaller species, a character that will separate it from all other species except small specimens of *H. sydneyae* (new species below) and *H. sulcatipennis*. *Hemiphrynus smithi* appears to be most closely related to *H. sydneyae* with respect to the shape of the aedeagi. However, they are distinctly different in their external appearance. *Hemiphrynus sydneyae* has a roughly sculptured, coarsely punctured pronotum (Fig. 24), while the pronotum of *H. smithi*, although coarsely punctured, is very even or regular dorsally (Fig. 23). *Hemiphrynus sydneyae*

also has a tendency to have elytral costae, especially in the females (Fig. 4). *Hemiphrynus smithi* does not show any signs of elytral costae. Other characters have been previously stated for other species that will also differentiate *H. smithi*. See the remarks for the other species for additional differences.

Distribution. Known only from the type locality in the Mexican state of Michoacan at an elevation of approximately 7,700 feet.

Host. Unknown.

Etymology. Named for Dr. Norman J. Smith, a good friend, hymenopterist, travel partner and collector.

Specimens Examined. See "Type Specimens."

Hemiphrynus sulcatipennis* Jacoby 1891 RESTORED GENERIC PLACEMENT, *incertae sedis
(Fig. 3, 29, 36, 82)

Hemiphrynus sulcatipennis Jacoby 1891: 266 (tab. 41, fig. 24). Heikertinger and Csiki 1939: 214.
Blackwelder 1946: 699.

Phrynocephala sulcatipennis: Wilcox 1975: 108. Furth and Savini 1996: 64. Furth 2006: 233.

Type Specimens. Lectotype (here designated and labeled). **Male** [MCZC] labeled: "Parada." [printed on white], "Mexico./ Salle Coll." [printed on white], "*Hemiphrynus/ sulcatipennis/ Jac.*" [handwritten on blue], "Jacoby 2nd/ Coll." [printed on white], "Type/ 18644" [printed and handwritten on red].

Paralectotypes (two here designated and labeled). **Male** [BMNH] labeled: "TYPE/ H.T." [printed on circular white with red border]; "Omiteme./ Guerrero./ 8,000 ft./ July. H. H. Smith." [printed on white], "B. C. A., Col. VI, 1./ Suppl./ *Hemiphrynus/ sulcatipennis,/ Jac.*" [printed on white], "*Hemiphrynus/ sulcatipennis/ Jac.*" [handwritten on blue], "*Hemiphrynus/ sulcatipennis Jac./ BM(NH)*" [printed on white]. **Female** [MCZC] labeled: "Parada." [printed on white], "Mexico./Salle Coll." [printed on white], "Jacoby 2nd Coll." [printed on white], "syntype" [handwritten on pink].

The MCZC specimen was selected as the lectotype as it is a male and in the "Biologia Centrali-Americana" where the collection locality, Parada [La Parada], is cited before the Omiteme [Omitemi] collection locality of the BMNH specimen.

Redescription. Male [MCZC type 18644]. Body length 3.88 mm; width at elytral humeri 1.65 mm; form elongate. Elytra shining, deep purple; head, pronotum, legs yellow-orange. **Head** not elongate, without a ventral "jowl-like" area; genal length 0.50x length of eye; vertex shining, reticulate with scattered punctures near eyes, with vague central longitudinal ridge extending from frontal tubercles to occiput; postclypeus reticulate, truncate, raised in front of antennae into a thickened "v-shaped" anterolateral ridge; frontal carina extending between antennal fossae, terminating at coronal suture between frontal tubercles; interantennal space slightly wider than antennal fossa (fossal width measured from inside edges); labrum orange, reticulate, rectangular, with corners rounded, shining, impunctate with 5 long setae; frontal tubercles small, distinct, elevated, separated by coronal suture; area in front of antennal fossa without sunken appearance, without lateral, obtuse carina; interocular distance 1.40x wider than width of both eyes combined; antennae slender, 0.85x length of body; antennomeres 1-4 orange; 5-6 brownish-orange; 7-11 dark brown; antennomere 2 shortest; antennomere 3 shorter than 4; other antennomeres approximately equal in length. **Pronotum** transverse, shining, with a few irregularly placed punctures laterally; margins uniformly arcuate, widest at center; a vague basal posterior depression along each side of longitudinal midline; basal margin thickened, with shallow central emargination, gradually curving forward to the side margins (not sinuate); anterolateral projections rectangular, with corners rounded; posterolateral angles distinct, acute. **Scutellum** elongate, orange-brown, shining, acutely triangular, impunctate. **Elytra** shining, not reticulate, moderately, irregularly punctate; humeri distinct, with obvious forked humeral costa forming a distinct sulcus along middle 1/3 of elytra. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very

narrowly, inconspicuously separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Mesosternum** black. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi enlarged, but not wider than 3, about equal in length to 2-4 combined; mesotarsi similar to protarsi; tarsomere 1 of metatarsi about equal in length to 2-4 combined, longer than tarsomere 1 of pro- or mesotarsi; hind tibiae with a central longitudinal carina along entire length. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth abdominal ventrite obscured by wings and debris [other male specimens have a shallow, broadly emarginate fifth ventrite]. Pygidium deeply, broadly emarginate. **Aedeagus** (from non-type specimen) sharply bent 90 degrees at basal piece (Fig. 29); basal piece about 25% total length of aedeagus; ventral end narrow, narrowing further to acute tip (Fig. 36).

Female. Differs from the male in longer body length (see “Variation” below), in the pro- and mesotarsi in which tarsomere 1 is not expanded, and in the fifth abdominal ventrite that is broadly, shallowly emarginate with an acute central projection (segment observed from a “syntype” specimen).

Variation. Male: length 3.76 – 4.06 mm; width at humeri 1.47 – 1.71 mm. Female: length 4.00 – 4.82 mm; width 1.53 – 1.88 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is very slender, approximately 5.3x longer than wide, while in the female the ratio is 4.0x longer than wide.

Remarks. This species clearly lacks the diagnostic characteristics of the genus *Phrynocephala*. It is similar to *Phrynocephala* only with respect to the characters of Scherer’s (1983) larger “group 5” and in the coloration and geography. It is much more similar to *Hemiphrynus* in relation to the genal length, the shape of the prosternal intercoxal process, the relative length of the third and fourth antennomeres and placement of the antennae. However, the slender filiform antennae that are nearly as long as the body and the shiny, nonreticulate, distinctly and deeply punctate elytra not only separate this species from all other *Hemiphrynus*, except *H. tenuicornis*, but seem to indicate that *Hemiphrynus* is not the proper placement for this species. Conversely, the shape of the aedeagus in lateral view compares well with the aedeagi of all other *Hemiphrynus*. The external morphology of this species and *H. tenuicornis* are more similar to the written description of *Deuteraltica* Bechyné and Bechyné 1960, but with the similarity of the aedeagi, generic placement is best left with *Hemiphrynus, incertae sedis*, until further study of the related alticine genera. However, it would appear that for *H. sulcatipennis* and *H. tenuicornis*, future study would place one or both species in a closely related group.

The very long and slender antennae, nonreticulate and distinctly punctate elytra (Fig. 3) and genitalia will separate this species from all other *Hemiphrynus*, except *H. tenuicornis*. *Hemiphrynus sulcatipennis* can be separated from *H. tenuicornis* by the forked humeral costa enclosing a distinct sulcus that extends more than 1/3 the length of the elytra (Fig. 3). *Hemiphrynus tenuicornis* lacks the distinct costa and sulcus and instead there are up to five indistinct costae on each elytron. The face is also different between the two species. The postclypeus of *H. sulcatipennis* has a thickened “v-shaped” anterolateral ridge and a distinct frontal carina extending between the antennal fossae. A weak carina extends from the antennal fossae to the occiput. In *H. tenuicornis*, the postclypeus is broadly curved and without a thickened “v-shaped” anterolateral carina. The frontal carina is very weak and the vertex lacks a central longitudinal carina. The mesosternum in *H. sulcatipennis* is black and in *H. tenuicornis* it is orange. See the remarks for the other species for additional differences.

Distribution. Known from the Mexican states of Jalisco, Guerrero, Mexico D. F., and Oaxaca. The type locality cited in the original description is La Parada, as opposed to the specimen label of “Parada.” The Mexican state in which La Parada is located is Oaxaca (Selander and Vaurie 1962).

Host. Unknown.

Specimens Examined. In addition to the lectotype from Parada and the two paralectotypes, other specimens examined included 3 males and 9 females from the following localities. **MEXICO. JALISCO:** Parque Nacional de Volcan, 11.0 mi. from Hwy, 11 July 1984, J. B. Woolley (5) [TAMU]; **MEXICO**

D. F.: Morelos border Hwy 95, 19 June 1979, E. P. Case and D. B. Thomas (3) [TAMU]; **OAXACA:** 2 miles north San Jose Pacifico, 20 July 1974, Clark, Murray, Ashe, Schaffner (2) [TAMU]; **UNKNOWN STATE:** 23683 [green label], Truqui [?], Fry Coll. 1905-100 [on underside of label] (1) [BMNH]; Salle Coll., 1068 [on underside of label] (1) [BMNH].

***Hemiphrynus sydneyae* Gilbert sp. nov.**

(Fig. 4, 18, 24, 31, 38, 82)

Type Specimens. Holotype (male) and **allotype** (female). **MEXICO. PUEBLA:** 3.7 miles south Zacapoxtla, 23 July 1985, Jones, Schaffner. Holotype and allotype deposited in the collection of Texas A&M University.

Paratypes (4 males and 13 females) – same data as holotype (2) [AJGC], (1) [TAMU]; Hwy. 129, 5 mi. W. Teziutlan, 7,500ft., 18 August 1982, C. W. and L. O'Brien and G. Wibmer (1) [TAMU]; 5 mi. S. Teziutlan, 7,500ft., hwy 131, 18 August 1982, C. and L. O'Brien and G. Wibmer (1) [TAMU]; **MEXICO:** No. 2, 13.3 mi. E. Santa Barbara, 9,700ft., 30 June 1961, George W. Byers (1) [KSBS]; #11, 13.4 mi. E. Santa Barbara, 9,750ft., 26 July 1963, George W. Byers (1) [KSBS]; **MEXICO D. F.:** 6 mi. E. of Avila Camacho, Hwy. #190, 10,500ft., 3 July 1956, R. E. Boer and party (1) [KSBS]; **OAXACA:** Hoege (4) [BMNH – labeled as B. C. A. material]; **PUEBLA:** 3.7 mi. S Zacapoxtla, 2 July 1985, 85/085, Coll. Woolley and Zolnerowich (1) [TAMU]; **UNKNOWN STATE:** 67-56 (1) [BMNH]; **VERACRUZ:** 3 mi. S. Altotonga, 7,700ft., hwy 131, 20 August 1982, C. and L. O'Brien and G. Wibmer (2) [TAMU]; Cordova [Cordoba], Salle Coll. (1) [BMNH].

Description. Male (holotype). Body length 4.41 mm; width at elytral humeri 1.82 mm; form elongate. Elytra shining, dark blue; head, pronotum, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.54x length of eye; vertex shining, with coarse coalescing punctures, a tentorial pit near eye, a “v-shaped” ridge extending forward, connecting with frontal tubercles, enclosing coronal suture; anterior margin of postclypeus truncate, with an abruptly elevated anterolateral ridge posterior to margin; frontal carina acute, distinctly raised in lateral view, emanating from anterolateral ridge of postclypeus; antennal fossae separated by distance slightly more than width of antennal fossa (fossal width measured from inside edges); labrum orange, rectangular, with corners rounded, shining, impunctate; labral notch indistinct; frontal tubercles distinct, elevated, separated by coronal suture; area in front of antennal fossa without sunken appearance, without lateral carina; interocular distance 1.47x wider than width of both eyes combined; antennae slender, 0.85x length of body; antennomeres 1-4 orange; 5-11 orange-brown to brown; antennomere 2 shortest; 4 longer than 3; antennomere 1 longest; 6-11 nearly equal in length. **Pronotum** transverse, dorsal surface uneven (not smooth), reticulate, shining, with shallow, coarse, irregular punctures; lateral margin widest in front of middle; basal depression most obvious near lateral margins, where it is delimited by distinct callosities; basal margin nearly straight; anterolateral projections distinct, rectangular, with corners rounded; posterolateral angles distinct, acute. **Scutellum** brown, shining, obtusely triangular, impunctate. **Elytra** reticulate, impunctate, with vague costae; humeri distinct. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly, inconspicuously separating procoxae, ending in dark brown knob with numerous setae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Mesosternum** black. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi enlarged, about as wide as 3, about equal in length to 2-4 combined; tarsomere 1 of meso- and metatarsi not wider than tarsomere 3 of meso- and metatarsi. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth ventrite shallowly emarginate, with small central nipple, with tip orange. **Aedeagus** sharply bent 90 degrees near basal piece (Fig. 31); basal piece about 30% total length of aedeagus; ventral end narrow, narrowing further to long, narrow, acute tip (Fig. 38).

Female (allotype). Similar to holotype, differing in the following characters: size slightly larger (length 4.71 mm; width 1.94 mm); tarsomere 1 on all legs not enlarged; fifth abdominal ventrite dark, truncate, with acute central projection.

Variation. Male: length 4.18 – 4.65 mm; width at humeri 1.65 – 1.82 mm. Female: length 4.35 – 4.88 mm; width 1.76 – 2.00 mm. The elytral costae (up to six per elytron) are more pronounced in the female, especially the humeral costa. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio) varies. In the specimens selected, the ratio of the fourth antennomere of the male is slender, approximately 3.6x longer than wide, while in the female the ratio of the fourth antennomere is even more slender, approximately 4.2x longer than wide.

Remarks. *Hemiphrynus sydneyae* can be distinguished from all other species in the genus by the very rough, uneven pronotum with a distinct basal depression which is delimited by obvious callosities (Fig. 24), the “v-shaped” ridge on the vertex of the head and the aedeagus. It also has an acute frontal carina distinguishing it from *H. corrugatus* (Fig. 14), *H. intermedius* (Fig. 16), and *H. smithi* (Fig. 17) which have a broad frontal carina. *Hemiphrynus elongatus* is larger in size and has distinctly stout antennae, and *H. barri* has a very differently shaped pronotum, with entirely orange thoracic sterna and lacks an anterolateral ridge on the postclypeus. See the remarks for the other species for additional differences.

Distribution. Known from the Mexican states of Mexico, Mexico D. F., Oaxaca, Puebla, and Veracruz at elevations between 7,500 and 10,500 feet.

Host. Unknown.

Etymology. Named for my first, and to date, only grandchild, Sydney Evelyn Jenkins.

Specimens Examined. See “Type Specimens.”

Hemiphrynus tenuicornis* Jacoby 1891 RESTORED GENERIC PLACEMENT, *incertae sedis
(Fig. 82)

Hemiphrynus tenuicornis Jacoby 1891: 265 (tab. 41, fig. 23, male). Heikertinger and Csiki 1939: 214.
Blackwelder 1946: 699.

Phrynocephala tenuicornis: Wilcox 1975: 108. Furth and Savini 1996: 64. Furth 2006: 233.

Type Specimens. Lectotype (here designated and labeled). **Male** [BMNH] labeled: “23” [handwritten on white], “TYPE/ H.T.” [printed on circular white with red border], “1226” [printed on blue], “Yolotepec” [printed on white], “Sp. figured.” [printed on white], “Mexico./ Salle Coll.” [printed on white], “B. C. A., Col. VI, 1./ Suppl./ *Hemiphrynus/ tenuicornis,/ Jac.*” [printed on white], “*Hemiphrynus/ tenuicornis,/ Jac.*, [male symbol]” [handwritten on blue], “BM(NH)” [printed on white].

Paralectotypes (two here designated and labeled). **Female** [MCZC] labeled: “Yolotepec” [printed on white], “Mexico./ Salle Coll.” [printed on white], “*Hemiphrynus/ sulcatipennis/ Jac.*” [handwritten on blue], “Jacoby 2nd/ Coll.” [printed on white], “Type/ 18643” [printed and handwritten on red]. **Female** [BMNH] labeled: “1227” [printed on blue], “Yolotepec” [printed on white], “Mexico./ Salle Coll.” [printed on white], “B. C. A., Col. VI, 1./ Suppl./ *Hemiphrynus/ tenuicornis, Jac.*” [printed on white], “*Hemiphrynus/ tenuicornis,/ Jac.*” [handwritten on blue], “BM(NH)” [printed on white].

Two specimens in the type material are labeled as the type or holotype. The British Museum specimen was selected as the lectotype because it is a male and is labeled as the specimen pictured in the “Biologia Centrali-Americana” (Jacoby 1891).

Redescription. Male [BMNH, lectotype]. Body length 4.29 mm; width at elytral humeri 1.82 mm; form elongate. Elytra shining, deep purple; head, pronotum, mesosternum, legs yellow-orange. **Head** not elongate, without ventral “jowl-like” area; genal length 0.75x length of eye; vertex shining, reticulate, impunctate; anterior margin of postclypeus broadly curved; frontal carina indistinct, only slightly raised in lateral view between antennal fossae; antennal fossae separated by twice width of antennal

fossa (fossal width measured from inside edges); labrum orange, rectangular, with corners rounded, shining, impunctate; labral notch indistinct; frontal tubercles distinct, elevated, separated by coronal suture; area in front of antennal fossa without sunken appearance, without lateral carina; interocular distance 1.70x wider than width of both eyes combined; antennae slender, nearly as long as body; antennomeres 1-3 orange; 4-11 gradually darker; antennomere 2 shortest; 3 slightly shorter than 1 or 4; 5-6 longest; 7-11 gradually shorter. **Pronotum** transverse, smooth, shining, with a few inconspicuous punctures; posterolateral margins nearly parallel, gradually curving inward at front; basal depression absent; basal margin vaguely sinuate; anterolateral projections distinct, rectangular, with corners rounded; posterolateral angles distinct, obtuse. **Scutellum** orange-brown, shining, obtusely triangular, impunctate. **Elytra** shining, not reticulate, moderately, irregularly punctate; punctures nearly coalescing; humeri distinct, with obvious humeral costa and 4 additional incomplete, indistinct costae on each elytron. **Prosternal intercoxal process** level with prosternum, not elevated ventrally to level of procoxae, very narrowly, inconspicuously separating procoxae. **Procoxae** conical, appearing contiguous. **Procoxal cavities** open. **Mesosternum** orange. **Legs** including tarsi, orange; pro- and mesofemora not enlarged; tarsomere 1 of protarsi enlarged, wider than 3, about equal in length to 2-4 combined; mesotarsi similar to protarsi; tarsomere 1 of metatarsi not enlarged, not wider than 3, longer than 2-4 combined; all tibiae with central longitudinal carina along entire length. **Abdomen** dark brown, shiny, impunctate, sparsely pubescent; fifth ventrite broadly emarginate, with indistinct, broad terminal lobe.

Female. Similar to the lectotype, differing in the following characters: elytral costae more evident; tarsomere 1 of pro- and mesotarsi not enlarged; fifth ventrite entire.

Variation. The two female paralectotypes measured 4.76 mm and 4.17 mm in length and 2.05 mm and 1.76 mm in width. The single female non-type specimen measured 4.41 mm in length and 1.88 mm in width. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is slender, approximately 3.6x longer than wide, while in the female the ratio of the fourth antennomere is very slender, approximately 5.3x longer than wide.

Remarks. For all the same reasons as *H. sulcatipennis*, *H. tenuicornis* is placed in *Hemiphrynus, incertae sedis* (see "Remarks" for *H. sulcatipennis*). With only the lectotype, two paralectotypes and a single non-type female available, the proper generic placement for this species will need to wait until additional specimens are collected and related groups are studied. See the remarks for the other species for additional differences.

Distribution. Based on material here examined, *H. tenuicornis* is known only from Yolotepec, Oaxaca, Mexico. However, Furth (2006) reports this species from the state of Hidalgo as well.

Host. Unknown.

Specimens Examined. In addition to the lectotype and two paralectotypes, one other specimen was examined. **MEXICO. UNKNOWN STATE:** 67-56 (1) [BMNH].

***Phrynocephala* Baly 1861**

(Fig. 7-10, 12, 39-80)

Phrynocephala Baly 1861: 201. Type Species. *Phrynocephala pulchella* Baly 1861, by original designation. *Romalocera* Dejean 1836: 389 [*nomen nudum*, no diagnosis or indication]. Gemminger and Harold 1876: 3494 [as synonym of *Phrynocephala* Baly].

Redescription. Body elongate; head, pronotum, legs yellow-orange; elytra dark bluish, greenish or purplish-black. **Head** elongate; eyes small, maximum length of eye less than genal length; clypeus truncate with prefrontal lateral ridge; frontogenal suture distinct; maxillary palpi not stout, last pal-

pomere smallest, narrow, attenuate; antennae inserted below eyes, filiform/moniliform, extending 2/3 to 3/4 length of body; antennomere 3 longer than 4; ventral side of face from eye to front of clypeus curving downward in “jowl-like” appearance (Fig. 7, 9); antennal fossae separated by distance equal to or slightly narrower than antennal fossa. **Pronotum** transverse, laterally margined, with vague basomedial depression extending across central half of basal margin; basal margin straight to vaguely sinuate. **Elytra** reticulate, impunctate to irregularly, shallowly punctate, with or without vague carinae. **Prosternal intercoxal process** elevated ventrally over plane of prosternum, projecting between procoxae, distinctly separating procoxae, curving posterior to procoxae, terminating at mesosternum in a distinct knob or projection. **Procoxae** globose. **Procoxal cavity** open. **Legs** in male with pro- and mesofemora enlarged, but not as large as metafemora; pro- and mesotarsi in male with tarsomere 1 enlarged, as wide as or wider than 3; tarsomere 1 of metatarsi less expanded, more elongate than pro- and mesotarsi; tibiae in male enlarged, strongly expanded from base to apex in ventral aspect, sulcate, bicarinate; tarsal claws appendiculate. Sexes dimorphic in size; length, shape of antennae; size, shape of pro- and mesofemora; size, shape of tarsomeres; shape of last abdominal ventrite; degree of development of “jowl.”

Remarks. Baly (1861) described *Phrynocephala* for a single species, *P. pulchella* (Fig. 42). Subsequently, Baly (1876) added a second species to the genus, *P. deyrollei*. Jacoby (1884) added three more species, *P. capitata* Jacoby 1884, *P. elongatus* (= *H. elongatus* above), and *P. laevicollis* Jacoby 1884. *Phrynocephala elongatus* is transferred to *Hemiphrynus* herein. Pallister (1953) described *P. punctulata* from northern Mexico. Harold (1876) added *P. heydeni* from Paraguay. The placement of this species is doubtful based on the Paraguayan distribution. However, until the type can be studied, *P. heydeni* remains in *Phrynocephala*. These seven species composed the genus *Phrynocephala* until Scherer (1962) synonymized *Hemiphrynus* with *Phrynocephala* (see “Remarks” for *Hemiphrynus* for additional history). The genus now consists of eleven species.

The name *Phrynocephala* is derived from the Greek “phryno” or “toad-like” and the Latin “cephalo” or head. Although the head in the species of this genus is rather unusual, it is hard to characterize it as a “toad-like head.”

Although similar in general appearance to *Hemiphrynus* in body shape, sculpture, color, and punctuation, *Phrynocephala* can be readily distinguished by a number of morphological features. Most notably is the extended genal area that is longer than the maximum length of the eye (Fig. 7, 9). Also, when viewed from the lateral perspective, the anterodorsal half of the head curves down from the eye and then back up to the clypeal area (Fig. 7, 9). At first glance, it is reminiscent of the “jowl” below the chin of a plump human. In *Phrynocephala* the third antennomere is longer than the fourth (Fig. 12). In *Hemiphrynus* the fourth antennomere is longer than the third (Fig. 11). The procoxae in *Phrynocephala* are globose, while they are conical in *Hemiphrynus*. The antennae are inserted below the eyes in *Phrynocephala* (Fig. 7, 9-10, 12) and at the lower margin of the eyes in *Hemiphrynus* (Fig. 5-6, 11). In *Phrynocephala*, the prosternal intercoxal process is elevated between the procoxae. The prosternal intercoxal process rises ventrally over the plane of the prosternum and separates the procoxae before curving posterior to procoxae and terminating on the mesosternum, sometimes with a short posteriorly facing projection at the terminal point. In *Hemiphrynus* the prosternal intercoxal process is flat, indistinct and only very narrowly separates the procoxae. Other characters that separate *Phrynocephala* from *Hemiphrynus* that may not be as noticeable include a slightly more obvious basal depression on the pronotum of *Phrynocephala*, the relatively greater distance between the antennae of *Hemiphrynus* and the more prominent pronotal angles in *Phrynocephala*. The tibiae of *Hemiphrynus* are slender compared to the broad, apically expanded tibiae of *Phrynocephala*. The metatibiae in *Phrynocephala* and *Hemiphrynus* are structurally distinct (see “Remarks” for *Hemiphrynus*).

Five species in this genus are associated with *Acacia* spp. and *Mimosa* spp. (Fabaceae) or *Acacia*-oak woodlands.

A single female specimen in the KSBS collection possesses many of the defining characteristics of the genus, except that the length of the gena is slightly less than the maximum length of the eye. Since some of the characteristics are limited to the male of the species and with only a single female specimen at hand, it would not be prudent to address this specimen in any detail in this paper. However, it does demonstrate that there is still work to be done within these two genera and beyond.

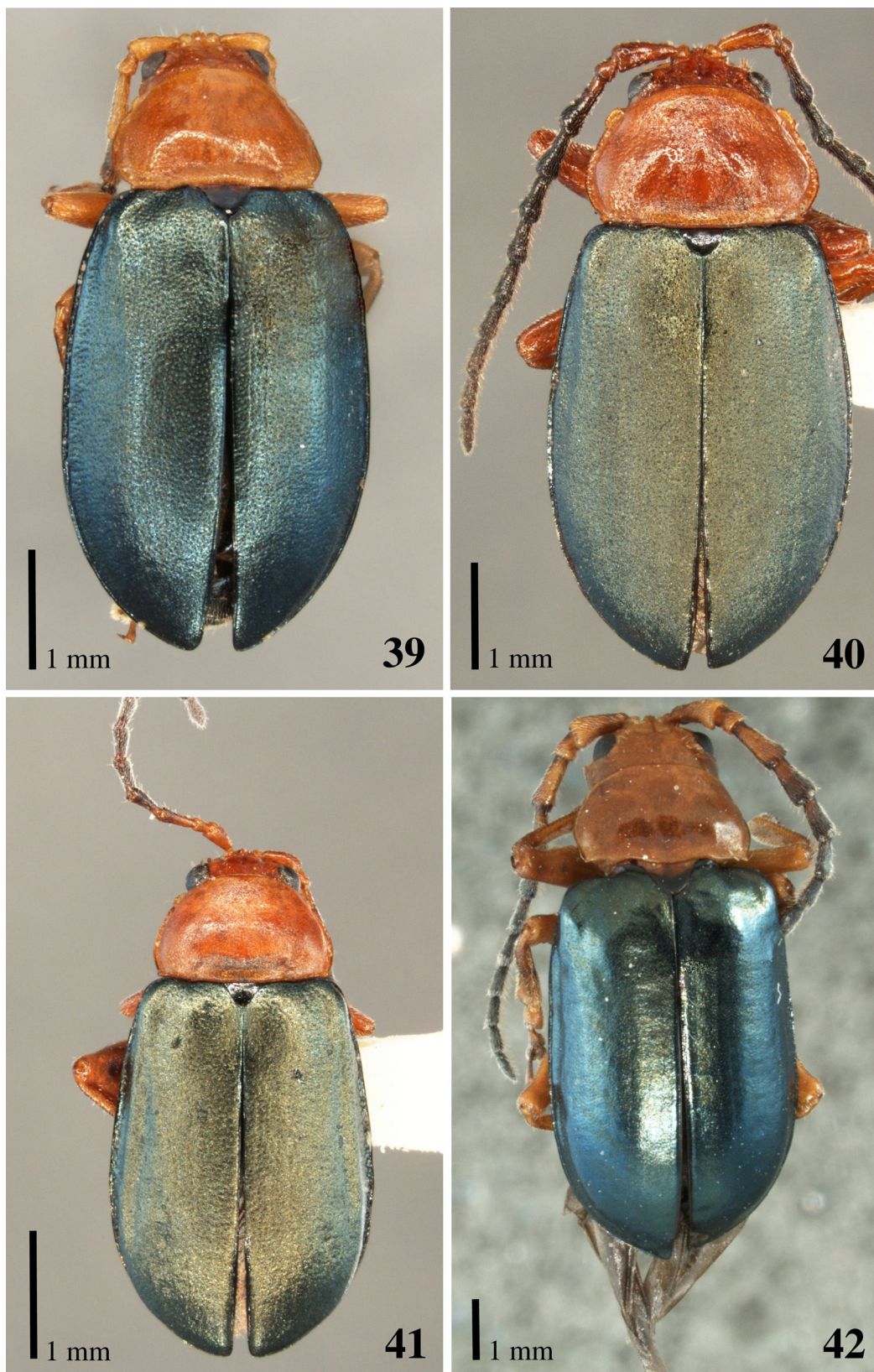
Key to the described species of *Phrynocephala* from Central and North America

1. Size large, 7.2 to 11 mm; procoxae conical; basal margin of pronotum strongly sinuate; “jowl” not obvious; aedeagus as in Fig. 62, 69 ***P. pulchella* Baly**
 — Size smaller, 3.5 to 7.5 mm; procoxae globose; basal margin of pronotum weakly sinuate to straight; “jowl” obvious **2**
- 2(1). Mesosternum orange; “jowl” carinate (Fig. 9).. **3**
 — Mesosternum dark brown or black; “jowl” without carina (Fig. 7) **7**
- 3(2). Male with pro- and mesotibiae, from ventral perspective, abruptly expanded in the apical half (Fig. 55); female with pro- and mesotibiae expanded more than metatibiae ***P. laevicollis* Jacoby**
 — Male with pro- and mesotibiae gradually enlarged, not abruptly expanded; female with pro- and mesotibiae not expanded more than metatibiae **4**
- 4(3). Size smaller, 3.9 to 4.4 mm; prosternal intercoxal process grooved, without solid hatchet-shaped knob posterior to procoxae; male unknown ***P. australis* Gilbert sp. nov.**
 — Size larger, 4.8 to 7.5 mm; male with prosternal intercoxal process produced into distinct hatchet-shaped knob posterior to procoxae **5**
- 5(4). Pronotum roughly sculptured, with numerous coalescing punctures (Fig. 47); aedeagus as in Fig. 56, 64, 75 ***P. capitata* Jacoby**
 — Pronotum smooth, reticulate not roughly sculptured, with punctures distinct or indistinct but not coalescing **6**
- 6(5). Pronotum dull, not obviously punctate (Fig. 52); occurs at higher elevations (900 meters) in the state of Chiapas, Mexico; aedeagus as in Fig. 60, 71 ... ***P. pseudocapitata* Gilbert sp. nov.**
 — Pronotum shining, obviously punctate (Fig. 49); occurs primarily at low elevations in the Mexican states of Colima, Jalisco and Nayarit; aedeagus as in Fig. 58, 66, 76 ***P. kendrae* Gilbert sp. nov.**
- 7(2). Size very small, 3.5 mm to 4.0 mm ***P. natalieae* Gilbert sp. nov.**
 — Size larger, 4.6 to 7.0 mm **8**
- 8(7). Pronotum impunctate (Fig. 54); aedeagus as in Fig. 63, 70; occurs in the Mexican states of Chihuahua and Durango; aedeagus as in Fig. 63, 70 ***P. punctulata* Pallister**
 — Pronotum with scattered coarse punctures or uniformly, moderately punctate **9**
- 9(8). Pronotum with scattered coarse punctures (Fig. 51); prefrontal clypeal ridge of male shallowly emarginate (Fig. 44); occurs in the Mexican state of Morelos; aedeagus as in Fig. 59, 67, 77 ***P. marciae* Gilbert sp. nov.**
 — Pronotum uniformly punctate (Fig. 48, 53); male with prefrontal clypeal ridge deeply emarginate (Fig. 43, 45) **10**
- 10(9). Genal ratio about 1.4x; aedeagus as in Fig. 61, 68, 72-73 ***P. pueblae* Gilbert sp. nov.**
 — Genal ratio about 1.7x; aedeagus as in Fig. 57, 65, 74 ***P. deyrollei* Baly**

***Phrynocephala australis* Gilbert sp. nov.**

(Fig. 80)

Type Specimens. Holotype (female): NICARAGUA. Sta. Rita Boaco, 20 May 1958, a la luz, Coll. Mario Vaughan, Estrada 58-216. Holotype deposited in the United States National Museum.



Figures 39-42. Habitus of adult *Phrynocephala*. 39) *P. kendrae*, male. 40) *P. marciae*, male holotype. 41) *P. nataliae*, male holotype. 42) *P. pulchella*, male.

Paratype (1 female) – **EL SALVADOR**. Cuscatlan, Rosario [El Rosario], 15 June 1953, No. 444-273, Col. M. S. V. (1) [USNM].

Description. Female (holotype). Body length 4.41 mm; width at elytral humeri 1.76 mm; form elongate. Elytra bluish-black; head, pronotum, mesosternum, legs yellow-orange. **Head** elongate, with curved carina ventrally extending from eye to front edge of postclypeus, appearing “jowl-like;” genal length 1.60x longer than maximum length of eye; vertex shining, finely reticulate, with large darkened area behind eye containing numerous coalesced punctures; postclypeus with prefrontal ridge truncate; an acute, elevated frontal carina extends between antennal fossae, descending to front edge of postclypeus; anteclypeus narrow, entire, indistinct; labrum orange, quadrate, with six long, evenly spaced setae; labral notch indistinct; antennal fossae separated by distance equal to width of antennal fossa (fossal width measured from inside edges); frontal tubercles flat, indistinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, without obvious lateral carina; interocular distance 1.59x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.70x length of body; antennomeres 1-3 orange; 4-11 dark brown; antennomere 3 longest; antennomere 2 shortest; antennomeres 5-11 subequal in length. **Pronotum** dull, smooth, reticulate, impunctate; lateral margins evenly curving to apex, widest at middle; basolateral projections small, obtuse; anterolateral projections rectangular, with corners rounded, not strongly projected; basal depression poorly defined. **Scutellum** orange-brown, triangular, impunctate. **Elytra** distinctly reticulate, irregularly punctate with punctures inconspicuous; humeri distinct; humeral costa not obvious, but with short indistinct costa extending 1/4 length of each elytron. **Prosternal intercoxal process** grooved, elevated ventrally over plane of prosternum, even with plane of tip of procoxae, narrowly, distinctly separating procoxae, width equal to approximately 1/4 width of procoxa. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** orange. **Legs** orange; tarsi orange-brown, darker than femora and tibiae; pro- and mesotibiae gradually expanded apically, with distinct central longitudinal carina; metatibiae without central carina. **Abdomen** dark brown, shiny, punctate, sparsely pubescent; fifth abdominal ventrite entire.

Male. Unknown.

Variation. The single female paratype measures 3.94 mm in length and 1.59 mm in width. The stout or slender appearance of the antennae, as represented by the ratio of the fourth antennomere (length to width ratio) in the female, is relatively stout, approximately 2.6x longer than wide.

Remarks. *Phrynocephala australis* clearly possesses all of the characters of the genus, including the extended gena, elevated prosternal intercoxal process, placement of the antennae below the eyes, the third antennomere longer than the fourth, globose procoxae and stout filiform to near moniliform antennae. Amongst the species within the genus, *P. australis* and *P. natalieae* are easily the smallest beetles. Specimens of *P. australis* range from 3.94 to 4.41 mm in length and *P. natalieae* from 3.47 to 4.00 mm. The smallest specimen of any other species is the holotype of *P. laevicollis*. This specimen is 4.12 mm in length. However, specimens of *P. laevicollis* range between 4.12 and 4.41 mm, and the obvious features of the legs, in both the male and female, will separate *P. laevicollis* from both *P. australis* and *P. natalieae*. *Phrynocephala natalieae* has a dark mesosternum, while the mesosternum of *P. australis* is orange. The female of *P. australis* has a strongly carinate “jowl.” Amongst females of the genus, this is a character shared with only *P. capitata*, *P. laevicollis* and *P. pseudocapitata* (new species below). Size and locality will readily separate *P. australis* from *P. capitata* and *P. pseudocapitata*, as well as from all other species of *Phrynocephala*. See also the remarks for other species.

Distribution. Known only from a single locality in El Salvador and another in Nicaragua.

Host. Unknown. The holotype was collected at light (a la luz). Specimens of other species collected by the author were day active. A collection at light was probably inadvertent.



Figures 43-46. Frontal view of faces of *Phrynocephala*. 43) *P. deyrollei*. 44) *P. marciae*. 45) *P. pueblae*. 46) *P. punctulata*.

Etymology. This species is given the Latin name “australis” for it represents the southern limit of the genus in Central America.

Specimens Examined. See “Type Specimens.”

***Phrynocephala capitata* Jacoby 1884**

(Fig. 47, 56, 64, 75, 78)

Phrynocephala capitata Jacoby 1884: 293. Heikertinger and Csiki 1939: 215. Blackwelder 1946: 699. Wilcox 1975: 107. Furth and Savini 1996: 64. Furth 2006: 233.

Type Specimens. Lectotype (here designated and labeled). **Female** [MCZC] labeled: “Tuxtla” [printed on white], “Mexico./ Salle Coll.” [printed on white], “1st Jacoby/ Coll.” [printed on white], “*capitata* Jac./ cotype” [handwritten on blue], “Type/ 18747” [printed and handwritten on red].

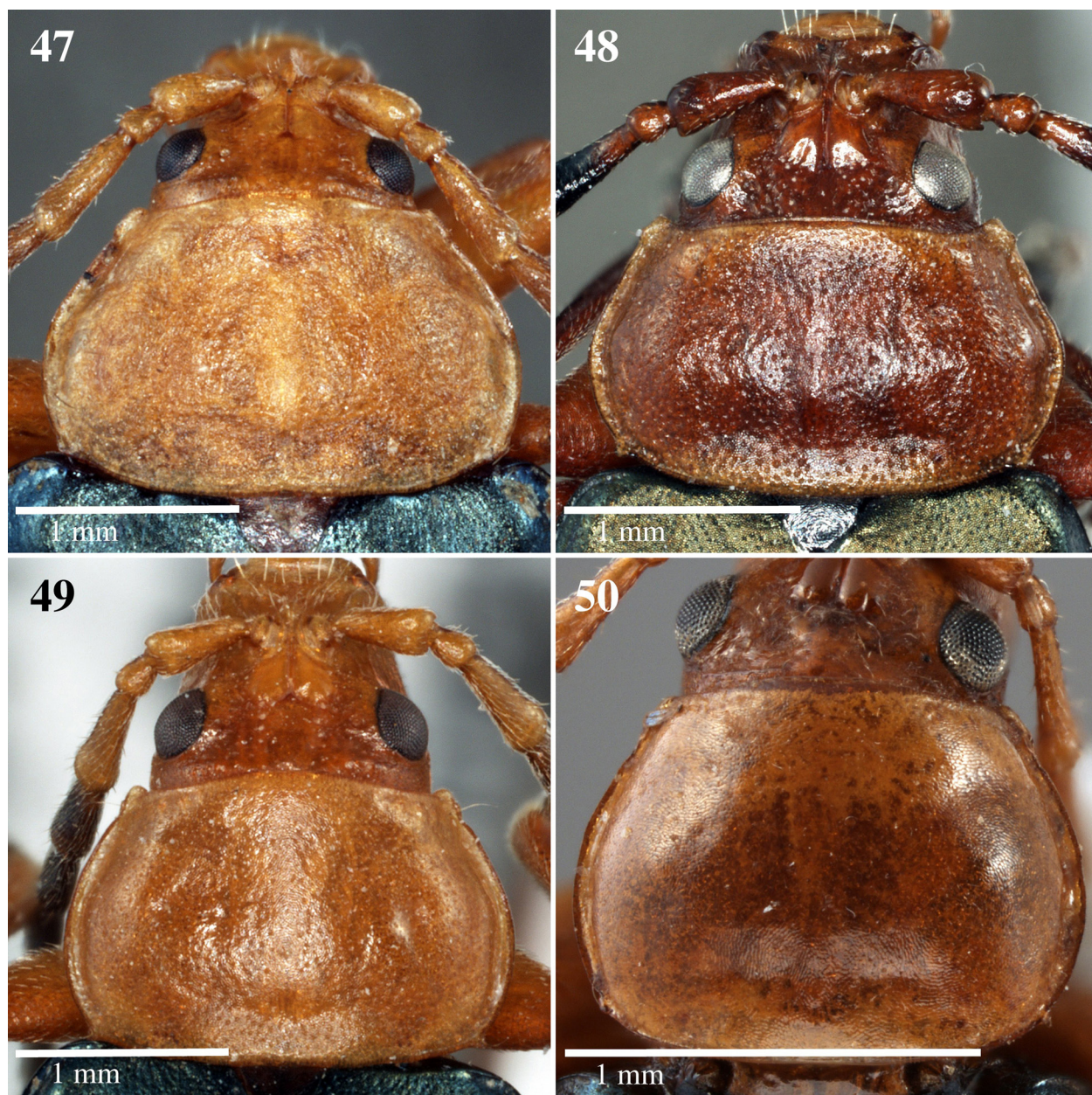
Paralectotype (here designated and labeled). **Female** [BMNH] labeled: “TYPE/ H.T.” [printed on circular white with red border], “Tuxtla.” [printed on white], “B. C. A., Col. VI, 1./ *Phrynocephal capitata*,/ Jac.” [printed on white], “Mexico./ Salle Coll.” [printed on white], “*Phrynocephal capitata*. Jac.” [handwritten on blue], “936” [printed on white].

The female specimen in the Museum of Comparative Zoology, Harvard was selected as the lectotype for the species because it is labeled as a cotype on a blue handwritten label from the 1st Jacoby Coll. A second specimen (designated as a paralectotype) from the type locality in the British Museum of Natural History did not indicate that it was from the 1st Jacoby Coll. and did not appear to be labeled originally as a type.

Redescription. Female [MCZC, type 18747]. Body length 6.05 mm; width at elytral humeri 2.47 mm; form elongate. Elytra bluish-black; head, pronotum, mesosternum, legs yellow-orange. **Head** elongate, with lateral curved carina ventrally extending from behind eye to front edge of postclypeus, appearing “jowl-like;” genal length 1.75x longer than maximum length of eye; vertex indistinctly reticulate, with a few scattered large coalesced punctures near eye; postclypeus with prefrontal ridge truncate; an acute, elevated frontal carina extends between antennal fossae, curving upward before descending to front edge of postclypeus; anteclypeus entire, same color as labrum; labrum yellow-orange, rounded with a few scattered setae; antennal fossae separated by frontal carina; antennal fossae separated by distance equal to width of antennal fossa (fossal width measured from inside edges); frontal tubercles flat, distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, bordered by obtuse carina extending from eye to front edge of postclypeus, with frontogenal suture; interocular distance 1.60x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.60x length of body; antennomeres 1-3 orange; 4-11 dark brown; antennomere 3 longest, barely longer than either antennomere 1 or 4; antennomere 2 shortest; antennomeres 5-11 subequal in length. **Pronotum** roughly sculptured, reticulate, with dense coalescing punctures; lateral margins widest at middle, tapering to apex; posterolateral projections small, rounded; anterolateral projections rectangular, with corners rounded; basal depression poorly defined. **Scutellum** orange, triangular, impunctate. **Elytra** distinctly reticulate, irregularly punctate; punctures conspicuous; with obvious humeral costa extending about 1/3 length of each elytron; humeral depression obvious. **Prosternal intercoxal process** elevated ventrally over plane of prosternum, even with plane of tip of procoxae, narrowly, distinctly separating coxae, terminating at mesosternum as small knob. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** orange. **Legs** orange; tarsi orange-brown, darker than femora or tibiae; tarsomere 1 on all legs nearly as long as 2-4 combined; tarsomere 1 of metatarsi longer than tarsomere 1 of pro- or mesotarsi metatarsi; tarsomere 3 on all legs widest; all tibiae similar, slender, gradually expanded apically, with weak central longitudinal carina. **Abdomen** black, shiny, coarsely punctured, moderately pubescent; fifth ventrite entire.

Male. Male characters were obtained from specimens collected at or near the type locality that were in a short series of specimens, including females that could be compared to the type. Males are similar to the female type, differing in the following characters: size slightly larger (see “Variation”); head more robust with “jowl” more pronounced laterally, in frontal view the margin of the “jowl” is visible giving the male a broader head than the female in front of the eyes; all carinae on the head more developed; elytra with humeri indistinct, without humeral costa; tarsomere 1 broadly enlarged on pro- and mesotarsi; all tibiae stout, sulcate, expanded apically, with central carina; fifth ventrite emarginate, with a small, central orange tip, including small central orange lobe. **Aedeagus** laterally straight in basal half, bent about 25 degrees ventrally in apical half; basal piece about 21% total length of aedeagus (Fig. 56); ventral end with distinct, broad subapical notch, followed by subapical lobe; tip with broad, obtuse point (Fig. 64, 75).

Variation. Male: length 4.88 – 7.06 mm; width at humeri 2.12 – 3.00 mm. Female: length 5.47 – 6.47 mm; width 2.35 – 2.71 mm. The humeral costa varies in length on female specimens from very short to



Figures 47-50. Pronota of *Phrynocepha*. 47) *P. capitata*. 48) *P. deyrollei*. 49) *P. kendrae*. 50) *P. laevicollis*.

about 1/3 length of elytra, and in some specimens there are additional vague elytral carinae. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 2.2x longer than wide, while in the female the ratio of the fourth antennomere is slightly greater, approximately 2.7x longer than wide.

Remarks. *Phrynocepha capitata*, *P. laevicollis*, and *P. pulchella* were the only described species of *Phrynocepha* with an orange mesosternum. With the addition of three of the five new species described previously or below, there is now a group of six species with an orange mesosternum. This group now includes *P. australis*, *P. capitata*, *P. kendrae*, *P. laevicollis*, *P. pseudocapitata*, and *P. pulchella*. *Phrynocepha pulchella* is readily distinguishable by its large size. The other five species are all smaller and can be separated from each other using external morphological characters and male genitalia. The type for *P. capitata* is a female, and, since the male has most of the unique characters of the genus, the



Figures 51-54. Pronota of *Phrynocephala*. 51) *P. marciae*. 52) *P. pseudocapitata*. 53) *P. pueblae*. 54) *P. punctulata*.

selection of specimens to designate as *P. capitata* was based on borrowed specimens collected at the type locality, and with a similar pronotum. The roughly sculptured, reticulate pronotum with dense coalescing punctures (Fig. 47) and a distinct central carina on the metatibia should serve to separate this species from *P. pseudocapitata* which has a smooth, nearly impunctate pronotum (Fig. 52) and a weak central carina on the metatibia. The pronotum of *P. kendrae* is shining, smooth, reticulate and obviously punctate (Fig. 49). Generally, *P. capitata* is similar in size to *P. kendrae*, but does not occur in the same states. It does share the same habitat as *P. pseudocapitata*, but is slightly smaller in size.

The aedeagus of *P. capitata* (Fig. 56, 64) is also unlike that of *P. pseudocapitata* (Fig. 60, 71). When viewed from various perspectives, the tip of the aedeagus of *P. capitata* (Fig. 64, 75) is similar to that of *P. kendrae* (Fig. 66, 76) and *P. marciae* (new species below) (Fig. 67, 77). However, upon closer examination and when viewed from the lateral perspective, obvious differences can be observed. The aedeagus is unique for each species (Fig. 56-77).



Figure 55. Protibia of *Phrynocephala laevicollis*.

Another species with an orange mesosternum, *P. laevicollis*, is easily separated from all of the above species by its smaller size and uniquely expanded pro- and mesotibiae in the male (Fig. 55). *Phrynocephala australis* can be distinguished by its smaller size, distribution and aedeagus.

All six species can also be differentiated from the four species with a dark mesosternum (see “Remarks” for other species) by the distinctly carinate “jowl” in the male.

Distribution. Based on material here examined, *P. capitata* is known from the Mexican states of Chiapas, Oaxaca and Veracruz at elevations between 138 and 3,400 feet. Furth (2006) also lists Guerrero, Jalisco and Tabasco for this species. This species and *P. kendrae* are the only two species in the genus that are known to occur below 1,850 feet elevation.

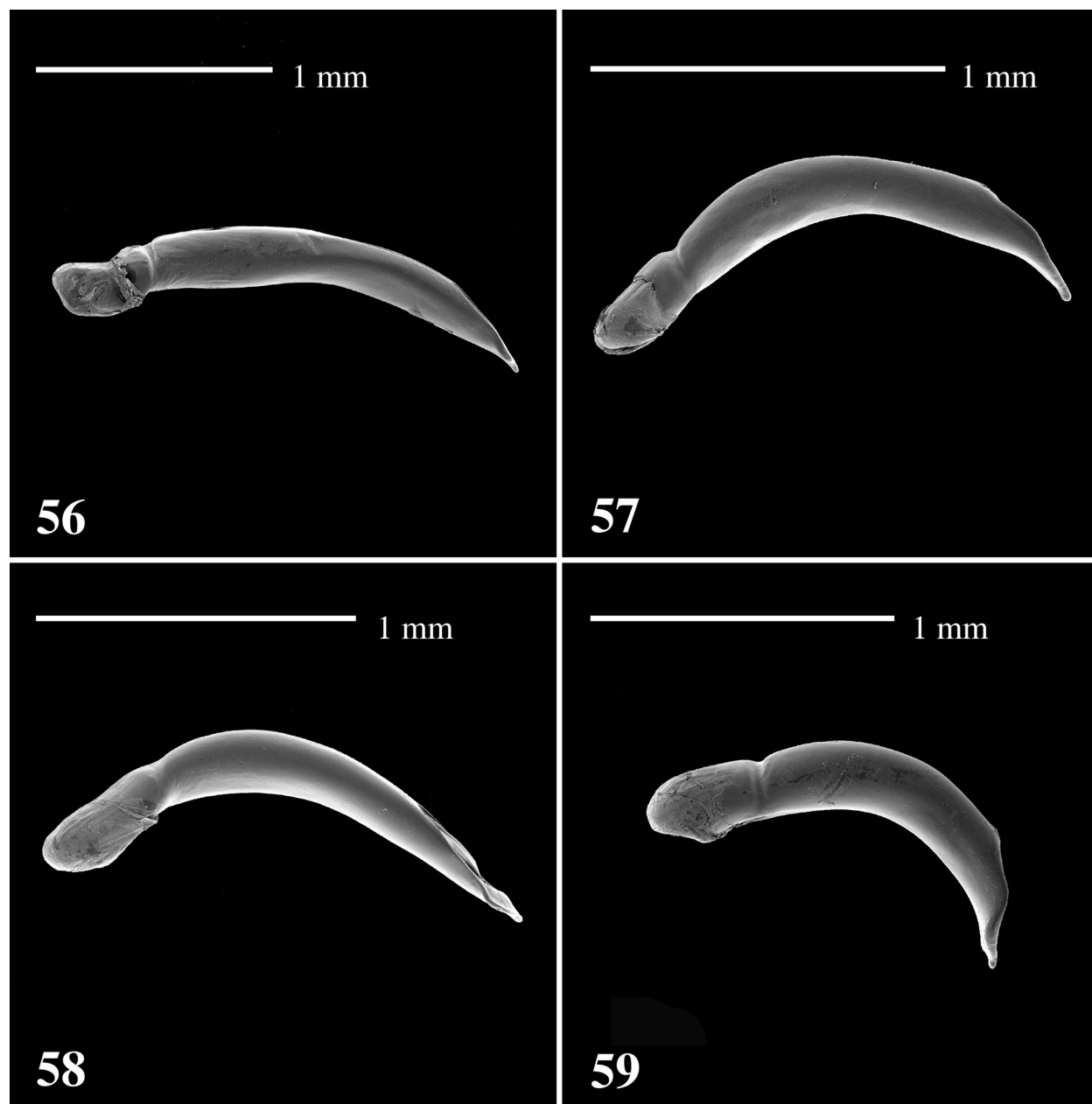
Host. Unknown. A single specimen was collected at light. Specimens of other species collected by the author were day active. A collection at light was probably inadvertent.

Specimens Examined. In addition to the lectotype and the paralectotype, other specimens examined included 21 males and 24 females. **MEXICO. CHIAPAS:** Tuxtla G.- Sumidero, 9 June 1991, flowering tree, F. W. Skillman Jr. (2) [FSCA]; 10 mi. W Ocozocoatlá [Ocozocoautla], on Mex. Hwy. 190, 20 May 1965, D. E. Breedlove [2,400ft.] (1) [CASC]; El Aguacero, 20 June 1989, P. K. and E. B. Lago [1,678ft.] (4) [TAMU]; 19 mi. W. Ocozocoatlá, 25 May 1965, H. R. Burke, J. R. Mayer, J. C. Schaffner [2,726ft.] (1) [TAMU]; 16 Km W Ocoz [not a known locality, probably an abbreviation for Ocozocoautla], 1/7 July 1986, J. E. Wappes, 2500' (1) [USNM]; El Aguacero, 16 km. W. Ocozocoatlá, 10 June 2009, Skillman and Hildebrant, MV and UV light (1) [BYUC]; **OAXACA:** Tehuantepec, 8 July 1959 [138ft.] (18) [AMNH]; 1 mi. se. Rio Hondo, 22 July 1974, Clark, Murray, Ashe, Schaffner [1,971ft.] (1) [TAMU]; 2.5 mi. nw. Rio Hondo, 5 August 1980, Schaffner, Weaver, Friedlander (3) [TAMU]; 7.6 mi. n Totolpan, 14 July 1971, Clark, Murray, Hart, Schaffner [3,243ft.] (5) [TAMU]; Aguaceros, 40 km west Tuxtla Gutierrez, 21 June 1987, W. F. Chamberlain [3,340ft.] (2) [TAMU]; Presa Benito Juárez, 23 July 1974, Clark, Murray, Ashe, Schaffner [1,835ft.] (1) [TAMU]; Tehuantepec, 28 June 1965, P. H. Freytag and L. P. Gibson Collectors (1) [BYUC]; 2.7 mi. nw. El Camaron, 14 July 1971, Clark, Murray, Hart, Schaffner [3,291ft.] (3) [TAMU]; **VERACRUZ:** Lake Catemaco area, D. C. Robinson (1) [TAMU].

Phrynocephala deyrollei Baly 1876

(Fig. 7-8, 12, 57, 65, 74, 78)

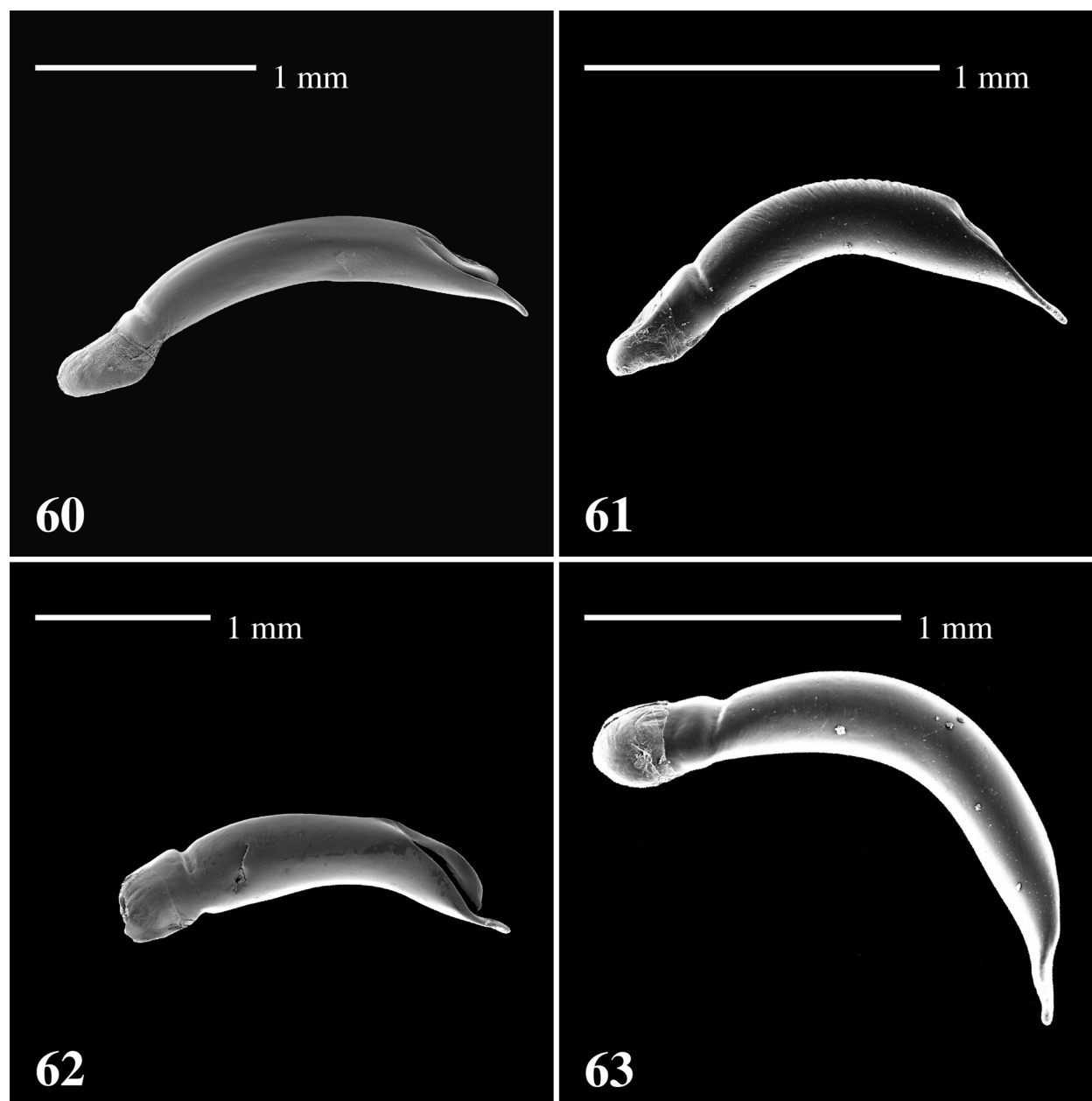
Phrynocephala deyrollei Baly 1876: 444. Jacoby 1884: 292. Heikertinger and Csiki 1939: 215. Blackwelder 1946: 699. Wilcox 1975: 107. Furth and Savini 1996: 64. Furth 2006: 233.



Figures 56-59. Aedeagi, lateral view. 56) *Phrynocephala capitata*. 57) *P. deyrollei*. 58) *P. kendrae*. 59) *P. marciae*.

Type Specimens. Holotype. Male [BMNH] labeled: “TYPE/ H.T.” [printed on circular white with red border], “Mex....” [handwritten and partially unreadable on green], “Baly Coll.” [printed on white], “*Phrynocephala deyrollei* Baly/ Mexico” [handwritten on blue].

Redescription. Male [BMNH, holotype]. Body length 6.40 mm; width at elytral humeri 2.47 mm; form elongate. Elytra bluish-black; head, pronotum, legs yellow-orange. **Head** elongate, with a non-carinate curvature ventrally extending from eye to front edge of clypeus (Fig. 7), appearing “jowl-like;” genal length 1.67x longer than maximum length of eye; vertex darker than rest of head, indistinctly reticulate with coarse, coalescing punctures; postclypeus appearing deeply, acutely emarginate, with thickened, “v-shaped” prefrontal ridge; an acute frontal carina extends between antennal fossae, curving upward between antennal fossae before descending to front edge of postclypeus; anteclypeus entire, same color



Figures 60-63. Aedeagi, lateral view. **60)** *Phrynocephala pseudocapitata*. **61)** *P. pueblae*. **62)** *P. pulchella*. **63)** *P. punctulata*.

as labrum; labrum quadrate, lighter in color than rest of head; labral notch indistinct; antennal fossae separated by distance slightly narrower than antennal fossa (fossal width measured from inside edges); frontal tubercles distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, bordered by obtuse lateral carina extending from eye to front edge of postclypeus, also with less obvious frontogenal suture; interocular distance 2.10x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.75x length of body; antennomeres 1-2 orange; 3-4 bicolored, orange to brown; 5-11 dark brown; antennomeres 1 and 3 longest, approximately equal in length; antennomere 2 shortest; antennomeres 4-5 subequal in length; antennomeres 6-11 subequal in length. **Pronotum** reticulate with moderate, inconspicuous, separated punctures; lateral margins widest behind middle, tapering to apex, narrowest at anterior margin, maximum length at midline; posterior and anterior projections flat; basal depression faint, poorly delimited, over 1/2 width of pronotum; two small depressions on each side of anterior margin along longitudinal midline. **Scutellum**

black, obtusely triangular, impunctate. **Elytra** distinctly reticulate, irregularly, moderately punctate; punctures conspicuous; obvious humeral costa extending about 1/3 length of each elytron; humeral depression obvious. **Prosternal intercoxal process** grooved, approximately 1/3 width of procoxa, elevated ventrally over plane of prosternum, even with plane of tip of procoxae, separating procoxae and curving downward to mesosternum. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** black. **Legs** orange; tarsi bicolored, orange to brown, darker than femora or tibiae; pro- and mesofemora enlarged, not distinctly sulcate; tarsomere 1 of protarsi enlarged, heart-shaped, wider than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae stout, sulcate, expanded apically with central carina. **Abdomen** black, shiny, coarsely punctured, moderately pubescent; last abdominal ventrite shallowly, broadly emarginate. **Aedeagus** (from non-type specimen) nearly uniformly arched; basal piece about 19% total length of aedeagus (Fig. 57); ventral end slender, without subapical notch or subapical lobe; tip simple, acutely pointed (Fig. 65, 74).

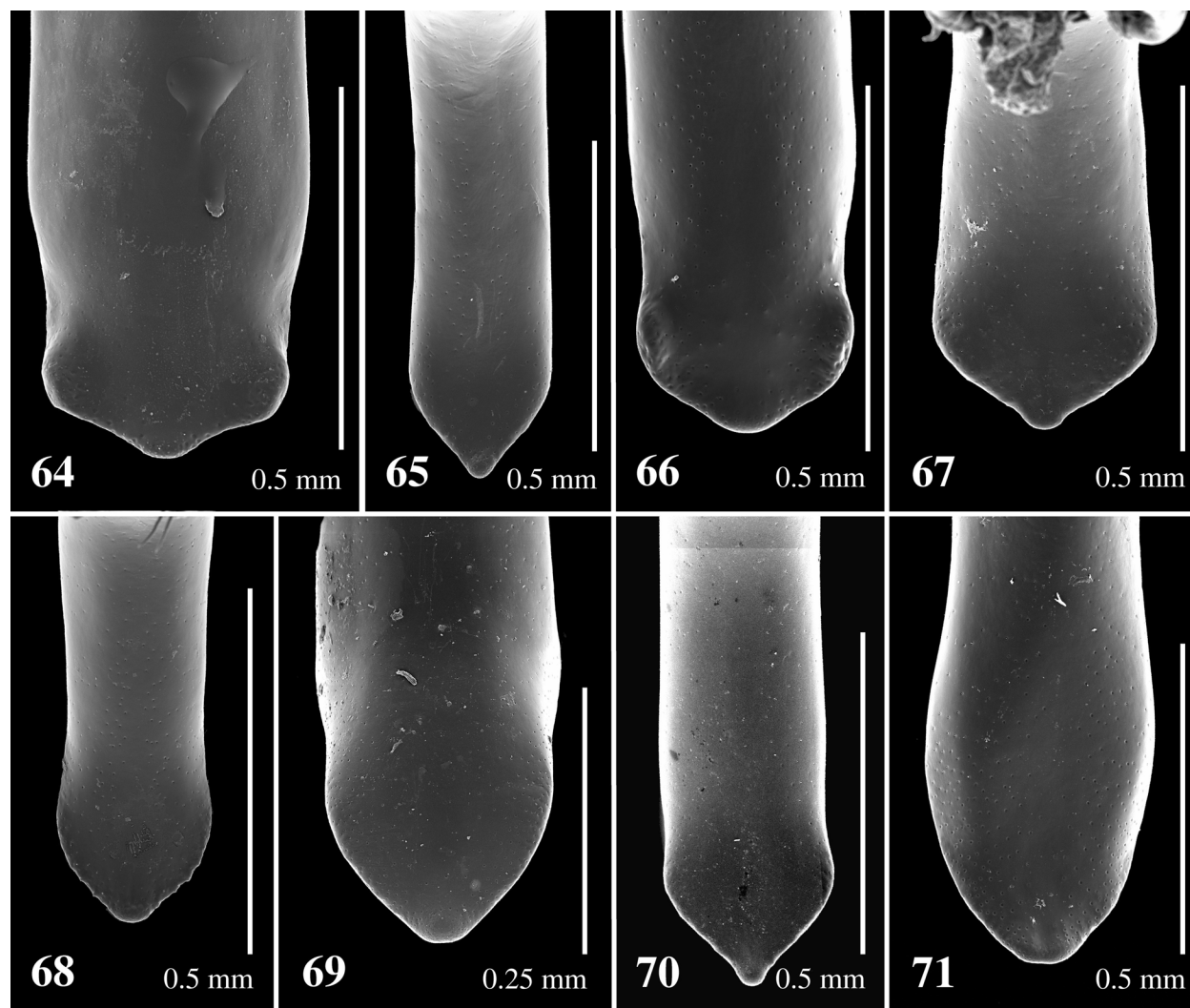
Female. Similar to male, except anterior margin of clypeus less obviously emarginate in most individuals; all tibiae similar, slender, gradually expanded apically; tarsomere 1 not widened on any of the legs; fifth abdominal ventrite entire.

Variation. Male: length 4.64 – 7.00 mm; width at humeri 1.88 – 2.76 mm. Female: length 4.64 – 6.71 mm; width 1.82 – 2.71 mm. The degree of clypeal emargination varies among individuals, with males more often with an obvious emargination than females. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 3.2x longer than wide, while in the female the ratio of the fourth antennomere is even more stout, approximately 2.3x longer than wide.

Remarks. *Phrynocephala deyrollei* and four other species, *P. marciae*, *P. natalieae*, *P. pueblae* (new species below) and *P. punctulata*, compose a group of five species with a black mesosternum. *Phrynocephala deyrollei* can be separated from all of these, except *P. pueblae*, by the distinctly emarginate postclypeus (Fig. 43) and the shape of the aedeagus. In addition, it can be separated from *P. natalieae* by its larger size and the enlarged heart-shaped first tarsomere of the protarsi of the male. The uniformly punctate prothorax (Fig. 48) is unlike the irregularly, coarsely punctate prothorax of *P. marciae* (Fig. 51) and the smooth, impunctate prothorax of *P. punctulata* (Fig. 54). External morphological characters separating *P. deyrollei* and *P. pueblae* are unreliable. Dissection of the aedeagi is needed to separate these two species. See “Remarks” for other species

Distribution. The occurrence of *P. deyrollei* begins in the state of Zacatecas and continues south over a large area of the western half of Mexico into Guatemala. The Mexican states include Aguascalientes, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico D. F., Michoacan, Oaxaca, Puebla, Queretaro, San Luis Potosi, Tlaxcala, Veracruz, and Zacatecas. Collection records occur between 3,800 and 9,186 feet elevation. Additionally, Furth (2006) reported this species from Morelos. The collection record for Veracruz is based on two specimens in the British Museum from Jalapa. A state was not indicated on the label. Selander and Vaurie (1962) indicated that some specimens collected by Höge may have been mislabeled. Either Oaxaca or Veracruz may be the state in which these specimens were collected. Considering the distribution for all other specimens, the state of Oaxaca seems the most logical choice for the collection locality. However, a collection record for *P. deyrollei* from Veracruz is not inconceivable. The state of Oaxaca will remain as the assumed collection locality since the correct state cannot be irrefutably determined.

Pallister (1953) records this species from the states of Chihuahua and Durango. Both records are incorrect. These records were based on a series of 61 specimens from Santa Clara, Chihuahua, one specimen from Namiquipa, also near Santa Clara in Chihuahua, and one specimen from Palos Colorados, Durango. Most of these specimens were examined for this study. The single specimen from Namiquipa is actually a female of *H. elongatus*, and the single specimen from Palos Colorados is a female of *H.*

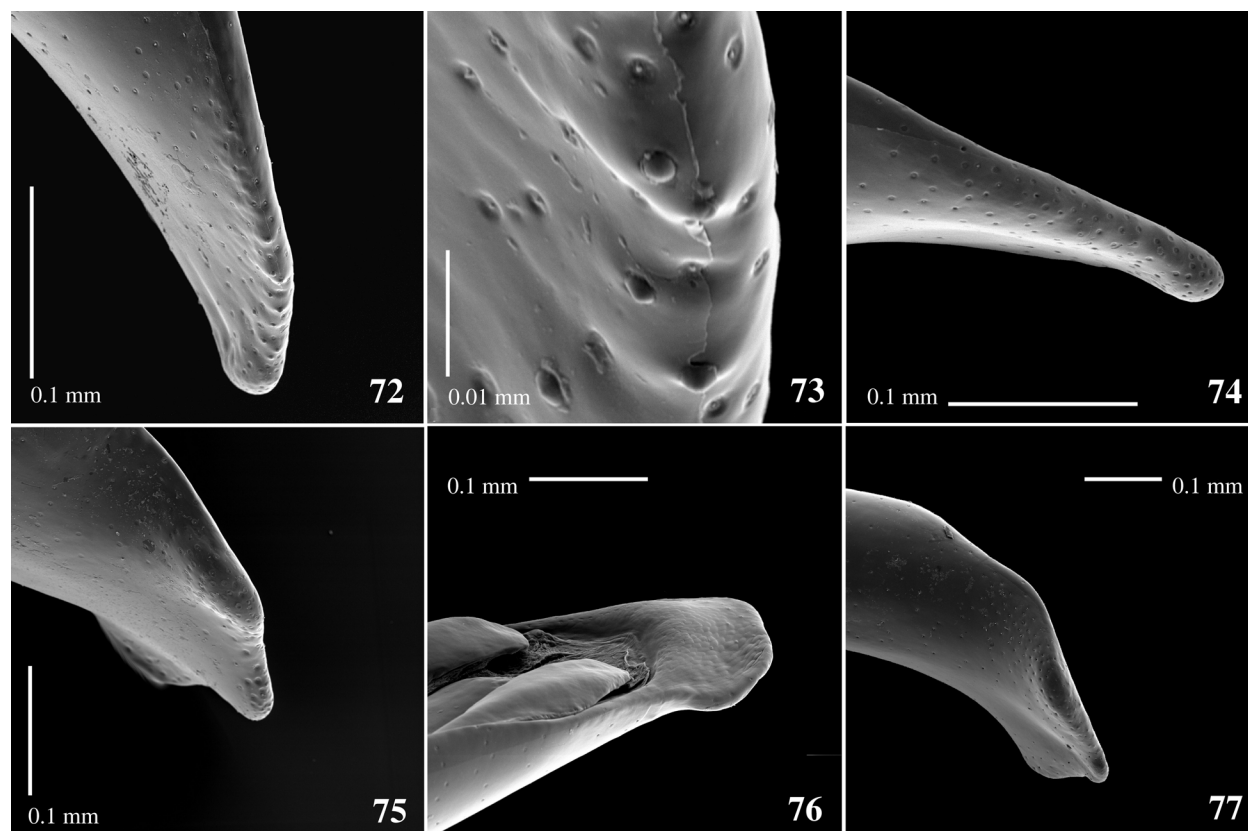


Figures 64-71. Tips of aedeagi, ventral view. **64)** *Phrynocephala capitata*. **65)** *P. deyrollei*. **66)** *P. kendrae*. **67)** *P. marciae*. **68)** *P. pueblae*. **69)** *P. pulchella*. **70)** *P. punctulata*. **71)** *P. pseudocapitata*.

intermedius. Of the 61 specimens mentioned by Pallister from Santa Clara, 53 were examined by the author. Of the 53 specimens, 28 (13 males and 15 females) are *H. elongatus* and 25 (17 males and 8 females) are *H. intermedius*. The occurrence of both species of *Hemiphrynus* at a single locality also occurs at a site 3 miles south of Alto in New Mexico (see *H. elongatus*). Furth (2006) also reported this species from Chihuahua and Durango. However, these localities were based on the incorrect identifications in Pallister (1953).

Host. Two collection records by one collector indicated that the specimens were collected in an *Acacia*-oak woodland. Another collection record by Dr. William F. Barr assigns a white flowered *Acacia* as the host. Two other specimens collected by Dr. Gayle Nelson were collected from *Mimosa*. A single specimen from Oaxaca records mesquite. It would appear that *Acacia*, *Mimosa* or other related genera in the Fabaceae are the adult hosts of the beetle. The single specimen collected from *Brickellia* sp. (Asteraceae) is most likely an inadvertent association.

Specimens Examined. In addition to the holotype, other specimens examined included 83 males and 103 females. **GUATEMALA.** B. Verapaz, 19-24 km N Salama 25-31 May 1989, 4,500ft, J. E. Wappes (1) [USNM]; **MEXICO. AGUASCALIENTES:** 10 mi. ne Calvillo, 5 July 1984, Carroll, Schaffner,



Figures 72-77. Tips of selected aedeagi, lateral view. **72)** *P. pueblae*. **73)** *P. pueblae*. **74)** *P. deyrollei*. **75)** *P. capitata*. **76)** *P. kendrae*. **77)** *P. marciae*.

Friedlander (1) [TAMU]; 13 miles west of Aguascalientes, 5 July 1984, Carroll, Schaffner, Friedlander (3) [TAMU]; 10 mi. n. Calvillo, Hwy 70, 5 July 1984, J. B. Woolley, 84/18 (20) [TAMU]; 14 mi. w. Aguascalientes, 10 July 1983, Kovarik, Harrison, Schaffner (5) [TAMU]; 13 mi. w. Aguascalientes, Hwy 70, 5 July 1984, J. B. Woolley (6) [TAMU]; **GUANAJUATO:** Salle Coll. (5) [BMNH]; **GUERRERO:** Taxaco [Taxco?], 20 July 1956, Vincent D. Roth Coll. (1) [AMNH]; 12 miles south Chilpancingo, 12 July 1966, P. M. and P. K. Wagner (1) [TAMU]; 29.9 km. S Chilpancingo, 22 July 1987, [2,400ft.], R. Turnbow (2) [RHTC]; hwy. 134, 79.8 km. NE jct. hwy. 200, 16 July 1985, R. Turnbow (3) [RHTC], (1) [TAMU]; 4 mi. w. Chilpancingo, 15 July 1984, Elev. Approx. 4,000 ft., J. B. Woolley (3) [TAMU]; Tasco [Taxco?] [5,830ft.] (7) [ZMHB]; **HILALGO:** Tula, Höge (2) [ZMHB], (1) [BMNH]; **JALISCO:** Hwy 54, 17 miles north of Guadalajara, 6 July 1984, J. B. Woolley (1) [TAMU]; 6.1 mi. N Autlan, 7 mi. W at San Francisco Microwave Tower, 4,680ft., 31 July 1996, Wm. Godwin (1) [TAMU]; La Quemada, 27 July 1954, M. Cazier, W. Gertsch, Bradts Collectors (1) [AMNH]; **MEXICO:** Zuluapan 10.5 km NE, 1276 m [3,828ft.], 23 August 1991, J. Rifkind Coll. (1) [AJGC]; 6 km. SW Zuluapan, 23 August 1991, on white flower *Acacia*, W. F. Barr (3) [WFBM]; same data as previous, except on *Brickelia* (1) [WFBM]; 6.6 m. SW Temascaltepec, 20 August 1991, 2024m [6,072ft.], W. F. Barr (1) [WFBM]; 3 km. SW Santa Tomas de los Plantanos, 21 August 1991, W. F. Barr Collector, beating (1) [WFBM]; 3 mi. N. of Valle De Bravo, 30 June 1965, Collectors G. H. and D. E. Nelson (1) [AJGC]; same data as previous except On *Mimosa* sp. (2) [AJGC]; Mexico City, Höge (1) [BMNH]; Mexico, Salle Coll. (2) [BMNH]; Tejupilco, Temescaltepec, ca. 4,000 ft., 1932, B. M. 1959-100, H. E. Hinton and R. L. Usinger Collectors (1) [BMNH]; **MICHOACAN:** 14.3 km. S. Uruapan, 1370-1465m [4,110 - 4,395 ft.], 29 July 1988, R. S. Anderson, oak-*Acacia* woodland, 88-10 (3) [EGRC]; 10 mi. S. Uruapan, 7 July 1985, Woolley and Zolnerowich (1) [TAMU]; 10.6 mi. s. Uruapan, 8 August 1978, Plitt and Schaffner (1) [TAMU]; Huetamo, Höge (1) [BMNH]; 29 mi on Chiapa Road from Morella Highway, 5 September 1938, 2500 feet, L. J. Lipovsky (1) [KSBS]; 2 mi. S Tzitzio, 9 August 1963, Naumann and Willis (1) [KSBS]; **OAXACA:** vic. Monte Alban, 26/27 July 2005, J. Rifkind (1) [CSCA]; 9 miles NE Mitla, 20 July 1985, J. Woolley, G. Zolnerowich, 86/079

(1) [TAMU]; 4 mi. ne. Miltepec, 21 July 1984, Carroll, Schaffner, Friedlander (7) [TAMU]; 9 miles ne. Mitla, 20 July 1985, Jones, Schaffner (3) [TAMU]; Oax., 5,034 ft., 14 July 1955, P. and C. Vaurie (6) [AMNH]; 3 km NW Huajuapán de León, 1860m [5,580ft.], 7 July 1992, Coll. C. Bellamy (1) [TAMU]; 10 mi. n. Miltepec, 26 July 1974, Clark, Murray, Ashe, Schaffner (2) [TAMU]; 2.7 mi. NW El Cameron, 27 July 1972, ME-65, R. R. and M. E. Murray (1) [TAMU]; 16 .1 mi. nw. Totolapan, 21 July 1974 Clark, Murray, Ashe, Schaffner (1) [TAMU]; .7 mi. NW of Huajuapán de León, 7 July 1992, B. K. Dozier (12) [FSCA]; 3 mi. NW of Huajuapán de León (1) [FSCA]; Fry Coll., 1905-100 (4) [BMNH]; Fry Coll., 1905-100, 71130 (1) [BMNH]; Salle Coll., 863 (1) [BMNH]; Salle Coll. (1) [BMNH]; W. Huajuapán de León, 28 June 1961, 5,000 ft., U. Kans. Mex. Exped. (1) [KSBS]; Oax, Baly Coll. (1) [BMNH]; Huajuapán de León, 28 June 1971, G. B. Marshall, mesquite, Texas Tech U. mesquite project, 41, (1) [TTUZ]; 10 mi. W. Tamazulapan, 28 June 1971, Ward and Brothers (1) [TTUZ]; **PUEBLA**: 4.4 mi. SW Acatepec, 26 July 1974, Clark, Murray, Ashe and Schaffner (1) [TAMU]; 1 mi. n. of Atlixco, 29 June 1955, R. E. Beer and party (1) [KSBS]; **QUERETARO**: 14.5 km. N. Queretero [Queretero] on #57, 1920m [5,760ft.], 26 July 1988, R. S. Anderson, *Acacia* woodland, 88-2 (6) [EGRC], (2) [TAMU]; 3 mi. W Queretero, 10 July 1975, CA, WE, BW Triplehorn (2) [BYUC]; Mipo: Pinal de Amoles, 5 km NE. Madroño, 21°07.42', 99°41.17', 14 June 2009, 2,800m [9,186ft.], on ground, AM, CW and LB O'Brien (1) [BYUC]; Univ. Auto. Queretero [Queretero], 2 km. SE. Juriquillo, 20°42.06, 100°38.02', 14 June 2009, 1,926m [6,319ft.], on ground, AM, CW and LB O'Brien (1) [BYUC]; 16 mi. N. Quetetero [Queretero], 29 June 1971, CW & L O'Brien & Marshall (1) [TTUZ]; **SAN LUIS POTOSI**: 55 km. NE Villa de Zaragoza, 14 July 1985, R. Turnbow (1) [RHTC], (1) [TAMU] [specimen labels indicates Guerrero as the state]; 24.5 km. NE Villa de Zaragoza, 14 July 1985, R. Turnbow (1) [TAMU] [specimen label indicates Guerrero as the state]; Hwy 134, 25 km NE Villa De Zaragoza, 14/16 July 1985, J. E. Wappes (2) [TAMU], (6) [USNM] [specimen label indicates Guerrero as the state]; **TLAXCALA**: Capulalpam [Calpaulalpan? misspelled on label] (2) [BMNH]; **UNKNOWN STATE**: L. Conradt (1) [USNM]; Tepetlapa (2) [ZMHB]; Coll. J. Flohr (3) [ZMHB]; Höge (6) [ZMHB]; In (?), Coll. J. Flohr (2) [ZMHB]; Yolotepec, Salle Coll. (2) [BMNH]; Parada, Salle Coll. (2) [BMNH]; [locality unknown] (2) [BMNH]; **VERACRUZ**: Jalapa, Höge (2) [BMNH]; **ZACATECAS**: 39.7 km. S. Juchipala [Juchipila?], 1524m [4,572ft.], 88-26, 6 August 1988, R. S. Anderson, *Acacia* thorn scrub (2) [TAMU].

***Phrynocephala kendrae* Gilbert sp. nov.**

(Fig. 49, 58, 66, 76, 78)

Type Specimens. Holotype (male) [CASC # 18541]: **MEXICO. JALISCO**: 16 km S Chamela Station along Cuitzmala River, 19°24.910'N/104°09.375'W, 17 July 2003, 50ft., A. J. Gilbert. **Allotype** (female): same data as holotype except 8 July 2003. Holotype and allotype deposited in the California Academy of Sciences.

Paratypes (27 males and 24 females) – same data as holotype (1) [AJGC]; same data as allotype (12) [AJGC], (2) [ERGC], (2) [BMNH]; 11 mi. N. Autlan on Hwy 80, 6 July 1984, J. B. Woolley [3,894ft.] (2) [TAMU]; San Mateo, 100', 19°34.425'N/105°05.165'W, 18 July 2003, Fred. G. Andrews (1) [CSCA]; 48.7 km NE La Huerta, 4,200ft., 19°41.763'N/104°23.016'W, 9 July 2003, A. J. Gilbert (1) [AJGC]; nr. Chamela, 20 July 1984, B. K. Dozier Coll. (2) [FSCA]; 27.4 km S Chamela, 16 July 1987, R. Turnbow (3) [TAMU]; 5.5 mi. NE Tecolotlan, 13 July 1982, A. J. Gilbert collector (4) [AJGC]; 14 km E Malague [Melaque], 29 July 1990, W. F. Barr (1) [WFBM]; 7 km N Malacque [Melaque], 16,19 July 1990, J. E. Wappes (1) [USNM]; **COLIMA**: 7 mi. SSW Colima on Hwy 110, 9 July 1984, J. B. Woolley [1,163ft.] (1) [TAMU]; 1.5 km W Los Ortices, 19°05.930'N/ 103°44.009'W, 1,175ft., 16 July 2003 (2) [AJGC]; 8 mi. S Colima, 10 July 1982, Fred G. Andrews (2) [CSCA]; 7 miles ssw. Colima, 9 July 1984, Carroll, Schaffner, Friedlander (1) [TAMU]; 27.4 km. S Chamela, 16 July 1987, R. Turnbow (8) [RHTC]; **GUERRERO**: Costa Azul, ACA, 18 May 1985, Hugo Miranda, on *Acacia* sp. [255ft.] (3) [USNM]; Acapulco, C. Azul, 27 June 1985, Jose Garcia B., on *Acacia cochliacantha* [255ft.] (1) [USNM]; **NAYARIT**: 3 km N Bucerias, 8 June 1984, *Acacia*, W. F. Barr [370ft.] (1) [WFBM].

Description. Male (holotype). Body length 5.71 mm; width at elytral humeri 2.41 mm; form elongate. Elytra greenish-black; head, pronotum, mesosternum, legs yellow-orange. **Head** elongate, with curved

carina ventrally extending from behind eye to front edge of postclypeus, appearing “jowl-like;” genal length 1.79x longer than maximum length of eye; vertex shining, with a few scattered punctures near eye; postclypeus with prefrontal ridge shallowly, broadly emarginate; an acute, elevated frontal carina extends between antennal fossae, curving upward before descending to front edge of postclypeus; anteclypeus entire, same color as labrum; labrum orange, rounded with few scattered setae; labral notch indistinct; antennal fossae separated by frontal carina; antennal fossae separated by distance slightly less than width of antennal fossa (fossal width measured from inside edges); frontal tubercles flat, distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, bordered by acute lateral carina extending from eye to front edge of postclypeus; frontogenal suture indistinct; interocular distance 1.44x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.74x length of body; antennomeres 1-3 orange; 4-11 dark brown; antennomere 3 longest; antennomere 2 shortest; antennomere 4 slightly longer than 5-11; antennomeres 5-11 subequal in length. **Pronotum** shining, smooth, reticulate, obviously punctate; lateral margins tapering to apex, widest at middle; basolateral projections small, obtuse; anterolateral projections rounded, projected; basal depression poorly defined. **Scutellum** orange-brown, triangular, impunctate. **Elytra** distinctly reticulate, irregularly punctate; punctures inconspicuous; humeral costa absent, humeral depression indistinct. **Prosternal intercoxal process** elevated ventrally over plane of prosternum, even with plane of tip of procoxae, narrowly, distinctly separating coxae, rising to wedge-shaped knob midway between procoxae. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** orange. **Legs** orange; tarsi orange-brown, darker than femora or tibiae; pro- and mesofemora enlarged; tarsomere 1 of protarsi enlarged, heart-shaped, wider than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, longer than 2-4 of metatarsi combined, wider than tarsomere 3 of metatarsi; all tibiae sulcate, expanded apically, with central longitudinal carina. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth ventrite broadly emarginate, with small, central, convexity. **Aedeagus** evenly arched ventrally from behind center point; basal piece about 26% total length of aedeagus (Fig. 58); ventral end flattened, with broad subapical notch, with distinct subapical lobe; tip with broad, obtuse point (Fig. 66, 76).

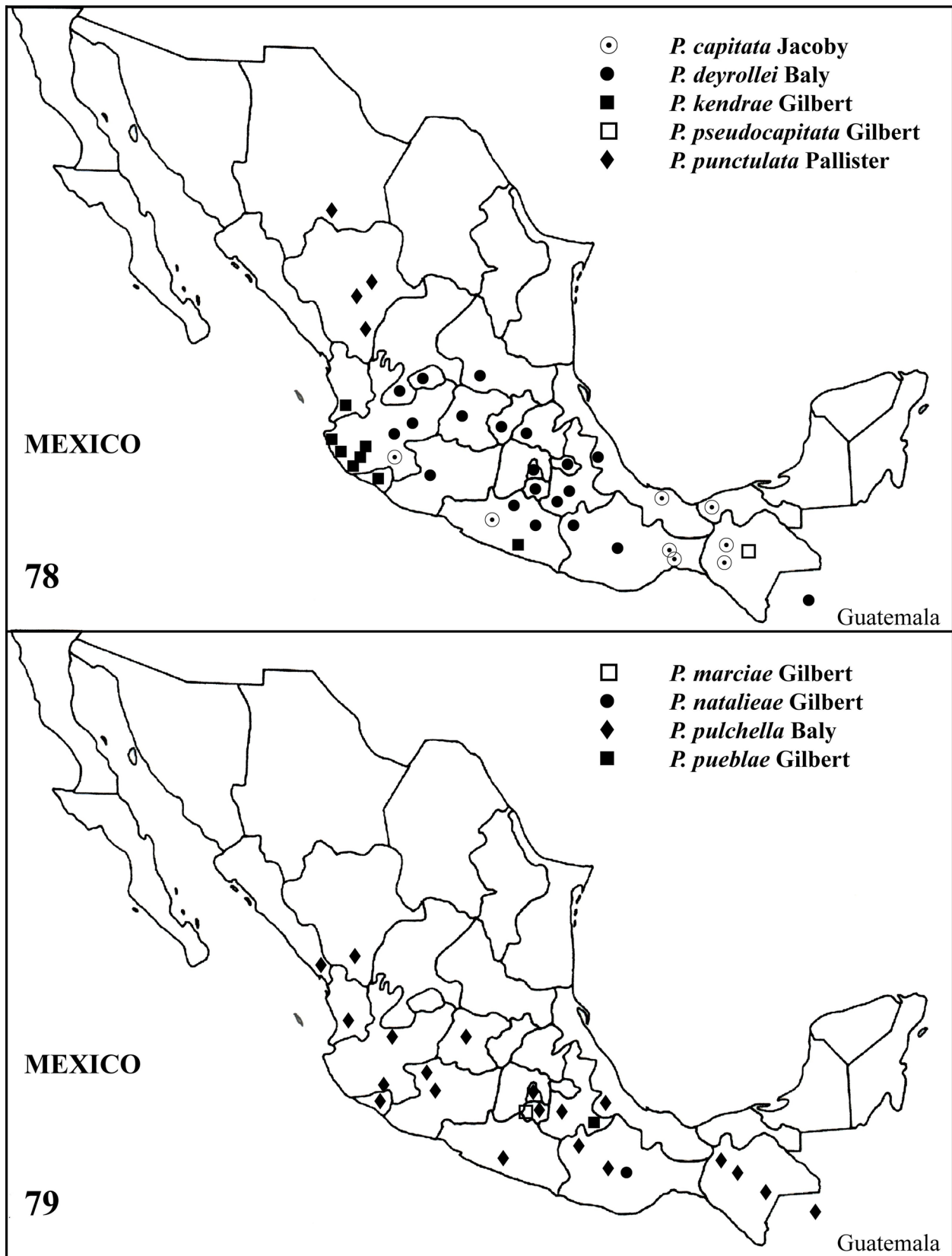
Female (allotype). Similar to holotype, differing in the following characters: size slightly larger (length 5.88 mm; width 2.47 mm); tarsomere 1 not broadly enlarged on pro- and mesotarsi; fifth abdominal ventrite not modified; elytra with short, distinct humeral costa and 3-4 additional very vague costae (light and angles must be right to observe the costae); “jowl” less pronounced laterally (in frontal view the margin of the “jowl” in the male is visible which gives the male a broader head than the female below the eyes); pro- and mesotibiae more expanded than metatibiae but less obviously than in male.

Variation. Male: length 4.88 – 6.47 mm; width at humeri 2.18 – 2.76 mm. Female: length 5.00 – 6.47 mm; width 2.18 – 2.65 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. However, in this species, the ratio of the male fourth antennomere is relatively similar to the female, 2.4x and 2.5x respectively.

Remarks. *Phrynocephala kendrae* resembles *P. capitata* and *P. pseudocapitata*, but is generally smaller than both species. The aedeagi are unique for each species, although from the ventral perspective, *P. capitata* (Figs. 64, 75) and *P. kendrae* (Figs. 66, 76) are similar. They differ in lateral perspective, and the tip of *P. kendrae* is flattened and much shorter (Fig. 76). See “Remarks” for *P. capitata* and other species.

Distribution. Known from the Mexican states of Colima, Guerrero, Jalisco and Nayarit at elevations between 50 and 4,200 feet. This species and *P. capitata* are the only two species that occur at low elevations (see *P. capitata*).

Host. Three specimens from Acapulco, Guerrero were collected from *Acacia* sp. (Fabaceae) and a single specimen from Costa Azul, Guerrero was collected from *A. cochliacantha* Willd. (Fabaceae), commonly called boat thorn acacia. The single specimen from Nayarit was also collected from *Acacia* sp.



Figures 78-79. Distribution of *Phrynocephala* in Mexico.

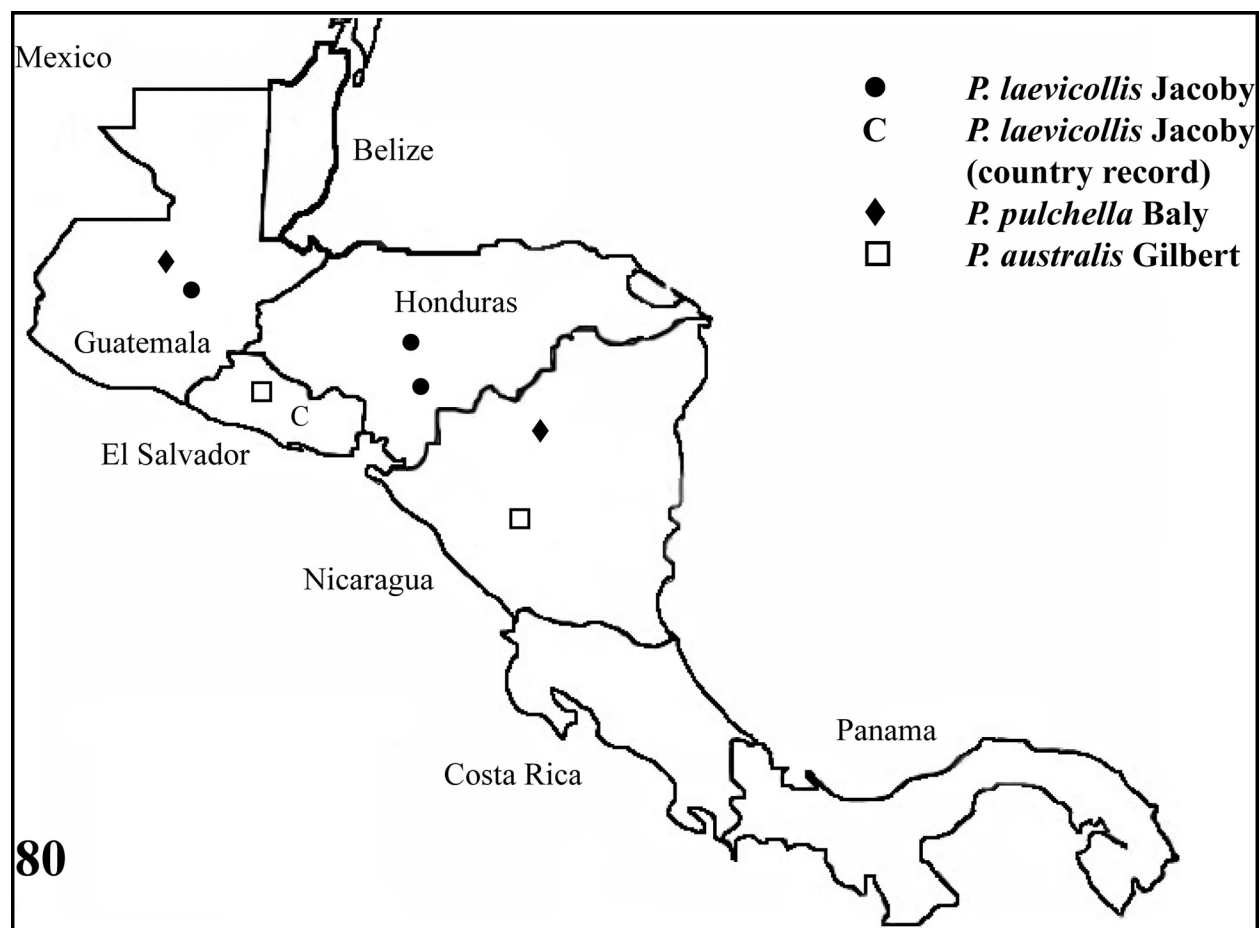


Figure 80. Distribution of *Phrynocephala* in Central America south of Mexico.

Etymology. Named for the youngest daughter of the author, Kendra Liane Gilbert; an author in her own right, although not of a biological nature.

Specimens Examined. See “Type Specimens.”

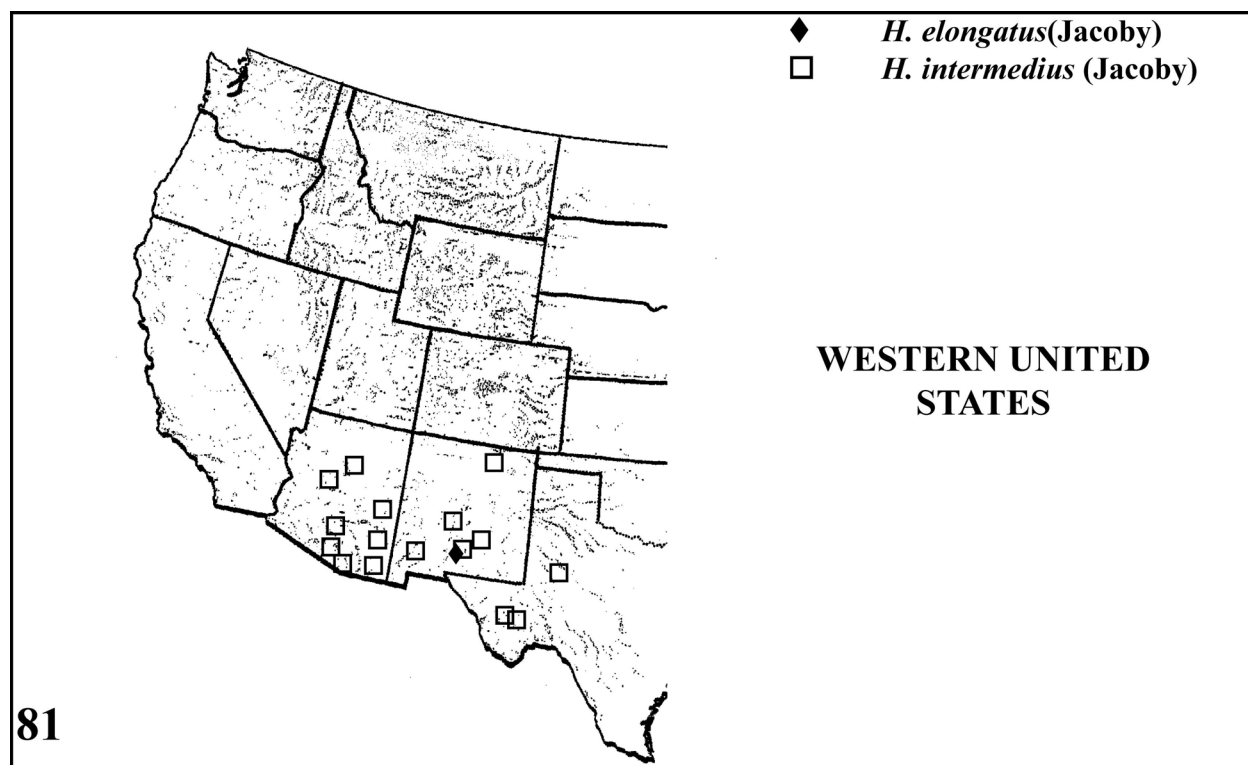
Phrynocephala laevicollis Jacoby 1884

(Fig. 50, 55, 80)

Phrynocephala laevicollis Jacoby 1884: 293 (tab. 18, fig. 3). Heikertinger and Csiki 1939: 215. Blackwelder 1946: 699. Wilcox 1975: 107. Furth and Savini 1996: 64. Furth 2006: 233.

Type Specimens. Holotype. Male [BMNH] labeled: “TYPE/ H.T.” [printed on circular white with red border], “S. Geronimo/ 3,000ft./ Champion.” [printed on white], “Type./ Sp. figured.” [printed on white], “B. C. A., Col. VI, 1./ *Phrynocephal laevicollis*,/ Jac.” [printed on white], “*Phrynocephal laevicollis*, Jac.” [handwritten on blue].

Redescription. Male [BMNH, holotype]. Body length 4.41 mm; width at elytral humeri 1.94 mm; form elongate. Elytra bluish-black; head, pronotum, mesosternum, legs yellow-orange. **Head** elongate, with curved carina ventrally extending from behind eye to front edge of postclypeus, appearing “jowl-like;” genal length 1.81x longer than maximum length of eye; vertex shining, with scattered large, shallow, coalesced punctures behind eyes, with a vague central longitudinal ridge extending from front edge of pronotum to frontal tubercles; frontal tubercles distinct, elongate, separated by coronal suture; area in



Figures 81-82. Distributions. 81) *Hemiphrynus* in the western United States. 82) *Hemiphrynus* in Mexico.

front of antennal fossa with shallow sunken appearance, bordered by indistinct lateral carina extending from eye to front edge of postclypeus, with distinct frontogenal suture; labrum orange, rounded; labral notch indistinct; postclypeus with prefrontal ridge truncate; an acute, elevated frontal carina extends between antennal fossae, with frontal carina divided by a small notch near antennal fossae (when viewed from lateral perspective), with section between antennal fossae raised slightly above anterior section; antennal fossae separated by distance slightly less than width of antennal fossa (fossal width measured from inside edges); interocular distance 1.96x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae 0.77x length of body; antennomeres 1-3 orange; 4-11 gradually darker to dark brown; antennomere 3 longest, barely longer than antennomeres 1 or 4; antennomere 2 shortest; antennomeres 5-11 subequal in length. **Pronotum** reticulate, impunctate; lateral margins uniformly curving to apex, widest behind middle; anterior corners with small, rectangular projections conforming to curvature of lateral margin; basal depression vague, poorly defined; posterolateral projections small. **Scutellum** dark orange, obtusely triangular, impunctate. **Elytra** shining, reticulate, distinctly, moderately punctate; punctures not coalescing; humeri prominent; humeral costa extending about 1/2 length of each elytron. **Prosternal intercoxal process** elevated ventrally over plane of prosternum and plane of tip of procoxae, narrowly, distinctly separating coxae, process grooved in anterior 1/2, projecting beyond coxae then turning toward mesosternum as a solid, narrow process terminating at mesosternum. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** orange. **Legs** orange; tarsi orange-brown, darker than femora or tibiae; protibiae with outer marginal ridge abruptly expanded from before middle to apex (Fig. 55), with distinct central carina and sulcate area between outer and central carinae; mesotibiae similar to protibiae only slightly more expanded with central carina less distinct; metatibiae not obviously expanded, a central carina along basal 1/3, a distinct comb of spines along distal edge of inner carina; tarsal claws appendiculate; pro- and mesofemora enlarged; tarsomere 1 of protarsi enlarged, heart-shaped, wider than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi. **Abdomen** dark brown, shiny, coarsely punctured, moderately pubescent; fifth ventrite obscured by debris but appearing to have a shape similar to that of other species of *Phrynocephala*.

Female. Similar to male, differing in the following characters: pro- and mesofemora not enlarged; tarsomere 1 enlarged on pro- and mesotarsi, but not broadly enlarged as in male; pro- and mesotibiae stout, gradually expanded, but not to the degree of the male; metatibiae slender, gradually expanded; fifth abdominal ventrite entire; “jowl” less pronounced laterally (in frontal view the margin of the “jowl” in the male is distinctly visible which gives the male a broader head than the female below the eyes); antennae not as stout, shorter, 0.66x length of body.

Variation. Male: length 4.12 – 4.41 mm; width at humeri 1.71 – 1.82 mm. Female: length 4.41 mm; width 1.82 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 2.2x longer than wide, while in the female the ratio of the fourth antennomere is more slender, approximately 2.7x longer than wide.

Remarks. The male of this species is unique, with the protibiae abruptly expanded, in ventral perspective, from about the middle distally (Fig. 55). The female is also unique, with the pro- and mesotibiae stouter than the metatibiae and with first tarsomere on both of these legs expanded. These characters will differentiate the female from all other females of *Phrynocephala*. See also the remarks for *P. capitata* and *P. deyrollei*.

Distribution. Known from El Salvador, Guatemala, and Honduras. The Jacoby type is from San Geronimo [San Jeronimo], Guatemala [locality taken from the “Biologia Centrali-Americana” (Jacoby 1884)]. The actual specimen label is S. Geronimo, 3,000 ft., Champion. Bechyné and Bechyné (1960) reported this species from El Salvador, as well as Guatemala. However, these specimens were not located for this study.

Host. Unknown.

Specimens Examined. In addition to the type, other specimens examined included 5 males and 1 female. **HONDURAS. EL PARAISO:** Yuscaran, mv + bl, 1 June 2003, R. Turnbow [2,388ft.] (1) [RHTC]; **FRANCISCO MORAZAN:** 25 km. S. Talanga (Hacienda Hachado), 11 May 1993, L. Stange and R. Miller [major roads leading in a southerly direction from Talanga travel SE and SW. Depending on which road was traveled to the collection site, the elevation would be between 2,300 and 3,200 feet.] (2) [AJGC], (3) [FSCA].

***Phrynocephala marciae* Gilbert sp. nov.**

(Fig. 44, 51, 59, 67, 77, 79)

Type Specimens. Holotype (male) and **allotype** (female): **MEXICO. MORELOS:** 10 mi. e. Cuernavaca, 8 July 1974, Clark, Murray, Ashe, Schaffner. Holotype and allotype deposited in the collection of Texas A&M University.

Paratypes (2 males and 7 females) – same data as holotype (2) [AJGC], (6) [TAMU]; #2, 3 mi. W Yau-tepec, 14/15 June 1966, (J. B. Karren), at blacklight (1) [BYUC].

Description. Male (holotype). Body length 5.76 mm; width at elytral humeri 2.35 mm; form elongate. Elytra greenish-black; head, pronotum, legs yellow-orange. **Head** elongate, indistinctly “jowl-like,” with non-carinate curvature ventrally extending from eye to front edge of postclypeus; genal length 1.56x longer than maximum length of eye; vertex appearing depressed behind frontal tubercles, shining with coarse, coalescing punctures; postclypeus with prefrontal ridge shallowly emarginate; an acute frontal carina extends between antennal fossae, curving upward between antennal fossae before descending to front edge of postclypeus; anteclypeus entire; labrum quadrate with six long, evenly spaced setae; antennal fossae separated by distance slightly narrower than antennal fossa (fossal width measured from inside edges); frontal tubercles elevated, distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, bordered by an indistinct lateral carina between eye and postclypeus; without frontogenal suture; interocular distance 1.86x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.85x length of body; antennomeres 1-2 orange; 3 bicolored, orange to brown; 4-7 black, 8-11 dark brown; antennomeres 1 and 3 longest, approximately equal; antennomere 2 shortest; antennomere 4 slightly longer than 5-11; antennomeres 5-11 subequal in length. **Pronotum** with dorsal surface uneven, reticulate with scattered coarse punctures; lateral margins widest behind middle, tapering to apex, narrowest at anterior margin, maximum length at midline; basolateral projections distinct, obtuse; anterolateral projections rectangular, strongly projected; basal depression faint, poorly delimited, over 1/2 width of pronotum; two small, faint depressions on each side of longitudinal midline along anterior margin. **Scutellum** black, obtusely triangular, shining, impunctate. **Elytra** distinctly reticulate, irregularly, moderately punctate; punctures inconspicuous; with short, indistinct humeral costa extending about 1/4 length of each elytron (length depends on the angle of light source); humeri distinct. **Prosternal intercoxal process** grooved, approximately 1/3 width of procoxa, elevated ventrally over plane of prosternum, even with plane of tip of procoxae, separating procoxae and curving downward to mesosternum. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** black. **Legs** orange; tarsi dark brown, darker than femora or tibiae; pro- and mesofemora enlarged, not distinctly sulcate; tarsomere 1 of protarsi enlarged, heart-shaped, wider than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae stout, gradually expanded apically, with central carina, carina very pronounced on pro- and mesotibia. **Abdomen** dark brown, shiny, coarsely punctured, moderately pubescent; last abdominal ventrite shallowly, broadly emarginate, with small central orange lobe. **Aedeagus** bent ventrally nearly 90 degrees behind center point; basal piece about 27% total length of aedeagus (Fig. 59); ventral end broadened subapically by ventrally deflected lobes; tip obtusely pointed (Fig. 67, 77).

Female (allotype). Similar to holotype, differing in the following characters: tarsomere 1 not broadly enlarged on pro- and mesotarsi; fifth abdominal ventrite entire, with small, broad dark lobe; “jowl” less pronounced laterally (in frontal view the margin of the “jowl” in the male is visible which gives the male a broader head than the female below the eyes); pro- and mesofemora not enlarged; tibiae slender, uniformly expanded; antennae not as stout, shorter, 0.59x length of body.

Variation. Male: length 5.76 – 6.12 mm; width at humeri 2.35 mm. Female: length 5.65 – 6.59 mm; width 2.24 – 2.53 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected for this species, the male and female antennae are stout and the ratio of the fourth antennomere is about 2.4x for both sexes.

Remarks. See “Remarks” for *P. capitata* and other species.

Distribution. Known from the Mexican state of Morelos.

Host. Unknown.

Etymology. Named for Marcia E. Gilbert, my wife, for the many years of support and for enduring my absences during the numerous trips to foreign and domestic collecting locations.

Specimens Examined. See “Type Specimens.”

***Phrynocepha natalieae* Gilbert sp. nov.**

(Fig. 41, 79)

Type Specimens. **Holotype** (male) and **allotype** (female): **MEXICO. OAXACA:** 2.8 mi. e. Matatlan, 24 July 1974, Clark, Murray, Ashe, Schaffner. Holotype and allotype deposited in the collection of Texas A&M University.

Paratype (1 female) – same data as holotype except 6 mi. NE Mitla, 20 July 1985, Woolley and Zolnerowich [6,476ft.] (1) [TAMU].

Description. Male (holotype). Body length 4.00 mm; width at elytral humeri 1.75 mm; form elongate. Elytra greenish-black; head, pronotum, legs yellow-orange. **Head** elongate, “jowl” not obvious; genal length 1.19x longer than maximum length of eye; vertex shining, with large coalescing punctures; postclypeus with prefrontal ridge entire, not emarginate; an acute, elevated frontal carina extends between antennal fossae, curving upward before descending to front edge of postclypeus; anteclypeus entire, same color as labrum; labrum orange, rounded, with a few scattered setae; labral notch indistinct; antennal fossae separated by distance slightly less than width of antennal fossa (fossal width measured from inside edges); frontal tubercles elevated, distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, with acute frontogenal suture; interocular distance 1.67x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.80x length of body; antennomeres 1-2 orange; 3-4 bicolored orange/dark brown; 5-11 dark brown; antennomere 3 longest; antennomere 2 shortest; antennomere 4 longer than 5-11; antennomeres 5-11 subequal in length. **Pronotum** shining, smooth, reticulate, impunctate; lateral margins tapering to apex, widest behind middle; basolateral projections small, obtuse; anterolateral projections rectangular, with corners rounded, obviously projected; basal depression poorly defined. **Scutellum** dark brown, shining, triangular, impunctate. **Elytra** distinctly reticulate, irregularly punctate; punctures inconspicuous; with distinct humeral costa extending 3/4 length of each elytron, a second short, vague carina also present behind humerus; humeral depression distinct. **Prosternal intercoxal process** grooved, approximately 1/4 width of procoxa, elevated ventrally over plane of prosternum and even with plane of tip of procoxae, narrowly, distinctly separating coxae. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** black. **Legs** orange; tarsi orange-brown, darker than femora or tibiae; pro- and mesofemora enlarged; tarsomere 1 of protarsi enlarged (relative to female), not heart-shaped, not wider

than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, not wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, not wider than tarsomere 3 of metatarsi; all tibiae gradually expanded apically, with central longitudinal carina. **Abdomen** black, shiny, impunctate, sparsely pubescent; fifth ventrite broadly emarginate, with small, central, convexity.

Female (allotype). Similar to holotype, differing in the following characters: size slightly smaller (length 3.53 mm; width 1.53 mm); tarsomere 1 not enlarged on pro- and mesotarsi; fifth abdominal ventrite not modified; “jowl” less pronounced or carinate laterally (in frontal view the margin of the “jowl” in the male is visible which gives the male a broader head than the female below the eyes); tibiae slender, not gradually broadening apically.

Variation. The only other specimen is a female that measures 3.47 mm by 1.47 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the male holotype, it is relatively stout at approximately 2.4x longer than wide, and in the two females, slightly more slender, approximately 3.0x longer than wide.

Remarks. This species is readily separated from all others in the genus, except *P. australis* by its small size. It can be separated from *P. australis*, by the humeral costae extending nearly 3/4 the length of the elytra, as well as by the lack of an obvious carinate “jowl,” and by the distinct and elevated antennal tubercles, and black mesosternum. See “Remarks” for other species. With only the holotype available, the aedeagus was not dissected. The external morphological features for this species will clearly distinguish it from all others.

Distribution. Known only from the Mexican state of Oaxaca. The paratype specimen was collected at 6,476 feet elevation.

Host. Unknown.

Etymology. Named for Natalie Nicole Jenkins, my oldest daughter, who like her sister, has endured my passion for collecting leaf beetles her entire life.

Specimens Examined. See “Type Specimens.”

***Phrynocephala pseudocapitata* Gilbert sp. nov.**

(Fig. 9-10, 52, 60, 78)

Type Specimens. **Holotype** (male) and **allotype** (female): **MEXICO. CHIAPAS:** Hwy 195 4.5 km N Ixtapa, 3,000', 24 May 1987, D. A. Rider, E. G. and T. J. Riley. Holotype and allotype deposited in the collection of Texas A&M University.

Paratypes (44 males and 49 females) – same data as holotype (6) [AJGC], (2) [AMNH], (4) [BMNH], (4) [CASC], (72) [EGRC], (2) [MCZC], (2) [USNM]; El Chorreadero, mv + bl, 26 June 1990, R. Turnbow (1) [RHTC].

Description. Male (holotype). Body length 6.47 mm; width at elytral humeri 2.76 mm; form elongate. Elytra bluish-black; head, pronotum, mesosternum, legs yellow-orange. **Head** elongate, with curved carina ventrally extending from behind eye to front edge of postclypeus (Fig. 9), appearing “jowl-like;” genal length 1.76x longer than maximum length of eye; vertex shining, impunctate; postclypeus with prefrontal ridge shallowly, broadly emarginate; an acute, elevated frontal carina extends between antennal fossae, curving upward before descending to front edge of postclypeus; anteclypeus entire, same color as labrum; labrum orange, rounded, with six long, evenly spaced setae; antennal fossae separated by distance slightly less than width of antennal fossa (fossal width measured from inside edges); frontal tubercles flat, distinct, separated by coronal suture; area in front of antennal fossa with

sunken appearance, bordered by acute lateral carina extending from eye to front edge of postclypeus; frontogenal suture indistinct; interocular distance 1.80x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.75x length of body; antennomeres 1-3 orange; 4-11 dark brown; antennomere 3 longest; antennomere 2 shortest; antennomere 4 longer than 5-11; antennomeres 5-11 subequal in length. **Pronotum** dull, smooth, reticulate, not obviously punctate; lateral margins tapering to apex, widest behind middle; basolateral projections small, obtuse; anterolateral projections rectangular, with corners rounded, not strongly projected; basal depression poorly defined. **Scutellum** dark brown, triangular, impunctate. **Elytra** distinctly reticulate, irregularly and inconspicuously punctate; humeral costa not obvious; humeral depression indistinct. **Prosternal intercoxal process** elevated ventrally over plane of prosternum and even with plane of tip of procoxae, narrowly, distinctly separating coxae, rising to a small wedge-shaped knob midway between procoxae. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** orange. **Legs** orange; tarsi orange-brown, darker than femora or tibiae; pro- and mesofemora enlarged; tarsomere 1 of protarsi enlarged, heart-shaped, wider than tarsomere 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae stout, sulcate, expanded apically, with distinct central longitudinal carina. **Abdomen** dark brown, shiny, impunctate, sparsely pubescent; fifth ventrite broadly emarginate with small, central, orange convexity. **Aedeagus** slightly, evenly arched; basal piece about 20% of total length (Fig. 60); ventral end slightly widened, with no distinct tip (Fig. 71).

Female (allotype). Similar to holotype, differing in the following characters: size slightly smaller (length 6.29 mm; width 2.70 mm); tarsomere 1 not broadly enlarged on pro- or mesotarsi; fifth ventrite not modified; each elytron with short, distinct humeral costa and 3-4 additional vague costae (light and angles must be right to observe the costae); “jowl” less pronounced laterally (in frontal view the margin of the “jowl” in the male is visible which gives the male a broader head than the female below the eyes); all tibiae similar, slender, gradually expanded apically.

Variation. Male: length 5.65 – 7.47 mm; width at humeri 2.09 – 3.18 mm. Female: length 5.47 – 7.18 mm; width 2.29 – 3.13 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 2.5x longer than wide, while in the female the ratio of the fourth antennomere is even more stout, approximately 2.2x longer than wide. In the female, the number and degree of additional elytral costae varies among individuals.

Remarks. The only obvious external difference between this species and *P. capitata* is the smooth, lightly punctured pronotum (Fig. 52) and the distinct carina on the metatibiae. See “Remarks” for *P. capitata* and other species.

Distribution. Known only from the type locality in the state of Chiapas, Mexico. All of the specimens were collected at 3,000 feet elevation.

Host. Unknown.

Etymology. Named for its very close likeness to *P. capitata*.

Specimens Examined. See “Type Specimens.”

***Phrynocepha pueblae* Gilbert sp. nov.**
(Fig. 45, 53, 61, 68, 72-73, 79)

Type Specimens. **Holotype** (male): MEXICO. PUEBLA: 4 mi. W. Acatepec, 26 July 1973, Mastro and Schaffner. **Allotype** (female): 4.4 mi. SW Acatepec, 26 July 1974, Clark, Murray, Ashe and Schaffner. Holotype and allotype deposited in the collection of Texas A&M University.

Paratypes (20 males and 26 females) – same data as holotype (1) [TAMU]; 4 mi. sw. Acatepec, 11 July 1973, Mastro and Schaffner [6,300ft.] (2) [TAMU]; 4.4 mi. sw. Acatepec, 9 July 1981, Bogar, Schaffner, Friedlander [4,200ft.] (1) [TAMU]; 4.3 mi. sw. Acatepec, 16 July 1971, Clark, Murray, Hart, Schaffner (5) [TAMU]; 4.4 mi. SW Acatepec, 26 July 1974, Clark, Murray, Ashe and Schaffner (6) [TAMU], (2) [AJGC]; 33.8 mi. SE Acatlan, 2 July 1992, B. K. Dozier (3) [FSCA]; 14 mi. W of I. de Matamoros [Izucar de Matamoros], 3 July 1992, B. K. Dozier (3) [FSCA]; 8.5 mi. SW of I de Matamoros, 3 July 1992, B. K. Dozier [3,750ft.] (8) [FSCA], (2) [AJGC]; 2.5 mi. W and 8 mi. N I de Matamoros, 5 July 1992, B. K. Dozier [4,770ft.] (8) [FSCA]; 7.3 miles southwest Izucar de Matamoros, 22 July 1981, Bogar, Schaffner, Friedlander [3,800ft.] (3) [TAMU]; 15 mi. SW Puebla, 6,900ft., 1 June 1974, C. W. and L. O'Brien and Marshall (2) [TAMU].

Description. Male (holotype). Body length 5.47 mm; width at elytral humeri 2.10 mm; form elongate. Elytra greenish-black; head, pronotum, legs yellow-orange. **Head** elongate, with a non-carinate curvature ventrally extending from eye to front edge of clypeus, appearing “jowl-like;” genal length 1.40x longer than maximum length of eye; vertex darker than rest of head, indistinctly reticulate with coarse, coalescing punctures; postclypeus appearing deeply, acutely emarginate, with a thickened, “v-shaped” prefrontal ridge; an acute frontal carina extends between antennal fossae, curving upward between antennal fossae before descending to front edge of postclypeus; anteclypeus entire, same color as labrum; labrum quadrate, lighter in color than rest of head; labral notch indistinct; antennal fossae separated by frontal carina; antennal fossae separated by distance slightly narrower than antennal fossa (fossal width measured from inside edges); frontal tubercles distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance; interocular distance 2.10x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.80x length of body; antennomeres 1-2 dark orange; 3 bicolored, orange to brown; 4-11 dark brown; antennomeres 1 and 3 longest, approximately equal in length; antennomere 2 shortest; antennomeres 4-11 subequal in length. **Pronotum** reticulate with moderate, separated punctures; lateral margins widest behind middle, tapering to apex, narrowest at anterior margin, maximum length at midline; basolateral projections small, blunt; anterolateral projections rectangular, with corners rounded, strongly projected; basal depression faint, poorly delimited, over 1/2 width of pronotum; two faint depressions on each side of anterior margin along longitudinal midline. **Scutellum** dark brown, obtusely triangular, impunctate. **Elytra** distinctly reticulate; punctures inconspicuous; humeral costa faint; humeral depression faint. **Prosternal intercoxal process** grooved, approximately 1/4 width of procoxa, elevated ventrally over plane of prosternum, even with plane of tip of procoxae, separating procoxae and curving towards mesosternum. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** dark brown. **Legs** orange to dark brown; tarsi dark brown, darker than femora or tibiae; pro- and mesofemora enlarged, not distinctly sulcate; tarsomere 1 of protarsi enlarged, heart-shaped, wider than tarsomere 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae stout, sulcate, expanded apically, with central carina. **Abdomen** dark brown, shiny, impunctate, moderately pubescent; last abdominal ventrite shallowly, broadly emarginate. **Aedeagus** sharply bent ventrally at midpoint about 60 degrees; dorsal transverse undulations behind ostium (Fig. 61); lateral tip with series of nodules (Fig. 72-73); basal piece about 22% total length of aedeagus (Fig. 61); ventral end slightly widened subapically, narrowing uniformly to obtuse tip, with lateral nodules visible (Fig. 68).

Female. Similar to male, except anterior margin of the clypeus less obviously emarginate in most individuals; all tibiae similar, slender, gradually expanded apically; tarsomere 1 not widened on all legs; fifth abdominal ventrite not emarginate. All noteworthy features of the head less pronounced.

Variation. Male: length 4.94 – 5.88 mm; width at humeri 2.00 – 2.24 mm. Female: length 5.12 – 6.00 mm; width 1.94 – 2.47 mm. The degree of clypeal emargination varies among individuals, with males often with a more obvious emargination than females. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 2.9x longer than wide, while in the

female the ratio of the fourth antennomere is even more stout, approximately 2.7x longer than wide.

Remarks. *Phrynocephala pueblae* can be distinguished from all other *Phrynocephala*, except *P. deyrollei*, by the same characters that will distinguish *P. deyrollei*. Comparison of the aedeagi is the only way to differentiate *P. pueblae* from *P. deyrollei*. The aedeagus of *P. pueblae* (Fig. 61) is more strongly angled than *P. deyrollei* (Fig. 57) and has unique ridging along the dorsal side, as well as unusual structures on the tip (Fig. 72-73).

Distribution. Known only from the Mexican state of Puebla at elevations between 3,750 and 6,900 feet.

Host. Unknown.

Etymology. Named for the only Mexican state in which it seems to occur, Puebla.

Specimens Examined. See "Type Specimens."

Phrynocephala pulchella Baly 1861

(Fig. 42, 62, 69, 79)

Phrynocephala pulchella Baly 1861: 201 (tab. 11, fig. 8). Gemminger and Harold 1876: 3495. Jacoby 1884: 291 (tab. 17, fig. 24). Heikertinger and Csiki 1939: 215. Blackwelder 1946: 699. Wilcox 1975: 108. Maes and Staines 1991: 33. Furth and Savini 1996: 64. Furth 2006: 233.

Romalocera forticornis Dejean 1836: 389 [*nomen nudum*]. Gemminger and Harold 1876: 3495. Blackwelder 1946: 699. Wilcox 1975: 108. [as synonym of *Phrynocephala pulchella* Baly].

Type Specimens. Lectotype (here designated and labeled). **Male** with aedeagus dissected on a card [BMNH], labeled: "Sp. figured." [printed on white], "Baly Coll./?Syntype/ *Phrynocephala pulchella* Baly/ BM(NH)" [printed on white].

Paralectotypes (three here designated and labeled). **Male** [BMNH] labeled: "TYPE/ H.T." [printed on circular white with red border], "Oax" [?] [unreadable, handwritten on white], "Baly Coll." [printed on white], "*Phrynocephala pulchella*/ Baly/ Mexico" [handwritten on blue]. **Female** [BMNH] labeled: "Oax" [handwritten on white], "Baly Coll." [printed on white], "?Syntype," "*Phrynocephala pulchella* Baly," "BM(NH)" [all handwritten and printed on white]. **Male** [BMNH] labeled: "Oax" [handwritten on white], "Baly Coll." [printed on white], "?Syntype," "*Phrynocephala pulchella* Baly," "BM(NH)" [all handwritten and printed on white].

The male lectotype was selected from four specimens in the British Museum of Natural History because it is labeled as the specimen pictured in the original description.

Redescription. Male [BMNH, lectotype]. Body length 8.53 mm; width at elytral humeri 3.94 mm; form elongate. Elytra bluish-black; head, thorax, legs yellow-orange. **Head** elongate, "jowl" not obvious; genal length 1.50x longer than maximum length of eye; vertex with coarse, coalescing punctures; postclypeus with thickened, "v-shaped" prefrontal ridge; an acute, uniformly elevated frontal carina extends between antennal fossae; antennal fossae separated by frontal carina, coronal suture; anteclypeus entire; antennal fossae separated by distance 1/2 width of antennal fossa (fossal width measured from inside edges); frontal tubercles quadrate, distinct, separated by thin coronal suture; area in front of antennal fossa with sunken appearance, not bordered by lateral carina; labrum rounded, shallowly emarginate, shiny, impunctate, with 11 long setae; labral notch indistinct; interocular distance 2.10x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.70x length of body; antennomeres 1-2 orange; 3-4 bicolored, orange to brown; 5 brown; 6-11 dark brown; antennomeres 1 and 3 approximately equal in length, both longer than antennomere 4; 5-11 subequal in length, shorter than 4. **Pronotum** orange, dorsal surface uneven, shining, indistinctly punctate, with punctures more obvious near basal depression; lateral margins widest at center, narrowed at anterior margin, parallel in basal 1/2; basolateral projections distinct, acute; anterolateral projections replaced by a slight, short inward curve; basal depression distinct, clearly limited anteriorly, not clearly lim-

ited laterally, over 1/2 width of pronotum. **Scutellum** bicolored black to orange, shining, impunctate, obtusely triangular. **Elytra** reticulate, with coarse, shallow, confluent punctures; faint longitudinal carina behind humeri. **Prosternal intercoxal process** not grooved, narrowly, distinctly separating procoxae, elevated ventrally over plane of prosternum. **Procoxae** conical. **Procoxal cavities** open. **Legs** orange; pro- and mesofemora enlarged, but smaller than metafemora; tarsi orange with brownish margins; tarsomere 3 brown; tarsomere 1 of protarsi enlarged, heart-shaped, wider than tarsomere 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae gradually expanded apically, with indistinct medial carina, appearing bicarinate (carina more apparent at some angles). **Abdomen** dark brown, shiny, coarsely punctured, moderately pubescent; last abdominal ventrite shallowly emarginate. **Aedeagus** (from non-type specimen) slightly bent ventrally near point two-fifths from tip (Fig. 62); basal piece about 20% total length of aedeagus; ventral end with weak subapical notch, narrowing uniformly to obtuse tip (Fig. 69).

Female. Similar to male except slightly larger (see "Variation"), antennae shorter, 0.52x length of body; pro- and mesofemora not enlarged; all tibiae more slender; tarsomere 1 not expanded, narrower than tarsomere 3 on all legs; fifth abdominal ventrite entire.

Variation. Male: length 7.18 – 10.18 mm; width at humeri 3.23 – 4.41 mm. Female: length 7.35 – 10.59 mm; width 3.18 – 4.59 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 2.2x longer than wide, while in the female the ratio of the fourth antennomere is even more stout, approximately 1.9x longer than wide. Abdominal segments can vary from dark brown to yellow-orange.

Remarks. Although *P. pulchella* possesses all of the major characteristics of the genus, most are less well developed than in other species. The "jowl" is not obvious, the first tarsomere of the pro- and mesotarsi is just barely wider than the third tarsomere, the genal ratio is smaller than in the other species, except *P. nataliae*, and the prosternal intercoxal process is just barely elevated ventrally over plane of the prosternum. In addition, the basal margin of the pronotum is obviously sinuate as opposed to the other species which all have the basal margin straight or only slightly sinuate (except as they curve to the basolateral projections of the lateral margin). The procoxae are conical rather than globose. The antennae are stout in both the male and female, much more so than for other species in the genus. These moderated characters and the large size will serve to distinguish this species from all others in the genus. See also the remarks for other species.

Distribution. *Phrynocephala pulchella* primarily inhabits the tropical wet areas of western Mexico and into adjacent Guatemala at elevations between 1,850 and 7,800 feet (Fig. 79). Additionally, Furth (2006) records this species from the state of Veracruz in eastern Mexico. A rather disjunct collection record is established by a specimen in the Museo Entomológico, León, Nicaragua labeled from central Nicaragua. Placement of the Nicaraguan specimen using Google Earth™ would put this collection at about 1,850 feet elevation.

Host. A few of the collection records indicate *Acacia* spp., *Acaci*-like plant or collected in an *Acacia*-oak woodland. Various species of *Acacia* would appear to be the adult host for this species, although a series of thirteen specimens from north of Durango were collected from cactus.

Specimens Examined. In addition to the lectotype and the paralectotypes, other specimens examined included 128 males and 136 females. **GUATEMALA.** B. Verapaz, 19-24 km N Salama, 25/31 May 1989, 4,500ft., J. E. Wappes (1) [EGRC]; Salle Coll. (2) [BMNH]; **MEXICO. CHIAPAS:** [No other data] (8) [USNM]; Municipio de Ixtapa, Between Atzalan and El Palmar, 914m [3,016ft.], 13 August 1981, D. E. and P. M. Breedlove and C. G. Whitefield [3,645ft.] (1) [CASC]; Las Margaritas, 18 June 1965, Burke, Meyer, Schaffner [5,091ft.] (1) [TAMU]; Sumidero Natl. Pk., 17 May 1989, D. Thomas, H. Howden, B.

Ratcliffe (1) [EGRC]; Sumidero Cyn. N Park, 20 May 1990, D. B. Thomas [3,666ft.] (1) [EGRC]; Fry Coll. 1905-100 [on bottom of second label] (2) [BMNH]; El Sumidero, 23 June 1990, R. Turnbow [3,980 ft.] (3) [RHTC]; **COLIMA**: Colima Vulcano [Volcano], L. Conrad (18) [USNM]; 9 mi. ne Comala, 17/18 July 1983, Kovarik, Harrison, Schaffner (1) [TAMU]; 9.7 mi. ne. Comala, 1 August 1988, Ferreira, Schaffner [4,876ft.] (1) [TAMU]; **DURANGO**: 5 mi. W of Durango (1) [MELN]; Sierra de Durango (14) [USNM]; Durango city, Höge (1) [AMNH], (1) [BMNH]; Ventanas, Höge (1) [AMNH], (1) [BMNH]; Ventanas, Höge, 96463 (1) [ZMHB]; 3 mi. SW Durango, 21 July 1972 [6,264ft.] (1) [EGRC]; Canelas (2) [ZMHB]; 650, Durango City (1) [ZMHB]; Durango City (2) [ZMHB]; Durango City [label different than previous] (3) [ZMHB]; La Borrega, [date?] (1) [ZMHB]; Refugio, Höge (1) [BMNH]; N. of Durango, 16 July 1969, Coll. Ward, Tenarino and Bennett, ex. Cactus (13) [TTUZ]; **GUANAJUATO**: Guanajuato [6,727ft.] (3) [USNM]; Guanajuato, Salle Coll. (2) [BMNH]; on road btwn. Silao and Guanajuato. Dunes, 13 July 1970, B. S. Cheary Collr. (2) [UCRC]; **GUERRERO**: 3.3 km Cacahuamilpa, 1494 m [4,902ft.], 2 July 1992, C. Bellamy (2) [EGRC]; 1 mi. ne La Laguna, 17 July 1984, Carroll, Schaffner, Friedlander [6,406ft.] (1) [TAMU], (1) [EGRC]; Chilpancingo, 4,600 ft., June, H. H. Smith (1) [BMNH]; **JALISCO**: 48.7 km NE La Huerta, 4,200ft., 19° 41.763'N/104° 23.016'W, 9 July 2003 (8) [AJGC]; same data as previous except 13 July 2003 (8) [AJGC]; Guadalajara, 29 June 1903 [5,098ft.] (3) [USNM]; Guadalajara, 30 June 1955, Derham Giuliani (2) [CASC]; Lagos de Moreno, 19 August 1960, P. H. Arnaud, Jr., E. S. Ross, D. C. Rentz [5,038ft.] (2) [CASC]; S. edge Guadalajara at perfecto, 6,000 ft., 11 July 1973, ME-98, R. R. and M. E. Murray (2) [TAMU]; rd. to Parque Nacional de Volcan de Colima, 2 mi. w. hwy. junct. 54 (near Atenquique), 12 July 1984, Carroll, Schaffner, Friedlander (1) [TAMU]; 13.8 mi. S. Autlan at Puerto los Mazos, 5,510ft., 30 July 1996, Wm. Godwin, cloud forest sweep (6) [TAMU]; 9 mi. SW Autlan, 4,300ft., hwy. 80, 11 August 1982, C. and L. O'Brien and Wibmer (1) [EGRC]; Guadalajara (2) [ZMHB]; Tamazula, 11 June 1967, J. R. McClellan (1) [BYUC]; **MEXICO**: 8 mi. N. Chalco, 29 June 1973, R. R. and M. E. Murray [7,813ft.] (1) [TAMU]; **MEXICO D.F.**: Mexico DF [7,345ft.] (1) [USNM]; **MICHOACAN**: 16 mi. west Jacona, 18 July 1966, P. M. and P. K. Wagner [5,379ft.] (1) [TAMU]; 10.6 mi. s. Uruapan, 24 July 1983, Kovarik, Harrison, Schaffner (1) [TAMU]; 14.3 km. S. Uruapan, 1370-1465m [4,495-4,806ft.], 29 July 1988, R. S. Anderson, oak-*Acacia* woodland, 88-10, (1) [TAMU]; Hwy. 35 5 km NW Zamora, 1740m [5,709ft.], 17 August 1991, J. Rifkind (1) [AJGC]; 5 km NW Zamora, beating *Acacia*-like plt., 17 August 1991, W. F. Barr (2) [WFBM]; Hwy. 15, 5 mi. S. of Tuxpan, G. H. Nelson, on *Acacia* sp. (Fabaceae) [6,183ft.] (3) [WFBM]; Hwy. 15, 5 mi. S. Tuxpan, 9 August 1972, G. H. Nelson (2) [AJGC]; **MORELOS**: Cuernavaca, 7 June, 1934, M. Rodriguez [5,880ft.] (1) [TAMU]; Cuernavaca, June 1934, Coll. H. E. Hinton, Hinton Coll. B. M. 1939-583 [on bottom of second label]; **NAYARIT**: 33 km. se. Tepic, 1130m [3,707ft.], 27 June 1975, E. M. Fisher (1) [CASC]; 24 mi. SE Tepic, 3 July 1962, E. Sleeper, R. Anderson, A. Hardy, R. Somerby (1) [CASC]; same data as previous but without date (3) [CASC]; Vol. Ceboruco, 15/16 July 1993, J. Huether (1) [TAMU]; **OAXACA**: Monte Al-Ban ruins, 8 mi. S.W. of Oaxaca, 2 May 1965, H. V. Weems, Jr. coll. (1) [FSCA]; Oaxaca, 5,034 ft., 1 July 1955, P. and C. Vaurie (1) [AMNH]; same data except 16 July 1955 (1) [AMNH]; same data except 30 June 1955 (1) [AMNH]; Huajuapán de León, 5,085 ft., 18 July 1955, P. and C. Vaurie (6) [AMNH]; 15, Coll. J. Flohr (1) [ZMHB]; Hoege, 96464 (1) [ZMHB]; Höge (3) [BMNH]; Salle Coll. (2) [BMNH]; **PUEBLA**: Atlixco, May, [green star as a label], [silver star as a label], A. Fenyes Collection (2) [CASC]; **SINALOA**: 20 mi W El Palmito, 13 July 1974, R L Mangan and D S Chandler (1) [FSCA]; 36.6 mi. NE Villa Union, nr La Capilla Detaxte, 2 July 1982, A. J. Gilbert (63) [AJGC]; Venedio[?], 27 June 1918, Van Dyke Collection (1) [CASC]; **UNKNOWN STATE**: [No other data] (7) [USNM]; Ciudad Granja[?] del, 16 June 1965, W. F. Chamberlain (1) [TAMU]; Coll. J. Flohr (4) [ZMHB]; (1) [ZMHB]; Coll. L. W. Schauffus (1) [ZMHB]; (2) [ZMHB]; 21576 [green label], Fry Coll. 1905-100 [on bottom of second label] (1) [BMNH]; Ex Coll J. Strum, *Romalocera forticornis* Dej., Salle Coll. (1) [BMNH]; [label illegible], Fry Coll. 1905-100 [on bottom of second label] (1) [BMNH]; **NICARAGUA**: 3 km N Jinotega, July 1989, [1,850ft.], col. F. Reinboldt (1) [MELN]; **NO COUNTRY DATA**: [Bowditch collection material] (6) [USNM]; 67-56 (2) [BMNH].

***Phrynocephala punctulata* Pallister 1953**

(Fig. 46, 54, 63, 70, 78)

Phrynocephala punctulata Pallister 1953: 67. Wilcox 1975: 108. Furth and Savini 1996: 64. Furth 2006: 233.**Type Specimens. Holotype. Male** [AMNH] labeled: "Santa Barbara/ Sta. Barbara Dist./ Chih. Mex. 7,500ft./ July 18, 1947" [printed on white], "D. Rockefeller/ Exp. Michener" [printed on white], [male symbol printed on white], "HOLOTYPE/ *Phrynocephala punctulata*/ Pallister" [printed and handwritten on red].**Paratypes. Female** [AMNH] labeled: "San Juan del Rio/ Dgo. Mex. 5,200ft./ VII-30-47" [printed on white], "D. Rockefeller/ Exp. Michener" [printed on white], [female symbol printed on white], "PARATYPE/ *Phrynocephala punctulata*/ Pallister" [printed and handwritten on yellow]. **Male** [AMNH] labeled: "San Juan del Rio/ Dgo. Mex. 5,200ft./ VII-30-47" [printed on white], "D. Rockefeller/ Exp. Cazier" [printed on white], [male symbol printed on white], "PARATYPE/ *Phrynocephala punctulata*/ Pallister" [printed and handwritten on yellow]. **Male** [AMNH] labeled: "Santa Barbara/Chih., Mex. 6300ft./VII-18-47" [printed on white], "D. Rockefeller/Exp. Gertsch" [printed on white] [not labeled as a paratype, but cited in the original description as a paratype].**Redescription.** Male [AMNH, holotype]. Body length 5.35 mm; width at elytral humeri 2.24 mm; form elongate. Elytra shining, bluish-black; head, pronotum, legs yellow-orange. **Head** elongate, with non-carinate curvature ventrally extending from eye to front edge of postclypeus, appearing "jowl-like;" genal length 1.67x longer than maximum length of eye; vertex shining with a few coarse, coalescing punctures near eye; postclypeus with transverse prefrontal ridge acutely, shallowly emarginate; an acute, elevated frontal carina extends between antennal fossae, descending uniformly to front edge of postclypeal ridge; anteclypeus entire; labrum rounded; labral notch indistinct; antennal fossae separated by frontal carina, coronal suture; antennal fossae separated by distance 1/2 width of antennal fossa (fossal width measured from inside edges); frontal tubercles flat, elongate, distinct, separated by coronal suture; area in front of antennal fossa with sunken appearance, bordered by obtuse lateral carina extending from eye to front edge of postclypeus; frontogenal suture indistinct; interocular distance 2.10x wider than width of both eyes combined; eyes nearly round, very small relative to head; antennae stout, 0.75x length of body; antennomeres 1-2 orange; 3-4 bicolored, orange to brown; 5-11 dark brown; antennomeres 1 and 4 approximately equal in length, shorter than 3; antennomere 3 longest; antennomere 2 shortest; antennomeres 5-11 subequal in length. **Pronotum** shining, vaguely reticulate, impunctate; lateral margins rounded, widest behind middle, maximum length at midline; basolateral projections small, obtuse; anterolateral projections rectangular, distinct; basal depression faint, poorly defined, about 1/2 width of pronotum. **Scutellum** dark brown, obtusely triangular, impunctate. **Elytra** shining, reticulate, with coarse, shallow, irregular punctures; humeral costa short, indistinct. **Prosternal intercoxal process** distinctly furrowed, narrowed between procoxae, less than 1/3 width of procoxa, elevated ventrally over plane of prosternum and plane of procoxae, slightly wider posterior to procoxae, curving downward to mesosternum. **Procoxae** globose. **Procoxal cavities** open. **Mesosternum** black. **Legs** orange; tarsi bicolored, orange to brown, darker than femora or tibiae; pro- and mesofemora enlarged, broadly expanded, with shallow sulcus along anterior surface; tarsomere 1 of protarsi enlarged, heart-shaped, wider than 3; tarsomere 1 of mesotarsi enlarged, more elongate than tarsomere 1 of protarsi, but still wider than tarsomere 3 of mesotarsi; tarsomere 1 of metatarsi enlarged, more elongate than tarsomere 1 of pro- or mesotarsi, wider than tarsomere 3 of metatarsi; all tibiae narrow with median longitudinal carina. **Abdomen** black, shiny, coarsely punctured, moderately pubescent; last abdominal ventrite shallowly, broadly emarginate. **Aedeagus** (from unlabeled paratype specimen) sharply bent ventrally about 90 degrees near mid-point (Fig. 63); basal piece about 19% total length of aedeagus; ventral end with weak subapical notch, weak subapical lobe, acute tip (Fig. 70).**Female.** Female characters were obtained from a paratype specimen in the American Museum of Natural History and two specimens collected by the author. The female is similar in size to the male (see "Variation") but differs in the following characters: "jowl" less obvious; face in front of eyes narrower; antennae less robust, shorter, 0.70x length of body; pro- and mesofemora not enlarged; all tibiae expanded but slender; tarsomere 1 not expanded, narrower than third on all legs; fifth ventrite entire.

Variation. Male: length 4.71 – 5.35 mm; width at humeri 2.12 – 2.29 mm. Female: length 4.76 – 5.82 mm; width 2.00 – 2.35 mm. The stout or slender appearance of the antennae, as represented by the fourth antennomere (length to width ratio), varies. In the specimens selected, the ratio of the fourth antennomere of the male is stout, approximately 3.2x longer than wide, while in the female the ratio of the fourth antennomere is even more stout, approximately 2.6x longer than wide.

Remarks. *Phrynocephala punctulata* is similar in external appearance to *P. deyrollei* and has a similar aedeagus. A number of external morphological characters will separate the two species on typical specimens. However, most of these characters are variable and most should not be evaluated individually. The shiny, less coarsely punctured pronotum (Fig. 54) and vertex (Fig. 46) in *P. punctulata* are the most reliable characters. The pronotum in *P. deyrollei* is very reticulate and coarsely punctured (Fig. 48) and the vertex is uniformly covered with coarse, confluent punctures (Fig. 43). Other useful characters include antennal tubercles that are elevated in *P. deyrollei* and flat in *P. punctulata*, a deeply emarginate transverse postclypeal ridge in the male of *P. deyrollei* (Fig. 43) as opposed to a shallowly emarginate ridge in *P. punctulata* (Fig. 46), and the interantennal space of *P. deyrollei* that is nearly equal in width to the antennal socket (in *P. punctulata* the interantennal space is clearly narrower than the antennal socket). The pro- and mesotibiae are more sulcate in the male of *P. punctulata*, and there are no obvious depressions on the anterior margin of the pronotum (Fig. 54). See also the remarks for other species.

Few specimens of *P. punctulata* were available for study. As more specimens are collected of *P. punctulata* and *P. deyrollei*, especially in the geographical interface of the two species, a more clear relationship of the two species may evolve, solidifying their status or requiring synonymy.

Distribution. The distribution for *P. punctulata* is currently limited to the Mexican states of Chihuahua and Durango. Specimens were collected at elevations between 5,200 and 7,500 feet.

Host. A single specimen from was collected from *Mimosa* sp.

Specimens Examined. In addition to the holotype and three paratypes, other specimens examined included 1 male and 3 females. **MEXICO. DURANGO:** 31.7 mi. N Durango, 22 July 1982, A. J. Gilbert collector [5,783ft.] (2) [AJGC]; 10 mi. NE Donato Guerra [Guerra], 1 July 1971, 6,500 ft., on *Mimosa*, L. & C. W. O'Brien (1) [TTUZ]; 9 mi. S. San Antonio, 1 July 1971, 5,200 ft., C. W. O'Brien & Marshall (1) [TTUZ].

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