

**TWO NEW SPECIES OF THE PREDACEOUS MIDGE GENUS
AMEROHELEA GROGAN AND WIRTH FROM ARGENTINA
(DIPTERA: CERATOPOGONIDAE)**

ANA L. GADDI, GUSTAVO R. SPINELLI, AND WILLIAM L. GROGAN, JR.

(ALG, GRS) División Entomología, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina (e-mail: GRS spinelli@fcnym.unlp.edu.ar); (WLG) Research Associate, Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Gainesville, Florida 32614-7100, U.S.A. (e-mail: groganw@doacs.state.fl.us)

Abstract.—Two new species of the predaceous midge genus *Amerohelea* Grogan and Wirth are described and illustrated from Argentina: *Amerohelea paranaensis*, Gaddi, Spinelli and Grogan, new species, from the subtropical forest zone of Misiones Province, and *Amerohelea xerophila*, Gaddi, Spinelli and Grogan, new species, from arid regions in San Luis, Córdoba and Río Negro provinces. The male of *A. paranaensis* exhibits a tuft of stout setae on the ventral surface of tarsomere 1 of the foreleg, a character previously unknown in the genus. A key is provided for males and females of all species of *Amerohelea*.

Key Words: Palpomyiini, taxonomy, Neotropical

DOI: 10.4289.0013-8797.113.3.299

The predaceous midge genus, *Amerohelea* Grogan and Wirth (Diptera: Ceratopogonidae), was proposed for two previously described and eight new species of the tribe Palpomyiini (Grogan and Wirth 1981), all but two of which inhabit the Neotropics. The distribution of these two species extends into the southern portion of the Nearctic Region: *Amerohelea frontispina* (Dow and Turner), which is known from California, Arizona and Texas, south through Mexico, Central America to Colombia and Venezuela, and, *Amerohelea fasciata* Grogan and Wirth, which is known from Sonora, Mexico,

south through Central America to Colombia. Three species range as far south as Argentina: *Amerohelea galindoi* Grogan and Wirth, *Amerohelea pseudo-fasciata* Grogan and Wirth and *Amerohelea similis* Spinelli (1989) from Argentina and Uruguay.

Species of *Amerohelea* are distinguished from species in other genera in the tribe Palpomyiini by the following combination of characters: females have only one spermatheca and a single pair of internal abdominal tergal apodemes that arise near the lateral margins of segment 7; males have parameres that are fused only on their extreme anteromedial portion and cerci with 1–2 stout apical setae (Borkent et al. 2009). Grogan and Wirth (1981) noted that the internal abdominal

* Edited by Martin Hauser; accepted by Robert R. Kula

tergal apodemes were not visible in females of *Amerohelea nelsoni* Grogan and Wirth and *Amerohelea spinellii* Grogan and Wirth. Females with non-sclerotized abdominal tergal apodemes have also been reported in the related genera *Palpomyia* Meigen (Grogan and Wirth 1975, 1979) and *Bezzia* Kieffer (Wirth et al. 1984). However, a study by Borkent and Craig (1994) of female *Bezzia varicolor* (Coquillett) that they reared from pupae revealed that sclerotization of their abdominal tergal apodemes was age-related, with older specimens exhibiting heavily sclerotized tergal apodemes. Therefore, we consider it highly likely that adult females of all species of *Amerohelea* eventually develop sclerotized internal abdominal apodemes.

Herein we describe two new species of *Amerohelea* that were recently collected in the arid Chaco, Monte and Paranaense ecoregions of Argentina (Brown et al. 2006).

MATERIAL AND METHODS

All specimens were collected by sweeping vegetation with aerial nets, preserved in 70% ethanol and subsequently cleared, dissected and mounted onto microscope slides in Canada balsam by the methods described by Borkent and Spinelli (2007). Specimens were examined and measured at 40–400 $\times$ with an Olympus CX31 binocular compound microscope, and illustrations of key diagnostic characters were prepared with the aid of an attached camera lucida.

Terminology of major structures follows those in the Manual of Nearctic Diptera (McAlpine et al. 1981). Specific terms of Ceratopogonidae, including their genitalia and wing venation, follow those by Downes and Wirth (1981) in the same manual except for recent modifications to some wing veins and cells proposed by

Szadziewski (1996), which were summarized in a table by Spinelli and Borkent (2004).

Grogan and Wirth (1981) deposited paratypes of most of the eight new species of *Amerohelea* they described in the Natural History Museum, London (BMNH); Muséum National d'Histoire Naturelle, Paris (MNHN); and Museu de Zoologia da Universidade de São Paulo, Brazil (MZSP). To directly compare our new species with other previously described species, WLG obtained additional paratypes of *A. fasciata*, *A. galindoi*, *A. pseudofasciata*, *A. spinellii* and *Amerohelea vargasi* Grogan and Wirth, as well as specimens of *A. frontispina* and *Amerohelea sordidipes* (Macfie) from the Smithsonian Institution National Museum of Natural History, Museum Support Center in Suitland, Maryland (USNM). These specimens are now deposited in the Florida State Collection of Arthropods, Gainesville (FSCA); the Canadian National Collection of Insects, Ottawa (CNCI) and División Entomología, Museo de La Plata, Argentina (MLPA). Holotypes of both new species, the allotype and other paratypes of *Amerohelea xerophila* Gaddi, Spinelli and Grogan, new species are deposited in the MLPA; other paratypes of *A. xerophila* are deposited in the USNM, FSCA and CNCI.

RESULTS AND DISCUSSION

Amerohelea Grogan and Wirth

Amerohelea Grogan and Wirth, 1981: 1280. Type species: *Amerohelea galindoi* Grogan and Wirth. Type locality: Colombia.

Key to Species of *Amerohelea*

Note: Females of *Amerohelea paranaensis* Gaddi, Spinelli and Grogan, new species are unknown; males of

Amerohelea dalcyi Grogan and Wirth, *A. nelsoni*, *A. pseudofasciata*, *A. similis* and *A. spinellii* are unknown.

1. Females 2
- Males 13
2. Frontoclypeus with numerous stout spinelike setae 3
- Frontoclypeus with slender setae 4
3. Wing with one radial cell; tarsomeres 5 with 3–5 stout ventral setae *A. frontispina*
- Wing with two radial cells; tarsomeres 5 with 8–10 stout ventral setae *A. similis*
4. Hind femur with broad apical or subapical yellowish band 5
- Hind femur uniformly brown or dark brown 7
5. Fore- and midtibiae brown, darkest basally; hind femur with apical pale band; antennal flagellomeres stout; abdomen without internal tergal apodemes *Amerohelea xerophila* Gaddi, Spinelli and Grogan, new species
- Fore- and midtibiae yellow; hind femur with apical or subapical pale band; antennal flagellomeres slender, elongated; abdomen with internal tergal apodemes 6
6. Palpal ratio 2.00–2.50; ratio of flagellum length/wing length 0.72–0.84; hind femur with subapical pale band *A. fasciata*
- Palpal ratio 2.70–3.33; ratio of flagellum length/wing length 0.60–0.66; hind femur with apical pale band *A. pseudofasciata*
7. Tarsomeres 5 without stout, ventral, spinelike setae 8
- Tarsomeres 5 with 1 or more stout, ventral, spine-like setae 9
8. Spermatheca with distinct, long narrow neck; wing length less than 1.10 mm *A. dalcyi*
- Spermatheca without distinct neck; wing length 1.50 mm or greater *A. nelsoni*
9. Forefemur with 0–2 ventral spines 10
- Forefemur with 3–6 ventral spines 12
10. Abdomen without internal tergal apodemes; tarsomeres 5 with 2 ventral setae *A. spinellii*
- Abdomen with internal tergal apodemes; tarsomeres 5 with 3 or more ventral setae 11
11. Forefemur with 1 spine (rarely 0 or 2 spines); anterior scutal spine large, well developed *A. galindoi*
- Forefemur with 2 (rarely 1 or 3) spines; anterior scutal spine small, poorly developed *A. vargasi*
12. Femora and tibiae uniformly brown forefemur swollen *Amerohelea ronderosi*, Grogan and Wirth
- Hind femur dark brown, proximal and distal portions of midfemur light brown; forefemur slender *A. sordidipes*

13. Wing with one radial cell *A. frontispina*
- Wing with two radial cells 14
14. Tarsomere 1 of foreleg with distinct, ventral, subapical tuft of stout setae *Amerohelea paranaensis* Gaddi, Spinelli and Grogan, new species
- Tarsomere 1 of foreleg without ventral, subapical tuft of stout setae 15
15. Distal halves of parameres with apices diverging, curved mesally 16
- Distal halves of parameres straight, apices not curved mesally 17
16. Forefemur with 3–5 ventral spines; aedeagus with basal arms broad proximally, distal portion slender, curved; base of sternite 9 curved; apices of gonocoxites nearly straight *A. fasciata*
- Forefemur with 0–2 ventral spines; aedeagus with basal arms slender, straight, distal portion slender, straight; base of sternite 9 straight; apices of gonocoxites curved mesally 60° *A. galindoi*
17. Forefemur swollen 18
- Forefemur slender 19
18. Forefemur with 3–5 ventral spines; gonocoxite with long, slender mesobasal tubercle; distal portion of aedeagus broad *Amerohelea ronderosi*, Grogan and Wirth
- Forefemur with 2 (rarely 1 or 3) ventral spines; gonocoxite without mesobasal tubercle; distal portion of aedeagus narrow *A. vargasi*
19. Sternite 9 with narrow, deep posteromedian excavation; gonocoxite greatly elongated, 4.70–5.20× longer than greatest breadth; distal halves of parameres slender, elongated, divergent, apices widely separated *A. sordidipes*
- Sternite 9 with broad, shallow posteromedian excavation; gonocoxite short, 2.20× longer than greatest breadth; distal halves of parameres stout, very short, closely approximated, apices slightly overlapping *Amerohelea xerophila* Gaddi, Spinelli and Grogan, new species

***Amerohelea paranaensis* Gaddi, Spinelli and Grogan, new species**
(Figs. 1–5)

Diagnosis.—Male. The only species of *Amerohelea* with tarsomere 1 of the foreleg bearing a distinct subapical tuft of stout setae on its ventral surface. Female. Unknown.

Description.—Male. *Head:* Reddish brown. Eyes bare, separated by distance of diameter of two ommatidia. Frontoclypeus with 12 setae. Antenna with dark

reddish brown scape; flagellum (Fig. 1) slightly lighter in color, proximal 1/2 of flagellomeres 1–9, bases of 10–13 paler, flagellomeres 2–8 more or less vasiform, 9 more elongate, 10–13 greatly elongated; plume dense; antennal ratio 1.07. Palpus (Fig. 2) light brown; segment 3 with a few scattered capitate sensilla on mesal surface of proximal portion; palpal ratio 3.00. *Thorax*: Dark reddish brown; pleural region paler. Scutum with medium-sized anterior spine and 2 prealar setae. Scutellum with 3 stout setae. Legs reddish brown, hind leg darkest; forefemur, extreme bases of mid- and hind femora paler; forefemur with 3–4 ventral spines; tarsi light brown; tarsomere 1 of foreleg (Fig. 3) with distinct subapical tuft of stout setae on ventral surface; ventral palisade setae absent on tarsomere 1 of foreleg, in one row on tarsomere 1 of midleg and tarsomere 2 of hind leg, in two rows on tarsomere 1 of hind leg; hind tibial comb with 6–7 large setae; hind tarsal ratio 2.58; tarsomeres 4 cordiform; tarsomeres 5 unarmed, claws small, of equal size and length, tips bifid. *Wing*: Membrane hyaline; anterior veins brown, posterior veins paler; 2nd radial cell $1.60\times$ longer than 1st; anal lobe poorly developed; wing length 1.22 mm, breadth 0.37 mm; costal ratio 0.73. Halter reddish brown. *Abdomen*: Light reddish brown. Genitalia as in Figs. 4–5. Tergite 9 extends short distance beyond apex of gonocoxite, tapering gradually distally to broadly rounded apex; cercus well developed with 1 apical, 1 subapical stout setae. Sternite 9 $3.00\times$ broader than long; base greatly curved; posterior margin concave. Gonocoxite $1.85\times$ longer than broad, stout, straight, tapering gradually distally with slender, sharply pointed mesobasal tubercle; gonostylus nearly straight, 0.70 the length of gonocoxite, tapering slightly distally, apex broad, curved mesally, tip slightly

pointed. Parameres (Fig. 5) stout, heavily sclerotized, fused for short distance proximally; basal arms slender, curved laterally; distal portions long, closely approximated basally, becoming increasingly divergent distally, apices curved mesally, tips rounded. Aedeagus Y-shaped, heavily sclerotized, ventral surface smooth; basal arch extending 0.37 of total length; basal arms slender, nearly straight, divergent, directed anterolaterally; distal portion abruptly tapered proximally, broadening to cup-shaped apex with truncate tip.

Female. Unknown.

Distribution.—Argentina; Misiones Province.

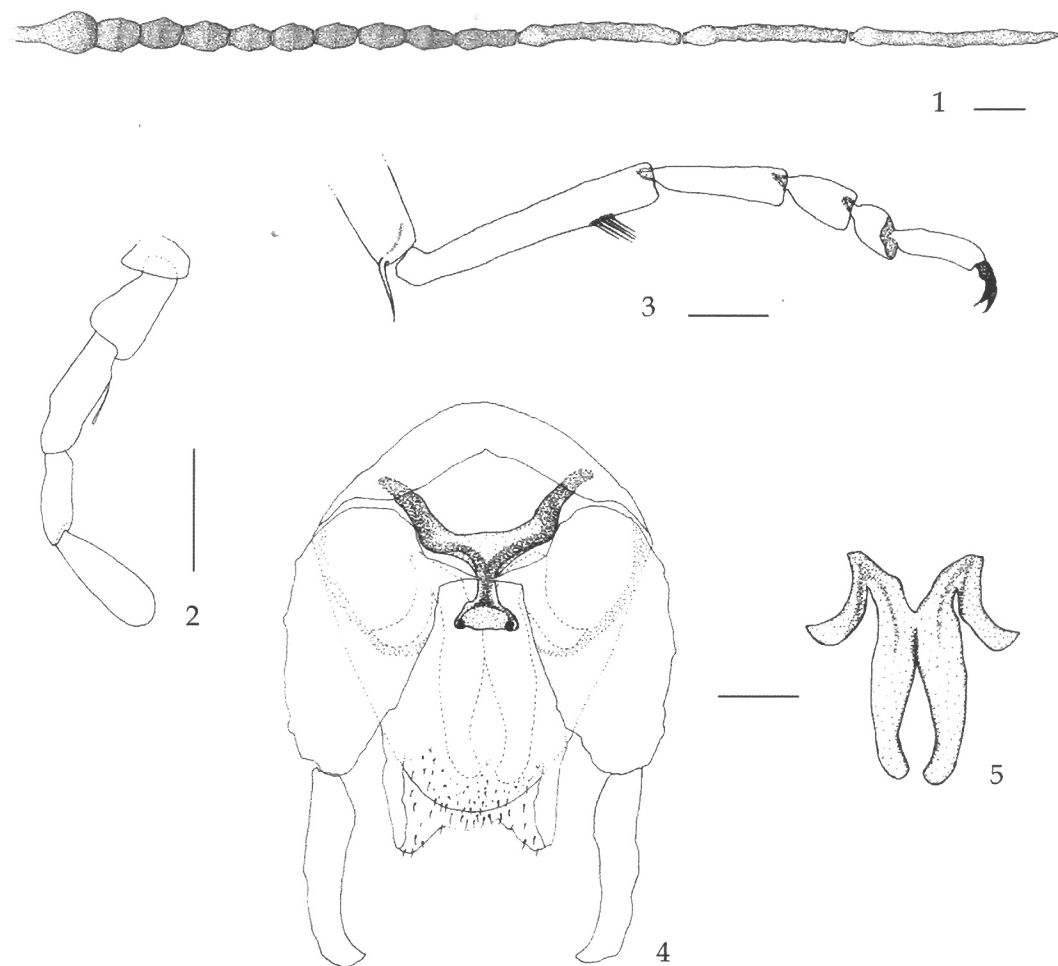
Type Material.—*Holotype*: ♂, **ARGENTINA**: Misiones, Puerto Iguazú, arroyo Mbocaí, 27-X-2006, C. Cazorla, sweep net. Deposited in Museo de La Plata, Argentina (MLPA).

Etymology.—The specific epithet is a reference to the ecoregion of Argentina where the holotype was collected.

Discussion.—The presence of a distinct subapical tuft of stout setae on the ventral surface of tarsomere 1 of the foreleg readily distinguishes this new species from all other male congeners. This structure is unique within *Amerohoelea*, and apparently, it has not been noted or described in any other genus of Ceratopogonidae.

The male genitalia of *A. paranaensis* is similar to those of *A. fasciata* by virtue of the short aedeagus, shape of the parameres, the concave posteromedian excavation on sternite 9 and the stout, straight gonocoxites. However, the aedeagus of *A. fasciata* differs by the basal arms that are broad on their proximal halves, and the distal portion is slender proximally, then abruptly expanded distally into a rounded, crescent shaped apex.

Grogan and Wirth (1981) described *A. pseudofasciata* from females collected



Figs. 1–5. *Amerohelea paranaensis*, male. 1, Antennal flagellum; 2, Palpus; 3, Distal portion of tibia and tarsus of foreleg; 4, Genitalia; 5, Parameres. Scale bars = 0.05 mm.

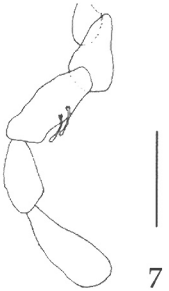
in southeastern Brazil and northeastern Argentina and noted their similarity to females of *A. fasciata* except for their infuscated wing membrane (hyaline in *A. fasciata*), the greater palpal ratio (2.67–3.33 versus 2.00–2.50 in *A. fasciata*), and the ratio of flagellum length to wing length (0.60–0.66 versus 0.72–0.84 in *A. fasciata*). Due to the overall similarity of *A. paranaensis* and *A. pseudofasciata*, and also because the type locality of *A. paranaensis* is near the only known Argentinean locality of *A. pseudofasciata*, it is possible that the

holotype of *A. paranaensis* is actually a male of *A. pseudofasciata*. However, we consider this unlikely because both female paratypes of *A. pseudofasciata* we examined lack the subapical tuft of stout setae on the ventral surface of tarsomere 1 of the foreleg of the holotype male of *A. paranaensis*. It is also possible that this structure is due to sexual dimorphism in males of *A. paranaensis*, but further collecting is necessary to determine this.

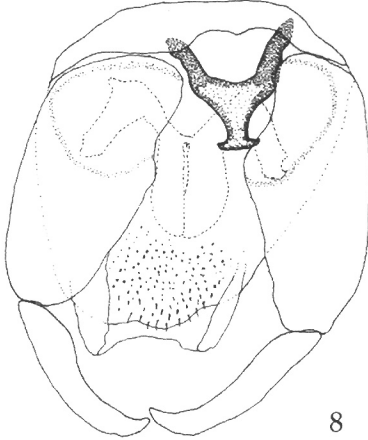
This new species is also similar to *A. xerophila*, and characters to distinguish



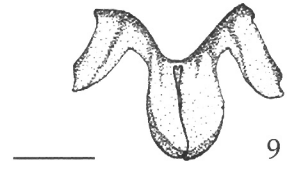
6 —



7



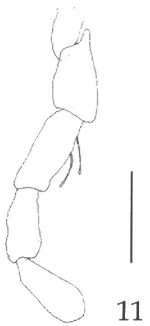
8



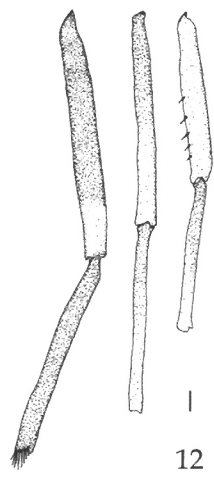
9



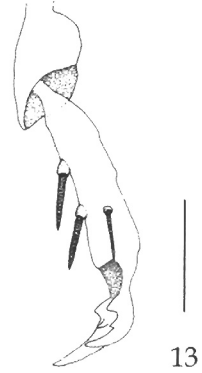
10 —



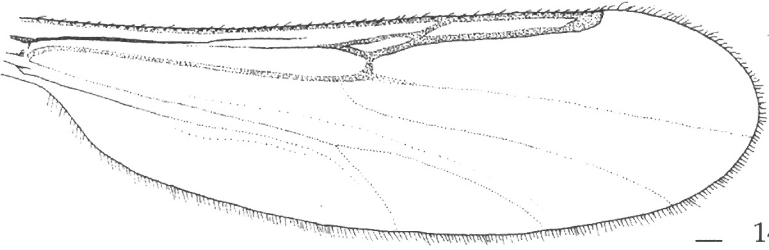
11



12



13



— 14



15

both species are provided in the discussion section of that species.

***Amerohelea xerophila* Gaddi,
Spinelli and Grogan, new species**
(Figs. 6–15)

Amerohelea pseudofaciata: Spinelli and Cazorla, 2003: 46 (record from Estancia El Rincón in the Somuncurá plateau, Argentina); Muzón et al. 2005: 58 (relisted record by Spinelli and Cazorla 2003); Spinelli and Marino 2009: 205 (in list of Patagonian species of Ceratopogonidae); Muzón et al. 2010: 113 (record from arroyo Valcheta, paraje Chipauquil in the Somuncurá plateau).

Diagnosis.—*Amerohelea xerophila* is the only species of *Amerohelea* with the following combination of characters: Male. Parameres stout, with very short, mesally adpressed distal portions and broad, rounded apices; aedeagus Y-shaped, very short, only 0.40 length of gonocoxite. Female. Fore- and midlegs brown except bases of midfemur and fore- and midtibiae slightly darker, hind leg dark brown except apical 1/4 of femur paler; internal abdominal tergal apodemes not visible.

Description.—Male. *Head*: Dark brown. Eyes bare, separated by distance of diameter of 4–6 ommatidia. Frontoclypeus with 14–20 setae ($n = 3$). Antenna with dark brown scape; flagellum (Fig. 6) slightly lighter brown, basal 1/2 of flagellomeres 1–9 and extreme bases of 10–13 paler; flagellomeres 1–9 more or less vasiform, 10 more elongate, 11–13 greatly elongate; plume sparse; antennal ratio 0.97–1.07 ($n = 3$). Palpus (Fig. 7) light brown; segment 3 with

a few scattered capitate sensilla on mesal surface; palpal ratio 2.40–3.10 ($n = 3$). *Thorax*: Dark brown. Scutum with small anterior spine, 2 prealar setae. Scutellum with 4 stout setae. Pleura brown. Fore- and midfemora and tibiae light brown, hind femur and tibia medium brown; forefemur with 2–4 ventral spines; hind tibial comb with 5–6 bristles; tarsi light brown; hind tarsal ratio 2.33–2.36 ($n = 3$); ventral palisade setae absent on foretarsus, present in one row on tarsomere 1 of midleg, tarsomere 2 of hind leg, in two rows on tarsomere 1 of hind leg; tarsomeres 4 cordiform; tarsomeres 5 unarmed, claws small, of equal size and length, apices bifid. *Wing*: Membrane hyaline, anterior veins brown, posterior veins pale; 2nd radial cell elongate, 1.77–2.00 $\times$ longer than 1st ($n = 3$); anal lobe poorly developed; wing length 1.12–1.22 mm, breadth 0.37–0.40 mm ($n = 3$); costal ratio 0.65–0.66 ($n = 3$). Halter brown. *Abdomen*: Brown. Genitalia as in Figs. 8–9. Tergite 9 extending slightly beyond apex of gonocoxite, tapering slightly distally, apex broadly rounded; cercus with 1 large subapical, 1 large apical setae. Sternite 9 4.40 $\times$ broader than long; base nearly straight, curved laterally; posterior margin with narrow, shallow posteromedian excavation. Gonocoxite elongate, straight, 2.20 $\times$ longer than broad, tapering slightly distally; gonostylus 2/3 length of gonocoxite, curving gradually distally, apex slightly narrowed, curved mesally, tip pointed. Parameres (Fig. 9) short, stout, fused on extreme base; basal arms stout, recurved more than 90°, lateral sides straight, moderately broad, apex abruptly narrowed, tip pointed; distal

Figs. 6–15. *Amerohelea xerophila*. Figs. 6–9. Male. Figs. 10–15. Female. 6, 10, Antennal flagella; 7, 11, Palpus; 8, Genitalia; 9, Parameres; 12, Femora and tibiae (from right to left: fore-, mid-, hind); 13, Tarsomeres 4–5 and claws; 14, Wing; 15, Spermatheca. Scale bars = 0.05 mm.

portion very short, divided for most of its length, each half closely adpressed, apices rounded, tips slightly overlapping. Aedeagus Y-shaped, 0.40 length of gonocoxite, heavily sclerotized, ventral surface smooth; basal arch extending nearly 1/2 of total length; basal arms straight, moderately divergent; distal portion gradually tapering distally, apex laterally expanded, tip truncate with two, short, laterally directed projections.

Female. Similar to male with the following notable sexual differences. Antennal flagellum (Fig. 10) dark brown, proximal 3/4 of flagellomeres 2–8, bases of 1, 9–13 light brown; antennal ratio 1.34–1.55 ($n = 5$). Palpus (Fig. 11) with moderately slender segment 3 bearing a few capitate sensilla mesally at mid-length; palpal ratio 2.33–3.57 ($n = 5$). Mandible with 5–6 large, coarse inner teeth. Femora, tibiae as in Fig. 12; fore-, midfemora and tibiae brown, proximal 1/2 of midfemur and fore-, midtibiae dark brown; hind femur and tibia dark brown, distal 1/4 of hind femur light brown; forefemur with 3–5 ventral spines; tarsomeres 1–2 light brown, 3–5 darker brown; hind tibial comb with 6–8 large setae; hind tarsal ratio 2.26–2.76 ($n = 5$); tarsomeres 4–5 (Fig. 13), tarsomeres 5 with 2 large, 1 smaller ventrolateral stout setae, claws small, of equal length and size on all legs, each with small, basal inner tooth. Wing (Fig. 14) with 2nd radial cell 2.30–2.90 $\times$ longer than 1st; wing length 1.62–1.95 mm, breadth 0.53–0.60 mm ($n = 5$); costal ratio 0.75–0.78 ($n = 5$). *Abdomen*: Brown; internal tergal apodemes not visible. Spermatheca (Fig. 15) subspherical with moderately long, slender neck; length 0.060–0.062 mm, breadth 0.048–0.050 mm, neck length 0.008–0.012 mm ($n = 5$).

Distribution.—Argentina; Córdoba, Río Negro and San Luis provinces.

Type material.—*Holotype*: ♂, Deposited in Museo de La Plata, Argentina (MLPA). *Allotype*: ♀, MLPA. **ARGENTINA**: San Luis Province, Parque Provincial Bajo de Véliz, 32° 18' 48.2" S, 75° 24' 43.3" W, 583m, 16-XI-2007, G. Spinelli, sweep net. *Paratypes*: ♂, USNM, **ARGENTINA**: Córdoba Province, río San Antonio, paraje Las Jarillas, 31° 32' 02.8" S, 64° 33' 01.7" W, 820 m, 25-XI-2007, G. Spinelli, sweep net; 2 ♀, USNM and FSCA, **ARGENTINA**: Río Negro Province, Meseta de Somuncurá, Estancia El Rincón, 40° 59' 24.1" S, 66° 40' 35.7" W, 620 m, 30-XI/3-XII-1999, J. Muzón, Malaise trap; ♂ MLPA, 2 ♀, MLPA and CNCI, **ARGENTINA**, Río Negro Province, Meseta de Somuncurá, arroyo Valcheta, paraje Chipauquil (escuela), 40° 57' 41.1" S, 66° 38' 20.8" W, 481 m, 4-XII-2006, G. Spinelli, sweep net.

Etymology.—The specific epithet is a combination of two Greek terms, *xeros* (dry) and *philos* (loving), and is a reference to this species habitat at the type locality, the arid Chaco ecoregion in central Argentina.

Discussion.—Previous records of *A. pseudofasciata* from the Somuncurá plateau of Argentina (Spinelli and Cazorla 2003, Muzón et al. 2005, Spinelli and Marino 2009, Muzón et al. 2010) actually refer to specimens of *A. xerophila* that we have included in the type series of this new species.

Males of *A. xerophila* resemble the holotype of *A. paranaensis* in their general features and coloration, but in *A. paranaensis* the gonocoxite bears a slender, mesobasal tubercle, and the parameres are distinctly elongated. Males of *A. paranaensis* also differ from the male of *A. xerophila*, as well as males of all other species of *Amerohoelea*, by the unique tuft of stout setae on the ventral surface of tarsomere 1 of their foreleg.

Males of *A. ronderosi* also have a mesobasal tubercle on the gonocoxite, but they otherwise differ from males of *A. xerophila* by their uniformly brown femora and tibiae, swollen forefemur and very long aedeagus with broad distal portion.

In the key provided by Grogan and Wirth (1981), females of *A. xerophila* key to couplet 2a: "hind femur with distinct subapical yellowish band," and near *A. fasciata* in couplet 3a: "wing hyaline; palpal ratio 2.0-2.5; ratio of flagellum length to wing length 0.72-0.84." However, the antennal flagellomeres of female *A. fasciata* are more slender and elongated than in females of *A. xerophila*, and the fore- and midtibiae of *A. fasciata* are yellow. Couplet 3b in the key by Grogan and Wirth deals with *A. pseudofasciata* which is known only from females collected in southeastern Brazil and northeastern Argentina. Females of *A. pseudofasciata* differ from females of *A. xerophila* by their darkly infuscated wing and shorter antennal flagellomeres.

Females of *A. frontispina* and *A. similis* differ from females of *A. xerophila* by the numerous, stout, spinelike setae on their frontoclypei. In addition, the wing of *A. frontispina* has a single radial cell, whereas the wing of *A. xerophila* and all other species of *Amerohelea* have two radial cells. Females of *A. dalcyi* and *A. nelsoni* differ from females of *A. xerophila* and all other females in *Amerohelea* in lacking ventral spinelike setae on their tarsomeres 5. Females of several other species differ from females of *A. xerophila* in either completely lacking forefemoral spines (*A. spinellii*) or in having fewer spines (0-2 in *A. dalcyi* and *A. galindoi*; 2 in *A. nelsoni*; 1-3 in *A. vargasi*).

ACKNOWLEDGMENTS

We thank Carla Cazorla for allowing us to report on the holotype of *A. para-*

naensis that she collected. We also extend our gratitude to Maria M. Ronderos and Nelida Caligaris for advice on preparation of the illustrations. We are grateful to Richard Wilkerson for access to specimens at the Museum Support Center, Smithsonian Institution, Suitland, Maryland. We also thank two anonymous individuals for their reviews of an earlier draft of the manuscript.

LITERATURE CITED

- Borkent, A. and D. A. Craig. 1994. The structure and function of the abdominal eversible sacs of female *Bezzia varicolor* (Coquillett) (Ceratopogonidae: Diptera). *The Canadian Entomologist* 126: 533-541. doi:10.4039/Ent126533-3.
- Borkent, A. and G. R. Spinelli. 2007. Neotropical Ceratopogonidae (Diptera: Insecta). In J. Adis, J. R. Arias, G. Rueda-Delgado, and K. M. Wantzen, eds. *Aquatic Biodiversity in Latin America (ABLA)*, Vol. 4. Pensoft, Sofia, Moscow. 198 pp.
- Borkent, A., G. R. Spinelli, and W. L. Grogan, Jr. 2009. Ceratopogonidae (Biting Midges, Purrugas), pp. 407-435. In B. V. Brown, A. Borkent, J. M. Cumming, D. M. Wood, N. E. Woodley, and M. A. Zumbado, eds. *Manual of Central American Diptera*, Vol. 1. National Research Council of Canada, Research Press, Ottawa. 714 pp.
- Brown, A., U. Martinez Ortiz, M. Acerbi, and J. Corcuera. 2006. *La Situación Ambiental Argentina 2005*. Fundación Vida Silvestre Argentina, Buenos Aires. 587 pp.
- Downes, J. A. and W. W. Wirth. 1981. Chapter 28. Ceratopogonidae, pp. 393-421. In J. F. McAlpine, B. V. Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood, eds. *Manual of Nearctic Diptera*, Volume 1. Agriculture Canada Monograph 27. Agriculture Canada, Ottawa. 674 pp.
- Grogan, W. L., Jr. and W. W. Wirth. 1975. A revision of the genus *Palpomyia* Meigen of northeastern North America (Diptera: Ceratopogonidae). *Agricultural Experiment Station, University of Maryland, Miscellaneous Publication* 875: v-1-49.
- Grogan, W. L., Jr. and W. W. Wirth. 1979. The North American predaceous midges of the genus *Palpomyia* Meigen (Diptera: Ceratopogonidae). *Memoirs of the Entomological Society of Washington* 8: 1-125.

- Grogan, W. L., Jr. and W. W. Wirth. 1981. A new American genus of predaceous midges related to *Palpomyia* and *Bezzia* (Diptera: Ceratopogonidae). *Proceedings of the Biological Society of Washington* 94: 1279–1305.
- McAlpine, J. F., B. V., Peterson, G. E. Shewell, H. J. Teskey, J. R. Vockeroth, and D. M. Wood. 1981. *Manual of Nearctic Diptera*, Volume 1. Agriculture Canada Monograph 27. Agriculture Canada, Ottawa. 674 pp.
- Muzón, J., G. R. Spinelli, P. Pessacq, N. Von Ellenrieder, A. L. Estévez, P. I. Marino, P. J. Pérez Goodwyn, E. B. Angrisano, F. Díaz, L. A. Fernández, S. Mazzucconi, G. Rossi, and O. D. Salomón. 2005. Insectos acuáticos de la Meseta del Somuncura, Patagonia, Argentina. *Inventario preliminar*. *Revista de la Sociedad Entomológica Argentina* 63: 47–67.
- Muzón, J., G. R. Spinelli, G. C. Rossi, P. I. Marino, F. Díaz, and M. C. Melo. 2010. Nuevas citas de insectos acuáticos para la Meseta de Somuncurá, Patagonia, Argentina. *Revista de la Sociedad Entomológica Argentina* 69: 111–116.
- Spinelli, G. R. 1989. *Amerohoelea similis* n. sp., from Argentina and Uruguay (Diptera: Ceratopogonidae). *Revista de la Asociación de Ciencias Naturales del Litoral* 20: 25–28.
- Spinelli, G. R. and A. Borkent. 2004. New species of Central American *Culicoides* Latreille (Diptera: Ceratopogonidae) with a synopsis of species from Costa Rica. *Proceedings of the Entomological Society of Washington* 106: 361–395.
- Spinelli, G. R. and P. I. Marino. 2009. Estado actual del conocimiento de la familia Ceratopogonidae en la Patagonia (Diptera: Nematocera). *Revista de la Sociedad Entomológica Argentina* 68: 201–208.
- Spinelli, G. R. and C. G. Cazorla. 2003. New findings of species of the tribe Palpomyiini in Argentina (Diptera: Ceratopogonidae). *Revista de la Sociedad Entomológica Argentina* 62: 46–48.
- Szadziewski, R. 1996. Biting midges from Lower Cretaceous amber of Lebanon and Upper Cretaceous Siberian amber of Taimyr (Diptera, Ceratopogonidae). *Studia Dipterologica* 3: 23–86.
- Wirth, W. W., S. M. Palchick, and L. Forster. 1984. The North American predaceous midges of the *Bezzia annulipes* group (Diptera: Ceratopogonidae). *Proceedings of the Entomological Society of Washington* 86: 155–175.