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Taxonomy and systematics

The genus *Pagasa* (Hemiptera: Heteroptera: Nabidae: Prostemmatinae) in Mexico, new records and key to the known species

El género Pagasa (Hemiptera: Heteroptera: Nabidae: Prostemmatinae) en México, registros nuevos y clave para las especies conocidas

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Abstract

The genus *Pagasa* Stål (Heteroptera: Nabidae: Prostemmatinae) from Mexico is revised. *Pagasa* (*P.*) *henryi* Kerzhner is recorded for the first time, and new records to *P. (L.) confusa* Kerzhner, *P. (L.) fusca* (Stein), *P. (P.) brailovskyi* Kerzhner, *P. (P.) luteiceps* (Walker), *P. (P.) pallipes* (Stål) and *P. (P.) prostemmatoides* Kerzhner are given. Key to subgenera and species is added; notes on the biology of some species are given, and photographs of dorsal habitus and parameres are provided.

Keywords: Insecta; Damsel bugs; *Pagasa*; Distribution; Mexico

Resumen

Se revisa el género *Pagasa* Stål (Heteroptera: Nabidae: Prostemmatinae) para México. *P. (P.) henryi* Kerzhner se registra por primera vez para la República Mexicana y se proporcionan nuevos datos distribucionales para *P. (L.) confusa* Kerzhner, *P. (L.) fusca* (Stein), *P. (P.) brailovskyi* Kerzhner, *P. (P.) luteiceps* (Walker), *P. (P.) pallipes* (Stål) y *P. (P.) prostemmatoides* Kerzhner. Se agrega una clave para separar los subgéneros y especies mexicanas; se incluyen algunas notas biológicas, así como fotografías en vista dorsal y de los parámetros.

Palabras clave: Insecta; Insectos damisela; *Pagasa*; Distribución; México

Introduction

The Nabidae, often called damsel bugs are a small group of important predatory bugs frequently used in biological

control (Kerzhner & Henry, 2008). The family includes two subfamilies Nabinae and Prostemmatinae. Nabinae is characterized by having an elongate body; antennae with four segments without supplementary segment; rostrum

slender; collar wider, distinctly marked; scutellum without trichobothria; hemelytra with clavus widened posteriorly; fore femora slender at most moderately incrassate without denticles; and tibiae usually without fossa spongiosa. The subfamily Prostematinae is characterized by having the body oblong, stout; antennae with four segments plus supplementary segment between segment I and II; rostrum moderately stout; collar narrow or absent; scutellum with 1-7 pairs of conspicuous trichobothria along lateral margins; hemelytra with embolus distinct and clavus not or only scarcely widened posteriorly; fore femora usually strongly incrassate, provided with a tooth or angular process on ventral surface; and tibiae provided with a fossa spongiosa at the apex (Harris, 1928; Henry & Lattin, 1988; Schuh & Slater, 1995).

The New World genus *Pagasa* Stål, 1862, belongs to the tribe Prostematini of the subfamily Prostematinae, and is characterized by having the head conically produced in front of the eyes; eyes large, almost or touching the apex of the pronotum; ocelli distinct; interocular distance greater than their distance from the eyes; antennae inserted near middle of anteocular part of head; antennal segments I-II somewhat thickened, III and IV slender and clothed with longer hairs; supplementary segment about one-half as long as segment I; rostrum rather short, stout. Pronotum constricted behind the middle; anterior lobe narrowed toward apex; collar narrow, indistinct; posterior lobe broad; scutellar disk bifoveate; hemelytra with macropterous or brachypterous condition; cuneus well marked in macropterous form; hemelytral membrane on brachypterous form very narrow to rudimentary, in macropterous form extending to apex of the abdomen; legs short, thickly pilose; fore femora strongly incrassate, ventrally armed with black teeth's; inner face of fore tibiae dentate, strongly widened near the apex and provided there with a large spongy fossa.

The genus is divided in two subgenera: *Lampropagasa* Reuter (in Reuter, O. M. and B. Poppius, 1909) and *Pagasa* Stål, 1873.

The subgenus *Lampropagasa* is characterized by having the rostral segment II shorter than or as long as segment III, and in most species not surpassing the hind margin of eye; and the clavus and corium are uniformly shining throughout. Currently includes 10 species considered as valid: *P. L. cobbeni* Kerzhner, 2007 (Curaçao Island, Lesser Antilles), *P. (L.) confusa* Kerzhner, 1992 (Costa Rica, Guatemala, Mexico, Panama, Puerto Rico, USA), *P. (L.) fasciventris* Harris, 1940 (USA), *P. (L.) flavipennis* Kerzhner, 2008 (Bolivia), *P. (L.) fusca* (Stein, 1857) (Canada, Guatemala, Mexico, Panama, USA), *P. (L.) fuscipennis* Reuter (in Reuter, O. M. and B. Poppius, 1909)

(Argentina, Brazil, Paraguay, Uruguay), *P. (L.) insperata* Hussey, 1953 (USA), *P. (L.) lattini* Kerzhner and Henry, 2008 (USA), *P. (L.) nigripes* Harris, 1926 (USA), and *P. (L.) similis* Poppius, 1914 (Brazil, Surinam) (Harris, 1928; Kerzhner & Henry, 2008; Kerzhner & Konstantinov, 2008; Volpi & Coscarón, 2010). The subgenus *Pagasa* Stål, 1862 is recognized by having the rostral segment II longer than or as long as segment III and surpassing the hind margin of eye; the clavus and corium are not uniformly shining; at least the inner half of clavus and the inner corner of the corium are dull, and contrast from the shining outer part of hemelytra; in most species, the shining part occupies only the outer part of corium, outside of the medial fracture. Currently included 21 species considered as valid: *P. (P.) aenescens* Stål, 1873 (Brazil, Surinam), *P. (P.) amazonica* Poppius, 1914 (Brazil, Paraguay, Surinam); *P. (P.) bimaculata* Harris, 1930 (Brazil, Panama, Paraguay, Surinam), *P. (P.) brailovskyi* Kerzhner, 2008 (Mexico, Panama), *P. (P.) brunneipes* Kerzhner, 2008 (Brazil), *P. (P.) cobbeni* Kerzhner, 2007 (Curaçao-Netherlands Antilles), *P. (P.) costalis* Reuter (in Reuter, O. M. and B. Poppius, 1909), 1909 (Argentina, Ecuador, Paraguay, Surinam, Uruguay), *P. (P.) doesburgi* Kerzhner, 2008 (Surinam), *P. (P.) flavipennis* Kerzhner, 2008 (Bolivia), *P. (P.) fusca* (Stein, 1857) (Canada, Guatemala, Mexico, USA), *P. (P.) fuscipennis* Reuter (in Reuter, O. M. and B. Poppius, 1909), 1909 (Argentina, Brazil, Paraguay, Uruguay), *P. (P.) henryi* Kerzhner, 2008 (Brazil, Panama, Peru), *P. (P.) luctuosa* Van Duzee, 1931 (Colombia), *P. (P.) luteiceps* (Walker, 1873) (Brazil, Colombia, Mexico, Panama, Peru, Surinam, Tobago, Venezuela), *P. (P.) margaritae* Kerzhner, 2008 (Surinam), *P. (P.) pallidiceps* (Stål, 1860) (Brazil), *P. (P.) pallipes* Stål, 1873 (Colombia, Costa Rica, Honduras, Mexico, Panama, USA, Venezuela), *P. (P.) planipes* Harris, 1939 (Peru), *P. (P.) prostematoides* Kerzhner, 2008 (El Salvador, Mexico), *P. (P.) ruficeps* (Walker, 1873) (Brazil) and *P. (P.) signatipennis* Reuter (in Reuter, O. M. and B. Poppius, 1909), 1909 (Brazil, Colombia, Paraguay, Surinam, Venezuela) (Harris, 1928, 1939; Van Duzee, 1931; Kerzhner & Henry, 2008; Kerzhner & Konstantinov, 2008; Volpi & Coscarón, 2010).

Of the 10 species included in the subgenus *Lampropagasa* only *P. (L.) confusa* and *P. (L.) fusca* are cited for Mexico. In the subgenus *Pagasa* with 21 known species only 4 are previously recorded for Mexico: *P. (P.) brailovskyi*, *P. (P.) luteiceps*, *P. (P.) pallipes*, and *P. (P.) prostematoides*. In this contribution one species: *P. (P.) henryi* is cited for the first time for Mexico and new locality records are given for the rest of the Mexican species previously known.

Material and methods

The following abbreviations are used for the institutions cited here: California Academy of Sciences, Golden Gate Park, San Francisco, USA (CASC); Canadian Museum of Nature, Ottawa, Ontario, Canada (CNCO); Instituto de Biología, Universidad Nacional Autónoma de México (CNIN); Colección Entomológica del Instituto de Ecología, A. C., Xalapa, Veracruz, México (IEXA); Leaf Litter Arthropods of Mesoamerica, The Evergreen State College, Washington, USA (LLAMA); Texas A & M University, College Station, USA (TAMU); Bohart Museum of Entomology, University of California, Davis, USA (UCDC); Smithsonian Institution, National Museum of Natural History, Washington, D. C., USA (USNM).

Description

Subfamily Prostematinae Reuter, 1890
Tribe Prostematini Reuter, 1890

Pagasa (Lampropagasa) confusa Kerzhner (Figs. 3, 4, 15)
Pagasa confusa Kerzhner, 1992: 43.

Diagnosis: characterized by having the body elongate, shiny black to shiny reddish brown throughout, with a few fine setae; antennal segments, rostral segments and legs pale yellowish; pronotum smooth, highly polished, and longer than wide; macropterous or brachypterous condition, reaching the apex of the last abdominal segment or the posterior border of the III abdominal segment. Parameres (Figs. 14, 15).

Taxonomic summary

General distribution: Costa Rica, Panama, Puerto Rico, USA. Mexico: Chiapas: Chiapa de Corzo, Chorreadero. Estado de México: Malinalco. Guerrero: km 15 Bejucos-Ciudad Altamirano, Estación de Microondas Tuxpan, Iguala and Teucizapan. Jalisco: Estación de Biología, Chamela. Oaxaca: road Teotitlán del Río-Xiquila, Pochutla and Chacalapa. Quintana Roo: road Felipe Carrillo Puerto-Buenavista. Veracruz: Las Choapas. (Kerzhner, 1993; Kerzhner & Konstantinov 2008; Volpi & Coscarón, 2010).

Material examined: new records, Mexico: Chiapas, 1 ♂, Reserva El Ocote, 9-III-1993, E. Barrera, G. Ortega, cols. (CNIN).

Pagasa (Lampropagasa) fusca (Stein) (Figs. 5, 12).
Prostemma fuscum Stein, 1857: 90.

Diagnosis: general habitus and color similar to *P. (L.) confusa* Kerzhner, with macropterous or submacropterous condition, reaching the apex of the last abdominal segment or posterior border of IV or V abdominal segment. The

shape of the paramere clearly distinguished each species. On *P. (L.) fusca* (Stein) the paramere are larger (length without articulating part about 0.3 mm), with rounded outer margin, and without hook at apex (Fig. 12). On the other species the paramere are smaller (0.2 mm), with angulate outer margin, and with hook at apex (Fig. 15).

Taxonomic summary

General distribution: Canada, Guatemala, Panama, USA. Mexico: Chiapas: km 8 road San Cristóbal de las Casas-Tuxtla Gutiérrez. Chihuahua: Pinos Altos and km 36 road Buenaventura-Ignacio Zaragoza. Ciudad de México: Eslava and Contreras. Durango: Santa Lucía and Los Mimbres. Estado de México: Malinalco, Zinacantepec and Temascaltepec. Guanajuato: Guanajuato City. Guerrero: Xucumanatlán, Chilpancingo and Amula. Michoacán: km 94 road Maravatio-Morelia. Morelos: Yautepec. Oaxaca: Macuilxochitl (Champion, 1899; Kerzhner, 1993; Kerzhner & Konstantinov, 2008; Volpi & Coscarón, 2010).

Material examined: New records: Mexico: Ciudad de México, 1 ♀, Lomas de Plateros, 12-VI-2003, C. Mayorga, col. (CNIN). Hidalgo, 1 ♂, 8 km NE from Pachuca, 23-II-1990, H. Brailovsky, E. Barrera, cols. (CNIN); 2 ♀♀, Huasca de Ocampo, rancho Santa Elena, manantial de las Vigas, 2480-2535 m, 20°07'53.4" N, 98°30'38.5" W, 23-VI-2007, Contreras, Menchaca, and 12-VII-17-VIII-2010, Contreras, Razo, Sarmiento, cols. (CNIN). Michoacán, 1 ♀, 13.7 mi W of Huajumbaro, 27-VII-1988, Ferreira, Schaffner, cols. (TAMU). Oaxaca, 1 ♂, road San José Pacífico-San Agustín Loxicha, 2,900 m, 16°03'37" N, 96°32'53" W, 21-X-2008, L. Cervantes, col. (CNIN). Querétaro, 1 ♂, 4.6 km SW of Pinal de Amoles, 1960 m, 21°16.479' N, 99°59.419' W, 18-VIII-2009, M. G. Branstetter, col. (CNIN).

Biological notes: it is associated with oak-pine woodland, collected under leaf litter of *Quercus* sp., where it was found running on the ground.

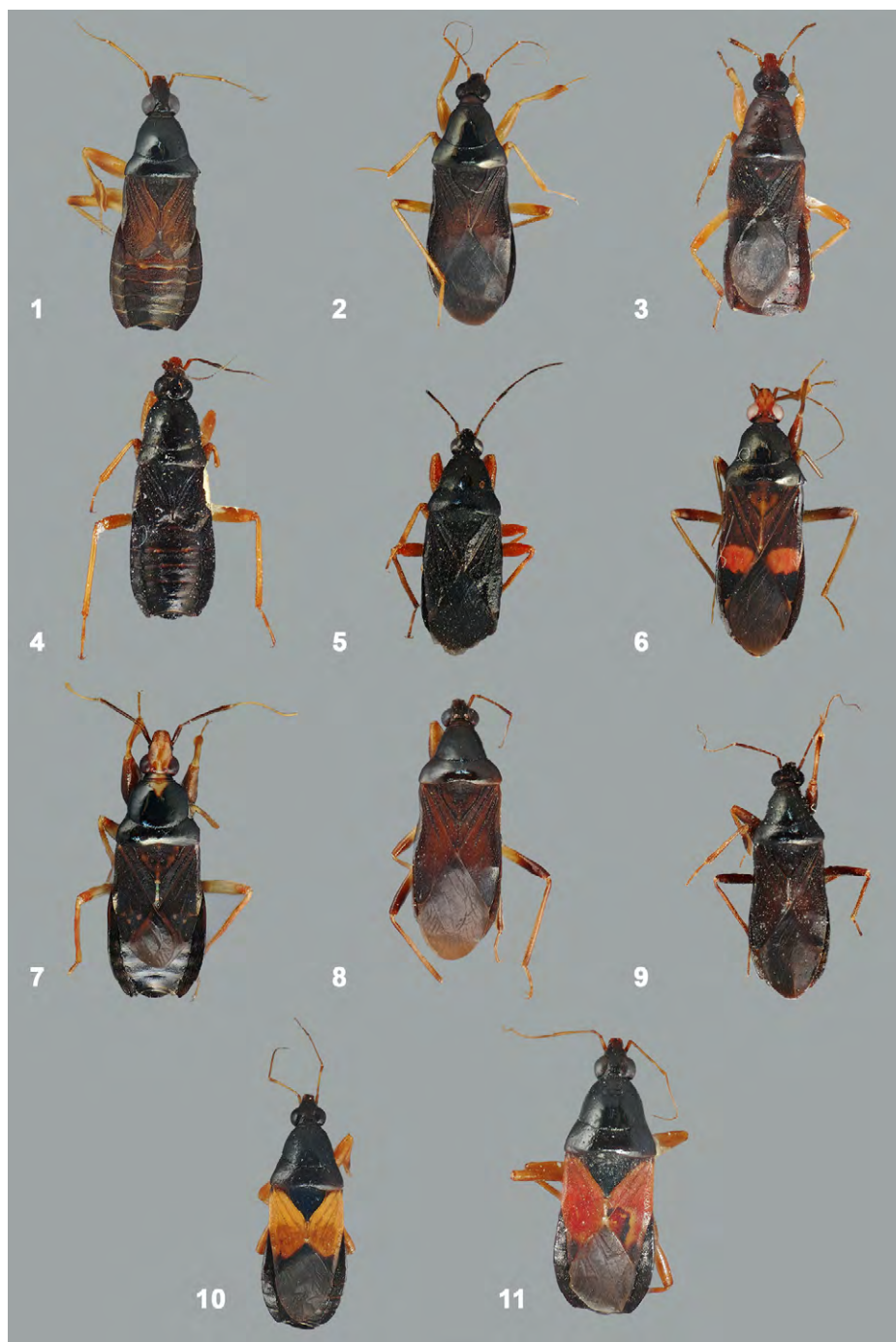
Pagasa (Pagasa) brailovskyi Kerzhner (Figs. 1, 2, 14).
Pagasa (Pagasa) brailovskyi Kerzhner, 2008: 47-48.

Diagnosis: this species is distinguished by having the head, pronotum, thorax and abdominal sterna shiny black to shiny reddish brown throughout, with a few fine setae; clavus and corium dull, pale to dark brown, except the costal margin, the inner margin of clavus and the claval and corial veins shiny reddish brown; rostral segments and legs pale yellowish; antennal segments I-II pale yellowish and III-IV darker; macropterous or brachypterous condition, reaching or surpassing the apex of last abdominal segment or reaching the middle third of III abdominal segment; and fore femur with two rows of black teeth's, one of which is

much longer and nearly reaching the base of femur. Two species *P. (L.) confusa* Kerzhner, and *P. (L.) fusca* (Stein) are similar, but the body including clavus and corium are entirely shiny brown to shiny reddish brown. Parameres (Figs. 12, 15).

Taxonomic summary

General distribution: Panama. Mexico: Chiapas: Tapachula. Guerrero: Acahuizotla and Ixcateopan. Jalisco: Estación de Biología Chamela. Morelos: Oaxtepec and Tepoztlán. Oaxaca: Pinotepa Nacional, Puerto Escondido



Figures 1-11. Dorsal view of *Pagasa* spp. 1-2, *P. (P.) brailovskyi* Kerzhner. 3-4, *P. (L.) confusa* Kerzhner. 5, *P. (L.) fusca* (Stein). 6, *P. (P.) henryi* Kerzhner. 7, *P. (P.) luteiceps* (Walker). 8-9, *P. (P.) pallipes* (Stål). 10-11, *P. (P.) prostemmatoides* Kerzhner.

and Chacalapa. Quintana Roo: 10 km NE of Dziuché. (Kerzhner & Konstantinov, 2008; Volpi & Coscarón, 2010).

Material examined: new records, Mexico: Campeche, 1 ♀, Escarcega, 4-VI-1983, O. Canul, col. (CNIN). Chiapas, 2 ♀♀, Reserva El Ocote, 9-III-1993, 3-V-1993, E. Barrera, G. Ortega León, cols. (CNIN). Guerrero, 1 ♂, 8 ♀♀, Ayutla de los Libres, 380 m, 16°57'53" N, 99°05'49" W, 19-VI-2010, L. Cervantes, D. Brzoska, cols. (CNIN); 1 ♀, Rodecia, 11-VIII-1971, H. Brailovsky, col. (CNIN); 1 ♀, Chichihualco, km 86 road Chichihualco-Puerto del Gallo, 1,942 m, 17°32.611" N, 99°54.648" W, 21, VI-2013, L. Cervantes, D. Brzoska, cols. (IEXA); 1 ♀, Atlixac, km 39 road Chilapa-Tlapa, 1,425 m, 17°35'47" N, 99°01'06" W, L. Cervantes, C. Mayorga, cols. (CNIN); 1 ♂, 1 ♀, Iguala, Estación de Microondas Tuxpan, 1,625 m, 18°23'32" N, 99°28'28" W, 8-XII-2006, L. Cervantes, C. Mayorga, cols. (CNIN); 1 ♂, Tixtla, 7-VII-1979, H. Brailovsky, col. (CNIN); 2 ♂♂, 1 ♀, Acatempan, 1,675 m, E. Barrera, A. Cadena, L. Cervantes, cols. (CNIN); 2 ♀♀, Atoyac de Álvarez, 19-VII-2005, L. Cervantes, R. Mariño, cols. (CNIN); 1 Morelos, 1 ♂, Huautla, Estación Ceamish, 2.5 km N 4 km W, 940 m, 18°27'67" N, 99°2'47" W, 10-VII-1996, S. Zaragoza, col. (CNIN); 1 ♂, 2 km S Ignacio Bastida, 1-VIII-1981, T. A. Sears, col. (UCDC). Nayarit, 1 ♀, río Santiago, Las Adjuntas II, 26-XI-1991, R. Barba, E. Barrera, cols. (CNIN); 1 ♀, río Santiago, Colorado de la Mora, 30-XI-1991, R. Barba, E. Barrera, cols. (CNIN); 1 ♀, San Blas, 14-VII-1960, R. B. Loomis, J. Maris, cols. (CASC). Oaxaca, 1 ♂, km 202 road Oaxaca City-Puerto Ángel, finca Pacífico, 8-VI-2004, E. Barrera, R. Mariño, cols. (CNIN); 1 ♂, km 11 road Huajuapán de León-Yozocuta, 29-I-1992, E. Barrera, C. Mayorga, cols. (CNIN). Puebla, 1 ♂, road Tehuacán-Teotitlán del Camino, 17-I-1992, H. Brailovsky, E. Barrera, C. Mayorga, G. Ortega León, cols. (CNIN); 1 ♂, 6 km N from Tehuizingo, 28-VI-1996, H. Brailovsky, E. Barrera, cols. (CNIN). Veracruz, 1 ♂, Apazapan, km 5 Carrizal-Apazapan, 453 m, 19°19'29" N, 96°42'11" W, 19-XI-2008, L. Cervantes, col. (IEXA), 1 ♀, Ozuluama, km 2 Ozuluama-San Gregorio, running on the ground below *Ficus* sp., 168 m, 21°39'43" N, 97°50'20" W, 30-I-2002, L. Pacheco, L. Cervantes, cols. (IEXA).

Biological notes: it is associated with *Ficus* sp., and *Cecropia* sp., and collected on the ground under leaf litter.

Pagasa (Pagasa) henryi Kerzhner (Fig. 6)

Pagasa (Pagasa) henryi Kerzhner, 2008: 43.

Diagnosis: this handsome species is clearly recognized by having the corium dull brown, with costal margin shiny reddish brown and more or less rounded pale yellow to pale orange shiny spot not subdivided into several spots

near the apical margin. Additionally the fore femur has two rows of black teeth, and the trochanter with 2 to 5 minute black teeth. This species is similar to *P. (P.) bimaculata* Harris in having on the corium a large yellow to orange spot, in both of these species the fore femur has 3 rows of black teeth and the trochanter has numerous minute black teeth.

Taxonomic summary

General distribution: Brazil, Panama and Peru.

Material examined: new records: Mexico: Chiapas, 1 ♀, Palenque, 20-25-VII-1980, Schaffner, Weaver, Friedlander, cols. (TAMU). Veracruz, 1 ♀, Actopan, La Mancha, 18-VIII-2001, L. Cervantes, A. Sanchez, cols. (CNIN); 1 ♀, San Andres Tuxtla, Estación de Biología Tropical "Los Tuxtlas", 80 m, 18°35'06" N, 95°04'12" W, L. Cervantes, D. Brzoska, cols. (CNIN).

Biological notes: it is associated with tropical rainforest, where it was found running on the ground.

Pagasa (Pagasa) luteiceps (Walker) (Fig. 7)

Prostemma luteiceps Walker, 1873: 135.

Diagnosis: this peculiar bug is recognized by the following characters: corium and clavus not uniformly shining throughout, at least inner half of clavus and inner corner of corium dull; thickened apical part of fore tibiae with more or less convergent sides, occupies less than half of the length of tibiae; dorsal side of head yellow; middle and hind femur without black teeth; and cells of hemelytral membrane darker and duller at base.

Taxonomic summary

General distribution: this is a widely distributed species originally described from South America (Tapayos?) and later mention from Brazil, Colombia, Honduras, Panama, Peru, Surinam, Tobago Island, and Venezuela. Mexico: San Luis Potosí: Tamazunchale. Veracruz: Atoyac. (Brailovsky, 2018; Champion, 1899; Harris, 1926, 1928, 1930; Kerzhner & Kostantinov, 2008; Volpi & Coscarón, 2010).

Material examined: new records: Mexico: Campeche, 1 ♀, Calakmul, ejido Gustavo Díaz Ordaz, Río Escondido, 170 m, 18°24'99" N, 89°8'20" W, 22-IX-1997, A. Contreras, col. (CNIN). Chiapas, 1 ♀, Chajul, Reserva Montes Azules, 28-IV-5-V-1986, F. Arias, R. Barba, L. Cervantes, cols. (CNIN); 1 ♂, Reserva El Ocote, 29-IV-3-V-1993, E. Barrera, col. (CNIN); 1 ♂, Naha, 16°96.291' N, 91°59.335' W, 10-VI-2008, Llama Project col. (CNIN); El Chorradero, 13-III-1993, G. Ortega León, E. Barrera, cols. (CNIN). Oaxaca, 1 ♂, 14.8 km SSW Valle Nacional, 1,370 m, 17.64483° N, 96.33637° W, 13-VIII-2009, M. G. Branstetter, col. (CNIN); 1 ♀, km 58 road Tuxtepec-Oaxaca City, 28-V-1987, F. Arias, col. (CNIN); 1 ♀,

Tuxtepec, 13-IX-1979, H. Brailovsky, E. Barrera, cols. (CNIN). San Luis Potosí, 1 ♀, 7.2 km NE Xilitla, 20-180 m, 21°42.821' N, 96°33.426' W, 19-VIII-2008, M. G. Branstetter, col. (CNIN). Veracruz, 1 ♂, 9 ♀♀, Estación de Biología Tropical "Los Tuxtlas", 0-170 m, 20-V-1985, 2-VIII-1985 24-27-IX-1985, 13-20-IX-1989, 26-X-1989, 16-VI-1990, and 16-IV-24-VII-2013, A. Ibarra, P. Sinaca, H. Rojas, J. L. Colin, cols. (IEXA, CNIN); 1 ♀, Xalapa, Ferrer Guardia, VII-2004, L. Cervantes, col. (IEXA); 1 ♂, Orizaba, Buenavista, 1,200 m, 3-V-2000, E. Barrera, A. Ibarra, cols. (CNIN); 1 ♂, Córdoba, Cuauhtémoc, 29-V-2011, L. Degado, col. (IEXA); 2 ♂♂, Tlalnelhuayocan, Agüita Fria, 1,400 m, 19°31'19" N, 96°59'27" W, VI-2012, L. Cervantes, col. (IEXA).

Biological notes: it is associated with cloud and mesophil forest, collected under leaf litter of *Ficus colubrinae* (Moraceae).

Pagasa (Pagasa) pallipes Stål (Figs. 8, 9, 13).

Pagasa pallipes Stål, 1873: 108.

Diagnosis: related to *P. (P.) luteiceps* (Walker, 1873) with clavus and corium not uniformly shining, at least with inner margin of clavus, costal margin of corium, and claval and corial veins dull; and thickened apical part of fore tibiae with more or less convergent sides, occupies less than half of the length of tibiae. *Pagasa (P.) pallipes* Stål is easily identified by having the head dorsally and clavus and corium dark brown to black; the shining stripe on outer margin of corium extending beyond medial fracture and almost reaching the apical angle; fore femur with two almost equally long rows of black teeth, only slightly surpassing the middle of femur; and paramere apically rounded (Fig. 13). *Pagasa (P.) brailovskyi* Kerzhner, resembles *P. pallipes* in the body proportions, size and coloration, including the fore femur with two rows of black teeth, but in *P. brailovskyi* one row is much longer and nearly reaching the base of femur and the paramere apically acute (Figs. 13, 14).

General distribution: described from Texas (USA), and later recorded from Colombia, Costa Rica, Cuba, Honduras, Mexico, Panama and Venezuela. Mexico: Colima: Manzanillo. Jalisco: Estación de Biología, Chamela. Morelos: Alpuyecá. Oaxaca: Tuxtepec, and Pinotepa Nacional. Quintana Roo: Champotón (El Zapote) (Alayo, 1967; Brailovsky, 2018; Champion, 1899; Harris, 1928; Kerzhner, 1992; Kerzhner & Konstantinov, 2008; Stål, 1873; Volpi & Coscarón, 2010).

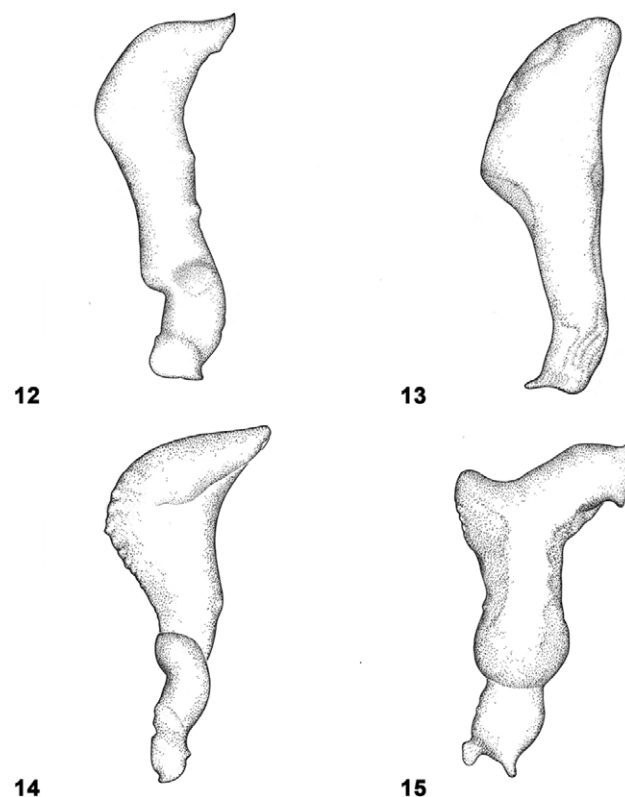
Material examined: new records, Mexico: Campeche, 1 ♂, grutas Xtacumb-Runnan, 26-VI-1989, A. Cadena, L. Cervantes, cols. (CNIN). Estado de México, 1 ♀, Municipio Malinalco, 1,670 m, 18°55'28" N, 99°29'56" W, 12-IV-2001, C. Hernández, col. (CNIN). Jalisco, 1 ♀,

road Barra de Navidad-Puerto Vallarta, río San Nicolás, 3-XI-1989, E. Ramírez, J. Villa, cols. (CNIN). Veracruz, 1 ♀, Martínez de la Torre, Hotel Los Cedros, 104 m, 20°03'41" N, 97°04'44" W, 7-XI-2009, L. Cervantes, R. Sites, R. Novelo, cols. (CNIN); 1 ♀, Actopan, La Mancha, 25-XI-1998, L. Cervantes, col. (CNIN).

Pagasa (Pagasa) prostemmatoides Kerzhner (Figs. 10-11)
Pagasa prostemmatoides Kerzhner and Konstantinov, 2008: 49.

Diagnosis: this species is easily recognized by having the dorsal side of head black to dark brown, the coriaceous part of hemelytra mostly dull and entirely orange, red or yellow, and the thickened apical part of fore tibiae with more or less convergent sides, occupies less than half of the length of tibiae.

General distribution: this species was originally described from Mexico and San Salvador. Mexico: Estado de México: Valle de Bravo. Guerrero: Acahuizotla, Estación de Microondas Tuxpan, km. 10 road Ixcateopan-Teloloapan, km. 60 road Coyuca de Catalán-Zihuatanejo,



Figures 12-15. Parameres of *Pagasa* spp. 12, *P. (L.) fusca* (Stein). 13, *P. (P.) pallipes* (Stål). 14, *P. (P.) brailovskyi* Kerzhner. 15, *P. (L.) confusa* Kerzhner.

Atoyac, and km 5 road Paraíso-Nueva Delhi. Morelos: Chacaltzingo and Tepoztlán (Kerzhner & Konstantinov, 2008; Volpi & Coscarón, 2010).

Material examined: new records, Mexico: Guerrero, 2 ♂♂, 1 ♀, Malinaltepec, Km 58 road Marquelia-Tlapa, 761 m, 16°58.385' N, 98°43.707' W, 19-VI-2013, L. Cervantes, D. Brzoska, cols. (IEXA). Oaxaca, 1 ♂, km 202 road Oaxaca City-Puerto Ángel, finca Pacífico, 8-VI-2004, E. Barrera, R. Mariño, cols. (CNIN); 1 ♀, km 14

road Mitla-Albarradas, 25-III-1990, E. Barrera, A. Cadena, cols. (CNIN); 1 ♀, km 5 road El Camarón-San Carlos Yautepec, 930 m, IX-2003, H. Brailovsky, E. Barrera, cols. (CNIN); 1 ♀, Cuicatlán, 5 km SE Cuicatlán-Las Torres, 658 m, 17°46'02" N, 96°57'03" W, 7-X-2005, L. Cervantes, E. Elizalde, R. Carranza, cols. (IEXA). Puebla, 1 ♂, Tepapayeca, 28-X-1994, H. Brailovsky, C. Mayorga, cols. (CNIN); 1 ♀, La Trinidad, 5 km SE Atlixco, 15-VI-1994, E. Barrera, C. Mayorga, cols. (CNIN).

Biological notes: it was collected under leaf litter of *Cecropia* sp., where it was found running on the ground. It is associated with oak-pine woodland.

Key of Mexican species of the genus *Pagasa**

1. Clavus and corium uniformly shining throughout; rostral segment II shorter than or as longer as segment III, not surpassing hind margin of eye..... subgenus *Lampropagasa* 2
 - 1a. Clavus and corium dull, never entirely shining; rostral segment II usually longer than III and distinctly surpassing hind margin of eye.....subgenus *Pagasa* 3
2. Paramere larger (0.3 mm), with rounded outer margin, without hook at apex (Figs. 5, 12) ... *P. (L.) fusca* (Stein)
 - 2a. Paramere smaller (0.2 mm), with angulate outer margin, with hook at apex (Figs. 3, 4, 15) *P. (L.) confusa* Kerzhner
3. Head dorsally black to dark brown 4
 - 3a. Head dorsally yellow to dirty white. 6
4. Coriaceous part of hemelytra entirely orange to dark red (Figs. 10-11) *P. (P.) prostemmatoides* Kerzhner
 - 4a. Coriaceous part of hemelytra entirely or in greater part brown to black 5
5. Fore femur with two rows of black teeth's, one of which is much longer and nearly reaching the base of femur; macropterous and brachypterous condition (Figs. 1-2)..... *P. (P.) brailovskyi* Kerzhner
 - 5a. Fore femur with two almost equally long rows of black teeth's, both only slightly surpassing the middle of femur; always macropterous (Figs. 8-9) *P. (P.) pallipes* (Stål)
6. Corium dark brown to black with a large yellow to orange spot; middle and hind femora with several minute black teeth's (Fig. 6)..... *P. (P.) henryi* Kerzhner
 - 6a. Corium uniformly dark brown to black; middle and hind femora without minute black teeth's (Fig.7) *P. (P.) luteiceps* (Walker)

*Modified from Kerzhner and Konstantinov key (2008).

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