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Additional new and unusual host records for Western Hemisphere spider wasps (Hymenoptera: Pompilidae)

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Abstract. We present 112 new and unusual host records for 63 species and subspecies of Pompilidae (Hymenoptera) from the Western Hemisphere in modified taxonomic order according to the Synoptic Catalog of Hymenoptera (Krombein 1979). These records supplement those reported in a recent study by Kurczewski et al. (2020b). New and atypical genus and species host records are given for the genera *Calopompilus* Ashmead, *Herbstellus* Wahis, *Pepsis* Fabricius, *Priocnessus* Banks, *Entypus* Dahlbom, *Pompilocalus* Roig-Alsina, *Sphictostethus* Kohl, *Priocnemis* Schiødte, *Caliadurgus* Fabricius, *Epipompilus* Kohl, *Auplopus* Spinola, *Ageniella* Banks, *Eragenia* Banks, *Agenioideus* Ashmead, *Sericopompilus* Howard, *Poecilopompilus* Ashmead, *Tachypompilus* Ashmead, and *Priochilus* (Fabricius). New host spider families are introduced for species of *Calopompilus* (Nemesiidae), *Pepsis* (Idiopidae, Pycnothelidae), *Priocnessus* (Euagridae), *Entypus* (Agelenidae), *Ageniella* (Theridiidae, Zoropsidae), *Agenioideus* (Theridiidae), *Poecilopompilus* (Salticidae), *Tachypompilus* (Anyphaenidae, Xenoctenidae, Pycnothelidae), *Xerochares* (Sparassidae), and *Priochilus* (Agelenidae). *Curicaberis* ?*culiacans* Rheims (Sparassidae), as prey of *Xerochares expulsus* (Schulz), is the first host record for this rare monotypic genus. Four new host spider families are reported from the Western Hemisphere for the first time: Idiopidae for *Pepsis terminata*, Pycnothelidae for *Pepsis completa* Smith and *Tachypompilus mendozae* (Dalla Torre), Euagridae for *Priocnessus hurdi* Dreisbach, and Xenoctenidae for *T. mendozae*. Pycnothelidae represents the first host record of a mygalomorph spider [*Acanthogonatus* ?*incursus* (Chamberlin)] for the worldwide genus *Tachypompilus*, based on more than 2500 host records. Amputation of the host spider's legs and Ageniellini method of prey transport is highly unique in *Poecilopompilus mixtus*.

Key words. Agelenidae, Euagridae, Idiopidae, host spider, Nemesiidae, *Pepsis*, Pycnothelidae, Sparassidae, Xenoctenidae.

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Introduction

Spider wasps (Hymenoptera: Pompilidae) are a cosmopolitan family with ~5000 species (Pitts et al. 2005). They capture and provision their nests only with spiders. Spider wasps are highly active and fast-moving insects. Their long legs and relatively long wings allow them to run and fly rapidly over short distances in search of prey. The female spends much time searching for and locating a suitable host spider. Their eventual meeting involves spider wasp and spider cohabiting the same area–on the ground, on vegetation, near the spider's web, or, rarely, in water. The wasp pursues the spider on foot or in flight, subdues it with one or more stings to the underside of

its cephalothorax. She then cleans herself and waits momentarily until the paralyzing effect of the venom takes place. She periodically examines the paralyzed spider with her antennae and mouthparts, evidently inspecting the degree of the paralysis. If the spider moves its appendages too much, the wasp will administer an additional sting or two to its cephalothorax. Sometimes, she feeds on fluids exuding from the spider's mouthparts or from the sting puncture. The wasp then transports the spider to a temporary holding place in most Pompilini or, in many Pepsini and Ageniellini, takes the prey directly to a previously prepared nest-cell. After placing the paralyzed spider in the cell in a certain position, she lays her egg in a species-specific site on the spider's abdomen (Evans 1953; Evans and Yoshimoto 1962). The wasp then closes the nest with fill and, depending on the species, may conceal the site with soil, debris or plant litter. The wasp egg hatches in a few days, the wasp larva's mandibles readily penetrate the thin cuticle of the spider's abdomen, and the larval wasp begins feeding at the site of its attachment. The wasp larva consumes the edible portions of the spider's body, grows rapidly over the next several days, constructs a parchment-like cocoon, pupates, and emerges as an adult spider wasp several weeks or a year later (Evans 1953; Evans and Yoshimoto 1962; Kurczewski et al. 2017, 2020b).

Size equivalence between spider wasp and spider is important. It provides the more rapid, aggressive and instinct-driven hunting wasp an advantage in outmaneuvering, overpowering and subduing the spider. Large spider wasps capture large spiders, moderate-size spider wasps capture moderate-size spiders, and small spider wasps capture small spiders (Kurczewski and Kurczewski 1968a, 1968b, 1972, 1973). There is a strong positive correlation between spider wasp and host spider body length, although the spider's (wet) weight is usually several times that of the wasp (Kurczewski and Kiernan 2015). Provisioning with a spider substantially heavier and more robust than herself allows the wasp to use a single, comparatively large prey per cell. A spider much smaller than the wasp would not provide enough food for her developing larva or, perhaps, produce a male instead of female wasp.

There is a strong positive correlation between spider wasp size and sex and stage of spider (Kurczewski and Kiernan 2015). Large pompilids tend to capture mainly large adult or subadult female spiders whereas small spider wasps often capture small immature spiders (Kurczewski and Kurczewski 1968a, 1968b, 1972, 1973). Large spider wasps usually have only a single generation annually in mid-late summer in temperate faunal zones (Evans and Yoshimoto 1962; Kurczewski 1999). Their flight season is closely synchronized to when the host female spider reaches sexual maturity and maximal size and weight (Kurczewski and Kiernan 2015). Conversely, small spider wasps and their small, immature host spiders occur from late spring-early summer into mid-late summer, often with two or more generations of wasps per year in temperate faunal zones (Evans and Yoshimoto 1962; Kurczewski 1999, 2001; Kurczewski and Kiernan 2015).

Evans and Yoshimoto (1962) provided the first major study on Nearctic spider wasp host spiders and nesting behavior in "The Ecology and Nesting Behavior of the Pompilidae (Hymenoptera) of the Northeastern United States." Krombein (1979) summarized all Nearctic spider wasp host records from early to mid-late-20th century in "Catalog of Hymenoptera in America North of Mexico. Vol.2. Apocrita (Aculeata)." More recent papers on host selection and nesting behavior of multiple pompilid species in the Western Hemisphere include those of Kurczewski (1981), Wasbauer (1982), Wasbauer and Kimsey (1985), Kurczewski and Spofford (1986), Kurczewski et al. (1987), Sánchez and Genaro (1989), Martins (1991), Genaro (1993), Cambra-Torok et al. (2004), Wilson and Pitts (2007), Kurczewski (2010), Kurczewski and Edwards (2012), Kurczewski et al. (2013), Kurczewski and Kiernan (2015) and Kurczewski et al. (2017). This paper represents a continuation of a recently completed study on host selection, ecology, and nesting behavior of Western Hemisphere spider wasps by Kurczewski et al. (2020b). It contains a substantial amount of new and unusual host selection information on a variety of pompilid species in the Americas. In this paper we concentrated on the Tribe Ageniellini and highly colorful species in the genera *Poecilopompilus* and *Tachypompilus*, which are photographic favorites in Central America and South America.

Materials and Methods

This paper involved locating, studying, identifying and associating host spider selection in 63 species and subspecies of spider wasps from the Americas. The vast majority of the 112 host records were obtained from active online photographs and videos (biofaces.com, bosque-santa.blogspot.com, bugguide.net, facebook.com, flickr.

com, inaturalist.org, instagram.com, naturalista.mx/observations, sciencedirect.com, youtube.com) with follow-up email and telephone conversations with many of the photographers. Other spider wasp host records were acquired from specimens in collections at the Entomology Museum of Utah State University, Logan, UT; California Academy of Sciences Insect Collection, San Francisco, CA, and University of Guelph Insect Museum, Guelph, Ontario, Canada. Several individuals, primarily from Central America and South America, sent us pompilid host records and their names are credited with the individual spider wasp and spider species.

The species of spider wasps are presented in modified taxonomic order following their arrangement in the *Synoptic Catalog of Hymenoptera North of Mexico* under family Pompilidae (Krombein 1979) with additions and emendations from Vardy (2000, 2002, 2005) and Waichert et al. (2015). The spider wasp species were identified by Frank E. Kurczewski; Cecilia Waichert; James Pitts and Matthias Buck, Royal Alberta Museum, Edmonton, Alberta, Canada. Roberto A. Cambra-Torok, Universidad de Panama, Chitré, Panama; M. Virginia Colomo de Correa, Universidad Nacional de Tucumán, San Miguel de Tucumán, Argentina; Fernando Fernández, Universidad Nacional de Colombia, Bogotá, Colombia and Arturo Roig-Alsina, Museo Argentino de Ciencas Naturales, Buenos Aires, Argentina, sent us taxonomic revisions, species lists, and unpublished host records from Central America or South America that aided in identification. The families of spiders listed under the various spider wasp species are arranged in modified taxonomic order following the World Spider Catalog (2020). Spiders in the Infraorder Mygalomorphae were identified by Rick C. West; Rogerio Bertani, IBB, São Paulo, Brazil; Pablo A. Goloboff, CONICET, Buenos Aires, Argentina; Marshal Hedin, San Diego State University, San Diego, CA, and Jorge Mendoza, Instituto de Biologia, UNAM, Mexico City, Mexico. Spiders in the Infraorder Araneomorphae were determined by Rick C. West; Rogerio Bertani; Antonio Brescovit, IBB, São Paulo, Brazil; Sarah C. Crews, California Academy of Sciences, San Francisco, CA; Diana Fernanda Silva Davila, UNMSM, Lima, Peru; Nelson Ferretti, CERZOS-CONICET, UNS, Bahia Blanca, Argentina; Christian J. Grismado, CONICET, Buenos Aires, AR; Marshal Hedin; Luciano Peralta, Mar del Plata, Argentina; Jaime Pinzon, Natural Resources Canada–Canadian Forest Service, Edmonton, Alberta, Canada; Cristina Rheims, Laboratório Especal de Coeções Zoológicas, São Paulo, Brazil; Antonio Tosto, Las Galeras, Samaná, Dominican Republic and Nico Zañartu, Santiago, Chile (Nemesiidae).

Frank E. Kurczewski, with assistance from Rick C. West, wrote the Abstract, Introduction, Materials and Methods, Results, Discussion, Acknowledgments and Literature Cited sections. The locality, date of observation/image/video or collection, time of observation/image or collection, type of habitat, if known, and name of observer/photographer or collector are given for each spider wasp–spider association/host record. The state or country with the exact locality are alphabetized or regionalized under the individual pompilid species. States in the United States of America are alphabetized and appear before foreign countries which are alphabetized by country, state, arrondissement, department or province and locality. Rick C. West and Frank E. Kurczewski selected and Rick C. West configured Plates 1 and 2 from a combination of 16 of the most interesting and colorful photographs. Frank E. Kurczewski, with assistance from Rick C. West, wrote the captions for each figure. He also corrected several misidentifications from Kurczewski et al. (2020b). The common names of the spiders were taken from the *Common Names of Arachnids. 5th Edition* (American Arachnological Society 2003).

Results

Family Pompilidae
Subfamily Pepsinae
Tribe Pepsini

Calopompilus pyrrhomelas (Walker)

CALIFORNIA: Alameda County, Oakland, Crocker Highlands; 12 September 2021, 1447 PDT; D. De Schrijver. Host: *Calisoga longitarsis* (Simon) (Nemesiidae) [det. M. Hedin, San Diego State University, San Diego, CA], immature. The wasp pulled the paralyzed false tarantula up a dirt slope, dorsal side upward, re-adjusting her grasp of the spider several times, then finally grasped the left patella of its rear leg with her mandibles before pulling it into a hole in the ground (De Schrijver 2021; De Schrijver, San Jose, California, USA, pers. comm. 2021).

CALIFORNIA: Marin County, Tamalpais; 19 September 2020, 1649 PDT; T. Brookshire. Host: *Calisoga longitarsis* [det. M. Hedin], adult male. The wasp attempted to re-sting the immobilized false tarantula as it laid on a sidewalk, dorsal side upward, while grasping the end of its second left leg with her mandibles (Brookshire 2020).

CALIFORNIA: Santa Clara County, Cupertino, Montebello Road, Picchetti Ranch Open Space Preserve; 13 September 2015; T. L. Hammond. Host: *Calisoga longitarsis* [det. M. Hedin], adult or subadult female, with abdomen and right rear leg detached and lying on the ground. The spider might have been mutilated by the adult wasp for feeding, by two adult wasps fighting over its possession, or by foraging ants that frequently amputate and carry off body parts. This observation does not support successful development of the wasp larva if an egg is laid on the spider's abdomen. Nonetheless, the wasp dragged the mutilated false tarantula backwards on the ground, dorsal side upward, grasping the middle of its right foreleg with her mandibles (Hammond 2015). The wasp was initially misidentified as *Pepsis pallidolimbata* Lucas in Kurczewski et al. (2020b),

Herbstellus pachylopus (Kohl)

CHILE: Coquimbo Region, Elqui Province, La Serena; 13 January 2021; S. Torres (Fotos de Vultur). Host: *Lycinus* sp. (Nemesiidae), adult or subadult female. The wasp grasped the immobilized spider's left foretrochanter with her mandibles, and maintaining it dorsal side upward, walked backwards on the ground (Fig. 14; Torres 2021; Torres Zañartu, Santiago, Chile, 2021 pers. comm.).

Pepsis rubra species group (Vardy 2000)

Pepsis heros (Fabricius)

FRENCH GUIANA: 3 km S of Nancibo, Sourou Creek, Le Sourou Ecolodge; 24 October 2021; C. Leblond. Host: *Theraphosa blondi* (Latreille) (Theraphosidae), adult or subadult female. A photograph and video show the wasp dragging the paralyzed Goliath birdeater tarantula, dorsal side upward, over leaf litter on the ground, grasping the base of its left pedipalp with her mandibles (Leblond 2021).

Pepsis petitii Guérin

PERU: Ayacucho, Ayacucho Region, Huamanga Province (Latitude -13.182258, Longitude -74.257722); 29 September 2020, 2:20 PM UTC; E. Y. Cristóbal Miranda. Host: *Linothele* ?*uniformis* Droishagen and Bäckstam (Dipluridae), subadult female. The wasp grasped the immobilized curtain-web spider, dorsal side upward, with her mandibles by its left chelicera or the base of right forecoxa (Cristóbal Miranda 2021).

Pepsis mexicana Lucas

COSTA RICA: Puntarenas Province, Manzanillo District, La Ensenada Lodge; 28 November 2021; M. Coolidge. Host: *Aphonopelma seemanni* (F. O. Pickard-Cambridge), adult or subadult female. The wasp straddled the paralyzed tarantula, venter to dorsum, as it laid on the ground dorsal side upward (Coolidge 2021).

Pepsis elevata species group (Vardy 2002)

Pepsis terminata Dahlbom

BRAZIL: Minas Gerais State, Lassance, Harmony Farm; 21 November 2017; M. A. F. Malacco. Host: ?*Idiops* sp. (Idiopidae) [det. R. Bertani, IBB, São Paulo, Brazil], adult or subadult female. The wasp stood over the immobilized armored trapdoor spider as it laid ventral side upward on the ground (Malacco 2017).

BRAZIL: Pernambuco State, Buíque; 28 August 2020, 1544 EDT; C. Avenengo. Host: *Acanthoscurria* ?*natalensis* Chamberlin (Theraphosidae), adult male [det. R. Bertani,]. The wasp grasped the Natal brown birdeater by the base of the femur of its right foreleg with her mandibles and dragged it, dorsal side upward, across the ground (Avenengo 2020).

COLOMBIA: Tolima Department, Ibagué, Vereda El Gallo trail; 27 April 2017; A. R. Reinoso. Host: *Pamphobeteus* sp. (Theraphosidae), adult or subadult female. The wasp pulled the paralyzed tarantula backwards across the ground, dorsal side upward, grasping the base of its pedipalp with her mandibles (Reinoso 2017).

ST. LUCIA: Praslin Quarter, 1 km NW Praslin; 10 June 2007; J. LaPergola. Host: *Tapinauchenius polybote* Hüsser (Theraphosidae), adult female. The wasp examined the immobilized tarantula with her mouthparts and antennae as it laid, dorsal side upward, on the bare ground (LaPergola 2007).

Pepsis pretiosa species group (Vardy 2002)

Pepsis egregia Mocsáry

COLOMBIA: Antioquia Department, 4 km N. Cañon del Río Claro Natural Reserve; 1 December 2021; J. Pruett. Host: *Linothele sericata* (Karsch) (Dipluridae), adult or subadult female. The wasp stood by the front right of the paralyzed curtain-web spider, examining it with her antennae, as it laid dorsal side upward on the ground (Pruett 2021; Pruett, Rochester, Minnesota, USA, 2021 pers. comm.).

ECUADOR: Morona Santiago Province, Gualaquiza Canton, Chuchumblezo; 1 August 2021, 1544 PM; H. Casper (Caspersomeghost). Host: *Diplura* sp. (undescribed) (Dipluridae), adult or subadult female. The wasp examined the immobilized curtain-web spider with her antennae and mouthparts as it laid dorsal side upward on the ground surface (Casper 2021).

VENEZUELA: Capital District, Caracas, El Hatillo; 26 July 2021; C. Rocha. Host: *Diplura petrunkevitchi* (Caporiacco), adult or subadult female. The wasp proceeded backwards on the ground, fanning its wings and grasping the immobilized curtain-web spider by its right pedipalp, at first, and, later, right forecoxa with her mandibles while maintaining it dorsal side upward (Rocha 2021; Rocha, El Hatillo, Caracas, Venezuela, 2021 pers. comm.).

Pepsis brevicornis species group (Vardy 2002)

Pepsis cassiope Mocsáry

COLOMBIA: Antioquia Department, Yondó, El Silencio Nature Reserve; 24 April 2021; P. J. C. Camancho. Host: *Phoneutria boliviensis* (F. O. Pickard-Cambridge) (Ctenidae), adult or subadult female. The wasp pulled the paralyzed armed spider over and through low grass, dorsal side upward, grasping the base of its right pedipalp with her mandibles (Camancho 2021a, 2021b, 2021c).

COLOMBIA: Casanare Department, Yopal; 22 November 2020; T. C. Bedoya. Host: *Ancylometes* ?*bogotensis* (Keyserling) (Ctenidae), adult or subadult female. Two photographs show the wasp straddling the wandering spider on the ground, dorsal side upward, while stinging it between the bases of its 1st and 2nd left legs. The 3rd–6th photographs show the wasp examining the paralyzed wandering spider with her antennae as it laid, dorsal side upward, on the ground (Bedoya 2020).

Pepsis sumptuosa species group (Vardy 2002)

Pepsis plutus Erichson

FRENCH GUIANA: Saül; 3 May 2020; W. Knaepen. Host: *Phoneutria fera* Perty (Ctenidae), adult or subadult female. The wasp pulled the paralyzed Brazilian wandering spider backwards on the ground, dorsal side upward, grasping the base of its right chelicera with her mandibles (Fig. 10; Knaepen 2020).

Pepsis montezuma species group (Vardy 2005)

Pepsis completa Smith

BRAZIL: São Paulo State, Salto, Parque de Lavras; 21 October 2015; C. Carlinhos. Host: Unidentified species (Pycnothelidae), adult or subadult female [det. R. Bertani]. The wasp grasped the immobilized spider by the base of its left hindfemur with her mandibles as it laid ventral side upward on the ground. She also stood next to the paralyzed spider as it laid on the ground on its left side (Carlinhos 2015a, 2015b).

BRAZIL: Sergipe State, Ribeirópolis; 21 November 2021; Í. Lorran. Host: Unidentified genus/species (Nemesiidae), adult or subadult female. A series of photographs shows the wasp examining the paralyzed funnel-web trapdoor spider with her antennae as it laid on its right side on the ground (Lorran 2021)

***Pepsis limbata* Guéri**

CHILE: O'Higgins Region, Colchagua Province, Sierras de Bellavista; 12 October 2021; S. T. Acuña. Host: *Homoeomma chilensis* Montenegro & Aguilera (Theraphosidae), adult or subadult female. The wasp dragged the paralyzed tarantula backwards across the ground and through low vegetation, dorsal side upward, grasping the base of its second left leg with her mandibles (Acuña 2021).

CHILE: Valparaiso Region, Valparaiso Province, Zapallar, Cerro de la Cruz; 3 July 2021; M. P. Roa. Host: *Thrixopelma* sp. (Theraphosidae), adult or subadult female. The wasp dragged the paralyzed tarantula backwards on the ground, dorsal side upward, grasping the base of its left foreleg with her mandibles (Roa 2021).

***Pepsis viridis* species group (Vardy 2005)**

***Pepsis martini* Vardy**

BRAZIL: Mato Grosso State, Alto Floresta, Cristalino Lodge; 2 May 2021, 1515; S. Dantas. Host: *Diplura nigra* (F. O. Pickard-Cambridge) (Dipluridae), adult or subadult female [det. R. Bertani]. The immobilized curtain-web spider laid dorsal side upward on the ground with legs outstretched, while the wasp stood next to it. A second photograph shows the wasp pulling the spider backwards on the ground, dorsal side upward, grasping the trochanter of its second right leg with her mandibles (Fig. 9; Dantas 2021; Dantas, Novo Mundo, Mato Grosso, Brazil, 2021 pers. comm.).

***Priocnessus hurdi* Dreisbach**

MEXICO: Morelos State, Jantetelco; 24 July 2021, 1320 CDT; P. Crespo. Host: *Euagrus* ?*mexicanus* (Ausserer) (Euagridae), adult or subadult female [det. M. Hedin; J. Mendoza, Instituto de Biologia, UNAM, Mexico City, Mexico,; R. West]. The wasp straddled the immobilized euagrid dorsal side upward, grasped the base of its left chelicera with her mandibles, and, with it in tow, walked forward (Fig. 11; Crespo 2021).

MEXICO: Oaxaca State, La Crucecita, Órgano Bay; 5 August 2021, 0910 AM; G. Cruz. Host: *Euagrus* ?*mexicanus*, subadult female. The wasp straddled the paralyzed euagrid, dorsal side upward, grasped the base of its chelicera with her mandibles and, with it, walked forward (Cruz 2021).

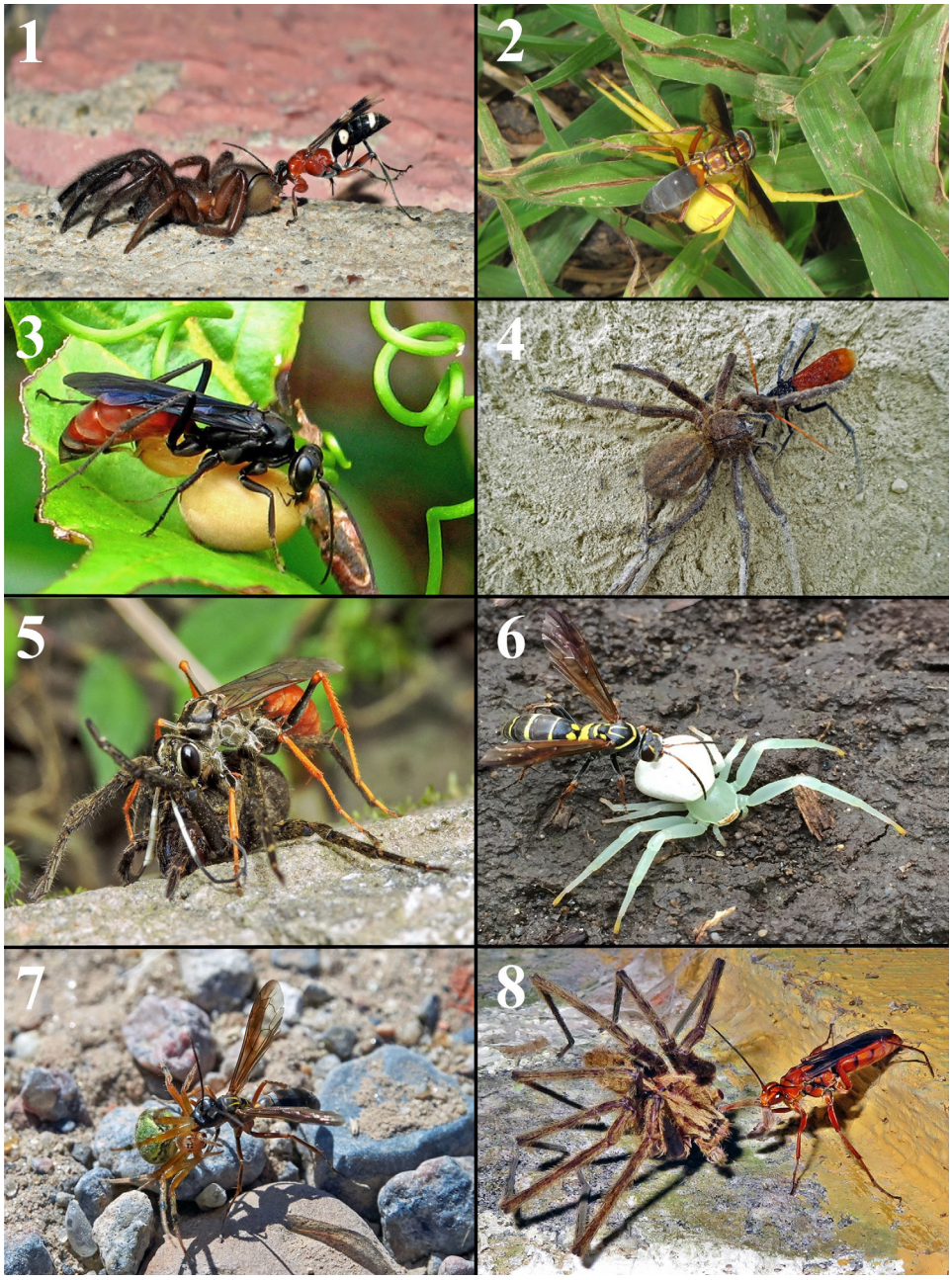
***Priocnessus sericeus* Dreisbach**

COLOMBIA: Cundinamarca Department, Tena; 13 December 2020, 1551; J. N. Rozo Pinilla. Host: *Ctenus* sp. (Ctenidae), adult or subadult female. The wasp straddled the immobilized wandering spider, dorsal side upward, and grasped the patella of its left foreleg with her mandibles. She then walked to the front of the spider, grasped its chelicera with her mandibles, and turned it onto its back, ventral side upward. Maintaining this grasp of the spider, she walked forward into dense vegetation, occasionally pausing and walking backwards for a short distance before turning around and walking forward (Fig. 5; Rozo Pinilla 2020).

***Entypus aratus* (Townes)**

MONTANA: Missoula County, Missoula; 22 July 2021, 1305 MDT; S. Baran. Host: *Hogna* sp. (Lycosidae), adult or subadult female. The wasp dragged the immobilized wolf spider backwards through dried grass, dorsal side upward, grasping its left chelicera with her mandibles (Baran 2021). This host record is a significant northern range extension for *E. aratus*, the previous northernmost locality being Pocatello, Bannock County, ID (Townes 1957).

UTAH: San Juan County, Canyonlands National Park; 6 October 2021, 1246 MDT; R. Hannawacker. Host: *Geolycosa wrighti* (Chamberlin) (Lycosidae), adult or subadult female. The wasp grasped the immobilized burrowing wolf spider by its left chelicera with her mandibles and, keeping it dorsal side upward, dragged it backwards on the ground across the bare soil (Hannawacker 2021).



Figures 1–8. Pompilid wasps and host spiders. **1)** *Epipompilus aztecus* (Cresson), female, with immobilized *Ariadna pilifera* O. P.-Cambridge (Segestriidae), adult or subadult female, Ixtapan de la Sal, México State, Mexico. Photograph © Aldo Gómez Benitez. **2)** *Poecilopompilus decedens* (Smith), female, with immobilized *Misumena* sp. (Thomisidae), adult or subadult female, Jacareí, São Paulo State, Brazil. Photograph © Tomaz Nascimento de Melo. **3)** *Ageniella* (*Priophanes*) *basirufa* (Fox), female, with immobilized unidentified theridiid (Theridiidae), adult or subadult female, São Simão, São Paulo State, Brazil. Photograph © José Rubens Lopes. **4)** *Entypus unifasciatus urichi* (Banks), female, with immobilized *Phoneutria boliviensis* (F. O. Pickard-Cambridge) (Ctenidae), adult or subadult female, Santa Rosa, Bolivar Department, Colombia. Photograph © Jim Steamer. **5)** *Priocnessus sericeus* Dreisbach, female, with immobilized *Ctenus* sp. (Ctenidae), adult or subadult female, Tena, Cundinamarca Department, Colombia. Photograph © Jorge Nicolás Rozo Pinilla. **6)** *Poecilopompilus interruptus dubitatus* (Cameron), female, with immobilized *Misumessus quinteroi* (Edwards) (Thomisidae), adult or subadult female, Tilarán, Guanacaste Province, Costa Rica. Photograph © Ana Pereira. **7)** *Poecilopompilus* sp., female, with immobilized *Araneus workmani* (Keyserling) (Araneidae), adult female, Reserva Ecológia Costanera Sur, Puerto Madero, Ciudad de Buenos Aires State, Argentina. Photograph © Milena Llopis. **8)** *Tachypompilus ferrugineus affinis* (Banks), female, with immobilized *Enoploctenus maculipes* Strand (Ctenidae), adult male, Visitor's Center, Tijuca National Park, Rio de Janeiro, Rio de Janeiro State, Brazil. Photograph © Roger Dias.

***Entypus fulvicornis* (Cresson)**

GEORGIA: Gordon County, Oakman; 2 July 2020; L. Kimberling. Host: *Agelenopsis naevia* (Walckenaer) (Agelenidae), adult male. After stinging the spider, the wasp examined it as it laid immobilized on the ground both dorsal and ventral side upward. She then grasped its chelicerae or pedipalp with her mandibles and dragged it backwards across the substrate, either dorsal or ventral side upward (Kimmerling 2020).

***Entypus magnus* (Cresson)**

TEXAS: Collin County, Princeton; 1 October 2020; M. Bell. Host: *Tigrosa georgicola* (Walckenaer) (Lycosidae), adult or subadult female. The wasp grasped the immobilized wolf spider by its chelicerae with her mandibles and dragged it while walking backwards, dorsal aide upward, across the ground through grasses (Fig. 16; Bell 2020).

***Entypus unifasciatus urichi* (Banks)**

COLOMBIA: Bolívar Department, Santa Rosa; 7 March 2020, 1436 EST; J. Steamer. Host: *Phoneutria boliviensis* (F. O. Pickard-Cambridge) (Ctenidae), adult or subadult female. The wasp grasped the immobilized armed spider by the base of its left chelicera, dorsal side upward, and, dragging it, walked backwards on the ground (Fig. 4; Steamer 2020).

ECUADOR: Pichincha Province**,** Quito; 31 January 2021, 1937; M. E. Guerrero Salazar: Host: *Lycosa* sp. (Lycosidae), adult female. The wasp grasped the immobilized wolf spider by the bases of its chelicerae with her mandibles, maintained it dorsal side upward, and walked backwards across a hard-packed gravel path or road (Guerrero Salazar 2021).

***Pompilocalus nemequene* Roig-Alsina**

BOLIVIA: Santa Cruz Department, San Juan; 13 February 2021, 1821; K. Kawakami. Host: *Phoneutria boliviensis*, juvenile. The wasp grasped the immobilized armed spider by its chelicerae with her mandibles and, maintaining it dorsal side upward, walked backwards on the ground (Kawakami 2021).

***Sphictostethus striatulus* Roig-Alsina**

CHILE: Araucanía Region, Cautín Province, Pucón, Huerguehue National Park; 25 February 2021; G. Andrés. Host: Unidentified species (Anyphaenidae), adult or subadult female. The first photograph shows the wasp standing over the paralyzed ghost spider as it laid on the ground, ventral side upward, grasping its left forecoxa with her mandibles. The second photograph shows *S. striatulus* pulling the spider in the opposite direction of an *S. xanthopus*, grasping its right forepatella or forefemur with her mandibles, while *S. xanthopus* (Spinola) grasps the trochanter of the third left leg with her mandibles. The third photograph shows the two wasps grappling atop the spider while it laid, ventral side upward, on the ground with *S. xanthopus* attempting to sting *S. striatulus* and bite it with her mandibles. The *S. striatulus* is grasping the patella of the spider's second right leg (Andrés 2021).

CHILE: Santiago Metropolitan Region, 12 km W of Paine, Altos de Cantillana Reserve; 23 September 2012; B. Segura. Host: ?*Grammostola* sp. (Theraphosidae), juvenile. The wasp dragged the paralyzed tarantula backwards on the ground, dorsal side upward, grasping the base of its right foreleg with her mandibles. An accompanying video of the same event shows the wasp searching for and finding the paralyzed tarantula as it laid on its left side on the ground, then grasping the base of its right foreleg with her mandibles and dragging it backwards on the ground (Fig. 13; Segura 2012; Segura, Santiago, Chile, 2021 pers. comm.).

***Sphictostethus xanthopus* (Spinola)**

CHILE: Araucanía Region, Cautín Province, Pucón, Huerguehue National Park; 25 February 2021; G. Andrés. Host: Unidentified species (Anyphaenidae), adult or subadult female. The first photograph shows *S. striatulus* standing over the paralyzed ghost spider as it laid on the ground, ventral side upward, grasping its left forecoxa with her mandibles. The second photograph shows *S. xanthopus* pulling the spider in the opposite direction of *S. striatulus*, grasping the trochanter of the third left leg with her mandibles, while *S. striatulus* grasps the

Figures 9–16. Pompilid wasps and host spiders. **9)** *Pepsis martini* Vardy, female, with immobilized *Diplura nigra* (F. O. Pickard-Cambridge) (Dipluridae), adult or subadult female, Cristalino Lodge, Alto Floresta, Mato Grosso State, Brazil. Photograph © Sidnei Dantas. **10)** *Pepsis plutus* Erichson, female, with immobilized *Phoneutria fera* Perty (Ctenidae), adult or subadult female, Saül, French Guiana. Photograph © Wouter Knaepen. **11)** *Priocnessus hurdi* Dreisbach, female, with immobilized *Euagrus* ?*mexicanus* (Ausserer) (Euagridae), adult or subadult female, Jantetelco, Morelas State, Mexico. Photograph © Paula Montserrat Crespo Barrera. **12)** *Priocnemella hexagona* (Fox), female, with immobilized *Phoneutria* ?*fera* Perty (Ctenidae), juvenile, National Forest of Jamari, Rondônia State, Brazil. Photograph © Pedro Paulo Machado Nascimento. **13)** *Sphictostethus striatulus* Roig-Alsina, female, with immobilized ?*Grammostola* sp. (Theraphosidae), juvenile, Altos de Cantillana Reserve, 12 km W Paine, Santiago Metropolitan Region, Chile. Photograph © Bernardo Segura. **14)** *Herbstellus pachylopus* (Kohl), female, with immobilized *Lycinus* sp. (Nemesiidae), adult or subadult female, La Serena, Elqui Province, Coquimbo Region, Chile. Photograph © Simon Torres. **15)** *Caliadurgus maculatellus* (Taschenberg), female, with immobilized *Larinia* sp. (Araneidae), adult or subadult female, Punilla, Córdoba Province, Argentina. Photograph © Andrea A. Coccuci. **16)** *Entypus magnus* (Cresson), female, with immobilized *Tigrosa georgicola* (Walckenaer) (Lycosidae), adult or subadult female, Princeton, Collin County, Texas, USA. Photograph © Manda Bell.

spider's right forepatella or forefemur with her mandibles. The third photograph shows the two wasps grappling atop the spider while it laid, ventral side upward, on the ground with *S. xanthopus* attempting to sting and bite *S. striatulus* with her mandibles. The *S. striatulus* is grasping the patella of the spider's second right leg (Andrés 2021).

***Priocnemis* (*Priocnemissus*) *oregona* Banks**

CALIFORNIA: Contra Costa County, Briones, Bear Creek Road; 15 April 2021; M. VanDerslice. Host: *Promyrmekiaphila clathrata* (Simon) (Euctenizidae), adult or subadult female [det. M. Hedin]. The wasp pulled the paralyzed wafer-lid trapdoor spider upright across the ground, grasping its ventral pedicel region with her mandibles (VanDerslice 2021; VanDerslice 2021 pers. comm.).

***Caliadurgus maculatellus* (Taschenberg)**

ARGENTINA: Córdoba Province, Punilla; 24 April 2021, 1705; A. A. Cocucci. Host: *Larinia* sp. (Araneidae), adult or subadult female. The wasp grasped the immobilized orb-weaver by its left or right hindcoxa or pedicel with her mandibles and held the spider in an upright position (Fig. 15; Cocucci 2021).

***Epipompilus aztecus* (Cresson)**

MEXICO: México State, Ixtapan de la Sal; 20 November 2020; A. Gómez Benítez. Host*: Ariadna pilifera* O. P.-Cambridge (Segestriidae), adult or subadult female. The wasp pulled the immobilized tube-dwelling spider backwards, dorsal side upward, across the ground for 60 cm, grasping its loose posterior abdominal cuticle with her mandibles (Fig. 1; Gómez Benítez 2020; Gómez Benítez 2020 pers. comm.).

Tribe Ageniellini

***Auplopus architectus metallicus* (Banks)**

CALIFORNIA: Ventura County, Ojai, Matilija Wilderness; 11 June 2021, 1140 PDT; J. Castilleja. Host: *Misumena vatia* (Clerck) (Thomisidae), adult or subadult female. The wasp attempted to amputate some of the crab spider's legs at the coxa-trochanter joints, holding it ventral side upward. She also straddled it in a ventral side upward position with most of its legs still intact, while grasping its spinnerets with her mandibles (Castilleja 2021).

***Auplopus associatus* (Banks)**

BRAZIL: São Paulo State, Socorro; 16 December 2021, 1030 EST; P. H. G. Lopes. Host: Unidentified species (Anyphaenidae), adult or subadult female. The wasp straddled the immobilized ghost spider, venter to venter, and grasped its spinnerets with her mandibles while standing on a leaf (Lopes 2021).

***Auplopus bellus* (Cresson)**

DOMINICAN REPUBLIC: Azua Province, Padre Las Casas; May 2015; F. A. Suriel. Host: *Hibana velox* (Becker) (Anyphaenidae), adult or subadult female. The wasp stood on a leaf and straddled the paralyzed delimbed ghost spider, venter to venter, while grasping its spinnerets with her mandibles (Suriel, Padre Las Casas, Dominican Republic, 2015 pers. comm.; Tosto, Las Galeras, Samaná, Dominican Republic, 2021 pers. comm.).

***Auplopus militaris* (Lynch-Arribalzaga)**

BRAZIL: São Paulo State, São Paulo; 31 May 2009; Violinha. Host: Unidentified species (Salticidae), adult or subadult female. The wasp straddled the immobilized jumping spider venter to venter and grasped its spinnerets with her mandibles. The spider's legs were still intact (Violinha 2009).

MEXICO: Sinaloa State, Mazatlán; 27 September 2020, 1505 HST; F. Farriols Sarabia. Host: *Balmaceda* ?*minor* (F. O. Pickard-Cambridge) (Salticidae), adult or penultimate male, with all legs cut off at coxa-trochanter joints. A series of photographs show the wasp examining a leg amputation, resting with the immobilized,

delimbed jumping spider underneath, and transporting the spider forward. While resting and during prey transport, she held the spider venter to venter and grasped its spinnerets with her mandibles (Farriols Sarabia 2020b).

***Auplopus pratens* Dreisbach**

BRAZIL: Pernambuco State, Paudalho; 5 December 2020; H. Lourencini. Host: Unidentified species (Salticidae), adult or subadult. The wasp rested on a broad leaf, grasping the spinnerets of its host jumping spider while holding it venter to venter. None of the spider's appendages were amputated at the coxa-trochanter joint (Lourencini 2020).

***Auplopus viridis* (Smith)**

COLOMBIA: Valle de Cauca Department, Santiago de Cali; 16 January 2021; V. Vieda. Host: Unidentified species (Anyphaenidae), adult or subadult female. The wasp grasped the immobilized ghost spider's spinnerets with her mandibles while straddling it venter to venter. The left hindleg and right hind-, third and second legs were amputated at the coxa-trochanter joints (Vieda 2021). The description of *A. viridis* reported from Colombia by Banks (1946) and represented in our host record may not be the same *A. viridis* (Smith, 1864) originally described from São Paulo, Brazil, as discussed by Banks (1946). (Waichert 2021 pers. obs.).

***Ageniella* (*Priophanes*) *basirufa* (Fox)**

BRAZIL: São Paulo State, São Simão; 3 December 2006; J. Rubens Lopes. Host: Unidentified species (Theridiidae), adult or subadult female. The wasp grasped the immobilized tangle-web spider by its spinnerets with her mandibles and held it venter to venter while standing on a leaf. All of the spider's legs were amputated at the coxa-trochanter joints (Fig. 3; Rubens Lopes 2006).

***Ageniella* (*Priophanes*) *comes* (Banks)**

BRAZIL: Federal District, Parque Olhos d' Água; 11 February 2021; J. Campos. Host: Unidentified species (Salticidae), immature female. The wasp grasped the immobilized jumping spider's spinnerets with her mandibles, held it venter to venter, and walked forward on a painted metal railing. She retained her grasp of its spinnerets with her mandibles even after she dismounted and rested. All legs of the spider were intact (Campos 2021).

***Ageniella* (*Priophanes*) *rufofemorata* (Taschenberg)**

ARGENTINA: Ciudad de Buenos Aires State, Distrito Federal Area, Metropolitana de Buenos Aires; 28 October 2021, 1606 PM; F. Chieffo. Host: ?*Misumenops* sp. (Thomisidae), adult or subadult female. The wasp grasped the immobilized crab spider by its spinnerets with her mandibles and held it venter to venter while standing on the ground atop large dried leaves (Chieffo 2021).

***Ageniella* (*Priophanes*) sp.**

MEXICO: Nuevo León, San Pedro Garza García; 13 June 2021, 1015 CDT; V. A. Hernández González. Host: *Pardosa* sp. (Lycosidae), adult female. The wasp straddled the wolf spider, dorsal side upward, while grasping the base of its right chelicera with her mandibles. None of the spider's legs or pedipalps had been amputated at the coxa-trochanter joints (Hernández González 2021; Hernández González, UANL, Monterrey, Nuevo León, MX, pers. comm. 2021).

***Ageniella* (*Ageniella*) *coronata* Banks**

CALIFORNIA: Alameda County, Sunol Regional Wilderness; 20 June 2021, 1103 PDT; A. Wuenschel. Host: *Castianeira occidens* (Reiskind) (Corinnidae), adult female, with all legs amputated at the coxa-trochanter joints. The wasp straddled the immobilized and delimbed corinnid sac spider as it laid on the ground dorsal side upward (Wuenschel 2021).

CALIFORNIA: Napa County, NE of Calistoga, Robert Lewis Stevenson State Park; 16 August 2017; L. Mazur. Host: *Titiotus* sp. (Zoropsidae) [det. M. Hedin]. The wasp straddled the immobilized false wolf spider,

dorsal side upward, grasped the base of its right chelicera with her mandibles, and walked forward on the ground. All of the spider's legs were amputated at the coxa-trochanter joints (Mazur 2017).

***Ageniella* (*Alasagenia*) *flavipennis* (Banks)**

BRAZIL: Rio de Janeiro State, Rio de Janeiro, Tijuca National Park, Visitor's Center; 18 January 2021; R. Dias. Host: Unidentified species (Ctenidae), adult or subadult female. The wasp straddled the recently captured, paralyzed wandering spider, examined it with her antennae as it laid dorsal side upward on the ground, and turned it onto its left side. She then detached the spider's right legs at the trochanter-coxa joints using her mandibles. She also amputated the spider's left legs at the trochanter-coxa joints. The wasp then ran across the ground, holding the delimbed host spider dorsal side upward while grasping the base of its chelicera with her mandibles. She stopped and paused, remaining atop her immobilized spider, on a green cement walkway (Dias 2021a).

BRAZIL: Rio de Janeiro State, Rio de Janeiro, Tijuca National Park, Visitor's Center; 18 January 2021; R. Dias. Host: Unidentified species (Ctenidae), adult or subadult female. The wasp ran up a vertical cement wall carrying an immobilized delimbed wandering spider, dorsal side upward, while grasping the base its chelicera with her mandibles. At the top she ran along the ledge to the end, then turned around and ran in the opposite direction to a tree growing against the wall. Without hesitating, the wasp with spider underneath continued running up the tree and out of sight (Dias 2021b).

BRAZIL: Rio de Janeiro State, Rio de Janeiro, Alto da Boa Vista; 8 October 2017; 1119; R. Dias. Host: ?*Ctenus* sp., adult or subadult female. The wasp examined the paralyzed wandering spider with her mouthparts and antennae as it laid dorsal side upward on the ground. She then grasped its right chelicera with her mandibles and attempted to pull it backwards across the ground. All of the spider's legs were intact (Dias 2021c). A subsequent very short video shows the spider with some of its legs amputated at the coxa-trochanter joints and lying on the ground (Dias 2019; Dias, Rio de Janeiro, Brazil, 2021 pers. comm).

***Ageniella* (*Alasagenia*) sp.**

BRAZIL: São Paulo State, Piedade; 2 February 2009; J. Burini. Host: Unidentified species (Corinnidae), adult or subadult female [det. R. Bertani, S. C. Crews, California Academy of Sciences, San Francisco, CA]. A series of photographs shows the wasp standing over and examining the paralyzed delimbed antmimic spider with her antennae as it laid on its side on the ground (Burini 2009; Burini 2021 pers. comm.).

***Ageniella* (*Ameragenia*) *ursula* (Banks)**

DOMINICAN REPUBLIC: Santo Domingo Province, Santo Domingo, Botanical Gardens; 24 April 2021; F. Paz. Host: *Hibana velox* (Becker) (Anyphaenidae), adult male. One photograph shows the wasp standing on a leaf straddling the paralyzed delimbed ghost spider, venter to venter, grasping its spinnerets with her mandibles. Another photograph shows the wasp straddling the same spider but venter to dorsum, attempting to grasp the spider's chelicera with her mandibles (Paz, Santo Domingo, Dominican Republic, 2021 pers. comm.; Tosto 2021 pers. comm.).

***Eragenia amabilis* (Taschenberg)**

BRAZIL: São Paulo State, Cotia, Jardim Barbacena; 25 March 2019, 1347 PM; R. Lazaro. Host: *Corinna* sp. (Corinnidae), adult or subadult female. Four photographs show the wasp cutting off the legs of the immobilized corinnid sac spider at the coxa-trochanter joints and discarding them on the substrate as it laid dorsal or ventral side upward (Lazaro 2019a).

BRAZIL: São Paulo State, São Paulo; 8 March 2009; G. Grespan. Host: *Corinna* sp. (Corinnidae). penultimate male. The wasp straddled the immobilized antmimic spider, dorsal side upward, and grasped the base of its left chelicera with her mandibles. The spider's legs and pedipalps were left intact (Grespan 2009).

***Eragenia micans* (Fabricius)**

PANAMA: Coclé Province, Antón Valle; 6 December 2021, 1137 EST; K. Squires. Host: Unidentified species (Anyphaenidae), adult or subadult female. The wasp straddled the immobilized ghost spider, dorsal side upward, grasping its left chelicera with her mandibles while resting on a large leaf (Squires 2021).

***Priocnemella hexagona* (Fox)**

BRAZIL: Rondônia State, National Forest of Jamari; 23 May 2021; P. P. M. Nascimento. Host: *Phoneutria* ?*fera* Perty (Ctenidae), juvenile. The wasp straddled and carried the delimbed paralyzed banana spider, dorsal side upward, grasping the base of its chelicera with her mandibles. She walked over leaf litter, then, holding the spider, disappeared into a small hole in the ground (Fig. 12; Nascimento 2021; Nascimento, Machadinho d'Oeste, State of Rondônia, Brazil, 2021 pers. comm.).

Subfamily Pompilinae
Tribe Pompilini

***Agenioideus* (*Enbanksia*) *accoleus accoleus* (Banks)**

COLOMBIA: Antioquia Department, Bolívar, Finca La Llorona; 2 April 2021, 1053; S. Berrio (Bioexploradores Farallones). Host: *Steatoda* ?*nobilis* (Thorell) (Noble false widow) (Theridiidae), adult female. The wasp grasped the immobilized spider on the ground by the base of its first or second left coxa or right coxa-trochanter joint with her mandibles. Later, she stood next to the prey cleaning her antenna (Berrio 2021).

***Sericopompilus neotropicalis* (Cameron)**

MEXICO: Sinaloa State, Mazatlán; 28 July 2020, 1537 HST; F. Farriols Sarabia. Host: *Eriophora edax* (Blackwall) (Araneidae), adult or penultimate male. The wasp grasped the immobilized orb-weaver's chelicera with her mandibles and, with wings angled upward, carried it forward on stems and leaves of a plant (Farriols Sarabia 2020a; Farriols Sarabia, Mazatlán, Sinaloa, Mexico, 2021 pers. comm.).

***Poecilopompilus decedens* (Smith)**

BRAZIL: Goiás State, Goiânia; 23 April 2009; E. Neri. Host: *Misumenops* sp. (Thomisidae), adult or subadult female. Three photographs show the wasp (1) atop the immobilized crab spider, venter to venter, as it hung in midair by a silken thread from a spinneret; the wasp grasped the base of the spider's chelicera with her mandibles; (2) atop the spider grasping the base of its second right leg as the prey laid on its left side on a leaf near ground level; and (3) maintaining the same grasp on the ground atop the spider in a ventral side upward position (Neri 2009).

BRAZIL: São Paulo State, Jacareí; 20 April 2011; T. Nascimento de Melo. Host: *Misumena* sp. (Thomisidae), adult or subadult female. The wasp stood above and beside the paralyzed crab spider as it laid on grass, dorsal side upward (Fig. 2; Nascimento de Melo 2011). This host record was listed under *Poecilopompilus* sp. in Kurczewski et al. (2020b).

***Poecilopompilus interruptus dubitatus* (Cameron)**

(det. M. Buck, Royal Alberta Museum, Edmonton, Alberta, Canada)

COSTA RICA: Guanacaste Province, Tilarán; 2 July 2018; A. Pereira. Host: *Misumessus quinteroi* (Edwards) (Thomisidae), adult or subadult female. The wasp stood over the paralyzed crab spider as it laid, dorsal side upward, on the ground (Fig. 6; Pereira 2018). This host record is listed as *Poecilopompilus* sp. in Kurczewski et al. (2020b).

***Poecilopompilus mixtus* (Fabricius)**

COSTA RICA: Alajuela Province, San Ramón; 1 September 2017; Y. Villalobos. Host: *Misumena vatia* (Clerck) (Thomisidae). The wasp stood near the paralyzed crab spider as it laid, ventral side upward, on the ground (Villalobos 2017). This host record is listed as *Poecilopompilus* sp. in Kurczewski et al. (2020b).

COSTA RICA: Alajuela Province, San Ramón, Soltis Center; May 2018; S. Marshall. Host: Unidentified species (Thomisidae), adult or subadult female. A photograph shows a wasp standing near the paralyzed crab spider as it laid, ventral side upward, on a leaf above the ground (Marshall, University of Guelph, Guelph, Ontario, Canada, 2020 pers. comm.; Pitts, 2020 pers. comm.). This host record is listed as *Poecilopompilus* sp. in Kurczewski et al. (2020b).

DOMINICAN REPUBLIC: Distrito Nacional, Santo Domingo; 27 November 2021, 1717 UTC; F. Paz. Host: *Mecaphesa* ?*californica* (Banks), adult or subadult female (Thomisidae). The wasp stood on a leaf and examined the immobilized crab spider which was cached, dorsal side upward, in the axil of the opposite leaf stem (Paz 2021).

HAITI, Port-au-Prince Arrondissement, Kenscoff; 11 January 2015; R. Durocher. Host: *Metazygia* sp. (Araneidae), adult or subadult female. The immobilized orb-weaver laid on its left side on vegetation while the wasp, with raised wings, stood beside it (Durocher 2015).

PERU: Cusco Department, Manu National Park, Coche Cashu Biological Station; 25 October 2021; P. Bertner. Host: Unidentified species (Salticidae), adult or subadult species. The wasp straddled the immobilized jumping spider, ventral side upward, and grasped its spinnerets with her mandibles. She amputated all but the prey's hindlegs at the coxa-trochanter joints to facilitate forward transport (Bertner 2021).

Poecilopompilus rubricatus (Smith)

BRAZIL: State of Rio Grande do Sul, Colinos; 27 December 2009; G. Mazzarollo. Host: *Argiope argentata* (Fabricius) (Araneidae) (Silver argiope), adult female. The wasp grasped the paralyzed orb-weaver by the base of the coxa of its 1st or 2nd left leg during transport (Mazzarollo 2009).

Poecilopompilus sp.

ARGENTINA: Ciudad de Buenos Aires State, Puerto Madero, Reserva Ecológia Costanera Sur; 2 April 2021, 1424; M. Llopis. Host: *Araneus workmani* (Keyserling) (Araneidae), adult female [det. C. J. Grismado, CONICET, Buenos Aires, AR, and R. C. West). The wasp grasped the immobilized orb-weaver by its first and second left coxae while holding it on its right side and raising her wings upwards at a ~45° angle (Fig. 7; Llopis 2021; Llopis, Aves Argentina, Buenos Aires, Argentina, 2021 pers. comm.).

Tachypompilus banksi Colomo de Correa

ARGENTINA: Buenos Aires Province, 20 km SE of Olavarria; 2 January 2010; R. Ruiz. Host: *Polybetes pythagoricus* (Holmberg) (Sparassidae), adult female. The wasp pulled the paralyzed huntsman spider backwards up a vertical brick wall, holding it dorsal side upward and grasping its left pedipalp with her mandibles (Ruiz 2010). This wasp was initially identified as *Tachypompilus erubescens* (Taschenberg) in Kurczewski et al. (2020b).

ARGENTINA: Buenos Aires Province, 4 km N of San Clemente del Tuyú; 26 December 2014; J. F. Romero. Host: *Polybetes pythagoricus*, adult female. The wasp dragged the paralyzed huntsman spider backwards on the ground, dorsal side upward, grasping its right pedipalp with her mandibles (Romero 2014). This wasp was initially identified as *Tachypompilus erubescens* in Kurczewski et al. (2020b).

ARGENTINA: Neuquén Province, Pichilemu; 30 December 2014; M. Belgrano. Host: *Polybetes pythagoricus*, adult or subadult female. The wasp examined the paralyzed huntsman spider with her antennae as it laid dorsal side upward on the ground (Belgrano 2014). This wasp was initially identified as *Tachypompilus erubescens* by Kurczewski et al. (2020b)

Tachypompilus ferrugineus affinis (Banks)

BRAZIL: Espírito Santo State, Alfredo Chaves; 14 March 2021, 0734; A. Fraga. Host: *Caayguara* sp. (Sparassidae), adult or subadult female. The wasp dragged the immobilized huntsman spider backwards, dorsal side upward, through grasses, onto a patio, and across the top of a low retaining wall, grasping the spider's right pedipalp with her mandibles (Fraga, Alfredo Chaves, Brazil, 2021 pers. comm.; De C. C. Alencar, Instituto do Espírito Santo, Vitória, Brazil, 2021 pers. comm.).

BRAZIL: Rio de Janeiro State, Petrópolis, 2nd District of Cascatinha, Bairro Araras; 13 March 2013; A. Rabello Pereira. Host: *Phoneutria* ?*keyserlingi* (F.O. Pickard-Cambridge) (Ctenidae), subadult female. The wasp grasped the immobilized armed spider by the patella of its left pedipalp with her mandibles, dorsal side upward, and pulled it backwards up a vertical stucco wall. The wasp was nesting beneath a house roof (Rabello Pereira, Petrópolis, Brazil, 2021 pers. comm.).

BRAZIL: Rio de Janeiro State, Petrópolis, 2nd District of Cascatinha, Bairro Araras; 29 November 2020, 1738; A. Rabello Pereira. Host: *Enoploctenus cyclothorax* (Bertkau) (Ctenidae), adult or subadult female [det. R. Bertani], 15 mm long. The wasp grasped the immobilized wandering spider with her mandibles by the apical patella of its right pedicel and pulled it, dorsal side upward, up the side of a wooden fence and over adobe roof bricks and roof support posts. The wasp with spider in tow pulled the prey vertically up the side of a house to its nest beneath the roof (Rabello Pereira 2020; Rabello Pereira 2021 pers. comm.).

BRAZIL: Rio de Janeiro State, Petrópolis, 2nd District of Cascatinha, Bairro Araras; 17 April 2021, 1400; A. Rabello Pereira. Host: *Ctenus ornatus* (Keyserling), adult or subadult female. The wasp pulled the immobilized wandering spider backwards across the ground, grasping the base of its left pedipalp with her mandibles (Rabello Pereira 2021).

BRAZIL: Rio de Janeiro State, Rio de Janeiro Tijuca National Park; 10 February 2021, 1240; R. Dias. Host: *Acanthoctenus* sp, (Ctenidae, Subfamily Acanthocteninae) [det. L. Peralta, Mar del Plata, Argentina and R. C. West], juvenile. The wasp is seen in several photographs feeding on a small, immobilized spider, using her mouthparts to imbibe fluids exuding from the sting puncture(s) on the underside of its cephalothorax as it laid ventral side upward on a leaf. The mandibles are evidently assisting by squeezing the area. This spider is too small, in comparison to the size of the wasp, for use as a host for a developing spider wasp larva. Furthermore, no photograph shows the wasp attempting to transport the spider elsewhere. The wasp flew away and did not return after imbibing fluids from the spider. The 2nd and 3rd left legs were cut off at the coxa-trochanter joints at which point there is "bleeding" of hemolymph. There are also droplets of hemolymph on the underside of the cephalothorax, perhaps where the spider was stung by the wasp (Dias 2021d; Dias 2021 pers. comm).

BRAZIL: Rio de Janeiro State, Rio de Janeiro, Tijuca National Park, Visitor's Center; 3 January 2019; R. Dias. Host: *Enoploctenus maculipes* Strand, adult male [det. A. Brescovit, IBB, São Paulo, Brazil]. The wasp grasped the immobilized wandering spider by the patella of its left pedipalp and, holding it dorsal side upward, walked backwards up the exterior wall of the bathroom building. She could not bypass the window frame and screen and fell to the floor. The wasp was evidently nesting underneath the roof of the building (Fig. 8; Dias 2020).

BRAZIL: Rio de Janeiro State, Rio de Janeiro, Vargem Grande, Pedra Branca State Park; 18 November 2017; E. A. Ferreira. Host: *Polybetes* ?*pythagoricus*, adult female. The wasp examined the paralyzed huntsman spider as it laid, dorsal side upward, on the ground (Ferreira 2017). This wasp is listed as *Tachypompilus* sp. in Kurczewski et al. (2020b).

BRAZIL: Rio Grande do Sul State, Osório; 20 December 2020, 1012; H. Andrades. Host: *Phoneutria nigriventer* (Keyserling), subadult female. A series of photographs shows the wasp (1) examining the immobilized armed spider with her antennae and mouthparts extended; (2) standing atop and behind the host spider; and (3) grasping the spider by the patella of its left pedipalp and dragging it backwards up a low concrete retaining wall or curb and over a rebar grate (Andrades 2020).

BRAZIL: Santa Catarina State, Florianópolis, Armação Beach; 27 November 2010; P. Moura. Host: Unidentified species (Ctenidae), adult or subadult female (2). The wasp grasped the paralyzed wandering spider with her mandibles by its left pedipalp as it laid on the ground, ventral side upward, and turned it over. She released her grasp, walked around the immobilized spider, and examined it with her antennae (Moura 2010). This wasp is listed as *Tachypompilus* sp. in Kurczewski et al. (2020b).

BRAZIL: Santa Catarina State, Parque Nacional da Serra do Itajaí; 14 April 2009; H. Moli. Host: *Phoneutria* sp. (Ctenidae), juvenile female. The wasp maneuvered around and under the wandering spider, as it repeatedly lunged at the wasp on the ground (Moli 2009). This wasp is listed as *Tachypompilus* sp. in Kurczewski et al. (2020b).

BRAZIL: Santa Catarina State, Santo Amaro, tropical woodland; 4 March 2015; D. da Cruz Pereira. Host: Unidentified species (Ctenidae), adult or subadult female. The wasp pulled the paralyzed wandering spider across large dead leaves, dorsal side upward, grasping its left pedipalp with her mandibles, then up a steep bare incline,

across level ground, and over large dead leaves (da Cruz Pereira 2015). This wasp is listed as *Tachypompilus* sp. in Kurczewski et al. (2020b).

BRAZIL: São Paulo State, Cofia, Jardim Barbacena; 8 February 2019, 1629; R. Lazaro. Host: *Phoneutria* ?*keyserlingi*, subadult female. The wasp ascended a vertical wall after dragging her prey backwards through dense grasses. She grasped the immobilized armed spider by the patella of its left pedipalp with her mandibles and kept it in a dorsal side upward position (Lazaro 2019b).

ECUADOR: Azuay Province, Cuenca; 2 February 2019; J. Garcia. Host: *Cupiennius coccineus* F. O. Pickard-Cambridge (Trechaleidae), adult female. The wasp dragged the paralyzed banana spider through low vegetation on the ground, dorsal side upward, grasping its left pedipalp with her mandibles (Garcia 2019). This host record is listed as *Tachypompilus* sp. in Kurczewski et al. (2020b).

MEXICO: Guanajuato State, Comonfort; 29 August 2020, 1648; E. Ramírez Rodríguez. Host: *Zorocrates fuscus* Simon (Zoropsidae), adult or subadult female. The wasp grasped the immobilized false wolf spider by the patella of its right pedipalp with her mandibles and dragged it backwards, dorsal side upward, across a patio (Ramírez Rodríguez 2020).

MEXICO: México State, Nezahualcóyotl, Aragon Valley; 9 November 2021; A. A. Wetland. Host: *Zorocrates fuscus*, adult or subadult female. Two photos show the wasp dragging the paralyzed false wolf spider across the ground, dorsal side upward, grasping its left pedipalp with her mandibles (Wetland 2021).

MEXICO: Oaxaca State, San Pablo Etla (Valles Centrales Region); 9 November 2020, 1751; N. R. Jenzen-Jones. Host: *Zorocrates fuscus*, adult or subadult female. The immobilized false wolf spider was grasped by the patella of its left foreleg with the wasp's mandibles and pulled backwards, dorsal side upward, across a patio (Jenzen-Jones, Churchlands, Western Australia, Australia, pers. comm. 2020).

Tachypompilus ferrugineus bicolor (Banks)

DOMINICAN REPUBLIC: Independencia Province, Duvergé, Vila Barrancoli; 7 July 2018, 1521 PDT; B. A. Roy. Host: *Heteropoda venatoria* Linnaeus (Sparassidae), juvenile [det. A. Tosto and R. C. West]. The wasp is grasping the immobilized huntsman spider midway on its right pedipalp with her mandibles, while pulling it backwards, dorsal side upward, vertically up a debarked upright post with a natural cavity part way up. Two other photographs show the spider positioned inside of the cavity, apart from the wasp. It is unknown whether the wasp placed the spider in the cavity in order to rest, after the strenuous prey transport, or whether she put it there in order to lay an egg on its abdomen and conceal it with debris (Roy 2021).

Tachypompilus mendozae (Dalla Torre)

ARGENTINA: La Rioja Province, Chilecito, El Portezuela Municipal Park; 6 November 2020, 2024; N. Greefpool. Host: *Xenoctenus marmoratus* Mello-Leitão (Xenoctenidae), adult male [det. N. Ferretti, CERZOS-CONICET, UNS, Bahia Blanca, AR; D. Fernanda Silva Davila, UNMSM, Lima, PE], 14 mm long (wasp, 14 mm). The wasp grasped the spider's right pedipalp near the end with her mandibles and dragged it backwards, dorsal side upward, across the outer concrete sidewalk of the park. She then pulled it across cobbled rock into a hole at the base of a low retaining wall (Greefpool 2020a; Greefpool, Chilecito, La Roija, AR, pers. comm. 2020). Greefpool (2020b) photographed this wasp or another female without prey at the same location on 13 November 2020, 2034 hours, searching for openings (presumably a nesting site) in the retaining wall (Greefpool pers. comm. 2020).

BOLIVIA: Santa Cruz Department, Santa Cruz; 31 December 2004, 0956 CET; J-P. Boerekamps. Host: *Ctenus* sp., adult male. The wasp grasped the patella of the immobilized wandering spider's left pedipalp with her mandibles and, maintaining it dorsal side upward, walked backwards on the substrate (Boerekamps 2004).

COLOMBIA: Cundinamarca Department, Nocaima; 8 November 2020; O. Encisoa. Host: *Ancylometes* sp. (Ctenidae), adult or subadult female. The wasp examined the immobilized wandering spider with her antennae as it laid, dorsal side upward, on the ground (Encisoa 2020a).

COLOMBIA: Cundinamarca Department, San Bernardo; 23 May 2020, 1544; O. Martinez. Host: Unidentified species (Anyphaenidae), adult or subadult female [det. A. Brescovit, S. C. Crews]. The wasp grasped the immobilized ghost spider near the end of its left pedipalp and dragged it, dorsal side upward, backwards across the ground (Martinez 2020).

PERU: Ancash Department, Juipon (2600 m elevation); 24 February 2015; S. Dickson. Host: *Acanthogonatus* ?*incursus* (Chamberlin) (Pycnothelidae) [det. P. A. Goloboff, CONICET. Buenos Aires, AR), subadult female. The wasp pulled the paralyzed pycnothelid spider, dorsal side upward, across the ground and up a vertical adobe wall and into a hole, grasping its left pedipalp with her mandibles (Dickson 2015).

***Tachypompilus pallidus* (Banks)**

BRAZIL: Goiás State, Sierra dos Pireneus; 9 February 2020; L. Vitorino. Host: *Phoneutria* ?*eickstedtae* Bertani, subadult female. The wasp grasped the immobilized armed spider near the base of its right pedipalp with her mandibles and dragged it backwards across the ground and debris, dorsal side upward (Vitorino 2020).

***Tachypompilus unicolor cerinus* Evans**

COLOMBIA: Choco Department, Playa El Almejal; 12 June 2020; E. Zaupa. Host: *Cupiennius getazi* Simon (Trechaleidae), adult or subadult female. Three videos show the wasp dragging the immobilized banana spider backwards on the ground. The wasp maintained the spider dorsal side upward while grasping its left pedipalp with her mandibles. Suddenly, a squareback marsh crab [*Armases* ?*angustum* (Smith)] (Sesarmidae) emerged from a ground hole and, using its claw, grasped the spider from the wasp. The wasp made several attempts to retake the spider from the crab to no avail. The crab simply brushed the wasp away with its walking leg. The crab disappeared into a crevice on the ground holding the spider with its claw and the wasp flew away (Zaupa 2020).

***Tachypompilus vulpes* (Dalla Torre) (det. M. Buck)**

BRAZIL: Mato Grosso State, Novo Mundo, Cristalino Jungle Lodge; 8 December 2020, 1718; S. Dantas. Host: *Nolavia* sp. (Sparassidae), adult female [det. C. A. Rheims, Instituto Butantan, Laboratório Especial de Coleções Zoológicas, São Paulo, Brasil]. The spider wasp and huntsman spider were both photographed in a dorsal side upward position on a shellacked piece of plywood. The wasp's wings are raised at a ~45° angle upward and outward above the dorsum (Dantas 2020b).

BRAZIL: Pará State, Santarém, Bosque Santa Lucia; 30 July 2014, 8 December 2017; S. W. Alexander. Host: *Sadala* sp. (Sparassidae), adult or subadult female [det. C. A. Rheims 2020 pers. comm.]. Three photographs taken at different times and during different years show two wasps (1) grasping an immobilized huntsman spider by its left pedipalp, dorsal side upward, with the mandibles and, with it in tow, walking backwards; (2) grasping the paralyzed huntsman spider with the mandibles by the tibia of its third leg; and (3) standing next to different huntsman spiders after stinging and immobilizing them. Both wasps' wings are raised at a ~45° angle upward and outward above the dorsum (Alexander 2014, 2017).

BRAZIL: State of São Paulo, Guapiaçu; 26 November 2018; E. Matos. Host: *Caayguara* sp. (Sparassidae) [det. C. A. Rheims 2020 pers. comm.], adult or subadult female. The wasp pulled the paralyzed huntsman spider up a vertical wall, dorsal side upward, grasping its right chelicera with her mandibles (Matos 2018).

BRAZIL: Sáo Paulo State, Ubatuba; 6 January 2021, 1401; M. Mariquitto. Host: *Polybetes* ?*rabidus* (Keyserling), adult female. The spider is 1.04 X the wasp in body length. The wasp stood on a wooden plank with wings raised at a ~45° angle upward and outward above the dorsum, facing the photographer, while the immobilized huntsman spider laid nearby on the plank, dorsal side upward, with legs spread outward (Mariquitto 2021).

***Tachypompilus* spp.**

BRAZIL: Rio Grande do Sul State, Esmeralda; 5 November 2021; E. Gasperin. Host; *Lycosa* sp., adult or subadult female. The wasp stood atop the immobilized wolf spider, head above abdomen, after stinging it. The wolf spider laid motionless in a ventral side upward position with legs spread outward (Gasperin 2021).

BRAZIL: São Paulo State, São Paulo, Serra da Cantareira; 31 January 2021; S. Rangel. Host: *Selenops* sp. (Selenopidae) [det. S. C. Crews, R. C. West], adult or subadult female. The wasp carried the paralyzed wall crab spider down an exterior wooden manmade structure, dorsal side upward, grasping its right pedipalp with her mandibles (Rangel 2021).

***Xerochares expulsus* (Schulz)**

ARIZONA: Pinal County, Superior, Boyce Thompson Institute; 21 February 2022, 1657 MST; K. Harrington, Host: *Olios giganteus* Keyserling (Sparassidae), juvenile. The wasp was photographed standing beside the immobilized prey with raised wings, examining it as it laid on the ground, and transporting it backwards grasping the trochanter of its left foreleg with her mandibles (Harrington 2022).

MEXICO: Sinaloa State, Angostura Municipality, Angostura; 14 June 2021; M. A. Sanzon. Host: *Curicaberis* ?*culiacan* Rheims (Sparassidae), adult female. The wasp straddled the immobilized huntsman spider, dorsal side upward, grasping its left pedipalp with her mandibles as she rested atop it on a dried leaf (Sanzon 2021; Sanzon, Polytechnic University of Évora Valley, Sinaloa, Mexico).

***Ammosphex michiganensis* (Dreisbach) (det. M. Buck)**

CANADA: Alberta Province, NE of Devon; 15 May 2021, 1734 MDT; M. Buck. Host: *Xysticus emertoni* Keyserling (Thomisidae), adult female [det. J. Pinzon, Natural Resources Canada–Canadian Forest Service, Edmonton, AB]. Wasp and spider are deposited in the Royal Alberta Museum, Edmonton, AB (Buck 2021).

Tribe Priochilini (Waichert et al. 2015)

***Priochilus gloriosum* (Cresson)**

COLOMBIA: Santander Department, Cimitarra; 22 February 2021, 3:27 PM; V. Moncada. Host: Unidentified species (Sparassidae), subadult female. The wasp stood beside and examined the immobilized huntsman spider with her mouthparts and antennae as it laid on the ground, dorsal side upward. She then grasped the spider's right chelicera with her mandibles and, holding it ventral side upward, dragged it backwards across the ground (Moncada 2021).

***Priochilus regius* Banks**

BRAZIL: Mato Grosso State, Novo Mundo, Cristalino Lodge; 30 November 2020; S. Dantas. Host: *Ctenus* sp., immature [det. R. Bertani]. The wasp examined the immobilized wandering spider with her antennae and mouthparts as it was positioned both dorsal and ventral side upward. She then dragged the spider backwards, dorsal side upward, across the substrate, grasping the patella of its second left leg with her mandibles (Dantas 2020a). Previous host records for this species are from Ecuador and Peru in Kurczewski et al. (2020b).

***Priochilus sericeifrons* (Fox)**

COLOMBIA: Cundinamarca Department, Nocaima; 6 December 2020, 1214 EST; O. Encisoa. Host: ?*Spinoctenus* sp. (Ctenidae), adult or penultimate male. The wasp examined the immobilized wandering spider with her mouthparts and antennae as is laid, dorsal side upward, on the pavement (Encisoa 2020b).

***Priochilus splendidulus* (Fabricius)**

PANAMA: Panamá State, Semaphore Hill, Canopy Tower; 16 July 2014, 1643 CEST; G. Mainguy. Host: *Melpomene* ?*panamana* (Petrunkevitch) (Agelenidae), adult or subadult female. The wasp stood beside the recently immobilized grass spider as it laid on the ground, ventral side upward with legs spread outward, and examined it with her antennae (Mainguy 2021).

Discussion

Calopompilus is mainly a Nearctic genus with outlier species in Mexico, Guatemala and Honduras (Roig-Alsina 1988; Waichert et al. 2014). There are currently nine described species in the genus (Waichert et al. 2014). Little is known about the host preferences or nesting behavior of *Calopompilus* species. *Calopompilus pyrrhomelas* (Walker) is reported to capture and oviposit on *Antrodiaetus pacificus* (Simon) and *A. pugnax* (Chamberlin) (Antrodiaetidae) (folding trapdoor spiders) and *C. heiligbrodtii*, on *Eucteniza relata* (O. P.-Cambridge) and *Myrmekiaphila comstocki* Bishop and Crosby (Euctenizidae) (wafer-lid trapdoor spiders) (Krombein 1979; Kurczewski et al. 2020b). We introduce herein the first three host records of Nemesiidae (tube-web trapdoor spiders

or false tarantulas), *Calisoga longitarsis*, for *C. pyrrhomelas*. *Calopompilus setaerotundus* is endemic to Central America (Honduras) (Waichert et al. 2014), and provisions with *Longilyra* sp. (Theraphosidae) (Kurczewski et al. 2020b). *Calopompilus* species appear to selectively capture mygalomorph spiders. However, the smaller *Calopompilus* species from the eastern U. S. have yet to be studied.

Little is known about the newly described South American genus *Herbstellus* (Wahis 2002). The pronotum is large and elongate, the forefemur of the female is swollen, the terminal spines of the female's forebasitarsus and those of the other foretarsomeres are very long and, together, form a comb, and the inner face of the apical foretarsomere is spiny. These morphological modifications in the female are, likely, adaptations for removing the trapdoor and entering the underground burrows of Nemesiidae. The enlarged pronotum and swollen forefemora provide increased internal area for muscle attachment. The comb or rake of the forelegs of the female is used for sweeping sand over the closed burrow once the nest is finished. The description for *H. pachylopus* nicely illustrates the use of the foreleg modifications in opening the spider's trapdoor and the hindlegs in bracing it open while pulling the immobilized spider into its own burrow (Kurczewski et al. 2020b). Based on the unique morphology of the female it is likely that all species of *Herbstellus* are predators of Nemesiidae or trapdoor families of Mygalomorphae. *Diplothelopsis* ?*bonariensis* Mello-Leitão is the first host record for the genus *Herbstellus* and *H. pachylopus* (Kurczewski 2020b). We introduce the nemesiid *Lycinus* sp. as a new host genus and species in this paper.

The species of tarantula hawk-wasps in the genus *Pepsis* are rather selective of the host genera and species of tarantulas (Theraphosidae) and other families of spiders they hunt and capture (Hurd 1952; Vardy 2000; Kurczewski et al. 2020b). Such is the case with species in the *Pepsis elevata* species group (Vardy 2002). *Pepsis marginata* Palisot de Beauvois provisions with theraphosids in the genera *Phormictopus* and *Cyrtopholis* in Cuba and Puerto Rico, respectively (Kurczewski et al. 2020b). *Pepsis terminata* Dahlbom captures the theraphosid genus *Acanthoscurria* in Martinique and St. Lucia and *Spinotibiapalpus trinitatus* (Pocock) (Theraphosidae) in Trinidad (Kurczewski 2020b). We report herein *Acanthoscurria* ?*natalensis* and *Pamphobeteus* sp. as a new host species and genus of *Pepsis terminata* in Brazil and Colombia; ?*Idiops* sp. (Idiopidae) as a new host family, genus and species of *P. terminata* in Brazil; *Aphonopelma seemanni* as a new host species for *P. mexicanus* and *Tapinauchenius polybote* as a new host genus and species for *P. terminata* in St. Lucia. We also introduce a new host spider family, Pycnothelidae, for *Pepsis completa* in the *Pepsis montezuma* species group in Brazil and *Homoeomma chilensis* and *Thrixopelma* sp. as a new host genera and species for *P. limbata* in Chile, and a second host record of *Diplura nigra* (Dipluridae) for *Pepsis martini* in the *Pepsis viridis* species group. We present the first host records for *Pepsis cassiope* (Ctenidae); *P. petitii* (Dipluridae); *P. plutus* (Ctenidae) and *P. egregia* (Dipluridae). We add Nemesiidae as a new host family to the prior host families of Theraphosidae, Dipluridae and Ctenidae for *P. completa* (Kurczewski et al. 2020b).

Priocnessus is a Neotropical genus with species intrusions into the Nearctic Region. The genus is much larger in the Neotropics than the small number of described species (13–17) indicates (Townes 1957, Waichert et al. 2012). The current problematic taxonomic state of the genus makes it difficult to apprise its phylogenetic position within the tribe Pepsini (Waichert et al. 2012; Pitts 2018 pers. comm.). Some species of *Priocnessus* are highly selective of their host spiders while other species are less restrictive in host selection: *P. nebulosus* (Dahlbom) (Agelenidae) (Evans and Yoshimoto 1962); *P. prominens* Dreisbach (Ctenidae, Sparassidae) (Cambra-Torok et al. 2004; Kurczewski et al. 2020b); *P. neotropicalis* (Cameron) (Ctenidae) (Cambra-Torok et al. 2004); *P.* sp. (Agelenidae) (Wasbauer 1995) and *P. vancei* Waichert and Pitts (Dipluridae, Sparassidae) (Kurczewski et al. 2020b). We introduce, herein, Ctenidae as a first host family for *P. sericeus*; Euagridae is a new host family for *P. hurdi* (2 separate records). *Priocnessus* species appear similar in nesting behavior to species of *Entypus* in modifying suitable-size holes among irregularities in the ground (Kurczewski, pers. obs. based on *P. nebulosus*). The method of prey transport of *P. nebulosus* whereby the wasp straddles the spider dorsal side upward, grasps a chelicera with her mandibles, and walks forward on the ground without amputating the prey's legs at the coxa-trochanter joints is highly unusual in the family Pompilidae (Evans and Yoshimoto 1962).

The genus *Entypus* is restricted to the Western Hemisphere and has about 30 species. As in species of *Pepsis* and *Hemipepsis*, many species of *Entypus* have orange wings and orange/yellow antennae (Townes 1957). However, unlike *Pepsis* and *Hemipepsis* and because of their smaller size, species of *Entypus* do not hunt and capture tarantulas and other Mygalomorphae. All 20th century host records for species of *Entypus* from the Americas are

for wolf spiders (Lycosidae), with all host genera being listed as "*Lycosa*" (Janvier 1930; Evans and Yoshimoto 1962; Krombein 1979). Kurczewski and Edwards (2012) and Kurczewski et al. (2017) added terrestrial and arboreal fishing spiders (Pisauridae) of the genus *Dolomedes* to the known list of prey for *E. fulvicornis* (Cresson). Kurczewski et al. (2020b) added Trechaleidae, Ctenidae, Pisauridae, Sparassidae, Zoropsidae and Miturgidae as new host families for *E. unifasciatus* (Say). Roig-Alsina (1988), Contreras (2017) and Kurczewski et al. (2020b) enlarged the known host species list for *Entypus* with the addition of *Tigrosa* sp. (Lycosidae), *Syspira* sp. (Miturgidae) and *Zorocrates fuscus* (Zoropsidae) for *E. aratus* (Townes); *Lycosa* sp. (Lycosidae) for *E. dumosus* (Spinola); *Rabidosa rabida* (Lycosidae) for *E. fulvicornis*; *Rabidosa rabida* (Lycosidae) and *Agelenopsis* ?*naevia* (Agelenidae) for *E. magnus*; *Hogna* ?*reducta* (Lycosidae) for *Entypus ochrocerus* Dahlbom and *Lycosa erythrognatha* Lucas, *L. implacida* Nicolet, *L. pampeana* Holmberg, *Lycosa* spp., *Schizocosa malitiosa* (Tullgren) and unidentified species of Ctenidae for *E. ferruginipennis* (Haliday). We introduce *Tigrosa georgicola* and *Lycosa* sp. as new host species for *E. magnus* and *E. unifasciatus urichi*, respectively, and *Geolycosa wrighti* (Lycosidae) as a new host family, genus and species for *E. aratus*. We also add a new host family, genus and species, *Agelenopsis naevia* (Agelenidae) for *E. fulvicornis*.

The genus *Pompilocalus* has approximately 55 species in South America, their geographic distribution ranging from Colombia to Chile and Argentina (Roig-Alsina 1988, Da Silva et al. 2015). No host spiders were associated with *Pompilocalus* species in the literature, except for *P. hirticeps* capturing "jeunes Mygale" in Chile (Janvier 1930), until Kurczewski et al. (2020b) reported host spider species for four species of *Pompilocalus*. *Pompilocalus hirticeps* (Guérin) captures the following host genera in Chile: *Acanthogonatus* (Nemesiidae); *Euathlus*, *Grammostol*a, *Phrixotrichus*, and *Thrixopelma* (Theraphosidae). *Pompilocalus caupolican* Roig-Alsina provisions with the theraphosid genera *Euathlus* (in part, formerly *Paraphysa*), *Grammostola* and *Phrixotrichus* in Chile. *Pompilocalus nemequene* preys on unidentified Ctenidae in Colombia and *P. vinicolor* (Packard) captures *Tapinauchenius* (Theraphosidae) in Ecuador. We introduce a new host species of Ctenidae, *Phoneutria boliviensis*, for *P. nemequene* in Bolivia.

The genus *Sphictostethus* has approximately 30 highly colorful species distributed disjunctly in eastern Australia, Tasmania, New Zealand, and Chile. The life histories and nesting behavior of three New Zealand species have been studied in detail by Harris (1999). *Sphictostethus nitidus* (Fabricius) makes single or multi-celled nests in soil; *S. calvus* Harris nests in rotting logs and tree trunks, closing the nests with wood fibers, moss, bark, and spider webs; and *S. fugax* (Fabricius) nests in abandoned beetle holes in trees, closing the nests with molded mud. The three species do not amputate the spider's legs and often drag the paralyzed prey backwards by the base of its 3rd coxa. All three species are strongly polyphagous in host selection: *S. nitidus*—Agelenidae, Amphinectidae, Desidae (Intertidal spiders), Dipluridae (curtain-web spiders), Lycosidae, Miturgidae, Nicodamidae (Red and black spiders), and Stiphidiidae (sheetweb spiders); *S. calvus*—Agelenidae, Amphinectidae, Clubionidae, Desidae, and Miturgidae; and *S. fugax*—Agelenidae, Clubionidae, Cycloctenidae, Desidae, Gnaphosidae, Pisauridae, and, Stiphidiidae (Harris 1999). Contreras and Téller (2017) recently published the first host record for *S. striatulus* Roig-Alsina, *Tomopisthes horrendus* (Nicolet) (Anyphaenidae), a new host family for *Sphictostethus* in South America. Kurczewski et al. (2020b) introduced first host family records for the Chilean *S. gravesii* (Nemesiidae or tube trapdoor spiders); *S. isodontus* (Ctenidae or wandering spiders and Desidae or intertidal spiders); *S. striatulus* (Nemesiidae) and *S. xanthopus* (Anyphaenidae, Ctenidae and Lycosidae). We include Anyphaenidae and Theraphosidae, herein, as first time (or first-time) host families for *S. striatulus*.

The subgenus *Priocnemissus* is Holarctic in geographic distribution with three species inhabiting the United States (Townes 1957). There are no external morphological characteristics for any of the U. S. species that would readily identify this subgenus as capturing trapdoor spiders. All three species have strong, suberect lobe-like teeth on the upper edge of the hind tibia that facilitates soil removal during burrow excavation (F. E. Kurczewski 2020 pers. obs.). Wasps of this subgenus excavate multicellular nests, often modifying preexisting cavities in the soil (Evans 1997). *Priocnemis* (*Priocnemissus*) *minorata* Banks, a predominantly eastern U. S. species, is strongly polyphagous in host selection, provisioning its nests with no less than eight families of araneomorph spiders (Kurczewski and Edwards 2012; Kurczewski and Kiernan 2015; Kurczewski et al. 2017). Contrastingly, all host records for *P.* (*Priocnemissus*) *oregona* from the western U. S. indicate a selectivity for families of Mygalomorphae (Coyle 1971; Hurd and Wasbauer 1956; Wasbauer and Powell 1962; Kurczewski and West 2021 pers. obs.). *Priocnemis* (*Priocnemissus*) *nigripes* (Cresson), another eastern U. S. species, likewise, provisions only with

Mygalomorphae (Kurczewski and West 2021 pers. obs.). Interestingly, all three Nearctic species of *Priocnemissus* are vernal in nesting activity, being confined to the spring months and relatively cool weather (Townes 1957). In this paper we substantiate the mygalomorph *Promyrmekiaphila clathrata* as a host for *P. oregona*.

Caliadurgus is a relatively diminutive genus of small to medium-sized black wasps that are pattered with red markings. The species inhabit North America, South America and Europe. The Nearctic and Palearctic species provision their nests with a variety of orb-weaving spiders (Araneidae) (Richards and Hamm 1939; Krombein 1979; Kurczewski and Edwards 2012; Gros and Durand 2013; Kurczewski et al. 2017, 2020b). In addition, in Europe, this species provisions with *Meta* spp. (Tetragnathidae) (Evans and Yoshimoto 1962; Gros and Durand 2013). *Caliadurgus fasciatellus* is highly unusual among spider wasps in temporarily suspending the immobilized spider from a plant or other object using the spider's own silken threads while the wasp excavates her burrow (Evans and Yoshimoto 1962, Kurczewski and Spofford 1985). We add in this study the first host record for the South American *Caliadurgus maculatellus*, *Larinia* sp. (Araneidae).

The genus *Epipompilus* contains 16 species in the Western Hemisphere (Evans 1966, 1967, 1976). *Epipompilus aztecus*, a highly attractive and distinctive species, ranges from Texas to Brazil (dos Santos and Noll 2010; Fensler, Jenera, OH, 2020 pers. comm.). We introduce herein *Ariadna pilifera* (Segestriidae) as a new host family, genus and species for *E. aztecus* in Mexico. The biological knowledge of the genus *Epipompilus* in the Americas is limited. Segestriidae is reported as a host spider family for *Epipompilus platensis* (Roig-Alsina and Barneche) in Argentina (Roig-Alsina and Barneche 2017). *Ariadna mollis* (Holmberg) represents the first host record for *Epipompilus excelsus* (Bradley) as a koinobiont ectoparasitoid in Brazil (Villaneuva-Bonilla et al. 2018). *Ariadna boliviana* Simon is reported as a host spider for *Epipompilus tucumanus* Evans in Brazil (Trad et al. 2018). The wasp was observed on a trail walking sideways or backwards with the immobilized spider, grasping its spinnerets with her mandibles.

There are more than 100 species of *Auplopus* in the Americas, mostly in South America, and many of them remain undescribed. Several of the 10 Nearctic species are strongly polyphagous in host selection (Krombein 1979; Kurczewski and Edwards 2012; Kurczewski and Kiernan 2015; Kurczewski et al. 2017, 2020b). The same degree of polyphagy characterizes the Palearctic species of *Auplopus* (Richards and Hamm 1939; Grandi 1961; Gros and Durand 2013). Species of *Auplopus* are rather unique in that they construct mud cells in concealed places and amputate the spider's legs and, sometimes, pedipalps at the coxa-trochanter joints in order to fit the prey into the cell and assist in carriage. Usually, all of the spider's legs are cut off. When some of the legs are left intact it is often the anterior ones since the spider is carried forward by the spinnerets and these are the least likely to interfere with forward transport. Rarely, a spider is found with all legs intact (Evans and Yoshimoto 1962). We introduce the first host record for *Auplopus viridis* (Anyphaenidae) and new host genera and species for *A. bellus* (Anyphaenidae); *A. militaris* (Salticidae) and *A. pratens* (Salticidae). Thomisidae (*Misumena vatia*) is a new host family for *Auplopus architectus metallicus*.

Ageniella is a diverse and poorly studied genus of Ageniellini with about 200 names in eight subgenera, three of them being endemic to the Neotropical Region (Waichert and Pitts 2012; Waichert et al. 2018). The Nearctic species of *Ageniella* are rather selective of their host spiders at the family level (Krombein 1979; Kurczewski and Kurczewski 1987). Such prey specificity is connected with habitat-specificity in certain species (Kurczewski and Kurczewski 1987). Some species of *Ageniella* are psammophilous, some are silvicolous, *A.* (*Leucophrus*) *fulgifrons* (Cresson) uses pre-existing burrows in fields and meadows (Kurczewski and Kurczewski 1987), *A.* (*Ageniella*) *evansi* is cavernicolous (Kurczewski 1995) and *A. flavipennis* is a parasocial mud-dauber (dos Santos et al. 2017). Some Nearctic species of *Ageniella s. str.* excavate short nests in the soil from preexisting mammal burrows or cavities (Evans and Yoshimoto 1962; Kurczewski and Kurczewski 1987). In this study we introduce the first host records for *A.* (*Priophanes*) *basirufa* (Theridiidae) and *A.* (*Priophanes*) *rufofemorata* (Thomisidae); a new salticid host record for *A.* (*Priophanes*) *comes*; two new host families for *A.* (*Ageniella*) *coronata* (Zoropsidae, Corinnidae); two ctenid host records for *A.* (*Alasagenia*) *flavipennis*; a new host family (Anyphaenidae) for *A.* (*Ameragenia*) *ursula* and a new host family for *A.* (*Priophanes*) *arcuata* (Lycosidae). dos Santos et al. (2017) first reported on the nesting behavior of *A. flavipennis* and it host Ctenidae. Three species in the subgenus *Priophanes*, including *A. arcuata*, grasp the host spider's spinnerets with the mandibles and hold the spider venter to venter (Kurczewski et al. 2012, 2020b), whereas *A.* (*Priophanes*) sp. [undescribed] and species in some other subgenera of *Ageniella*

grasped the host spider by a chelicera and straddle the prey dorsal side upward (Evans and Yoshimoto 1962; Kurczewski and Kurczewski 1987). In either case the wasp walks or attempts to fly forward with the host spider.

Eragenia species are rather rare, small to moderate-size (7–15 mm) spider wasps in the tribe Ageniellini. The genus contains 16 described species and, until recently, was neglected (Waichert et al. 2014). Nesting and prey capture behavior in *Eragenia* species are not well known and there are few published descriptions (Carvalho-Filho et al. 2015). Females demonstrate plasticity in the pattern of amputation of all or some of the prey's legs (Kimsey 1980; Wilson and Pitts 2007). Several host araneomorph families are reported in the literature for *Eragenia* species: *E. amabilis* (Corinnidae, Segestriidae) (Kurczewski et al. 2020b, this study); *E. coerulipes* (Smith) (Corinnidae) (Kurczewski et al. 2020b); *E. congrua* (Fox) (Corinnidae) (Carvalho-Filho et al. 2015; Kurczewski et al. 2020b); *E. dentata* Waichert and Pitts (Corinnidae) (Kurczewski et al. 2020b); *E. micans* (Fabricius) (Corinnidae, Ctenidae, Miturgidae) (Kimsey 1980; Waichert et al. 2014; Kurczewski et al. 2020b); *E. tabascoensis* (Cameron) (Miturgidae) (Waichert et al. 2014); and *E. oliva* Waichert and Pitts (Ctenidae, Pisauridae) (Wilson and Pitts 2007; Waichert et al. 2014). *Eragenia congrua* was noted nesting in a hole at the base of a tree and provisioning with both amputated and non-amputated spiders (Carvalho-Filho et al. 2015). The spiders, usually with all legs cut off at the coxa-trochanter joints, were carried forward, dorsal side upward, and grasped by the base of their chelicera, as in many species of *Ageniella* (Evans and Yoshimoto 1962; Kurczewski and Kurczewski 1987). This is the customary manner of prey transport in this genus (Kurczewski et al. 2020b). Nesting in this species is gregarious with several females occupying in the same area over successive days (Carvalho-Filho et al. 2015).

Priocnemella is a small Neotropical genus in the tribe Ageniellini containing rather large wasps with black integument, large clypeus and yellow wings (Waichert et. al. 2014). Little is known about their nesting behavior or prey preferences. Kimsey (1980) noted *P. rufothorax* (Banks) transporting an immobilized *Acanthoctenus* sp. (Acanthoctenidae) with all its legs intact. Cambra-Torok et al. (2004) reported several paralyzed individuals of *Cupiennius* (Trechaleidae) and Ctenidae being carried by *P. fairchildi* (Banks), and some spiders with a few or all legs amputated at the coxa-trochanter joints. We introduce the second host record for *P. hexagona* (Fox) with an unidentified species of Ctenidae with all legs cut off at the coxa-trochanter joints, a characteristic behavior of most species of Ageniellini (see Kurczewski et al. 2020b), and nesting in a hole in the ground.

Enbanksia is currently a Neotropical subgenus in the diverse genus *Agenioideus* (Evans 1965). James P. Pitts is working on a revision of this subgenus, in which he will elevate it to generic level. *Enbanksia* is most closely related to *Tastiotenia* and is basal in the Pompilini, not to the remaining subgenera of *Agenioideus*, based on molecular data (Pitts 2021 unpub. data). Evans (1965) described the subgenus based on three South American species and Wasbauer and Kimsey (1985) mentioned two Brazilian and one Panamanian species in their study of the California Pompilinae. Nothing is known about the biology of this subgenus. Our host record for *Enbanksia a. accoleus* is the only host information for this rare subgenus.

The genus *Sericopompilus* is represented by three species in North America (Evans 1950, 1966). *Sericopompilus neotropicalis*, an attractive species, occurs through the southern tier of states from California to Florida, Kansas, Georgia and the Carolinas southward to Costa Rica (Evans 1966; Wasbauer and Kimsey 1985). The nesting biology of this species has been little studied. There are three valid published host records: *Misumenops* sp. (Thomisidae) (Wasbauer 1982); *Latrodectus mactans* (Fabricius) (Theridiidiidae) (Kurczewski and Edwards 2012); and *Neoscona oaxacensis* (Keyserling) (Araneidae) (Kurczewski et al. 2020b). The host record for *Phidippus clarus* (Salticidae) in Kurczewski et al. (2017) is based on the misidentification of the wasp and is incorrect. We introduce herein *Eriophora edax* (Araneidae) as a new host genus and species. Host selection in this species is variable including unrelated families of araneomorph spiders similar to its congener *S. apicalis* (Say) (Kurczewski and Edwards 2012), except that three of four host records are for web-making spiders.

The genus *Poecilopompilus* contains 10 species in the Americas (Colomo de Correa 1998). The species provision their nests with relatively large orb-weavers of the families Araneidae and, rarely, Nephilidae: *P. algidus* (Smith), *P. i. interruptus* (Say), *P. mixtus*, *P. rubricatus* and *P.* sp., but *P. decedens*, *P. interruptus dubitatus* and *P. mixtus* also captures crab spiders (Thomisidae) (Evans 1950; Evans and Yoshimoto 1962; Alayo 1976; Armas and Alayón 1976; Kurczewski 1981; Alayón 1982; Sanchez and Genaro 1989; Martins 1991; Genaro 1993; Cambra-Torok et al. 2004; Kurczewski and Edwards 2012; Kurczewski and Kiernan 2015; Kurczewski et al. 2013, 2017, 2020b). We introduce herein as new host genera and species for the genus *Poecilopompilus*: *Metazygia* sp. (Araneidae) and *Mecaphesa* ?*californica* and *Misumena vatia* (Thomisidae) for *P. mixtus*, *Misumenops* sp. and

Misumena sp. (Thomisidae) for *P. decedens*, *Argiope argentata* (Araneidae) for *P. rubricatus*, *Misumessus quinteroi* (Thomisidae) for *P. interruptus dubitatus*, and *Araneus* ?*workmani* (Araneidae) for *P.* sp. Salticidae is a new host family for *P. mixtus* which also captures Araneidae and Thomisidae, and amputation of the prey's legs to facilitate forward transport, as in the tribe Ageniellini, is also unique in this species. Species of *Poecilopompilus* frequently cache their paralyzed spider on vegetation some distance from the nest and interrupt nest excavation one or more times to move the spider closer to the opening (Martins 1991). Females of *P. algidus* attempt to conceal the nest, when finished, by bringing debris with their mandibles and placing it on the area of the closed entrance, thereby making it indistinguishable from its surroundings (Kurczewski 1981; Martins 1991).

There are 14 relatively large species of *Tachypompilus* in the Americas (Fernández 2000). The different species demonstrate similar behavioral components, often nesting near or inside man-made structures (Rau and Rau 1918; Ibarra-Grasso 1938; Strandtmann 1953; Evans and Yoshimoto 1962; Genise 1983; Kurczewski 1989, 2010; Martins 1991; Genaro 1993; Barthélémy 2010; Santos Murgas et al. 2018; Kurczewski et al. 2020b). The host spiders of the American *Tachypompilus* species are mostly relatively large adult or subadult females of vagrant, cursorial-hunting families of Lycosoidea. Lycosidae (wolf spiders) is the predominant host spider family for *T. ferrugineus* and *T. u. unicolor* (Banks) in the U. S. and northern Mexico (Kurczewski 1981, 1989; Kurczewski and Edwards 2012; Kurczewski and Kiernan 2015; Kurczewski et al. 2017; Kurczewski et al. 2020a). *Tachypompilus u. unicolor* also captures Sparassidae in the U. S. (Kurczewski 2020b). *Tachypompilus ferrugineus* preys on semi-terrestrial and arboreal fishing spiders (Pisauridae) and, rarely, huntsman spiders (Sparassidae) in the U. S. and Central America (Kurczewski and Edwards 2012; Santos Murgas et al. 2018; Kurczewski et al. 2017, 2020a, b). This species captures mainly Trechaleidae (banana spiders) and Ctenidae (wandering spiders) in southern Mexico, Central America, and South America (Santos Murgas et al. 2018; Kurczewski et al. 2020a, b). *Tachypompilus ferrugineus* is also reported to provision with Agelenidae, Zoropsidae and Selenopidae (Kurczewski et al. 2020a, b). *Tachypompilus unicolor cerinus* Evans preys on Lycosidae in the U. S. and Mexico; Trechaleidae and Ctenidae in Mexico, Nicaragua, Costa Rica and Colombia; Zoropsidae in Mexico and Guatemala and Miturgidae and Sparassidae in the U. S. (Kurczewski et al. 2020b). In Brazil *T. xanthopterus* Rohwer stocks its nests exclusively with Sparassidae (Martins 1991; Kurczewski 2020b); *T. vulpes* captures Sparassidae with *Novalia*, *Sadala* and *Caayguara* being new host genera (this study) and *T. pallidus* provisions its nests with Ctenidae and *Phoneutria* ?*eickstedtae* being a new host genus and species (this study). In Argentina *T. erubescens* (Taschenberg) preys on Sparassidae (Holmberg 1878; Ibarra-Grasso 1938; Genise 1983; Kurczewski et al. 2020b); *T. banksi* captures Sparassidae and *T. erubescens* or *T. xanthopterus* preys on Selenopidae (Kurczewski et al. 2020b). *Tachypompilus mendozae* provisions mostly with Lycosidae and, rarely, Ctenidae in South America (Genise 1983; Kurczewski et al. 2020b). We introduce the new host families Pycnothelidae (Mygalomorphae), Xenoctenidae and Anyphaenidae for *T. mendozae* in this study. Pycnothelidae is a new host family for the family Pompilidae in the Western Hemisphere. This family of mygalomorph spiders was first described in 1917. It was downgraded to a subfamily of the funnel-web trapdoor spiders in 1985 but returned to family status in 2020 (World Spider Catalog 2020). Xenoctenidae is also a new host family for the family Pompilidae in the Western Hemisphere. Xenoctenidae is a family of araneomorph spiders separated from Miturgidae in 2017 (World Spider Catalog 2020). This rare small family of spiders is restricted to the Neotropics. We show a *T. ferrugineus affinis* female feeding on the hemolymph of a small, atypical host spider that was probably not used in provisioning.

X*erochares* is a rare monotypic genus with only a single species, *X. expulsus* (Schultz) (Evans 1951, 1966). *Xerochares expulsus* is known from southern New Mexico and Arizona, Baja California, western Mexico, and Guatemala (Krombein 1979). Morphologically, this genus is unique and does not resemble any other pompilid genus (Evans 1951, 1966). Next to nothing is known about the biology or nesting behavior of this genus and species. Our host records of *X. expulsus* with the immobilized sparassids, *Curicaberis* ?*culiacan* and *Olios giganteus*, are the first for this rare genus and species.

Ammosphex michiganensis is highly specific in host spider selection, all records for this spider wasp species being for the crab spider genus *Xysticus* (Thomisidae) (Kurczewski and Kiernan 2015). In other aspects of nesting behavior, *A. michiganensis* is typically pompiline in excavating its own burrow after capturing and paralyzing the host spider, hiding the spider in a concealed place, usually above ground, during burrow excavation, dragging the spider backwards on the ground by a leg base while holding it in an upright position, pulling the spider into the burrow by its spinnerets with the mandibles, and laying an egg on the paralyzed prey's abdomen (Kurczewski and

Snyder 1964; Kurczewski et al. 2017). We report in this study a new host species for *A. michiganensis*: *Xysticus emertoni* (Thomisidae).

Priochilus is a Neotropical genus with 22 described species (Evans 1966; Auko et al. 2013; Wasbauer et al. 2017). Nests are often many celled and individuals frequently nest in close proximity (Auko et al. 2013). Species use semi-liquid mud as the foundation for constructing a nest cell (Wasbauer et al. 2017). *Priochilus nubilis* Banks and *P. gloriosum* (Cresson) build cells of mud mixed with twig and leaf pieces, whereas *P. regius* and *P. captivum* (Fabricius) use mud and add leaf pieces to camouflage the cells (Williams 1928; Evans 1966; Cambra-Torok et al. 2004; Wilson and Pitts 2007). Moist cow manure covered with leaves near ground level comprised the nest structure of *P. captivum* in Panama (Cambra-Torok et al. 2004). *Priochilus* species stock a wide variety of host spider families in their cells: Araneidae, Ctenidae, Cyrtaucheniidae, Lycosidae, Salticidae, Scytodidae, Sparassidae, Theraphosidae and Trechaleidae (Wasbauer et al. 2017; Kurczewski et al. 2020b). *Priochilus captivum* has been studied somewhat thoroughly and its prey preferences vary according to location: Ctenidae, Salticidae, and Araneidae in Panama (Cambra-Torok et al. 2004); Salticidae in Trinidad and Tobago, West Indies (Starr 2012); Salticidae in Brazil (Auko et al. 2013); and Ctenidae in Brazil (Dantas 2019). Swing and Wasbauer (unpublished observation) found *P. regius* in Ecuador using Lycosidae and Cambra-Torok et al. (2004) reported *P. scrupulus* in Panama capturing Sparassidae. *Priochilus gloriosum* from Bolivia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Peru and Suriname, *P. gloriosum* or *P. multifasciatus* from Venezuela, *P. regius* from Ecuador and Peru, *P. sericeifrons* from Brazil and Costa Rica and *P. veraepacis* from Trinidad provisioned with Trechaleidae, Ctenidae, Sparassidae or Theraphosidae; while *P. scrupulum* from Ecuador captured Selenopidae (Cambra-Torok et al. 2004, Kurczewski et al. 2020b) and Scytodidae (Kurczewski et al. 2020b). In this study *P. regius* from Brazil and *P. sericeifrons* from Colombia both captured Ctenidae, *P. splendidulus* from Panama provisioned with Agelenidae, and *P. gloriosum* from Colombia preyed on Sparassidae.

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Literature Cited

Acuña ST. 2021. Avispa mata tarantulas. Available at https://www.instagram.com/p/CU7jwRZg5hK/. (Last accessed 14 November 2021).

Alayo PD. 1976. Introducción al estudio de los himenópteros de Cuba—Vespoidea. Serie Biologia 62: 1–37.

Alayón G. 1982. Observaciones conductuales en *Poecilopompilus mundus* (Cresson) (Hymenoptera: Pompilidae). Miscellania Zoologica 13: 3–4.

Alexander SW. 2014. We're almost there! Come with me! Available at https://bosque-santa.blogspot.com/2014/07/were-almost-there.html (Last accessed 31 January 2021).

Alexander SW. 2017. Spider wasp. Available at https://bosque-santa.blogspot.com/2017/12/spider-wasp.html (Last accessed 31 January 2021).

American Arachnological Society. 2003. Common Names of Arachnids. 2003. Fifth Edition. Available at https://www.americanarachnology.org/fileadmin/documents/arachnids/arachnid_common_names2003.pdf (Last accessed 15 December 2020).

Andrades H. 2020. Genus *Tachypompilus.* Available at https://www.inaturalist.org/observations/66834206. (Last accessed 21 December 2020).

Andrés G. 2021. *Batalla.* Available at https://www.flickr.com/photos/fotografiasgerald/with/50991254266/. (Last accessed 14 April 2021).

Armas LF de, Alayón G. 1976. Depredadores parasitoides de *Argiope trifasciata* (Araneae: Araneidae) en el sur de la Habana. Ciencia Biológica 16: 114–117.

Auko TH, Silvestre R, Pitts JP. 2013. Nest camouflage in the spider wasp *Priochilus captivum* (Fabricius, 1804) (Hymenoptera: Pompilidae), with notes on the biology. Tropical Zoology 26: 140–144.

Avenengo C. 2020. Tarantula hawk-Wasps and Allies (Subfamily Pepsinae). Available at https://www.inaturalist.org/observations/66039828. (Last accessed 15 December 2020).

Banks N. 1946. Studies of South American Psammocharidae. Part I. Bulletin of the Museum of Comparative Zoology at Harvard College 96: 311–525.

Baran S. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/88185282. (Last accessed 22 July 2021).

Barthélémy C. 2010. Preliminary description of the predatory and nesting behavior of *Tachypompilus analis* (Pompilidae: Pompilinae) in Hong Kong, China. Hong Kong Entomological Bulletin 4: 3–9.

Bedoya TC. 2020. *Pepsis caridei.* Available at https://www.inaturalist.org/observations/65771570. (Last accessed 5 December 2021).

Belgrano M. 2014. La avispa (San Jorge) y la araña. Available at https://www.flickr.com/photos/130186250@N07/15762656873/in/photostream. (Last accessed 14 January 2021).

Bell M. 2020. *Entypus unifasciatus.* Available at https://www.inaturalist.org/observations/61402698. (Last accessed 3 October 2020).

Berrio S. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/72842605. (Last accessed 5 April 2021).

Bertner P. 2021. Spider wasp (Pompilidae) with jumping spider prey. Available at https://www.flickr.com/photos/rainforests/51663333057/in/album-72157625475420352/. (Last accessed 15 December 2021).

Boerekamps J-P. 2004. Tribe Pompilini. Available at https://www.inaturalist.org/observations/69715438. (Last accessed 18 February 2021).

Brookshire T. 2020. False Tarantula (*Calisoga longitarsis*). Available at https://www.inaturalist.org/observations/60148424. (Last accessed 30 November 2020).

Buck M. 2021. *Ammosphex michiganensis***.** Available at https://www.inaturalist.org/observations/79085468. (Last accessed 19 May 2021).

Burini JP. 2009. Parasitism 1—3. Available at https://www.flickr.com/photos/techuser/albums/72157603166802298. Last accessed 29 March 2021.

Camancho PJC. 2021a. Hymenoptera > Pompilidae (??) – Avispón. Available at https://www.facebook.com/2701Pedro JoseCardonaCamacho/photos/366387848169534. (Last accessed 5 December 2021).

Camancho PJC. 2021b. Hymenoptera > Pompilidae (??) – Avispón. Available at https://www.facebook.com/2701Pedro JoseCardonaCamacho/photos/366387808169538. (Last accessed 5 December 2021).

Camancho PJC. 2021c. Hymenoptera > Pompilidae (??) – Avispón. Available at https://www.facebook.com/2701Pedro JoseCardonaCamacho/photos/366387771502875. (Last accessed 5 December 2021).

Cambra-Torok RA, Quintero Arias D, Miranda RJ. 2004. Presas, compartamiento de anidación y neuvos registros de distribución en Pompílidos Neotropicas (Hymenoptera: Pompilidae). Tecnociência 6: 95–109.

Campos J. 2021. Tarantula-hawk Wasps (Subfamily Pepsinae). Available at https://www.inaturalist.org/observations/69424925. (Last accessed 12 February 2021).

Carlinhos C. 2015a. Casca Carlinhos—at Parque de Lavras Salto Sp. Available at https://www.facebook.com/photo?fbid=911920582234737&set=pb.100002504118609.-2207520000. (Last accessed 28 March 2021).

Carlinhos C. 2015b. Casca Carlinhos—at Parque de Lavras Salto Sp. Available at https://www.facebook.com/photo?fbid=911920562234739&set=pb.100002504118609.-2207520000. (Last accessed 28 March 2021).

Carvalho-Filho F, Auko T, Waichert, C. 2015. Observations on the nesting behaviour of the spider wasp *Eragenia congrua* (Hymenoptera: Pompilidae), with the first record of the host. Journal of Natural History 49: 1–10.

Casper H. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/90415681. (Last accessed 17 August 2021).

Castilleja J. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/82627859. (Last accessed 12 June 2021).

Chieffo F. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/99647987. (Last accessed 31 October 2021).

Cocucci AA. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/75367732. (Last accessed 27 April 2021).

Colomo de Correa MV. 1998. Analisis cladistico del género *Poecilopompilus* Howard (Hymenoptera, Pompilidae) y clave para las especies**.** Insecta Mundi 12: 102–112.

Contreras JM. 2017. Nuevos registros de caza de *Entypus unifasciatus dumosus* (Spinola, 1851) (Hymenoptera: Pompilidae) en Chile. Arquivos Entomológicos 18: 253–258.

Contreras JM, Téllez F. 2017. Primer registro de caza de *Sphictostethus striatulus* Roig-Alsina (Hymenoptera:Pompilidae) sobre *Tomopisthes horrendus* (Nicolet) (Araneae: Anyphaenidae). Revista Chilena de Entomología 42: 91–94.

Coolidge M. 2021. Peregrinity. Available at https://www.inaturalist.org/observations/102266486. (Last accessed 5 December 2021).

Coyle FA. 1971. Systematics and natural history of the mygalomorph spider genus *Antrodiaetus* and related genera (Araneae: Antrodiaetidae). Bulletin of the Museum of Comparative Zoology 141: 269–402.

Crespo P. 2021. Tarantula-hawk Wasps (Tribe Pepsini). Available at https://www.inaturalist.org/observations/88758718. (Last accessed 27 July 2021).

Cristóbal Miranda EY. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/80197825. (Last accessed 22 June 2021).

Cruz G. 2021. Genus *Batazonellus*. Available at https://www.inaturalist.org/observations/97500200. (Last accessed 8 October 2021).

da Cruz Pereira D. 2015. *Tachypompilus* sp. Spider vs Wasp (Pompilinae) spider. Available at https://www.youtube.com/watch?v=8fqoDy2RWT0. (Last accessed 20 August 2021).

Dantas S. 2019. Spider Wasps (Family Pompilidae). Available online at https://www.inaturalist.org/observations/35581719. (Last accessed 25 January 2021).

Dantas S. 2020a. New World Tarantula-hawk Wasps (Genus *Pepsis*). Available at https://www.inaturalist.org/observations/65914491. (Last accessed 27 December 2020).

Dantas S. 2020b. Subfamily Pompilinae. Available at https://www.inaturalist.org/observations/66302211. (Last accessed 9 December 2020).

Dantas S. 2021. New World Tarantula-hawk Wasps (Genus *Pepsis*). Available at https://www.inaturalist.org/observations/76675120. (Last accessed 3 May 2021).

Da Silva LE, dos Santos EF, Ferreira ENL, Noll FB. 2015. New records of three species of *Pompilocalus* (Hymenoptera: Pompilidae) from Brazil and Chile. Check List 11: 16–19.

De Schrijver D. 2021. New World Tarantula-hawk Wasps (Genus *Pepsis*). Available at https://www.inaturalist.org/observations/94728655. (Last accessed 13 September 2021).

Dias R. 2020. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/66696414. (Last accessed 17 December 2020).

Dias R. 2021a. Vespa prepara aranha capturada PNTijuca. Available at https://www.youtube.com/watch?v=eg_ajWnFm4Y&feature=youtu.be. (Last accessed 10 February 2021).

Dias R. 2021b. Vespa carregando aranha capturada PNTijuco. Available at https://www.youtube.com/watch?v=GODxwLlAYts&feature=youtu.be. (Last accessed 10 February 2021.

Dias R. 2021c. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/70005895; https://www.youtube.com/watch?v=-N-NJNFJYQU (Last accessed 23 February 2021).

Dias R. 2021d. Tribe Pompilini. Available at https://www.inaturalist.org/observations/74780472. (Last accessed 22 April 2021).

Dickson S. 2015. Dando de comer a los animales de la chacra pelea Araña Vs Avispa. Available at https://m.facebook.com/photo.php?fbid=852064918168182&id=100000940450435&set=a.852063881501619. (Last accessed 25 January 2021).

dos Santos EF, Noll BF. 2010. Additions to the known distribution of *Epipompilus aztecus* (Cresson, 1869) and *E. excelsus* (Bradley, 1944) (Hymenoptera: Pompilidae). Psyche 2010: 562869.

dos Santos EF, Waichert C., dos Santos CPS. 2017. Behavioural notes on the Neotropical parasocial spider wasp *Ageniella* (*Lissagenia*) *flavipennis* (Banks) (Hymenoptra: Pompilidae), with host association. Ecological Entomology 42: 96–99.

Durocher R. 2015. Pompilidae *Poecilopompilus* vs *Metazygia*. Available at https://facebook.com/photo.php?fbid=10152671800816589&id=534406588&set=a.10153890802541589. (Last accessed 25 January 2021).

Encisoa O. 2020a. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/65434458. (Last accessed 23 November 2020).

Encisoa O. 2020b. Genus *Entypus*. Available at https://www.inaturalist.org/observations/66204996. (Last accessed 7 December 2020).

Evans HE. 1950. A taxonomic study of the Nearctic spider wasps belonging to the tribe Pompilini (Hymenoptera: Pompilidae). Part I. Transactions of the American Entomological Society 75: 133–270.

Evans HE. 1951. A taxonomic study of the Nearctic spider wasps belonging to the tribe Pompilini (Hymenoptera: Pompilidae). Part III. Transactions of the American Entomological Society 77: 203–340.

Evans HE. 1953. Comparative ethology and the systematics of spider wasps. Systematic Zoology 2: 155–172.

Evans HE. 1965. Studies on Neotropical Pompilidae (Hymenoptera) I. The genus *Agenioideus* Ashmead in South America. Breviora 234: 1–7.

Evans HE. 1966. A revision of the Mexican and Central American spider wasps of the subfamily Pompilinae (Hymenoptera: Pompilidae). Memoirs of the American Entomological Society 20: 1–422.

Evans HE. 1967. Studies on the Neotropical Pompilidae (Hymenoptera). III. Additional Notes on *Epompilus* Kohl. Breviora 273: 1–15.

Evans HE. 1976. Studies on Neotropical Pompilidae (Hymenoptera). X. Supplementary Notes. Psyche 83: 263–270.

Evans HE. 1997. Spider wasps of Colorado (Hymenoptera: Pompilidae): An annotated checklist. Great Basin Naturalist 57: 189–197.

Evans HE, Yoshimoto CM. 1962. The ecology and nesting behavior of the Pompilidae (Hymenoptera) of the northeastern United States. Miscellaneous Publications of the Entomological Society of America 3: 67–119.

Farriols Sarabia F. 2020a. Tribu Pompilini. Available at https://www.naturalista.mx/observations/54879488. (Last accessed 5 May 2021).

Farriols Sarabia F. 2020b. Género *Auplopus*. Available at https://www.naturalista.mx/observations/61240459. (Last accessed 6 May 2021).

Fernández FC. 2000. Avispas cazadoras de arañas (Hymenoptera: Pompilidae) de la Región Neotropical. Biota Colombiana 1: 3–24.

Ferreira EA. 2017. Vespa caçadora de aranha. Available at http://www.biofaces.com/post/103796/vespa-cacadora-de-aranha/. (Last accessed 15 January 2021).

Garcia J. 2019. #Spider#Araña#Avispa. Available online at https://www.instagram.com/p/BtZdX43nV9y/. (Last accessed 25 January 2021).

Gasperin E. 2021. Genus *Tachypompilus*. Available at http://portugal.inaturalist.org/observations/100430648. (Last accessed 7 November 2021).

Genaro JA. 1993. Conducta de nidificación de algunas especies de Pompílidos (Hymenoptera). Revista Biologia 7: 108–112.

Genise JF. 1983. Comportamiento de nidificación de *Tachypompilus erubescens* (Tasch.) y *T. mendozae* (D. T.) (Hym.: Pompilidae) con la descripción de un nuevo tipo de nido multicellular. Revista de la Sociedad Entomológica Argentina 42: 305–312.

Gómez Benítez A. 2020. Spider Wasps (Family Pompilidae). Available at https://www.naturalista.mx/observations/65648782. (Last accessed 11 December 2020).

Grandi G. 1961. Studi di un entomologo sugli Imenotteri superiori. Bollettino dell'Istituto di Entomologia delia Università degli Studi di Bologna 25: 1–659.

Greefpool N. 2020a. Genus *Tachypompilus*. Available at http://www.inaturalist.org/observations/64324930. (Last accessed 11 November 2020).

Greefpool N. 2020b. Genus *Tachypompilus***.** Available at http://www.inaturalist.org/observations/64821463. (Last accessed 14 November 2020).

Grespan G. 2009. Killer… Available at https://www.flickr.com/photos/guilhermegrespan/3347118603/in/album-72157604321718087/. (Last accessed 6 January 2021).

Gros E, Durand F. 2013. Les Pompiles. Comportement/Clé des Genres. Bulletin de l'Association Entomologique d'Arvernsis 1: 1–183.

Guerrero Salazar ME. 2021. Milde's Tarantula-hawk Wasp (*Pepsis mildei*). Available at https://www.inaturalist.org/observations/69028439. (Last accessed 4 February 2021).

Hammond TL. 2015. Genus *Pepsis*. Available online at https://www.inaturalist.org/observations/1942939. (Last accessed 16 September 2021).

Hannawacker R. 2021. New World Tarantula-hawk Wasps (Genus *Pepsis*). Available at https://www.inaturalist.org/observations/97399844. (Last accessed 18 December 2021).

Harrington K. 2022. *Xerochares expulsus*. Available at https://www.inaturalist.org/observations/107217649. (Last accessed 22 February 2022).

Harris AC. 1999. The life histories and nesting behaviour of the Pompilidae (Hymenoptera) in New Zealand: A comparative study. Species Diversity 4: 143–235.

Hernández González VA. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/86775766. (Last accessed 3 September 2021).

Holmberg EL. 1878. Escenas pintorescas de la vida de algunos insectos de Buenos Aires. El Naturalista Argentino 1: 257–262.

Hurd PD Jr. 1952. Revision of the Nearctic species of the pompilid genus *Pepsis* (Hymenoptera: Pompilidae). Bulletin of the American Museum of Natural History 98(4): 257–334.

Hurd PD Jr., Wasbauer MS. 1956. New host records for North American spider-wasps (Hymenoptera: Pompilidae). Journal of the Kansas Entomological Society 29: 168–169.

Ibarra-Grasso A. 1938. El aranón y su enemigo el avispón colorado. Revista Geográfica Americana 10: 45–50.

Janvier H. 1930. Recherches biologiques sur les prédateurs du Chili. Annales des Sciences Naturelles (10)13: 235–354.

Kawakami K. 2021. Tarantula-hawk Wasps (Tribe Pepsini). Available at https://www.inaturalist.org/observations/69532844. (Last accessed 14 February 2021).

Kimmerling L. 2020. *Entypus* sp.? – *Entypus fulvicornis* – Female. Available at https://bugguide.net/node/view/1846106/bgimage. (Last accessed 9 May 2021).

Kimsey LS. 1980. Notes on the biology of some Panamanian Pompilidae, with a description of a communal nest (Hymenoptera). Pan-Pacific Entomologist 56: 98–100.

Knaepen W. 2020. Saül. Available at https://www.instagram.com/p/B_ud_LaAJI2/. (Last accessed 25 November 2021).

Krombein KV. 1979. Family Pompilidae. p. 1523–1570. In: Krombein KV, Hurd PD Jr., Smith DR, Burks BD (eds.). Catalog of Hymenoptera in America north of Mexico. Vol. 2. Apocrita (Aculeata). Smithsonian Institution Press; Washington, DC. 2209 p.

Kurczewski FE. 1981. Observations on the nesting behaviors of spider-wasps in southern Florida (Hymenoptera: Pompilidae). Florida Entomologist 64: 424–437.

Kurczewski FE. 1989. Ecology, mating and nesting of *Tachypompilus ferrugineus nigrescens* (Hymenoptera: Pompilidae). Great Lakes Entomologist 22: 75–78.

Kurczewski FE. 1995. *Ageniella evansi*, a cavernicolous spider wasp. Sphecos 29: 10–12.

Kurczewski FE. 1999. Comparison of spider wasp faunas from two ecologically distinct sites in Erie County, Pennsylvania (Hymenoptera: Pompilidae). Journal of the Kansas Entomological Society 72: 339–360.

Kurczewski FE. 2001. Comparative nesting behavior of *Episyron quinquenotatus* (Hymenoptera: Pompilidae) in the northeastern United States. Northeastern Naturalist 8: 403–426.

Kurczewski FE. 2010. Prey and nesting behavior of some North American spider wasps (Hymenoptera: Pompilidae). Northeastern Naturalist 17: 115–124.

Kurczewski FE, Edwards GB. 2012. Hosts, nesting behavior, and ecology of some North American spider wasps (Hymenoptera: Pompilidae). Southeastern Naturalist 11 (Monograph 4): 1–71.

Kurczewski FE, Edwards GB, Pitts JP. 2017. Hosts, nesting behavior, and ecology of some North American spider wasps (Hymenoptera: Pompilidae), II. Southeastern Naturalist 16 (Monograph 9): 1–82.

Kurczewski FE, Kiernan DH. 2015. Analysis of spider wasp host selection in the eastern Great Lakes Region (Hymenoptera: Pompilidae). Northeastern Naturalist 22 (Monograph 11): 1–88.

Kurczewski FE, Kurczewski EJ. 1968a. Host records for some North American Pompilidae (Hymenoptera) with a discussion of factors in prey selection. Journal of the Kansas Entomological Society 41: 1–33.

Kurczewski FE, Kurczewski EJ. 1968b. Host records for some North American Pompilidae (Hymenoptera). First Supplement. Journal of the Kansas Entomological Society 41: 367–382.

Kurczewski FE, Kurczewski EJ. 1972. Host records for some North American Pompilidae, Second Supplement. Tribe Pepsini. Journal of the Kansas Entomological Society 45: 181–193.

Kurczewski FE, Kurczewski EJ. 1973. Host records for some North American Pompilidae (Hymenoptera). Third supplement. Tribe Pompilini. Journal of the Kansas Entomological Society 46: 65–81.

Kurczewski FE, Kurczewski EJ. 1987. Nest and prey of *Ageniella* (*Leucophrus*) *fulgifrons* (Hymenoptera: Pompilidae). Great Lakes Entomologist 20: 75–80.

Kurczewski FE, Kurczewski EJ, Norton RA. 1987. New prey records for Nearctic species of Pompilidae (Hymenoptera). Journal of the Kansas Entomological Society 60: 467–475.

Kurczewski FE, Pitts JP, Elliott NB. 2013. Annotated list of spider wasps from the Bahamas, with description of a new species of *Tachypompilus* (Hymenoptera: Pompilidae). Caribbean Naturalist 5: 1–28.

Kurczewski FE, Snyder NFR. 1964. Observations on the nesting of *Pompilus* (*Ammosphex*) *michiganensis* (Dreisbach) (Hymenoptera: Pompilidae). Proceedings of the Biological Society of Washington 77: 215–222.

Kurczewski FE, Spofford MG. 1985. Observations on the nesting and unique cachement behavior of *Calicurgus hyalinatus* (Hymenoptera: Pompilidae). Great Lakes Entomologist 18: 41–44.

Kurczewski FE, Spofford MG. 1986. Observations on the behaviors of some Scoliidae and Pompilidae (Hymenoptera) in Florida. Florida Entomologist 69: 638–644.

Kurczewski FE, West RC, Crews SC, Jenzen-Jones NR. 2020a. Selenopidae (Arachnida: Araneae), a new host family for the spider wasp *Tachypompilus ferrugineus* (Say) (Hymenoptera: Pompilidae: Pompilinae). Insecta Mundi 0824: 1–6.

Kurczewski FE, West RC, Waichert C, Kissane KC, Ubick D, Pitts JP. 2020b. New and unusual host records for North American and South American spider wasps (Hymenoptera: Pompilidae). Zootaxa 4891: 1–112.

LaPergola J. 2007. Tarantula-hawk Wasps and Allies (Subfamily Pepsinae). Available at https://www.inaturalist.org/observations/69961496. (Last accessed 22 February 2021).

Lazaro R. 2019a. Mud-nesting Spiders Wasps (Tribe Ageniellini). Available at https://www.inaturalist.org/observations/94353385. (Last accessed 13 September 2021).

Lazaro R. 2019b. Genus *Tachypompilus*. Available at https://www.inaturalist.org/observations/93379770. (Last accessed 2 September 2021).

Leblond C. 2021. Guepe Pepsi en pleine action. Available at https://www.facebook.com/Le-Sourou-117648450361167/videos/433857855005803. (Last accessed 26 November 2021).

Llopis M. 2021. Tribe Pompilini. Available at https://www.inaturalist.org/observations/72737654. (Last accessed 8 April 2021).

Lopes PHG. 2021. Mud-nesting Spider Wasps (Tribe Ageniellini). Available at https://www.inaturalist.org/observations/103143579. (Last accessed 29 December 2021).

Lorran Í. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/101833931. (Last accessed 25 November 2021).

Lourencini H. 2020. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/66158040. (Last accessed 28 December 2020).

Mainguy G. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/69360194. (Last accessed 12 February 2021).

Malacco MAF. 2017. Marimbondo caçador com sua presa, uma aranha. Available at https://www.facebook.com/fazharmonia/photos/a.378117119206397/533776460307128/. (Last accessed 10 November 2021).

Mariquitto M. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/67966943. (Last accessed 13 January 2021).

Martinez O. 2020. *Tachypompilus mendozae*. Available at https://www.inaturalist.org/observations/47448253. (Last accessed 25 December 2020).

Martins RP. 1991. Nesting behavior and prey of *Poecilopompilus algidus fervidus* and *Tachypompilus xanthopterus* (Hymenoptera: Pompilidae). Journal of the Kansas Entomological Society 64: 231–236.

Matos E. 2018. #hymenoptera#spider. Available at https://www.instagram.com/p/Bqps3pqFRU0/. (Last accessed 14 January 2021).

Mazur L. 2017. *Ageniella coronata*. Available at https://www.inaturalist.org/observations/7566689. (Last accessed 3 October 2020).

Mazzarollo G. 2009. Wasp eating spider. Available online at https://www.flickr.com/photos/gmazza/4220003664/in/album-72157622606261722/. (Last accessed 7 April 2021).

Moli H. 2009. Parque Nacional Serra do Itajaí Aranha x Vespa. Available at https://m.youtube.com/watch?v=KR3x2IcJDN4. (Last accessed 20 August 2021).

Moncada V. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/70007714. (Last accessed 23 February 2021).

Moura P. 2010. Aranha X Vespa (Spider X Wasp). Available at https://www.youtube.com/watch?v=wLO3fsg3V6o. (Last accessed 20 August 2021).

Nascimento PPM. 2021. Flona do Jamari. Available at https://www.instagram.com/p/CPOja3vjTC3/. (Last accessed 20 November 2021).

Nascimento de Melo T. 2011. Genus *Poecilopompilus*. Available at https://www.inaturalist.org/observations/21143143. (Last accessed 17 January 2021).

Neri E. 2009. Euclides Neri. Round 2. Available at https://www.flickr.com/photos/kidneri/3469299556/in/album-72157604429277654/. (Last accessed 15 January 2021).

Paz F. 2021. Genus *Poecilopompilus*. Available at https://www.inaturalist.org/observations/102654691. (Last accessed 7 December 2021).

Pereira A. 2018. #costarica#avispa#parasitoides. Available at https://www.instagram.com/p/Bkujr-un4fo/. (Last accessed 17 January 2021).

Pitts JP, Wasbauer MS, von Dohlen CD. 2005. Preliminary morphological analysis of relationships between the spider wasp subfamilies (Hymenoptera: Pompilidae): revisiting an old problem. Zoologica Scripta 35(1): 63–84.

Pruett J. 2021. Wasp has paralyzed tarantula. Available at https://www.flickr.com/photos/108136608@N06/51760154507/in/dateposted/. (Last accessed 31 December 2021).

Rabello Pereira A. 2020. Genus *Tachypompilus*. Available at https://www.inaturalist.org/observations/65849973. (Last accessed 30 November 2020).

Rabello Pereira A. 2021. Tribe Pompilini. Available at https://www.inaturalist.org/observations/74352434. (Last accessed 18 April 2021).

Ramírez Rodríguez E. 2020. Genus *Tachypompilus*. Available at https://www.inaturalist.org/observations/57971030. (Last accessed 18 November 2020).

Rangel S. 2021. *Tachypompilus* sp. with Selenopidae. Available at https://www.instagram.com/p/CKuekfCnw_I/. (Last accessed 12 November 2021).

Rau P, Rau N. 1918. Wasp studies afield. Princeton University Press; Princeton, NJ. 372 p.

Reinoso AR. 2017. Wasp and tarantula. Available at https://www.instagram.com/p/BTaVY6uAcz3/. (Last accessed 5 December 2021).

Richards OW, Hamm AH. 1939. The Biology of the British Pompilidae. Transactions of the Society for British Entomology 6: 51–114.

Roa MP. 2021. Cazandoimagenes. Available at https://www.instagram.com/p/CQ3p9v5sXBn/. (Last accessed 5 December 2021).

Rocha C. 2021. Spider Wasp with Spider. Available at https://www.instagram.com/p/CRy5_bLn1iD/. (Last accessed 8 September 2021).

Roig-Alsina A. 1988. La posición sistemática de los grupos hasta ahora incluidos en *Chirodamus* Haliday *sensu lato* y revisión de *Pompilocalus* gen. nov. (Hymenoptera: Pompilidae). Revista de la Sociedad Entomológica Argentina 47: 3–73.

Roig-Alsina A, Barneche J. 2017. The genus *Epipompilus* in Argentina (Hymenoptera: Pompilidae). Revista de la Sociedad Entomológica Argentina 76: 33–38.

Romero JF. 2014. Supervivencia – The Winner. Available at https://www.flickr.com/photos/juliofromero/15971305028/in/dateposted/. (Last accessed 14 January 2021).

Roy BA. 2021. Rusty Spider Wasp (*Tachysphex ferrugineus*). Available at https://www.inaturalist.org/observations/73233785. (Last accessed 7 April 2021).

Rozo Pinilla JN. 2020. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/67938805. (Last accessed on 13 January 2021).

Rubens Lopes J. 2006. Vespa & Aranha. Available at https://www.flickr.com/photos/41196754@N02/4654416238/in/dateposted/. (Last accessed 5 January 2021).

Ruiz RO. 2010. Araña vs avispa. Available at https://www.flickr.com/photos/roruiz/5107766300/in/dateposted/. (Last accessed 14 January 2021).

Sánchez CS, Genaro JA. 1989. Conducta de nidificación en tres especes de pompilídos (Hymenoptera: Pompilidae). Poeyana 375: 1–16.

Santos Murgas A, Quintero Arias D, Ramírez Silva JA. 2018. Nuevos registros de presas, comportamiento de anidacíon y parasitoide de *Tachypompilus ferrugineus* (Say, 1824) (Hymenoptera: Pompilidae) en la Provincia de Darién, Panamá. Boletín de la Sociedad Entomológica Aragonesa 63: 243–247.

Sanzon MA, 2021. Family Pompilidae (Spider Wasp). Available at https://www.instagram.com/p/CQHj53IMW9H/. (Last accessed 5 July 2021).

Segura B. 2012. Avispa arrastrando araña, Altos de Cantillana. Available at https://www.youtube.com/watch?v=TxzG3vzRcZA. (Last accessed 27 November 2021).

Smith F. 1864. Descriptions of new species of Brazilian Pompilidae. Journal of Entomology 2: 263–270.

Squires K. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/102632539. (Last accessed 29 December 2021).

Starr CK. 2012. Nesting biology and sex ratio in a neotropical spider wasp, *Priochilus captivum* (Hymenoptera:Pompilidae). Tropical Zoology 25: 62–66.

Steamer J. 2020. *Phoneutria boliviensis.* Available at https://www.inaturalist.org/observations/41143296. (Last accessed 7 February 2021).

Strandtmann RW. 1953. Notes on the nesting habits of some digger wasps. Journal of the Kansas Entomological Society 26: 45–52.

Torres S. 2021. Tribe Aporini. Available at https://www.inaturalist.org/observations/78718593. (Last accessed 31 December 2021).

Townes H. 1957. Nearctic wasps of the subfamilies Pepsinae and Ceropalinae. Bulletin of the United States National Museum 209: 1–286.

Trad BM, Silvestre R, Auko TH, Lopez VM, dos Santos EF. 2018. First host record of *Epipompilus* (Hymenoptera: Pompilidae) from Brazil and discussion of prey carriage mechanism. Revista Brasileira de Entomologia 62(4): 253–256.

VanDerslice M. 2021. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/74181810. (Last accessed 18 April 2021).

Vardy CR. 2000. The New World tarantula-hawk wasp genus *Pepsis* Fabricius (Hymenoptera: Pompilidae). Part 1. Introduction and the *P. rubra* species-group. Zoologische Verhandelingen 332: 1–86.

Vardy CR. 2002. The New World tarantula-hawk wasp genus *Pepsis* Fabricius (Hymenoptera: Pompilidae). Part 2. The *P. grossa* to *P. deaurata* groups. Zoologische Verhandelingen 337: 1–135.

Vardy CR. 2005. The New World tarantula-hawk wasp genus *Pepsis* Fabricius (Hymenoptera: Pompilidae). Part 3. The *P. inclyta* to *P. auriguttata* groups. Zoologische Verhandelingen 79: 1–305.

Vieda V. 2021. Mud-nesting Spider Wasps (Tribe Ageniellini). Available at https://www.inaturalist.org/observations/68163274. (Last accessed 19 January 2021).

Villalobos Y. 2017. Spider Wasps (Family Pompilidae). Available at https://www.inaturalist.org/observations/7761830. (Last accessed17 January 2021).

Villaneuva-Bonilla GA, Brescovit AD, dos Santos E, Vasconcellos-Neto J. 2018. First record of *Epipompilus excelsus* (Bradley, 1944) (Hymenoptera, Pompilidae) as a koinobiont ectoparasitoid of *Ariadna mollis* (Holmberg, 1876) (Araneae, Segestriidae). Journal of Hymenoptera Research 66: 15–21.

Violinha [real name unknown]. 2009. Hora do almoço. Available at https://www.flickr.com/photos/violinha/3582698503/in/album-72057594061710887/. (Last accessed 6 January 2021).

Vitorino L. 2020. Vespa caçadora em batalha com a tarantula na Sierra dos Pireneus – Goliás. Available at https://www.facebook.com/urologia.minimamente.invasiva/photos/2562836613985678. (Last accessed 28 January 2021).

Wahis R. 2002. Notes taxinomiques sur quelques Pompilides du Chili (Hymenoptera: Pompilidae). Notes Fauniques de Gembloux 47: 59–67.

Waichert C, Colombo WD, von Dohlen CD, Pitts JP. 2018. Taxonomic contributions to *Ageniella* Banks, 1912 (Hymenoptera: Pompilidae) from Brazil. Zootaxa, 4403 (1): 133–153.

Waichert C, Pitts JP. 2012. Addition to the distributional record of *Ageniella* (*Neotumagena*) *amazonica* Fernández, 1998 (Hymenoptera: Pompilidae) and establishment of a neotype. Psyche 2012: 307103.

Waichert C, Rodriguez J, Pitts JP. 2014. New additions to the Honduran fauna of spider wasps (Hymenoptera: Pompilidae) with the description of two species. Zootaxa 3873 (5): 590–600.

Waichert C, Rodriguez J, Von Dohlen CD, Pitts JP. 2012. Spider wasps (Hymenoptera: Pompilidae) of the Dominican Republic. Zootaxa 3353: 1–47.

Waichert C, Rodriguez J, Wasbauer MS, Von Dohlen CD, Pitts JP. 2015. Molecular phylogeny and systematics of spider wasps (Hymenoptera: Pompilidae): redefining subfamily boundaries and the origin of the family. Zoological Journal of the Linnean Society 175: 271–287.

Wasbauer MS. 1982. Prey records for some North American spider wasps (Hymenoptera: Pompilidae). Pacific Entomologist 58: 223–230.

Wasbauer MS. 1995. Pompilidae. p. 522–539. In: Hanson PE, Gauld ID (eds.). The Hymenoptera of Costa Rica. Oxford University Press; New York, NY. 893 p.

Wasbauer M, Cambra-Torok R, Añino Ramos YJ. 2017. A new species of *Priochilus* Banks, 1944 (Hymenoptera, Pompilidae, Pompilinae) from Panama. Zootaxa 4247(3): 341–345.

Wasbauer MS, Kimsey LS. 1985. California spider wasps of the subfamily Pompilinae (Hymenoptera: Pompilidae). Bulletin of the California Insect Survey 26: 1–130.

Wasbauer MS, Powell JA. 1962. Host records for some North American spider wasps with notes on prey selection (Hymenoptera: Pompilidae). Journal of the Kansas Entomological Society 35: 393–401.

Wetland AA. 2021. *Tachypompilus ferrugineus* with *Zorocrates fuscus*. Available at https://www.facebook.com/photo?fbid=4896677650351796&set=pcb.4896599467026281. (Last accessed 12 November 2021).

Williams FX. 1928. Studies in tropical wasps—their hosts and associates (with descriptions of new species). Bulletin of the Experiment Station of the Hawaiian Sugar Planter's Association (Entomology) 19: 1–179.

Wilson JS, Pitts JP. 2007. New host associations for New World spider wasps (Hymenoptera: Pompilidae). Journal of the Kansas Entomological Society 80: 223–228.

World Spider Catalog. 2020. Version 21.0. Natural History Museum Bern. Available at http://wsc.nmbe.ch. (Last accessed 12 November 2020).

Wuenschel A. 2021. Genus *Ageniella*. Available at https://www.inaturalist.org/observations/83880957. (Last accessed 21 June 2021).

Zaupa E. 2020. Arácnidos de Antioquia/La dura vida de la selva. Available at https://www.facebook.com/groups/1267270223377931/posts/2684613341643605. (Last accessed 11 November 2021).

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