First notice of *Therion* from South America with description of two new species from Argentina and Bolivia (Hymenoptera: Ichneumonidae)

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Abstract: *Therion* Curtis (Ichneumonidae: Anomalinae) has a nearly cosmopolitan geographic distribution but has not previously been recorded from South America. In most *Therion* the tarsal claws are simple or have only a few inconspicuous teeth near the base. The new species described herein are distinctive, therefore, because they have the tarsal claws conspicuously pectinate over at least 0.8 the distance from base to apex. *Therion ranti* n.sp. from Córdoba and Mendoza Provinces of Argentina may be recognized by its almost uniformly red mesosoma and basally elevated clypeus. In *Therion wileyi* n.sp., from the Andean puna near La Paz in Bolivia, the mesosoma is red with extensive black coloration, including much of the propodeum, and the clypeus is weakly and symmetrically convex in profile. *Therion wileyi* n.sp. was reared from an unidentified noctuid moth larva infesting *Chenopodium quinoa* (Angiospermae: Chenopodiaceae), an important food crop in Andean South America.

Resumen: El género *Therion* Curtis (Ichneumonidae: Anomalinae) es de distribución geográfica cosmopolita, pero no ha sido citado antes de Sudamérica. En la mayoría de las especies de *Therion*, las uñas tarsales son simples o, como máximo, tienen varios dientes inconspícuos cerca de la base. Las especias nuevas aquí descriptas, por lo tanto, se destacan por sus uñas tarsales que son fuertemente pectinadas en alrededor de 0,8 de su largo total entre la base y el ápice. *Therion ranti* sp.nov., de las provincias de Córdoba y Mendoza en la Argentina, puede reconocerse por su mesosoma casi del todo rojo y por tener el clípeo notablemente elevado en la mitad basal. En *Therion wileyi* sp.nov., de la puna altoandina cerca de La Paz en Bolivia, el mesosoma es rojo y negro con gran parte del propodeo negro y el clípeo, visto de perfil, es de contornos simétricos y poco elevado. *Therion wileyi* sp.nov. fué criado de la larva de una especie no identificada de noctuido(Lepidoptera) sobre *Chenopodium quinoa* (Angiospermae: Chenopodiaceae), una planta comestible de gran valor económico ampliamente cultivada en la región altoandina de Sudamérica.

Introduction

The genus *Therion* Curtis (Fig. 1) belongs to the subfamily Anomalinae, a highly distinctive group within the family Ichneumonidae, whose members are easily recognizable by the following combination of characters (Townes 1966,1971): occipital carina usually at outer hind margin of temple, so that head is nearly as wide at this carina as at the eyes; propodeum with complex, strong reticulate sculpture but without areolation delimited by regular transverse and longitudinal carinae (only the basal transverse caring sometimes well defined); fore wing without areolet (i.e, with only one intercubital vein); first gastric tergite very long and slender, without a lateral pit or groove (glymma) between spiracle and base, its spiracle located far distad of the middle; gaster beyond first segment very strongly compressed.

Within this context, *Therion* is distinctive because of its apically truncate clypeus without a pointed projection or tooth; small acute tooth on lower front margin of pronotum; postpectal carina interrupted in front of each mid coxa; postnervulus vein joining the discocubital cell near its midlength; and because of its modified male hind tarsi which have a weak median longitudinal carina ventrally on segments 2-4.

Species of *Therion* are known to attack larger lepidopterous caterpillars in the families Arctiidae, Geometridae, Noctuidae and Saturniidae (Dasch 1984). They oviposit into the host larva at an early stage in its development. The ichneumonid larva then feeds on the caterpillar as an internal parasite, staying with its host until after pupation, when the adult wasp finally emerges (Gauld 1984).

Therion has been recorded from the Holarctic, Neotropic, Oriental and Ethiopian regions (Gupta 1987,Townes 1971) and has one species from Papua

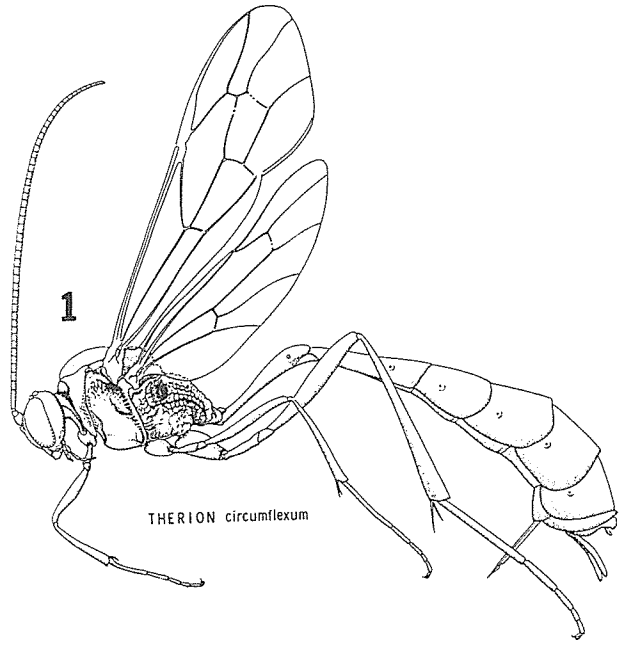

Figure 1. *Therion circumflexum* (Linnaeus). Type species of genus. Female in lateral view. (from Townes 1971)

New Guinea in the Australian region (Gauld 1978). Although Townes (1966) cited several species from Mexico and Central America, the genus has not heretofore been known from South America, where it has several undescribed species from Neantarctic central Chile, and Neotropical Argentina, southern Brazil, and Bolivia.

The Chilean and Brazilian *Therion* are represented in collections I have seen by very few specimens and I defer their description until more material is collected. On the other hand, the undescribed Argentine species has been obtained repeatedly in moderate numbers from localities in Córdoba and Mendoza provinces between 1966 and 1997, while the closely related Bolivian species, represented by three females, merits description because it parasitizes the larvae of a noctuid moth that is a pest on *Chenopodium quinoa*, an important food crop cultivated in the Andean highlands of Bolivia and Perú.

As summarized below, the new *Therion* herein described are closely related. They share several features which differentiate them as a well defined, endemically South American species group within their genus: Flagellum unusually short, 0.6-0.7 as long as fore wing, with only 34-37 segments; mandible long, slender, drawn out gradually into a single pointed upper tooth, lower tooth absent; male hind tarsus moderately swollen(as compared to female), ventral suface of hind tarsomeres 2 and 3 weakly convex and with a very delicate but percurrent median longitudinal carina; tarsal claws of both sexes gently curved and conspicuously pectinate for at least 0.8 their length.

Most other *Therion* have the flagellum considerably longer and with as many as 63 segments; the mandible usually bidentate with the lower tooth only a little shorter than the upper (but minute in a few species); male hind tarsomeres 2 and 3 flattened below and with a more conspicuous longitudinal carina; and the tarsal claws either simple or with weak basal teeth that are difficult to see (Dasch 1984; Gauld 1976).

Key to the species of *Therion* in the *ranti* species group

1. Mesosoma almost uniformly pale red; apex of prestigma and base of pterostigma with a conspicuous bright yellow spot; clypeus asymmetrically convex in profile with its basal half notably elevated; notauli narrow but well impressed on basal 0.6 of mesoscutum ..... *Therion ranti* n.sp.

1'. Mesosoma red with extensive black areas, including much of propodeum; apex of prestigma and base of pterostigma with a inconspicuous whitish spot; clypeus weakly and symmetrically convex in profile, scarcely elevated toward base; notauli faintly impressed, traceable on at most basal 0.3 of mesoscutum ..... *Therion wileyi* n.sp.

Therion ranti Porter, new species

(Fig. 2, 3)

Female. Color: antenna pale orange brown grading into blackish based on flagellum , with anellus, pedicel and scape black; head with mandible dull yellow to ferruginous with some blackish staining; clypeus yellow with reddish brown peripherally; face light reddish brown with yellow broadly on orbits and on a wide vertical median bar that extends from antennal scrobes to clypeus; front black mesally, reddish brown laterally and partly yellow on orbits; much of vertex and occiput black with reddish brown laterally; temple reddish brown verging on yellow with a large black area mostly apicad on its dorsal 0.3; malar space reddish brown; mesosoma shining pale red; wings medium brown with bright yellow on apex of prestigma and basal 0.4 of stigma; fore and mid coxae shining pale red with black extensively toward apex; hind coxa light red

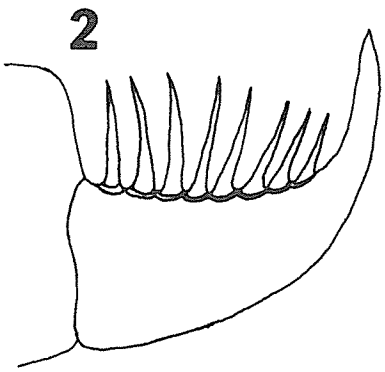

Figure 2. *Therion ranti*, female. Right hind tarsal claw, showing conspicuous pectination. (Holotype).

with black on apical 0.3; trochanters and trochantelli shining black with a little reddish brown staining; femora shining black; tibiae shining black with brown staining ventro-anteriorly on fore tibia; tarsi dull blackish with brown staining that is best developed on fore tarsus; gaster on tergites 1-3 shining pale red except for a wide longitudinal black band on much of basal 0.5 of 2nd tergite, uniformly shining black on tergites 4-8.

Length of fore wing: 10.4 mm. **Flagellum**: short, 0.7 as long as fore wing, with 36 segments. **Temple**: 1.1 as long as eye in lateral view, in dorsal view with convex profile and a little widened behind eyes, its surface shining with numerous medium sized to large sharp punctures which are quite crowded on upper 0.5 of temple but notably sparser on the lower 0.5 and which emit long, rather dense pale brown setae. **Clypeus**: 2.3 as wide as long, its apical margin narrowly impressed but not reflexed, asymmetrically convex in profile with basal 0.5 notably elevated. **Mandible**: elongate, gradually tapered to a narrow apex, apparently unidentate(lower tooth absent or hidden). **Mesoscutum**: with notauli well defined on its basal 0.6 and well impressed except near base. **Mesopleuron**: mostly smooth and polished with numerous but generally well spaced medium sized to large punctures, except that on its upper 0.25 from prepectal carina to speculum (including subalarum) it has extensive, strong, longitudinally biased wrinkling. **Lower metapleuron**: smooth, polished, with numerous but mostly sparse small to medium sized sharp punctures which become larger and denser near apex where there is also some strong wrinkling. **Pleural carina**: percurrent, sharp throughout. **Radial cell**: 4.2 as long as wide. **Tarsal claws**: of all legs conspicuously pectinate on basal 0.8. **Second hind tarsomere**: 4.6 as long as deep. **Second gastric tergite**: with medium length setae that are very sparse on its basal 0.6, but which become denser and a little overlapping on apical 0.4. **Ovipositor**: sheathed portion 1.2 as long as apical depth of sixth tergite.

Male. the paratype males from Dolores in Córdoba Province differ from the holotype female as follows: **Color**: flagellum blackish with only faint brown staining; front, vertex, and occiput almost wholly black; temple broadly black, including malar space, except dull reddish yellow on much of its lower 0.6 from hind margin of eye about 0.6 the distance rearward to occipital carina; mesosoma a little more deeply red than in female but with blackish only on pronotal collar anteriorly; legs as in female but deeper red and with dark areas more intensely black; front tibia dully pale orange brown.

Length of fore wing: 9.4-10.3 mm. **Flagellum**: with 34 segments. **Clypeus**: 2.5 as wide as long. **Hind tarsus**: more robust and swollen than in female, second segment 4.0 as long as deep, with a very fine and low percurrent longitudinal carina on its gently convex ventral surface.

Type Material. Holotype, female: ARGENTINA, Córdoba, Dolores nr. La Cumbre, 1000 m, 8-III-1996, C. Porter. Paratypes, 5 females and 9 males: ARGENTINA, Córdoba, Same as holotype, 14-III-7-IV-1996, 1-17-XII-1997, C. Porter; Mendoza, Potrerillos, 20-II-1966, C. Porter, L. Stange, A. Willink. Holotype in Instituto Miguel Lillo. Paratypes in AEI (1 male), FSCA (4 females and 7 males), and IML (1 female and 1 male).

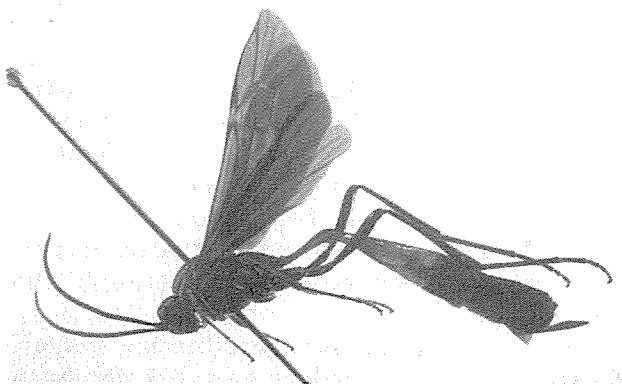

Figure 3. *Therion ranti*, female. Photograph of entire insect in lateral view. (Holotype).

Variation. The paratype female from Dolores in Cordoba Province differs in color from the female holotype because it has the flagellum mostly black with dull orange brown only on the apical 0.3; yellow only on lower 0.5 of face; the front almost entirely black; the vertex and occiput uniformly black except for a dull yellow spot on vertex at top of eye; the temple largely black grading into reddish brown and dull yellow broadly along lower 0.5 of eye and into malar space; mesosoma mostly red as in holotype but with black on pronotal collar; coxae a little more extensively black. This paratype also differs from the holotype in a few measurements and structural features: fore wing length 10.6 mm; flagellum 0.6 as long as forewing, with 35 segments; temple 1.2 as long as eye in lateral view; clypeus 2.4 as wide as long; wrinkling on upper 0.25 of mesopleural disc more reticulate than in holotype but still with a longitudinal bias; radial cell 4.4 as long as wide; second hind tarsomere 4.3 as long as deep; and the sheathed portion of ovipositor 1.3 as long as apical depth of sixth tergite.

The paratype material from Potrerillos in Mendoza Province shows some minor differences from the the series collected in the Sierras de Córdoba.

Females have the flagellum orange brown with blackish at most on its first three segments; front black with orbits broadly yellow; temple very broadly black on its upper 0.4-0.5 but still yellow or reddish on orbit; mesosoma pale red but often with blackish on propleuron, laterally on pronotum, sometimes slightly on mesoscutum, sometimes in part on prepectus, as well as often in great part on propodeum, in particular dorso-laterally; the first gastric tergite sometimes with a medio-dorsal black stripe on petiole; also with flagellum up to 0.8 as long as fore wing, with as many as 38 segments; temple 1.2 as long as eye in lateral view; notauli rather weak, impressed on basal 0.4-0.6 of mesoscutum; radial cell as much as 4.6 as long as wide; and with second hind tarsomere 5.4 as long as deep.

Males differ from the Córdoba material in having the face often almost completely yellow; by having blackish staining throughout but faintly on pronotum, sometimes in part on mesopleuron, dorsally on postpetiole of first gastric tergite, and weakly on much of second and third gastric tergites; and also have the second hind tarsomere only 3.9 as long as deep.

When additional specimens become available for study, it probably will be seen that the characters discussed above vary widely within all populations of *Therion ranti*. There is no evidence that the series from Mendoza differs even at the subspecific level from material obtained in the Sierras de Córdoba.

Relationships. Its conspicuously pectinate tarsal claws distinguish this species from all other *Therion* except the Bolivian *T. wileyi*, which is also described in this contribution. *Therion ranti* and *T. wileyi* constitute a distinctive species group within their genus and are closely related but differ in color and in details of clypeal and mesoscutal morphology, as summarized in the foregoing key.

Field Notes. My specimens of *T. ranti* were netted as they flew near the ground among grasses and low herbs in fields at early stages of ecological succession, such as recently abandoned farmlands and well grazed pastures. In its shining red and black body with infumate wings which have a conspicuous yellow spot on the pterostigma, *T. ranti* seems to be a Batesian mimic of certain braconine and agathidine braconid wasps that are common in the same habitats. The braconids appear to serve as models in this mimetic association because they emit a disagreeable odor when captured and may inflict a transiently painful sting.

The holotype locality at Dolores in Cordoba Province is in semiarid subtropical thorn scrub, which belongs to the upland or Chaco Serrano subprovince of the Chaco Biogeographic Realm as defined by Cabrera and Willink (1973). Some plant genera which characterize this community are: *Schinus* (Anacardiaceae); *Opuntia* (Cactaceae), *Baccharis* (Compositae); *Acacia*, *Cercidium*, *Geoffroea*, *Prosopis* (Leguminosae); *Trithrinax* (Palmae), *Condalia*, *Ziziphus* (Rhamnaceae), *Bumelia* (Sapotaceae); and *Celtis* (Ulmaceae). Some other noteworthy but by no means precinctive Hymenoptera which occur near Dolores in the same disturbed habitats as *Therion ranti* include the ichneumonids *Aeglocryptus viridis*, *Compsocryptus melanostigma*, and *Picrocryptoides willinki*, an undescribed species of the gasteruptiid *Aulacofoenus*, thynnids in the genus *Scotaena*, several species of Anthoboscidae, the eumenid *Cuyodynerus cuyanus*, the megachilid genus *Lithurge*, and a diverse assemblage of panurgine Andrenidae.

The collecting site at Potrerillos near Mendoza is in the Subandean Desert or Monte Province of the Chaco Realm. This community exists under a cooler and drier climate than does the Chaco Serrano. Its flora has many of the same genera present in the Sierras de Cordoba but lacks such subtropical ele-

ments as *Trithrinax*, *Condalia*, and *Bumelia* while including a more diverse assemblage of Cactaceae and being defined especially by the presence of jarrilla or creosote bush (Zygophyllaceae: *Larrea*).

Specific Name. For the Rant family: Cristina, Tomás, Natalia, Cristian, Victoria, Mariana, and Alejandro who administer the Hotel del Campo Padre Rodolfo Hanzelic at Dolores and who continue to assist the author, generously and patiently, during his fieldwork in the Sierras de Cordoba.

Therion wileyi Porter, new species
(Fig. 4)

Female. Color: antenna dark reddish brown with dusky staining toward base on flagellum, especially below, and with shining black on scape and pedicel; head shining black with a large transverse yellow to brownish yellow blotch on clypeus, a broad median yellow bar on face, a narrow yellow band on facial orbit and lower 0.3 of frontal orbit, a narrow yellowish band on most of hind orbit, and a dull brownish yellow mark on vertical orbit; pronotum shining black with a large bright red blotch in humeral sector except marginally; mesoscutum shining pale red with a large blackish area on basal 0.3 of median lobe and narrowly black almost throughout peripherally; scutellum mostly shining pale red with black laterally and on apex; postscutellum and axillary troughs of meso and metanotum black; mesopleuron shining pale red with black extensively on upper 0.3 (including axillary area and all of subalarum), on anterior margin including all of prepectus, and posteriorly on mesepimeron as well as more or less in mesopleural suture; mesosternum shining black on ventral 0.8 but becoming abruptly red dorsally(confluent with red on mesopleuron); upper metapleuron shining black on dorsal 0.5 and mostly bright red below; lower metapleuron shining red with vague dusky staining toward apex and broadly black on and adjacent to submetapleural crina; propodeum black except for a large bright red blotch on apical 0.7 of its lateral face; tegula shining black; wings brownish black with white briefly on prestigma and on base of stigma; legs with coxae, trochanters, trochantelli and femora shining black except for brownish on extreme base of femora and more obscurely brownish on trochantelli; tibiae duller black with brownish obscurely on apices and spurs; tarsi dull black with obscure brown staining; gaster shining black, its second tergite laterally with a broad, percurrent white to pale brownish band, third tergite briefly brownish white latero-basally, its second and third sternites brownish white with a darker brown mark also on third sternite, as well as with dull brownish white extensively on sixth sternite.

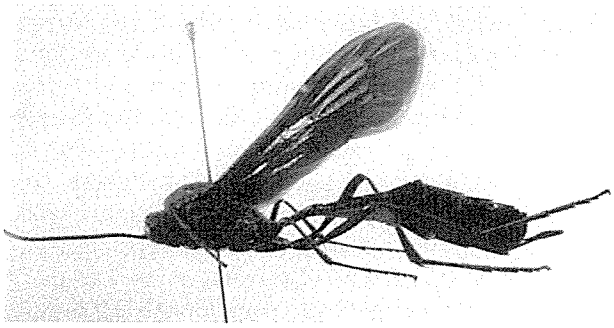

Figure 4. *Therion wileyi*, female. Photograph of entire insect in lateral view. (Holotype).

Length of fore wing: 11.3 mm. **Flagellum**: short, 0.6 as long as forewing, with 35 segments. **Temple**: 1.4 as long as eye in lateral view, its punctures a little larger and denser than in *T. ranti*, emitting long, dense blackish setae. **Clypeus**: 2.1 as wide as long; weakly convex in profile, only slightly raised toward base. **Mesoscutum**: with notauli faintly impressed, and scarcely traceable for more than 0.3 its length. **Mesopleuron**: mostly smooth and polished with numerous medium sized to small and widely spaced punctures (sparser than in *T. ranti*), except that its upper 0.25, including subalarum, has denser punctation and some irregular wrinkling. **Lower metapleuron**: with numerous small, uniformly much separated punctures. **Pleural carina**: faint to absent, not percurrently traceable. **Radial cell**: 3.8 as long as wide. **Second hind tarsomere**: 4.4 as long as deep at apex. **Ovipositor**: sheathed portion 1.2 as long as apical depth of sixth tergite.

Male. unknown.

Type Material. Holotype, female: BOLIVIA, La Paz, Huaraco-Aroma, colectado de cultivos de quinua, salió de larva de Noctuidae, 12-III-1994, R. Altamirano. Paratypes, 2 females: same data as holotype, except collected as adults in quinua plantations, 12-23-III-1994. Holotype in Instituto Miguel Lillo. Paratypes in AEI (1 female) and FSCA (1 female).

Variation. The paratype females show the following minor differences with respect to the holotype:

flagellum nearly all black with only slight brown staining; orbits without pale markings except for a very short dull yellowish band on face and front; mesosternum almost entirely red, with black only in and along the mid-ventral longitudinal sulcus as well as anteriorly and posteriorly bordering the prepectal and the postpectal carina; gaster with dull reddish brown on apex of first tergite, irregularly on apical 0.5 of second tergite, as well as near base on third tergite; fore wing length 10.6-12.0 mm; clypeus 2.0 as wide as long; radial cell 4.1 as long as wide; second hind tarsomere 4.2 as long as deep; sheathed portion of ovipositor 1.1 as long as apical depth of sixth tergite.

Relationships. *Therion wileyi* is a close relative of *T. ranti* from which it may be distinguished by its longer temple (1.4 as long as eye in lateral view); generally blackish rather than pale brown setae on temple and elsewhere; extensively black marked mesosoma, including much of propodeum; absence of a bright yellow spot on prestigma and pterostigma; gastric tergites 1-3 mostly shining black rather than predominantly red; by its gently convex clypeus that is not stongly raised toward base as viewed in profile; its weakly impressed notauli which are traceable at most on basal 0.3 of mesoscutum; lack of strong, longitudinally biased wrinkles on upper 0.3 of mesopleuron including subalarum; by its nearly obsolete pleural carina; as well as by its slightly shorter female second hind tarsomere (4.2-4.4 as long as deep, versus 4.6-5.4 as long as deep in *T. ranti*).

Hosts. The holotype female was reared from an unidentified noctuid moth larva on *Chenopodium quinoa* (Angiospermae: Chenopodiaceae).

Field Notes. The type series was collected near La Paz, Bolivia at more than 3000 m altitude in the high Andean Steppe or Puna Biogeographic Province (Cabrera and Willink 1973). *Chenopodium quinoa*, host plant of the noctuid larva from which *T. wileyi* was reared, is a halophyte endemic to the Andean highlands of Bolivia and Perú, where it is widely cultivated for its edible seeds and leaves.

Specific Name. For Mr. Jim Wiley, who for many years has expertly and patiently managed the Hymenoptera collection at the FSCA. Specialists everywhere owe Jim a unique debt of gratitude for his generosity and depth of knowledge, which have helped to make the FSCA one of the largest, best curated, and most accesible collections of its kind.

Collections

Material for this study was examined in the following institutional collections.

AEI American Entomological Institute
3005 SW 56th Avenue,
Gainesville, FL 32608

FSCA Florida State Collection of Arthropods
Division of Plant Industry
Florida Department of Agriculture and
Consumer Services
P.O. Box 147100
Gainesville, FL 3261-7100

IML Fundación e Instituto Miguel Lillo
Miguel Lillo 251
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Dr. Patricia A. Fidalgo of the Facultad de Ciencias Naturales e Instituto Miguel Lillo at Tucumán, Argentina provided the specimens of *Therion wileyi*. Dr. Lionel A. Stange of the Division of Plant Industry (FSCA) read the manuscript and made several suggestions for its improvement. Dr. David Wahl facilitated access to the collection of the American Entomological Institute (AEI).

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