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A new *Anagyrus* (Hymenoptera: Encyrtidae) from Argentina, parasitoid of *Hypogeococcus* sp. (Hemiptera: Pseudococcidae) on *Harrisia pomanensis* (Cactaceae)

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A new species of *Anagyrus* Howard (Hymenoptera: Encyrtidae), *A. lapachosus* **sp. n.**, is described from Salta Province of Argentina as a parasitoid of *Hypogeococcus* sp. (Hemiptera: Pseudococcidae) on *Harrisia pomanensis* cactus (Cactaceae). It is a candidate "new association" biological control agent for quarantine evaluation and possible following introduction to Puerto Rico (USA) against another *Hypogeococcus* sp., commonly called the *Harrisia* cactus mealybug and often misidentified as *H. pungens* Granara de Willink (according to our unpublished data the latter attacks only Amaranthaceae), which devastates or threatens the native cacti there and also in some other Caribbean islands (Triapitsyn, Aguirre *et al.* 2014; Carrera-Martínez *et al.* 2015).

Species of *Anagyrus* in Argentina were recently reviewed and keyed by Triapitsyn, Logarzo *et al.* (2014) who also described two new taxa reared in that country from *Hypogeococcus* spp., *A. cachamai* Triapitsyn, Logarzo & Aguirre and *A. quilmes* Triapitsyn, Logarzo & Aguirre; these were then further illustrated by Triapitsyn, Aguirre *et al.* (2014).

All the specimens had been initially preserved in 80% ethanol; later they were dried using a critical point dryer, point-mounted, and then two females and two males were slide-mounted in Canada balsam. Terms for morphological features in the description are those of Gibson (1997). Measurements are given in micrometers (μm) as length or length: width (for the wings). An abbreviation used is: F = antennal funicle segment. Type specimens are deposited in the collections of Fundación e Instituto Miguel Lillo, San Miguel de Tucumán, Tucumán, Argentina (IMLA), Museo de La Plata, La Plata, Buenos Aires, Argentina (MLPA), and Entomology Research Museum, University of California, Riverside, California, USA (UCRC).

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Anagyrus lapachosus Triapitsyn, Aguirre & Logarzo sp. n.
(Figs 1–10)

Type material. Holotype female [MLPA] on slide (Fig. 4) labeled: 1. "ARGENTINA: Salta Los Lapachos, 24°36.114'S 65°04.877'W, 20.xi.2014 G. A. Logarzo, M. B. Aguirre, M. A. Saracho Bottero from *Hypogeococcus* sp. on *Harrisia* sp. Code: 24R"; 2. "Mounted by V. V. Berezovskiy 2015 in Canada balsam"; 3. [magenta] "*Anagyrus lapachosus* Triapitsyn, Aguirre & Logarzo HOLOTYPE ♀"; 4. "Det. by S. V. Triapitsyn 2015".

The host plant was later identified as *Harrisia pomanensis*. The holotype is in good condition, almost complete (lacking one middle leg), dissected under 3 coverslips.

Paratypes (9 ♀, 14 ♂), same data as the holotype [2 ♀, 2 ♂ on points, IMLA; 3 ♀, 5 ♂ on points and 1 ♂ on slide, MLPA; 3 ♀, 5 ♂ on points and 1 ♀, 1 ♂ on slides, UCRC].

Description. FEMALE (holotype). Color. Body (as in Fig. 1) mostly brown or dark brown except frontovertex mostly orange (except face brown between toruli), eyes and ocelli gray; sides of pronotum yellow, mesopleuron orange; radicle brown, base of scape white and rest of scape brown or dark brown except for a wide, transverse, subapical white band, pedicel brown basally and white apically, F1 brown, rest of flagellum whitish gray; legs whitish except tarsi

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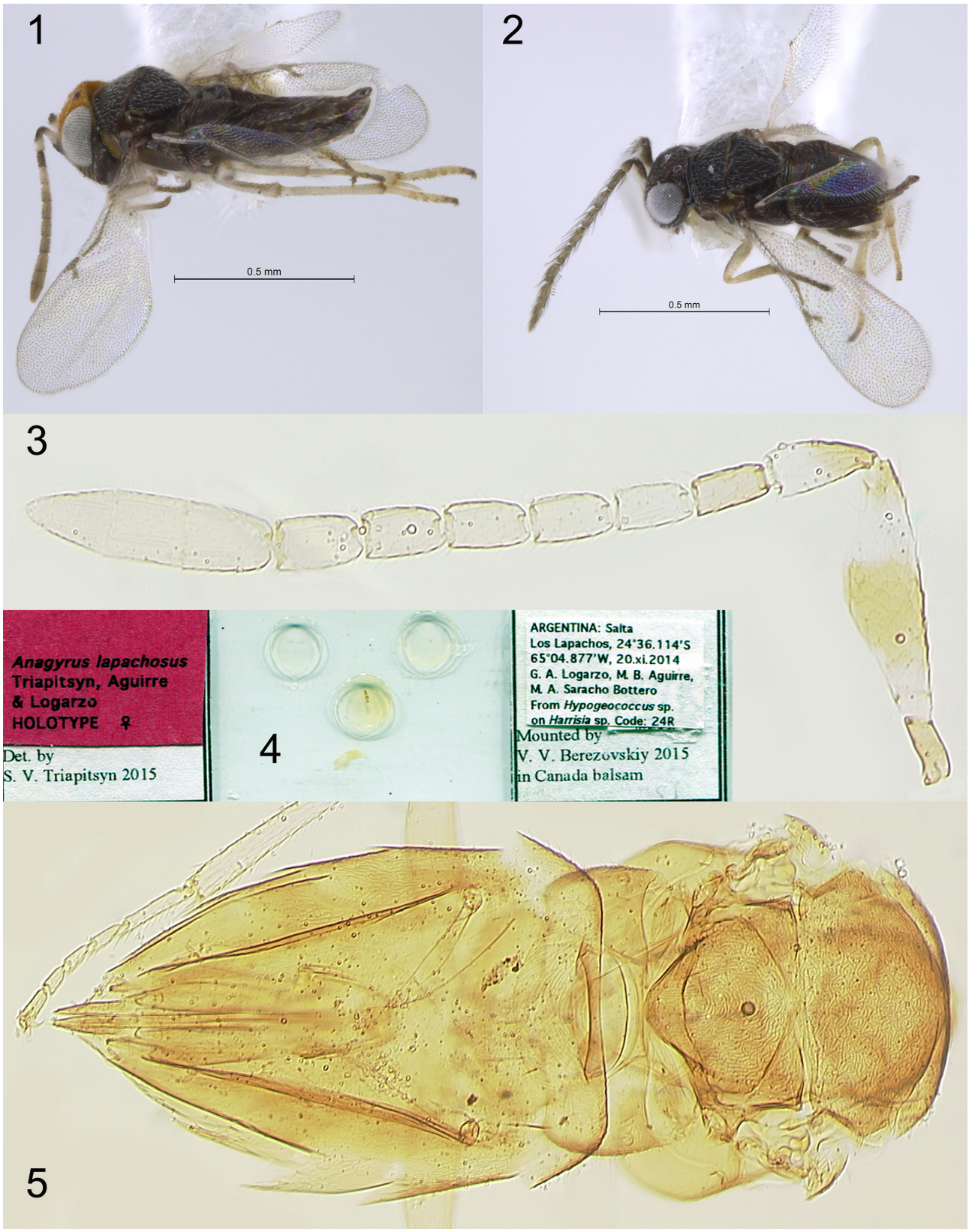
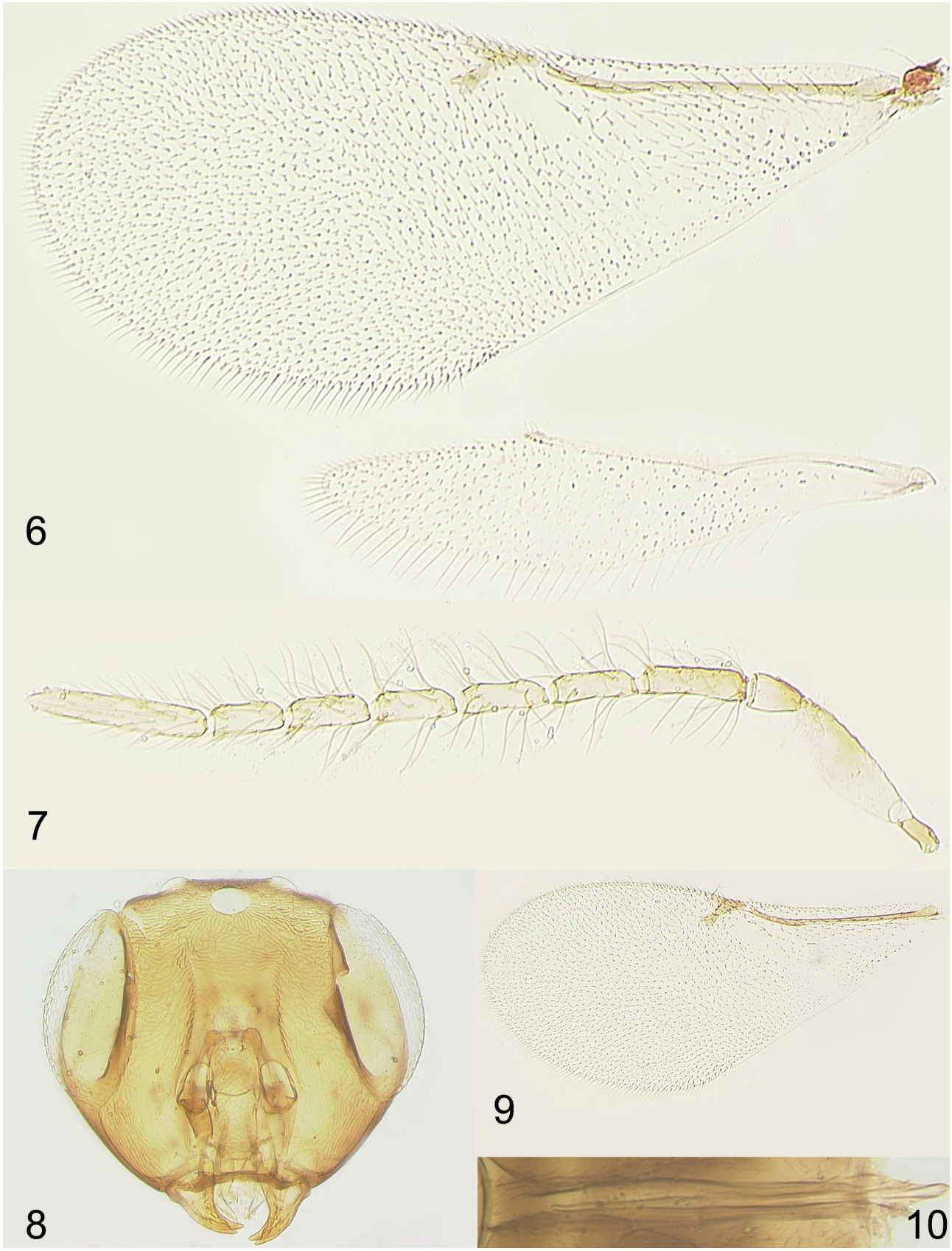
grayish. Sculpture. Head, particularly frontovertex, mesoscutum, axilla, scutellum, mesopleuron, propodeum, and gaster partially, with fine but conspicuous coriaceous-rugose sculpture; scape mostly reticulate. Pubescence. Frontovertex and pronotum with inconspicuous white setae; mesoscutum, axillae, and scutellum with numerous short, white setae except for a few longer ones on scutellum.



FIGURES 1–5. *Anagyrus lapachosus*: 1, ♀ habitus (paratype); 2, ♂ habitus (paratype); 3, ♀ antenna (holotype); 4, holotype slide; 5, ♀ mesosoma and metasoma (paratype).



FIGURES 6–10. *Anagyrus lapachosus*: 6, ♀ fore and hind wings (holotype); 7, ♂ antenna (paratype); 8, ♂ head (frontal view, paratype); 9, ♂ fore wing (paratype); 10, ♂ genitalia (paratype).

Head (as in Fig. 8) slightly wider than high. Toruli just below level of lower eye margin. Ocelli in an almost equilateral triangle; minimum distance between posterior ocelli (POL) about 2× greater than that between posterior ocellus and eye margin (OOL). Maxillary palpus 4-segmented, labial palpus 3-segmented. Antenna (Fig. 3) with radicle 2.4× as long as wide, rest of scape broadened medially, 3.3× as long as wide; pedicel 2.2× as long as wide, longer than F1; funicle segments all longer than wide, F1–F5 equal in length and slightly shorter than F6; clava 3-segmented, 3.6× as long as wide and about as long as combined length of F4–F6; flagellar segments all with several (at least 2) longitudinal sensilla except F1 with 1 such sensillum. Mesosoma (as in Fig. 5). Mesoscutum about 2× as wide as long; scutellum a little wider than long, a little longer than mesoscutum, scutellar apex narrowly rounded, placoid sensilla about in the middle of scutellum.Wings (Fig. 6) not abbreviated, fore wing extending at least a little beyond apex of gaster. Fore wing 2.35× as long as wide, with disc hyaline; linea calva interrupted by 5–6 rows of setae; costal cell about 16× as long as wide; marginal vein longer than wide, postmarginal vein a little shorter than stigmal vein. Hind wing 4.5× as long as wide, with disc hyaline.

Legs. Mesotibial spur slightly shorter than mesobasitarsus.

Gaster (as in Fig. 5) longer than mesosoma. Ovipositor occupying about 0.6 length of gaster, not exserted beyond its apex, and 1.3× as long as metatibia.

Measurements (µm) of the holotype. Mesosoma 455; metasoma 585; ovipositor 333. Antenna: radicle 36; rest of scape 145; pedicel 61; F1 42; F2 42; F3 42; F4 42; F5 42; F6 45; clava 142. Fore wing 738:314; longest marginal seta 30. Hind wing 515:115; longest marginal seta 36.

Variation (paratypes). Body length 730–1255 µm (dry-mounted, critical point-dried specimens). Mesopleuron often orange-brown. Scape minus radicle 3.1× as long as wide; F2 sometimes with only 1 longitudinal sensillum. Fore wing 2.3× as long as wide; hind wing 4.6–4.7× as long as wide.

MALE (paratypes). Body length 600–730 µm (dry-mounted, critical point-dried specimens). Body (Fig. 2) including head (Fig. 8) mostly dark brown except frontovertex brown with some orange, sides of pronotum orange-brown, and mesopleuron either orange-brown anteriorly or mostly brown; antenna with radicle brown, rest of scape mostly white except brown apically on dorsal side, pedicel brown basally and white apically, and flagellum whitish-gray; legs as in female. Antenna (Fig. 7) with scape minus short radicle 2.8–3.1× as long as wide; funicle segments all longer than wide (F1 the longest); clava entire, 4.4–5.4× as long as wide; flagellar segments all with longitudinal sensilla and numerous long setae, F6 with 5 and base of clava with 2 scale-like structures ventrally. Fore wing (Fig. 9) 2.2–2.3× as long as wide; hind wing 4.4–4.6× as long as wide. Gaster shorter than mesosoma; genitalia (Fig. 10; length 218–245 µm) occupying 0.5–0.8 length of gaster.

Diagnosis. The new species is similar to both *A. brevistigma* De Santis (1964), described from Balcarce (San José de Balcarce), Buenos Aires, Argentina and later recorded in Pernambuco and São Paulo, Brazil from the mealybug *Antonina graminis* (Maskell) (De Santis 1980), and *A. tanystis* De Santis (1964), described from a single female specimen from the Autonomous City of Buenos Aires, Argentina. A modified couplet 14 from Triapitsyn, Logarzo *et al.* (2014) is provided below to separate females of these three species.

14(11) Scape (excluding radicle) white basally and relatively slender (Fig. 3; also see fig. 9, p. 62 in De Santis (1964)), at least 3.1× as long as wide 14a

\- Scape (excluding radicle) dark brown basally and relatively broad (see fig. 14, p. 211 in Triapitsyn, Logarzo *et al.* (2014)), about 2.5× as long as wide ..... *A. brevistigma* De Santis

14a(14) Scape (excluding radicle) 4.0× as long as wide; F1 conspicuously longer than F2; clava markedly shorter than combined length of F4–F6 ..... *A. tanystis* De Santis

\- Scape (excluding radicle) 3.1–3.3× as long as wide; F1 about as long as F2; clava about as long as combined length of F4–F6 ..... *A. lapachosus* **sp. n.**

Anagyrus lapachosus also differs from *A. chilensis* Brèthes, known from a single, incomplete female from Santiago, Chile, in the female having a much narrower scape (for comparison, see fig. 26, p. 217 in Triapitsyn, Logarzo *et al*. 2014); the latter species was not included in their key. In Noyes (2000), *A. lapachosus* keys to couplet 49 together with *A. calyxtoi* Noyes from Costa Rica, but female of the latter has a broader scape (about 2.3× as long as wide) which is black basally (Noyes 2000).

The new taxon is not compared with any of the numerous described species of *Anagyrus* from the Old World because its host belongs to a mealybug genus whose native range is restricted to the New World, and also the host plant of this *Hypogeococcus* sp. is a cactus native to South America. According to our unpublished data, other *Anagyrus* species from Argentina that parasitize *Hypogeococcus* spp. appear to be host specific to this genus but not necessarily to a particular species within it. In Noyes & Hayat (1994) for instance, *A. lapachosus* would not key to any even remotely similar species.

Etymology. The species name is derived from that of its type locality.

Comments. Little is known about biology of this parasitoid besides its host association and some basic bionomic data provided below. Under laboratory conditions, females of *A. lapachosus* can attack nymphs of 1st and 2nd instars of the host *Hypogeococcus* sp. reared on *Cleistocactus baumannii* and *Harrisia pomanensis*. Adult wasps emerged from mummies of the adult mealybugs. Their longevity was 5±3 days at 25°C; females emerged with 30±18 mature eggs. The developmental time of the parasitoid from egg to adult was 46±14 days for females and 42±6 for males at 25°C.

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