New record of the genus *Ithytrichia* (Trichoptera: Hydroptilidae) for South America, with descriptions of male, larva and pupa of a new species from northwestern Argentina

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Abstract

Ithytrichia is a small genus of Hydroptilidae, recorded from Europe, North America, and north Central Mexico. The first record of *Ithytrichia* for South America is presented here. A new species of this genus *Ithytrichia ferni* is described from northwestern Argentina. Diagnostic characters of the male imago, pupa and larva are described and illustrated. Biological notes are included.

Keywords: Trichoptera, taxonomy, biology, immature stages, South America

Introduction

Ithytrichia is a small Holartic genus of Hydroptilidae (Orthotrichiini), with only three American species. *Ithytrichia mazon* Ross (1944) is recorded from North America. *Ithytrichia clavata* Morton (1905) is recorded from North America and Europe. Finally *Ithytrichia mexicana* Harris and Contreras-Ramos (1989) has been described from north Central Mexico. The genus was not known to occur in other Neotropical regions (Flint et al. 1999).

The larvae of *Ithytrichia* species have been described several times (Nielsen 1948; Wiggins 1996). They live on the surface of stones and on moss in running water habitats (Wiggins 1996).

During the past 10 years many quantitative and qualitative samples of bentic macroinvertebrates were taken from rivers in northwestern Argentina. Some larvae of *Ithytrichia* were identified but the male adults were not found in the light traps. Recently in Tucumán province some pupae were collected and reared through to adults.

In this work, the genus *Ithytrichia* is recorded from South America for the first time. A new species of *Ithytrichia* is described from northwestern Argentina. The male adult, pupa and larva are described and illustrated. Some biological observations are recorded. The general morphological terminology of the larva follows that of Wiggins (1996) and adult terminology follows that of Marshall (1979).

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Materials and methods

Larvae were collected from the surface of gravel in mountain rivers with a Surber Sampler net. They were sparsely distributed and only low numbers of individuals could be found. The pupae were collected by hand from the bottom of the river in slow running sandy sections, where they were attached to the low face of boulders. Pupae were reared in plastic bowls with water from the river but were placed in individual vials to assure correct association with the larva.

The larval sclerites were examined and compared to larvae collected from other localities. Larval characters were described from such an associated larva. Pupal characters were described from the pupal exuviae after adult emergence. The abdomina of male adults and the larvae were cleared in a 10% NaOH solution and then neutralized with phenol. The larva, pupal cuticle and the cleared abdomen of the male were mounted in glycerin for observation and illustration. All material is preserved and stored in 75% ethyl alcohol.

Systematic account

Ithytrichia ferni Rueda Martín, sp. n.

Material examined

Holotype. 3 imago, Argentina, Tucumán Prov., Tafi Viejo, Río Tafi, S26°43'25", W64°17'26", 827 m, 13.IV.2005, Rueda Martín col. *Paratypes.* 1 3, Argentina, Tucumán Prov., A° El Ceibalito, S26°17'6", W65°31'28", 1210 m, 24.X.1999; 1 3 metamorphotype, 2 pupae, Argentina, Tucumán Prov., Tafí Viejo, Río Tafí, 13.IV.2005, Rueda Martín col.; 1 larva Argentina, Tucumán Prov. Burruyacu, Río del Nío, S26°26'28", W64°59'20", 1020, 7.VII.1999, C. Molineri col.; 7 pupae, 8 larvae, Argentina, Salta, Santa Victoria, Lipeo, Río Los Naranjos, S22°25'47", W64°44'20", 1109 m, 13.XI. 2004, Rueda Martín col.

Diagnosis

Segments IX and X of the male of *I. ferni* are fused as also seen in *I. mexicana* Harris and Contreras-Ramos (1989), but the apex of segment X is produced into a pair of hooked processes (Figures 1px and 2px), and the inferior appendages are divided into two parallel processes in the new species (Figures 1dp, vp and 3dp, vp).

The larva differs from other larvae of this genus because of the presence of gill filaments on abdominal segments VIII and IX and in the shape of the lateral sclerite of the anal proleg (Figure 14ls).

Male imago

Length of forewings 2.5 mm. General colour in alcohol brown. Segment VI with a short ventral spine directed posteriorly. Segment IX anteriorly rounded in lateral view, bearing posterior strong spine (Figure 1spix) which is slightly curved to the mid-line in dorsal view (Figure 2spix). Segment X fused with IX; in lateral view bearing posterior hooked process (Figure 1px); in dorsal view the pair of posterior hooked processes is divergent (Figure 2px). Inferior appendages divided into two processes; in lateral view dorsal process broad basally and narrowed at the tip (Figure 1dp); ventral process narrowed at the tip with ventral border straight and dorsal border angled (Figure 1vp); in ventral view dorsal and ventral processes narrowed at the tip and slightly curved to the mid-line (Figure 3vp and dp). Subgenital plate



Figures 1-7. *Ithytrichia ferni*, (1-4) male imago; (5-7) pupa. (1) Lateral view of male genitalia (aedeagus removed); (2) dorsal view of male genitalia (inferior appendages not illustrated); (3) ventral view of male genitalia; (4) dorsal view of aedeagus; (5) pupal mandibles; (6) pupal hook plates; (7) pupal case. Abbreviations: spix-spine of segment IX; px-hooked process of segment X; dp-dorsal process of inferior appendages; vp-ventral process of inferior appendages; spl-subgenital plate; spp-spiral process. Scale bars 0.5 mm.

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slightly longer than inferior appendages, broadened at the tip; in lateral view with apex decurved bearing a dorsal lobe directed anteriorly (Figure 1spl); in dorsal and ventral views apex shallowly bifid bearing dorsally Y-shaped non-sclerotized area (Figures 2spl and 3spl). Aedeagus long with median constriction; distal half with long, basal, spiral process extending parallel to apical section (Figure 4spp); apex slightly rounded.

Рира

Body length 3 mm. Mandible 2.5 times as long as the width of base, bearing small teeth at the mid-length of internal margin (Figure 5). Dorsal hook plates on abdominal segments III to VIII; segments III to VI with two pairs of dorsal hook plates, the posterior ones smaller (Figure 6).

Pupal case

Length 4 mm. The anterior end of pupal case (head-end of pupa) corresponds to the posterior opening of larval case. Anterior end broadened, closed and bearing median filaments. Posterior end narrowed with a rounded projection closing the larval anterior opening. Lateral borders reinforced (Figure 7).

Larva

Final instar. Length 2.5 mm. Head slightly narrowed anteriorly; antennae rod-like clearly apparent (Figure 9an); labrum bearing branched setae (Figure 9slab); apex of mandibles with external biphid tooth and internal smaller tooth, median portion almost straight with border crenullate (Figure 10). Pronotum, mesonotum and metanotum sclerotized; mid-dorsal ecdysial line visible. Anterior legs shorter than mid and posterior legs (Figures 11–13). Abdomen strongly compressed laterally with lobate projections in dorsum of segments III to VII and in venter of segment III to VI and VIII (Figure 8); segment VIII with median gill filament; segment IX with oval dorsal sclerite bearing gill filaments (Figure 14ds), lateral sclerites bearing apical gill filaments and with hooked anal claw (Figure 14ls and cl).

Larval case

Case of 5th instar larva. Length 3 mm. Translucent and flattened. The case is made entirely of silken secretion; anterior opening small; posterior opening broadened; lateral borders reinforced (Figure 15).

Etymology

This species is dedicated to my husband, Fernando Di Brigida.

Biology

The larvae of *Ithytrichia ferni* were found on the upper face of pebbles (32-64 mm) from rivers with extensive marginal vegetation. The pupae were found attached to the lower face of large boulders (>256 mm) in tranquil depositional areas of the river. The adult males used in this work were all reared from pupae.



Figures 8–15. *Ithytrichia ferni*, larva. (8) Larva in lateral view; (9) head, dorsal view; (10) larval mandibles; (11) leg I; (12) leg II; (13) leg III; (14) abdominal segment IX; (15) larval case. Abbreviations: an-antenna; slab-labrum; ds-dorsal sclerite; ls-lateral sclerite; cl-anal claw. Scale bars 0. 5 mm.

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References

Flint OS Jr, Holzenthal R, Harris SC. 1999. Catalog of the Neotropical Caddisflies (Insecta: Trichoptera), Columbus, OH, Ohio Biological Survey.

Harris SC, Contreras-Ramos A. 1989. *Ithytrichia mexicana* (Trichoptera: Hydroptilidae), a new species of caddisfly from Mexico. Entomological News 100:176-178.

Marshall JE. 1979. A review of the genera of the Hydroptilidae (Trichoptera). Bulletin of the British Museum (Natural History) Entomology Series 39(3):135-239.

Morton KJ. 1905. North American Hydroptilidae. New York State Museum Bulletin 86:63-85.

Nielsen A. 1948. Postembryonic development and biology of the Hydroptilidae. Kongelige Danske Videnskabernes Selskab. Biologiske Skrifter 5:1–200.

Ross HH. 1944. The caddis flies, or Trichoptera, of Illinois. Bulletin of the Illinois Natural History Survey 23:1-326.

Wiggins GB. 1996. Larvae of the North American caddisfly Genera (Trichoptera), 2nd ed. (1998). Toronto: University of Toronto Press.