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Studies of Neotropical Caddisflies, XX: Trichoptera Collected by the Hamburg South-Peruvian Expedition

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(with 9 figures)

Nearly forty years ago the Hamburg Museum organized an expedition under the direction of Prof. Dr. ERICH TITSCHACK to south-central Peru that was in the field from the end of February into June of 1936. The results of this expedition were presented primarily in a series of four volumes under the title „Beiträge zur Fauna Perus" in the years 1951—1954 (TITSCHACK, 1951 a, 1951 b, 1952, 1954). The first volume (TITSCHACK, 1951 a) provides an extensive and exellent account of the itinerary, collecting localities, and accounting of the groups of organisms collected.

TITSCHACK lists (1951 a, p. 388) a total of 451 Trichoptera as taken on the expedition. However, Prof. Dr. H. WEIDNER was only able to locate and forward 160 specimens in 1973. Undoubtedly many of the missing specimens have been lost or destroyed during the intervening years, but others have probably been widely dispersed amongst the Trichopterists of the World and may still be reported upon.

In the present paper I have included records of all the material forwarded to me, and also the few published records based on the expedition's material. In addition, a few new synonymies involving other species from the same area are included. The holotypes of the new species have been returned to the Zoologisches Institut und Zoologisches Museum, Universitat Hamburg, but duplicate specimens have been retained at the National Museum of Natural History (USNM). Included in the type-series, whenever available, are examples from the collections of the USNM and Cornell University, Ithaca, N. Y. (CU).

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I wish to thank Prof. Dr. H. Weidner who suggested that I undertake this study and very kindly forwarded the material. I also thank Dr. L. D. Zhiltzova of the Zoological Institute, Academy of Sciences, USSR who generously facilitated the loan of certain of Martynov's types of Peruvian Trichoptera, and Mme. S. Kelner-Pillault of the Museum National d'Histoire Naturelle, Paris for the loan of the type of *Ventrarma callosa* Navas.

Distribution

The records from the expedition's collections are not sufficient in themselves to show any distributional patterns. However, some species are known from several additional localities, which do tend to correlate with several Biogeographic Provinces. The map and descriptions of Cabrera and Willinik (1973) have been most useful to me in trying to decipher these patterns, and I have, therefore, used their terminology for the Biogeographic Provinces.

The known points of distribution for *Leptonema boliviense* Mosely, *Smicridea (R.) magna* (Ulmer) (at least the form here recorded) and possibly for *S. (R.) titschacki* n. sp. suggest that all are rather closely restricted to the Provincia de las Yungas (Fig. 1). In Argentina, at least, *S. (R.) magna* is also found in the Provincia Puneña, and I suspect that all species have a certain tolerance toward the higher, drier provinces provided the necessary aquatic habitats are present. In any case, these species are found mainly along the eastern slope of the Andes in a moist forested region of some relief.

In contrast to this narrow, southwardly pattern of distribution, is the pattern exhibited by *Atopsyche callosa* (Navas) and *Smicridea (R.) acuminata* Flint. These species are known from at least as far north as Costa Rica, but apparently also in wet, hilly, and usually forested areas very similar to those of the former group. In the northern extremity of their range they are found in the Provincias Pacifica and Venezolana, as well as the Yungas.

The species *Smicridea (R.) peruana* (Martynov), which is found far to the south in northwestern Argentina, seems to be found only in the higher, drier, provinces above the Yungas: The Provincia Prepuneña, Puneña, and Altoandina (Fig. 1).

Family Rhyacophilidae

Atopsyche callosa (Navás)

Ventrarma callosa Navás 1924, 78.

Atopsyche callosa (Navás): Ross 1947, 128; 1953, 293. — Ross & King 1952, 204.

Atopsyche alconura Ross 1953, 292 — Flint 1963, 458. — Weidner 1964, 69 **[New Synonymy].**

Atopsyche schmidi Denning 1965, 267 **[New Synonymy].**

This appears to be one of the more widely distributed species of the genus. I have examples from Costa Rica, Panama, Colombia, and Venezuela. The abdomen of the type female of *Ventrarma callosa* Navás, which consists only of a metathorax and abdomen glued to a card, was cleared and studied by me. The genitalia are identical to those of other females

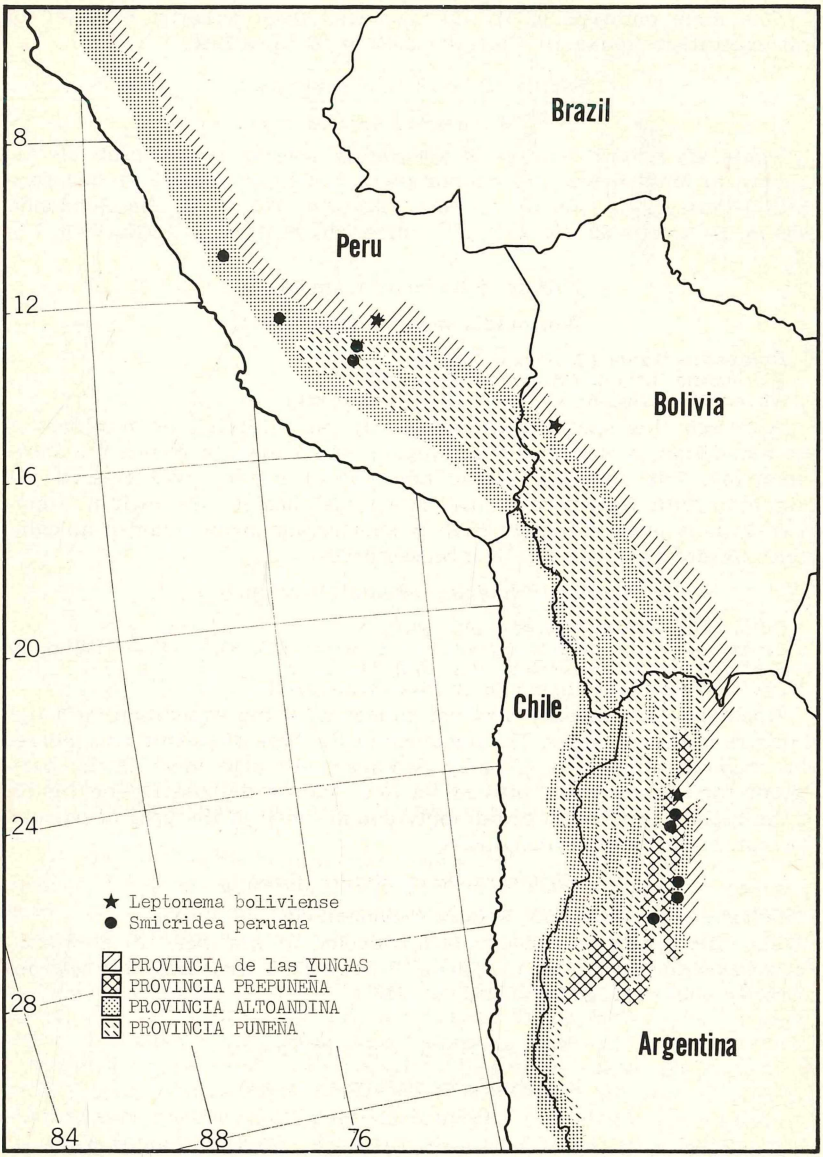


Fig. 1: Distribution map.

with associated males from Costa Rica. The original figures of *A. schmidi* Denning are sufficient to identify that name with the same Costa Rican males. The description and figures of *A. alconura* Ross are also clearly of the same species.

One male paratype of *A. alconura* was from material collected on this expedition: Süd-Peru, Cangallo, 2600 m, 22 April 1936.

Family Glossosomatidae

Mexitrichia species

There are several females of apparently several species, probably belonging to *Mexitrichia* that cannot be identified to species at this time.

Süd-Peru, Sivia, 250 m, 15 May 1936 (No. 336), 2 ♀; Río Sondondo, 2400 m, 18 April 1936 (No. 447), 2 ♀; same, but 20 April 1936 (No. 570), 1 ♀.

Family Philopotamidae

Wormaldia insignis (Martynov)

Dolophilus insignis Martynov 1912, 29.
Wormaldia insignis (Martynov): Ross 1956, 62.
Wormaldia ostina Ross 1956, 64 **[New Synonymy].**

Although this species was apparently not collected by members of the expedition, it is found in the region, and I wish to record the above synonymy. The abdomen of the holotype of *insignis* was cleared and compared with figures of *ostina*. The mesal lobe of the eighth tergum in *insignis* is proportionately slightly shorter and more rounded apically, which difference appears to be inconsequential.

Chimarrhodella galeata (Martynov)

Chimarrha galeata Martynov 1912, 30.
Chimarrahodella galeata (Martynov): Lestage 1925, 37. — Flint 1971 b, 20.
Protarra galeata (Martynov): Ross 1956, 69.
Protarra sagittoides Ross 1956, 69 **[New Synonymy].**

Apparently this species was not collected by the expedition, although it occurs in nearby areas. The abdomen of the type of *galeata* was cleared and studied recently. It is badly damaged, although most of the parts except for the cerci are present on one side or the other. The figures of the type of *sagittoides* could apply equally well to the type of *galeata*; the names are clearly synonymous.

Chimarrhodella ulmeri (Ross)

Protarra ulmeri Ross 1956, 69 **[New Combination].**

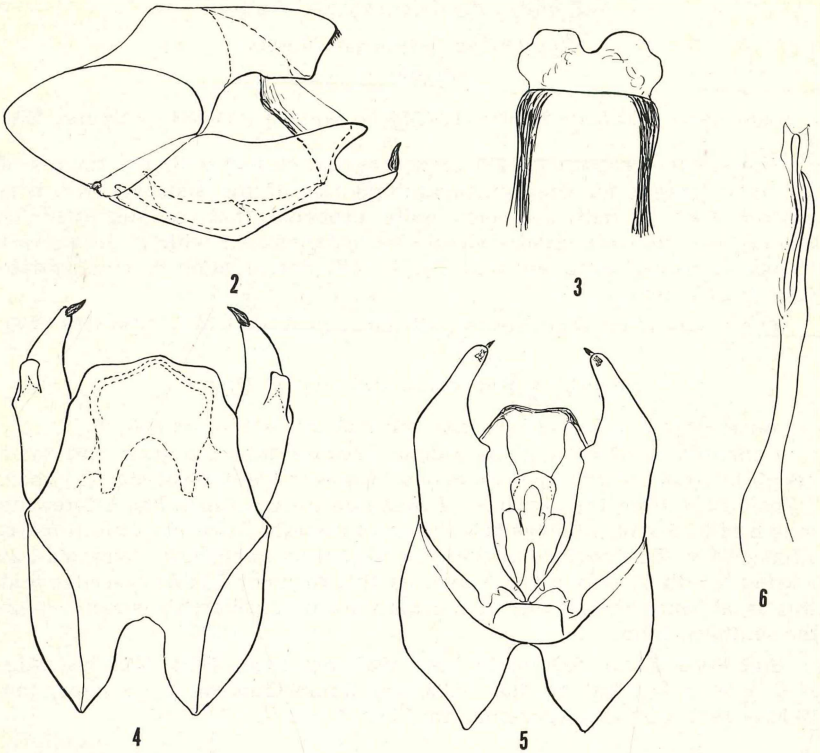
The holotype of this species was collected by members of the South-Peruvian Expedition: Aina, 1400 m, 7 May 1936 (No. 652), but was incorrectly published as „Alna, July 5, 1936".

Family Hydroptilidae

Rhyacopsyche peruviana n. sp.

(Figures 2—6)

This species, the first of the genus known from western South America, very clearly falls into the *mexicana* group as defined by Flint (1971 a, p. 517). From all other known species of the group, *peruviana* differs in the short, nearly truncate, and completely fused ninth tergal lobes, the differently shaped subgenital plate and claspers, and aedeagus with its pointed lateral process.



Figs. 2—6: *Rhyacopsyche peruviana* Flint sp nov. 2 male genitalia, lateral; 3 female eighth tergum, dorsal; 4 male genitalia, dorsal; 5 male genitalia, ventral; 6 aedeagus dorsal.

Adult. — Length of forewing, 3 mm. Color brown, legs paler, basal segment of antenna with white hair (broken off beyond); forewing mostly brown, paler posteriad, with costal cell apparently reflexed for $^2/_3$ its length and bearing a brush of erect, brown hairs. Seventh sternite with a small apicomesal point. Male genitalia: Ninth segment produced and rounded anterolaterally; dorsal lobes completely fused mesally, truncate apically in both dorsal and lateral aspects. Tenth tergum borne from venter of ninth tergum, broad, and truncate apicad, apically articulated with slender subgenital plate between claspers. Clasper elongate, bifid apically with ventral arm bearing an enlarged, erect seta. Aedeagus tubular, with apicolateral process strongly sclerotized and pointed apically, tubule extending freely beyond process and capped with lightly sclerotized lobes. Female genitalia: Eighth sternum simple apically. Eighth tergum with elongate, parallel, dark bars laterally; posterior margin entire, with a pair of buttonlike lobes, broadly joined mesally.

Material. — Holotype, male: Süd-Peru, Sivia, 520 m, 18 May 1936, am Licht (No. 461). Paratype: Same data, 1 ♀.

Family Hydropsychidae

Leptonema boliviense Mosely

(Figure 1)

Leptonema boliviense Mosely, 1933, 36. — Weidner, 1964, 83. — Schmid, 1964, 317.

The single specimen here recorded agrees closely with the figures of the type, except for the ventrobasal process of the aedeagus which is shorter than figured. It seems quite probable that, as suggested by Schmid, loc. cit., this species should be synonymized with *L. stigmosum* Ulmer. However, adequate material is still not at hand to substantiate fully such a step.

The single male was captured at Aina, 1400 m, 4 May 1936 (No. 328).

Smicridea (Rhyacophylax) magna (Ulmer)

Rhyacophylax magnus Ulmer 1909, 120; 1913, 391. — Weidner 1964, 95.

I identify this material as *magna* because the coloration and male genitalia do not offer any distinctions. However, the typical *magna*, which I know only from the province of Mendoza in Argentina, has a forewing length of 7—8 mm, whereas this Peruvian material, as well as much more, I have from the Province of Salta in Argentina north into Colombia has a wing length of only 4.5—5.5 mm. At this moment I must consider that this is all one species with a northern form considerably smaller than the southern form.

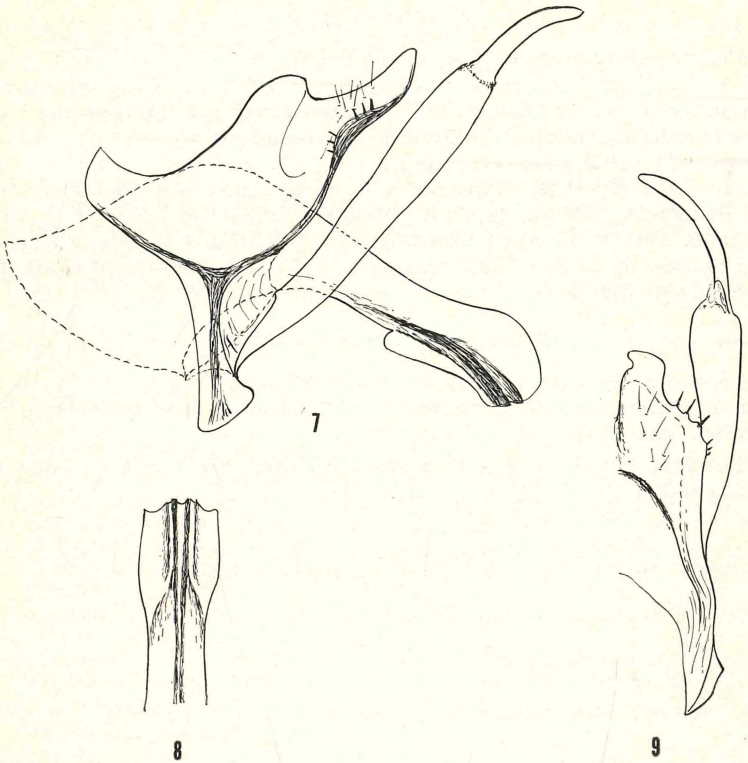
Süd-Peru, Sivia, 520 m, 15 May 1936, am Licht (Nos. 330, 369, 370), 2 ♂ 4 ♀; same, but 16 May 1936, am Baumstämmen, 1 ♀; same, but 18 May 1936, Ufer des Apurimac, am Licht, 2 ♂ 1 ♀.

Smicridea (R.) titschacki new species

(Figures 7—9)

This interesting species does not appear to have any close relatives presently known in the genus. In both coloration and genitalia it is readily recognized. The shape of the tenth tergum with its row of lateral spines and very concave apicolateral margin in dorsal aspect, and the rather simple internal sclerites and distinct ventral lobe of the aedeagus are diagnostic.

Adult. — Length of forewing, 5 mm. Color generally stramineous; head, thorax and base of forewings dark violet, forewing with dark marks additionally along anastamosis, along anal margin subbasally, in thyrdial cell, and on nygma, with a pale band subapically; female with pale areas of forewing browner. Male with width of eye dorsally about 1/3 that of interocular distance. Fifth sternum of male with anterolateral process barely attaining anterior margin of sixth sternum; without internal sacs. Male genitalia: Ninth segment with anterior margin produced into a broadly upturned lobe. Tenth tergum divided apicomesally, with lateral margin bearing a series of short spines on enlarged bases, in dorsal aspect with lateral margin concave beyond spines, and tip slightly hooked mesad.



Figs. 7—9: *Smicridea (R.) titschaki* Flint sp. nov. 7 male genitalia, lateral; 8 apex of aedeagus, dorsal; 9 male genitalia, dorsal.

Clasper with basal segment long, margins parallel; apical segment bluntly pointed. Aedeagus with base greatly enlarged, and angled to axis of stem which is proportionately short and broad; apex rounded dorsally, with a distinct ventral lobe subapically; internal sclerites elongate, slightly curved in lateral aspect, placed near ventral margin.

Material. — Holotype, male: Süd-Peru, Sivia, 520 m, 15 May 1936, am Licht (No. 369). Paratypes: Same data, 26 ♂ 2 ♀; same, but No. 370, 1 ♂; same, but 11 May 1936 (No. 433), 1 ♂; same, but 21 May 1936, am Licht (No. 266), 1 ♂; same, but 12 May 1936, gestreift im Urwald (No. 24), 1 ♂; same, but 16 May 1936, am Baumstämmen (No. 59), 2 ♂; same, but 18 May 1956, Ufer des Apurimac, am Licht, 1 ♂ 1 ♀. Peru, Prov. Huanuco, Tingo Maria, 19—24 April 1969, P. & P. Spangler, 11 ♂ 11 ♀ (USNM). Peru, Puerto Bermudez, Río Pichis, 12—19 July 1920, 2 ♂ (CU).

Smicridea (R.) peruana (MARTYNOV)
(Figure 1)

Rhyacophylax peruanus MARTYNOV, 1912, p. 27.

I have cleared and studied the abdomen of the type of this species. The material recorded below was compared directly to the type and found to be identical. In addition to Peru, I have found the species to be common in areas of northwestern Argentina.

Süd-Peru, Oberhalb Huacana, 3600 m, 15 April 1936 (No. 141), 10 ♀. Río Sondondo, 2400 m, 18 April 1936, am Licht (No. 685), 33 ♂ 38 ♀. Cangallo, 2600 m, 22 April 1936 (Nos. 201, 569, 573), 4 ♂ 3 ♀. Ayacucho-Yucaes, 2500 m, 24 April 1936 (No. 2), 1 ♂. Tambo, 3190 m, 30 April 1936, am Fluß (No. 338), 1 ♂.

Smicridea (R.) acuminata FLINT

Smicridea (R.) acuminata FLINT, 1974, p. 37.

This species, recently described from Costa Rica and Colombia, is here recorded from Peru.

Süd-Peru, Sivia, 15 May 1936, am Licht (No. 369), 1 ♂ 8 ♀; same, but 23 May 1936, 1 ♀.

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