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SYNONYMY OF THE NEOTROPICAL MAYFLY GENERA
ASTHENOPUS AND *ASTHENOPODES*
(EPHEMEROPTERA: POLYMITARCYIDAE:
ASTHENOPODINAE)

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The polymitarcyid mayfly subfamily Asthenopodinae Edmunds & Traver, 1954, (Ephemeroptera: Polymitarcyidae) has been considered to consist of three genera. One of these, *Povilla* Navás, 1912, is restricted to the Ethiopian and Oriental Regions, and contains eight species in two subgenera (Hubbard 1984). The other two genera, *Asthenopus* Eaton, 1871, and *Asthenopodes* Ulmer, 1924, are confined to the Neotropical Region, from Colombia to Argentina. *Asthenopodes* is monobasic and *A. picteti* Hubbard, 1975, is known only from adults from Brazil and Uruguay. *Asthenopus* contains two nominal species, *A. curtus* (Hagen, 1861) and *A. gilliesi* Dominguez, 1987; the former is known from both nymphs and adults from lowlands throughout South America, and the latter is known only from nymphs from Uruguay.

The genera *Asthenopus* and *Asthenopodes* have been separated by means of characters of wing venation, leg length, and shape of the male genitalia. Discussions in more detail of the characters of these two genera and their perceived differences can be found in papers by Traver (1950, 1956), Berner (1978), and Dominguez (1988).

The recent description of *Asthenopus gilliesi* from Uruguay by Dominguez (1988) has thrown these generic distinctions into question, however. *Asthenopus gilliesi* (Fig. 2) is intermediate in character between *Asthenopus curtus* (Fig. 3) and *Asthenopodes picteti* (Fig. 1) and greatly blurs any clear demarcation at the generic level between adults assigned to these two genera. The paper by Dominguez (1988) contains an extensive discussion of this subject and there is no need to repeat it here.

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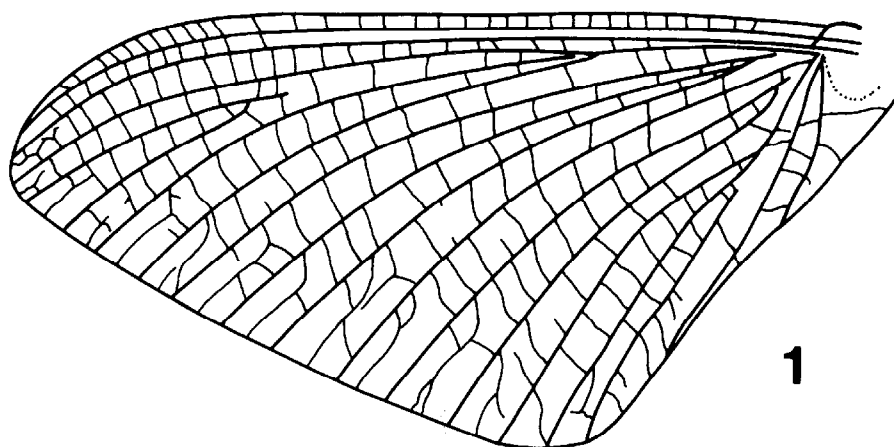


Fig. 1. Fore wing of male of *Asthenopus picteti* (Hubbard).

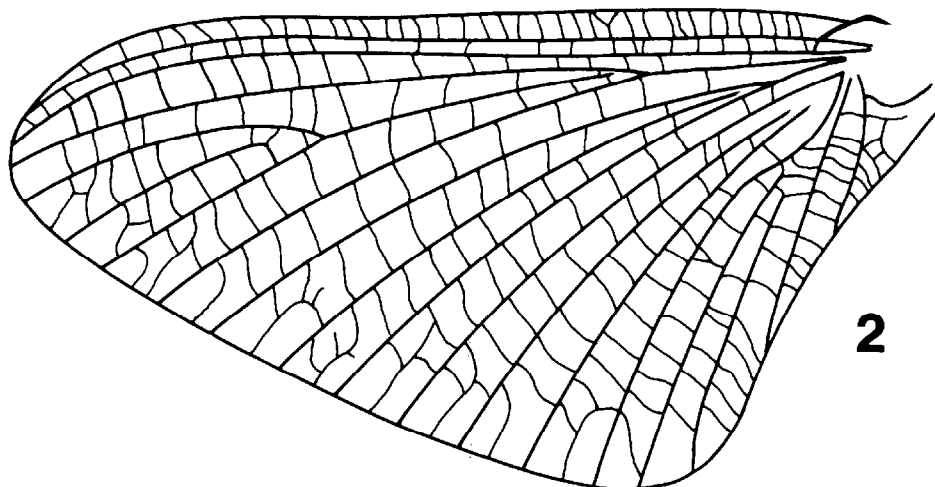


Fig. 2. Fore wing of male of *Asthenopus gilliesi* Dominguez.

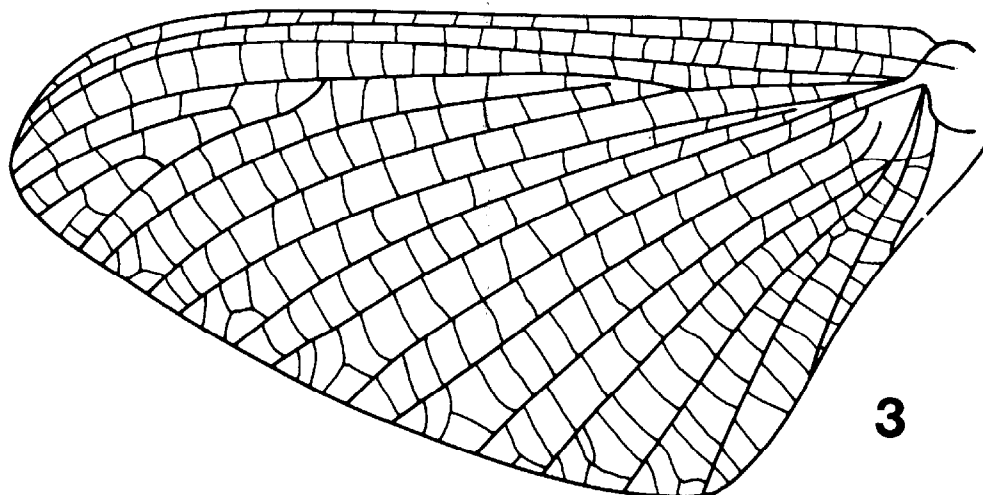


Fig. 3. Fore wing of female of *Asthenopus curtus* (Hagen).

The type-specimen of *Asthenopodes picteti* is deposited in the Naturhistorisches Museum Wien. It is in extremely poor condition with the abdomen, hind wings, and most of the legs missing. Prof. Dr. Anneliese Strenger of the Institut für Zoologie der Universität Wien arranged for us to be sent a drawing of the fore wing which is shown in Fig. 1. We have also examined two specimens of *Asthenopodes picteti* collected from Uruguay by Dr. M. T. Gillies. Some variation in characters of wing venation is evident among these specimens.

We have examined numerous nymphs of Asthenopodinae from throughout South America and have been unable to find any characters which would suggest that they are not congeneric. No nymphs have been assignable to *Asthenopodes* as such. The Neotropical nymphs are, however, easily distinguishable from those of *Povilla* (Hubbard 1984).

Because there is no longer any clear demarcation of generic distinction in the adults, and no Neotropical nymphs of Asthenopodinae are known which do not appear congeneric with *Asthenopus*, we see no usefulness in considering *Asthenopodes* a genus separate from *Asthenopus*. We therefore place *Asthenopodes* Ulmer, 1924, [Type-species: *Asthenopodes picteti* Hubbard (as *Palingenia albicans*) as a junior synonym of *Asthenopus* Eaton, 1871 [Type-species: *Palingenia curta* Hagen]. The genus *Asthenopus* now contains three nominal species: *A. curtus* (Hagen), *A. gilliesi* Dominguez, and *A. picteti* (Hubbard).

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Key to the Adults of *Asthenopus*

1. Crossveins reaching hing margin of fore wings and usually longer than distance between longitudinal veins (as in Fig. 1-2) 2
- 1a. If crossveins reach hind margin of fore wings then usually shorter than distance between longitudinal veins (as in Fig. 3) *A. curtus*
2. Prothorax of male three times as broad as long; fore legs of male one half as long as fore wings; penes broad at base, narrowing toward apex *A. gilliesi*
- 2a. Prothorax of male two times as wide as long; fore legs of male almost as long as fore wings; penes slender from base to apex *A. picteti*

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A SURVEY OF WATERHYACINTH WEEVIL POPULATIONS (*NEOCHETINA* SPP.) IN NORTHERN FLORIDA

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The waterhyacinth weevils *Neochetina eichhorniae* Warner and *Neochetina bruchi* Hustache were introduced into Florida in 1972 and 1974, respectively. The initial release of these two biological control agents was followed by their dispersal and establishment throughout virtually all areas of waterhyacinth (*Eichhornia crassipes* (Mart.) Solms) infestation in the state. Yet there has been little subsequent monitoring of their populations, and data on abundance, species proportions, and phenology are largely unavailable. This information would be helpful to an understanding of the impact of current waterhyacinth management practices on populations of these biocontrol agents (Center and Durden 1986), and is also necessary to broaden our understanding of the insect's impact on the plant itself. Here we report the results of a survey of these two insect species from a number of sites throughout northern Florida.

Waterhyacinth weevils were collected from twenty different sites in northern Florida between 12 April and 6 October of 1985. Sites spanned a range of habitat types from roadside canals to large lakes. Only one sample was collected at each site. A sample consisted of approximately 50-100 plants taken without bias from one area in the waterhyacinth infestation. Plants were placed in a plastic bag and taken to the laboratory, where they were examined immediately. All weevil adults were removed from the plants and placed in 70% isopropyl alcohol. Weevils were later identified to species and sex. Dissections were done to determine the presence of eggs and developed indirect flight muscles (Buckingham and Passoa 1986).

Five hundred and five weevils were found on 1015 plants collected at the 20 sites sampled (Table 1). Weevils were found at all sites sampled in this limited survey. Insect intensity (# insects per unit habitat), computed for each site, ranged from less than 0.1 to 1.7 weevils per plant. A total of 250 *N. eichhorniae* and 255 *N. bruchi* were collected; *N. bruchi* was found at 19 of 20 sites sampled whereas *N. eichhorniae* was found at 18 of 20 sites. Males usually outnumbered females in both species in our collections. Over the range of time in which our samples were collected some females of both species were almost always gravid. Developed flight muscles were seldom found in weevils collected in our survey, and when present were found much more frequently in females of both species than in males. Flight muscles were found from April through July in females but only in June in males of both species. Females were never found with both eggs and developed flight muscles.

The data presented in this survey are limited, and due to unequal plant-sample sizes and the collection of only one sample per site, comparisons between sites and over time