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The genus Potimirim in Central America (Crustacea, Atyidae)*

by

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The small fresh-water shrimps of the family Atyidae, genus *Potimirim* occur from the West Indies and Mexico, to southern Brazil. VILLALOBOS (4) reviewed the genus and gave detailed descriptions of *P. mexicana* (Saussure), *P. potimirim* (Müller), and *P. brasiliana* Villalobos. As a result of investigations on the fresh-water decapod crustacea of Costa Rica, *Potimirim glabra* was found to occur commonly in the waters of the Pacific slope, and its taxonomy, distribution, and biology are reviewed in this paper. *P. brasiliana* is found to be the same species as *P. glabra*. *P. mexicana* was found in the Atlantic drainage of Costa Rica. In addition, the relationships of *P. americana* (Guérin-Méneville) to the other species in the genus are briefly reviewed.

SPECIMENS EXAMINED

Potimirim glabra.

Nicaragua. Corcueva, 3 ovig. ♀ ♀ (MCZ).

Costa Rica (all from Puntarenas Prov., all TU). Río Ciruelitas, 9 mi. W. Esparta, 20 Jan. 1961, 2 ♂ ♂, 1 ovig. ♀, 19 non-ovig. ♀ ♀; same locality, 24 July 1962, 1 ♂, 4 ovig. ♀ ♀, 3 non-ovig. ♀ ♀; spring, 3 mi. upstream from Dominical, Río Barú drainage, 28 Jan. 1961, 2 ♂ ♂, 13 ♀ ♀, all juveniles; Río Balsar, trib. to Río Grande Térraba, 1 mi. E. Puerto Cortés, 22 Jan. 1962, 1 ♂, 4 ovig. ♀ ♀, 3 non-ovig. ♀ ♀; Río Camaronal, 2 mi. W Palmar Norte, 23 Jan. 1962, 1 ovig. ♀; Río Corredor at Villa Neily, Río Coto drainage, 23 Jan. 1962, 2 ♂ ♂, 7 ovig. ♀ ♀, 1 non-ovig. ♀; Río Naranja, 7 mi. W. Esparta, 12

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July 1962, 7 ovig. ♀ ♀, 6 non-ovig. ♀ ♀; Río Sardinal, 18 mi. N. W Esparta, 24 July 1962, 2 ♂ ♂, 8 ovig. ♀ ♀; Río Grande Térraba, 3 mi. N. E. Palmar Norte, 19 Jan. 1963, 24 ovig. ♀ ♀, 6 non-ovig. ♀ ♀.

Panama. Barro Colorado, Canal Zone, 1924 (3 collections), 6 ♂ ♂, 1 ♀. (USNM).

Potimirim mexicana

Costa Rica. Trib. of Río Estrella at Pleyades, Limón Prov., 23 Jan. 1963, 3 ovig. ♀ ♀. (TU).

Potimirim brasiliana

Brazil. (all USNM). São Sebastião, N. seashore region of São Paulo State, 19 January 1949, 6 ♂ ♂; same locality, 1894, 2 ♂ ♂; Río Ariro, Angra dos Reis, Estado de Río de Janeiro, 1 ♂, 1 ♀.

Potimirim americana

Jamaica. Trib. of Wag Water River, 4 mi. N. Castleton Gardens, 11 June 1960, 1 ♂, 1 ♀. (TU).

ABBREVIATIONS: TU — Tulane University Collections, USNM — United States National Museum, MCZ — Museum of Comparative Zoology.

The only published description of *Potimirim glabra* since KINGSLEY's original description in 1878 (3), is the account of a single female by HOLTHUIS (2), who at the same time reviewed the nomenclatural history of the genus and proposed the name *Potimirim* for the American species formerly placed in *Ortmannia.* VILLALOBOS (4) pointed out the similarity of *P. glabra* to his new *P. brasiliana,* both of which possess an epipodite on the fourth pereiopod, and a pleurobranch on the fifth pereiopod. Neither HOLTHUIS nor VILLALOBOS had the opportunity to examine males of *P. glabra.*

Examination of a large series of *P. glabra,* including males, confirms VILLLALOBOS' diagnosis of the relationship between *P. glabra* and *P. brasiliana.* However, there appear to be no constant, important differences between the two species; therefore, all of the Potimirims with a well-defined, spineless indentation on the anterior edge of the appendix masculina of the second pleopod of the male (Fig. 1), should be considered the same species, and the name *P. brasiliana* placed in the synonymy of *P. glabra.* Variation in rostral teeth is treated later, but almost all possible characters examined showed some variation, including the appendix masculina.

P. americana was not treated by VILLALOBOS. *P. americana* resembles *P. glabra* in the presence of the pleurobranch on the fifth pereiopod of both male and female, but in the single pair examined by me, the male lacks an epipodite

on the fourth pereiopod; this epipodite is present in the female. The shape of the appendix masculina of the second male pleopod (Fig. 2) is different from any of the other known species.

Table 1 shows the distribution of the pleurobranchs on the fifth pereiopod, and epipodites on the fourth pereiopod, of the four species of *Potimirim.* The complete complement of pleurobranchs and epipodites in *P. glabra* is evidence that they are more primitive than *P. mexicana, P. potimirim,* or *P. americana.* However, without additional evidence, these differences are not of sufficient importance to permit phylogenetic speculations.

TABLE I

Distribution of pleurobranchs on the fifth pereiopods and epipodites on the fourth pereiopods of the known species of Potimirim.

		Pleurobranch Pereiopod V	Epipodite Pereiopod IV
P. mexicana	male	—	—
	female	+	—
P. potimirim	male	—	—
	female	+	—
P. glabra	male	+	+
	female	+	+
P. americana	male	+	—
	female	+	+

DISTRIBUTION

The range of *P. glabra* thus extends from El Salvador to Panamá in Central America, and to Southern Brazil in South America. As in other species of this genus, *P. glabra* is found only near the sea. *P. mexicana,* formerly known from the West Indies, Mexico, and British Honduras, is now known to occur as far south as the Atlantic slope of Costa Rica.

DIAGNOSIS

The diagnosis of the genus according to VILLALOBOS should be amended in the following respects:

1. Usually with ventral rostral teeth (see below under "Individual Variation").

2. Without small spines at the base of the rostrum, to separate from *Jonga* Hart, 1961 (1).

3. Appendix masculina of the second male pleopod differentiated into a lamellate lobe, which will further distinguish this genus from *Jonga*.

INDIVIDUAL VARIATION

The Salvadoran specimen described by HOLTHUIS has five ventral teeth on the rostrum. The Costa Rican specimens examined by me have from zero to five ventral teeth. There is no apparent correlation between number of rostral teeth and sex, geographical location, or size. However, since 10 of a total of 112 adult specimens examined lacked rostral teeth altogether, this character should be used with great care in comparing different species of the genus.

BIOLOGY

The color of most Costa Rican specimens agrees with HOLTHUIS' description, orange with a dark olive to black mid-dorsal band. Some specimens were extremely light, with light red or rose markings. These specimens are apparently juvenile females. The color probably becomes progressively darker during the reproductive and incubatory period, although my data are not sufficiently detailed to be conclusive.

There are 107 females and 10 males in the Costa Rican collections. The preponderance of females might be due in part to difficulty in catching the smaller males with seine and dipnet. The Panamanian specimens include six males and only one female. The range of carapace length of all the adult females examined is 3.4 to 5.7 mm, that of the Costa Rican males, 2.7 to 3.3 mm. The mean carapace length of the Panamanian specimens is 5.0 mm; the ranges of the Panamanian and Costa Rican series do not overlap. Thus, looking at the Costa Rican specimens alone, a considerable difference in size between the sexes is apparent, but all the Panamanian males are about the same size as the Costa Rican females. There is no really satisfactory explanation for these differences, but it should be noted that only eight adult Costa Rican males were available for comparison.

From data gathered in January and July, *Potimirim glabra* appears to reproduce the year around. Local conditions of water level probably affect reproductive activities. For instance, in January, when the Río Ciruelitas consisted of only isolated pools, of 20 female shrimp collected, only one was ovigerous. In July, when the stream was flowing, a collection yielded four ovigerous females of a total of seven. A January collection of 15 shrimps from the Río Corredor consisted only of non-ovigerous females, but these were probably all juveniles; other collections at the same time included many ovigerous specimens.

Potimirim glabra is found in a a variety of habitats, but most typically in shallow, moderately swift-flowing water in rocky streams, devoid of macroscopic

vegetation. In the Río Esquinas, they were collected from overhanging vegetation in relatively slow-moving water, about one meter deep. The juvenile specimens from the Río Barú drainage were found in a small spring, with *Archaeatya* sp., *Atya* sp., and *Macrobrachium hancocki* Holthuis.

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SUMMARY

Examination of males of *Potimirim glabra* show that *P. brasiliana* is the same species. *P. americana* is not closely related to the other known species. *P. mexicana* is found on the Atlantic slope of Costa Rica. The biology and distribution of *P. glabra* in Costa Rica is discussed.

RESUMEN

El examen de machos de *Potimirim glabra* mostró que esta especie y *P. brasiliana* son idénticas. Por otro lado, no se encontró relación próxima entre *P. americana* y las otras especies conocidas. *P. mexicana* se encuentra en la Vertiente Atlántica de Costa Rica. Por último se discute la biología y distribución de *P. glabra* en Costa Rica.

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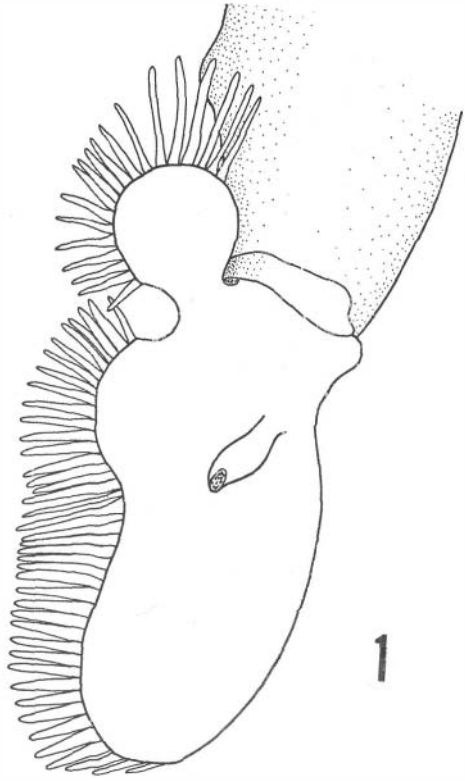
Figs. 1-2. Appendix masculina of the second pleopod of the male.

Fig. 1. *Potimirim glabra*

Fig. 2. *P. americana*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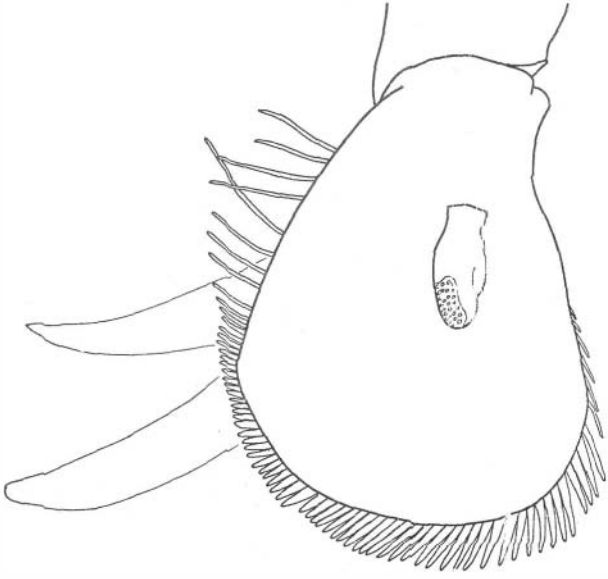
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