

SYSTEMATIC STUDIES ON *ERICHTONIUS BRASILIENSIS*
(CRUSTACEA, AMPHIPODA, ISCHIROCERIDAE) FROM THE
CARIBBEAN SEA OF VENEZUELA

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ABSTRACT: *Erichthonius brasiliensis* is recorded from the North Venezuelan seas, its taxonomy is discussed, its biology is studied and it is reported as an indicator species for the South Caribbean Sea.

RESUMEN: *Erichthonius brasiliensis* es reportado para las aguas marinas del Norte de Venezuela, se discute su taxonomía, se estudia su biología y se reconoce como especie indicadora del Sur del Mar Caribe.

INTRODUCTION

The family Ischyroceridae STEBBING (1899), comprises about 60 species in 13 genera of corophioidean amphipods, widespread in shallow marine or brackish waters, mainly in the northern hemisphere. Most are small tube-dwelling species, but may become cemented together to form extensive fouling mats on submerged surfaces.

FAMILY ISCHYROCERIDAE

Body shallow, often of small size, sexually dimorphic. Eyes small. Antenna 1-2 peduncle elongate, strong and setose, flagellum short, accessory flagellum absent. Mouthparts basic; mandible with "molar flake" (a major taxonomic character, often overlooked, which relates the Corophioidea to the Caprellida); mandibular palp with apical article short, broad and setose. Gnathopods subchelate, gnathopod 2 the largest, in male often enormous and toothed. Pereopods 3-4 basic, swollen with cement glands. Pereopods 5-7 dissimilar. Pleopods basic. Uropod 3 rami very short, inner ramus may be absent, outer uncinata bearing hooked spines. Coxal gills present on plates 2-6; gills may be absent on plate 2 in females. Ostegites present on plates 2-5.

ERICHTONIUS MILNE-EDWARDS

Erichthonius, MILNE-EDWARDS, 1830: 382.

Pyctilus, DANA, 1852: 218.

Erichthonius, SARS, 1895: 601; BOUSFIELD, 1973: 193.

Body depressed, especially in male. Coxal plates short and scarcely contiguous; plates 2 and 5 longer than rest. Head elongate, lateral lobes very large and prolonged apically acute. Mouthparts basic; upper lip entire, lower lip with inner lobes well developed; mandible with large triturative molar, palp robust, distal article broad, setose; maxillae 1-2 basic; maxilliped inner and outer plates well developed, palp slender. Antennae subequal, slender, accessory flagellum absent. Gnathopod 1 in male and 1 and 2 in female subchelate; gnathopod 2 in male very large, complexly carpocheleate. Pereopods 3-4 basis broadly oval. Uropods 1-2 biramous, spinose; uropod 3 uniramous ramus much shorter than peduncle, apex with minute reverted denticles. Telson broad, bilobed, surface minutely spinulose.

A circumtropical and northern temperate genus of about 10 tube-dwelling species, typically found in littoral habitats. Species separation is based mainly on the structure of the male second gnathopod, but it must be emphasized that the male second gnathopod exhibits marked intraspecific variation according to the size and age of the individual. Developmental



changes in gnathopod 2 morphology have been inadequately described for most species.

ERICTHONIUS BRASILIENSIS (DANA)

(Fig. 1)

Pyctilus brasiliensis, DANA, 1852: 976.

Cerapus abditus, BATE, 1862: 263.

Erichthonius abditus, SARS, 1895: 602.

Cerapus brasiliensis, BATE, 1862: 267.

Erichthonius brasiliensis, CHEVREUX & FAGE, 1925: 353; GALAN, 1976: 163.

Erichthonius brasiliensis, STEBBING, 1906: 671; BCUSFIELD, 1973: 195.

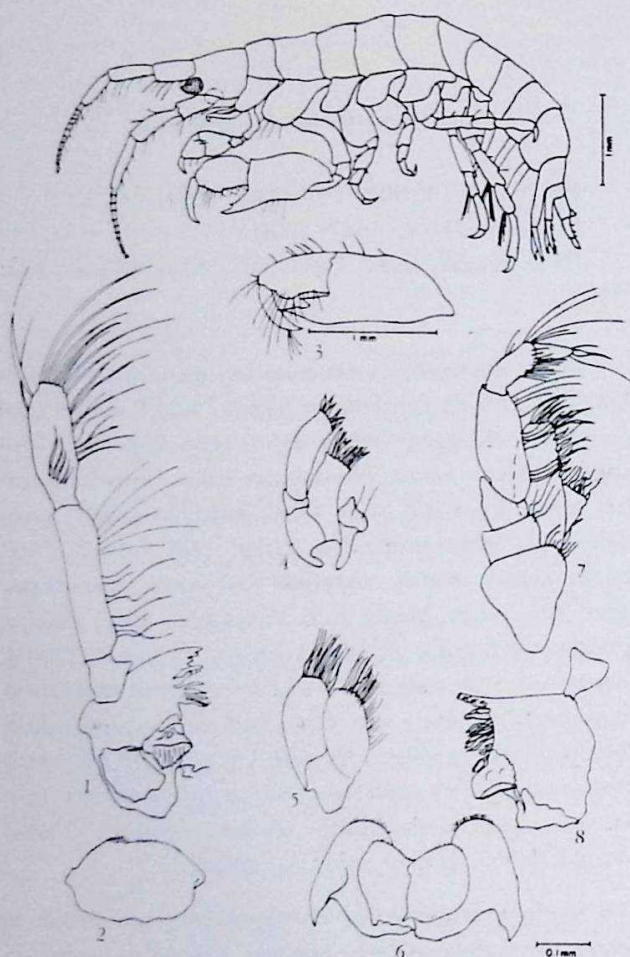


Fig. 1. *Erichthonius brasiliensis*, ♂ 5 mm, G. Cariaco, Aug. 1974.

1.-Mandible; 2.-Lower Lip; 3.-Gnathopod 2;
4.-Maxilla 1; 5.-Maxilla 2; 6.-Upper Lip;
7.-Maxilliped; 8.-Right.

MATERIAL EXAMINED

1 ♂ from Turpialito, Golfo de Cariaco, August, 1974; monthly samples with many specimens from Golfo de Cariaco through 1974; monthly samples with many specimens from Laguna de La Restinga, Isla de Margarita, 1975; several specimens from Bahía de Mochima, 7 March, 1976; several specimens from Moron, Golfo Triste, March, 1981.

DESCRIPTION

Length up to 7.2 mm (median size 5 mm), colour brown mottled with darker pigment including pair of symmetrical spots on telson; eyes red. Coxal plates contiguous except plate 2 with distal margin convex; coxal gills absent on coxal plates 2-3 in both sexes. Epimeral plate 3 distal margin rounded, minutely crenulate. Head, lateral lobes apically acute, very large;

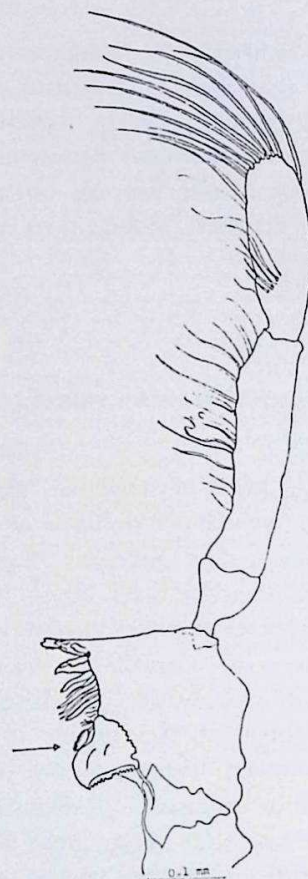


Fig. 2. *Erichthonius brasiliensis* ♂ 5 mm: Right mandible showing molar flake.

eyes anterior, protruding and rounded. Antennae subequal, little over half body length, peduncle articles elongate, setose; antenna 1 flagellum up to 13-articulate (in 30% of specimens the number of articles differs between the left and right antenna, the right antenna always having the greater number); antenna 2 flagellum up to 11-articulate, peduncle articles 4 and 5 subequal, or 5 little longer than 4. Right mandible with molar flake (Fig. 2). Gnathopod 1 propodus smaller than carpus, both triangular, setose, palm oblique delimited by obtuse angle. Gnathopod 2 ♀ carpus with narrow setose posterior lobe, propodus oval, palm convex. Gnathopod 2 ♂ very variable, merus very small, carpus very large and robust, posterodistal angle with long acute process, and small accessory tooth on inner margin, propodus much smaller with low distal tubercle, dactylus broad. Pereopods 3-4 basis broadly rounded; pereopods 5-7 basis moderately expanded. Uropods 1-2 rami subequal, weakly spinose, margins minutely serrate; uropod 3 peduncle elongate, ramus very short and curved. Telson shall, bilobed and spinulose.

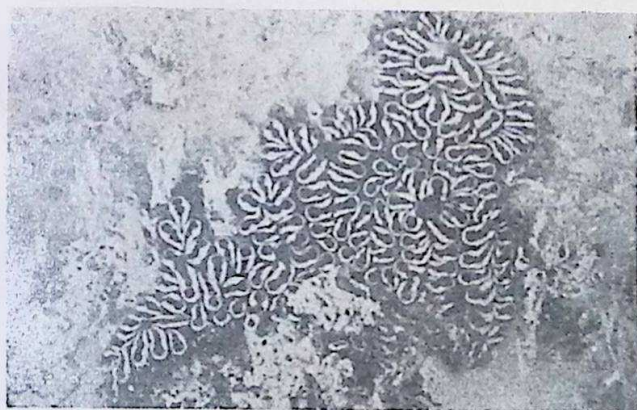


Fig. 3. The tubes of *Erichthonius brasiliensis* around a colonial ascidiana *Botrylloides* sp.

ECOLOGY

Depth range from intertidal to 171 m (BARNARD, 1979). This species is a benthic tube-dweller, constructing a small tube of sand consolidated by mucus. The tubes are usually clustered together amongst algae,

hydroids, polychaete-tubes, bryozoans and colonial ascidians (Fig. 3), and may be occupied by inquilinous *Stenothoe* species. Locally *E. brasiliensis* is very common in shallow waters reaching densities of up to 5000 per square metre (at least 50 animals were found on one side of submerged plates of 100 cm² during weekly counting of specimens and tubes throughout a two year period). It feeds largely on detritus, and is preyed upon by *Gobiosoma zebrella* and *Lupinoblenius dispar*; an analysis of 50 stomachs of Gobiidae and Blenniidae yielded 1 to 4 amphipods, isopods or tanaids and up to 50 harpacticoids per gut content.

In the tropical waters of the southern Caribbean Sea, *E. brasiliensis* has a short life cycle and a relatively small body size; 12 mm for North Atlantic material (STEBBING, 1906) compared with a maximum size of 7.2 mm for Caribbean material (found by the author substrate and build a tube within the first 24 hours of 3093 adults studied). This species can settle on a virgin substrate and build a tube within the first 24 hours of submersion of the substrate (GALAN, 1976 & 1978). Juveniles were found throughout the year in a monthly sampling survey in the Gulf of Cariaco during 1974 and in a mangrove lagoon of Isla Margarita during 1975, with maximum numbers from May to September; also the end of those months revealed the mean time of recruitment in the life cycle (Fig. 4). The incidence of males expressed as percentage of the total adult population through a year was 38.86 per cent; and that of females with a brood pouch as a percentage of the total adult females was 39.15 per cent (from 1815 adults examined). The relation between length (mm) and the number of eggs (n°) in females with brood pouch was, approximately, $n^{\circ}: 1/4 \times \text{mm}^3$ between a range from 3.2 mm and 5 eggs to 6.4 mm and 68 eggs. For an estimation of age, from adult increase in body length and number of articles in first antenna, see fig 5. Still to be ascertained is the duration between moults and the total number of moults from egg to adult. This is a dominant species in the peracaridan taxocenosis of shallow waters near harbours, and is useful as an indicator of high levels of organic matter. It is tolerant of wide fluctuations in environmental factors (productivity in excess of 350 gr C/m², y⁻¹; 42‰ salinity; 30°C and 2 ml/l dissolved O₂; see GALAN, 1976), living in estuaries and also inhabits hypersaline lagoons.

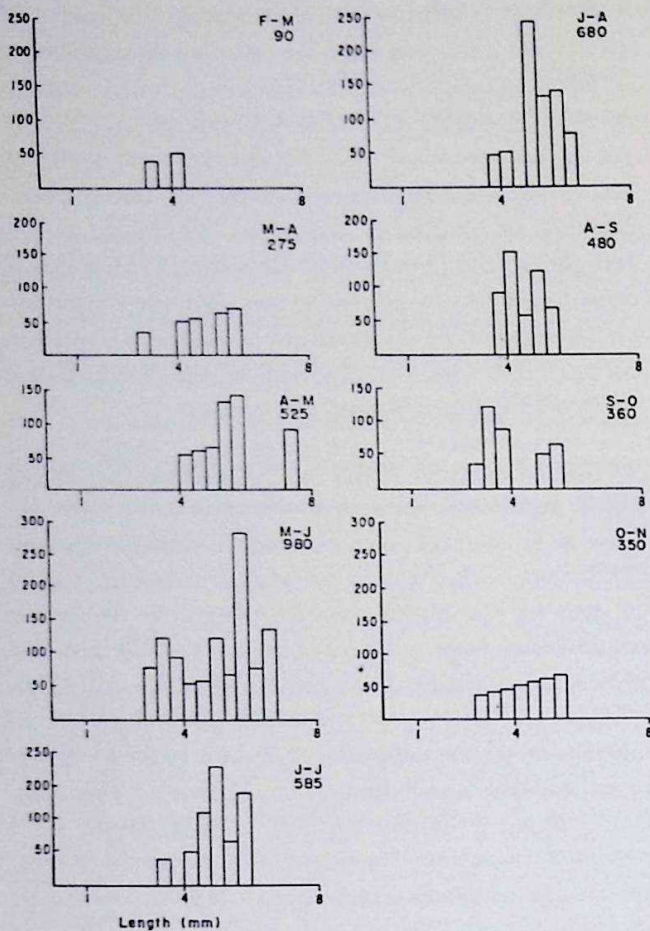


Fig. 4. *Erichthonius brasiliensis*. Length-frequency histograms of adults in G. Cariaco from Feb. to Nov. 1974. Total number of animals in each monthly period below letters.

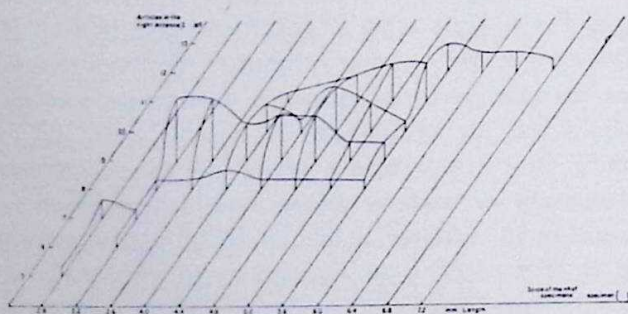


Fig. 5. The relation between length Nº of articles in the right Antenna I, and Nº of specimens in 80 adults of *Erichthonius brasiliensis*.

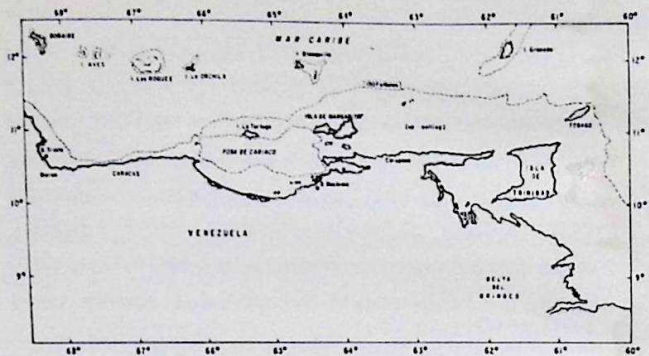


Fig. 6. Distribution of *Erichthonius brasiliensis* in Venezuela.

DISTRIBUTION

Cosmopolitan, tropical and temperate; widespread in Atlantic, Pacific and Indian Oceans (CHEVREUX & FAGE, 1925; BOUSFIELD, 1973; BARNARD, 1979).

Venezuela: Isla de Margarita (GALAN, 1976); Golfo de Cariaco; Bahía de Mochima; Golfo Triste (Fig. 6).

REMARKS

Erichthonius brasiliensis is now reported from the southern Caribbean as an useful indicator species.

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