

## AMPLIACIONES DE AMBITO

### Peanut worms (Phylum Sipuncula) from Costa Rica\*

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The Phylum Sipuncula includes about 150 species in 17 genera, most of which are called "peanut worms". The body is peanut-shaped and divisible into a retractile introvert and a trunk (Fig. 2D). Other species, however, exhibit more elongated bodies (Fig. 2C). Sipunculans are marine and estuarine organisms found from the intertidal zone to abyssal depths at all latitudes. Their wide range of habitats is best described by Hyman (1959): "they lead a sedentary existence in burrows in sandy, muddy, mucky, gravelly, or shelly bottoms, in clefts and interstices of rocks, in porous lava, in the holdfast tangles of kelp, under beds of eelgrass and other vegetation, among coralline algae, under rock, among corals, especially in the cavities in rotting coral heads or under slabs of decaying coral, in sponges, in empty shells and tubes of other animals, and in almost any protected situation".

A singular effort to describe and quantify terrestrial biodiversity in Costa Rica was started towards the end of the past decade (Tangley 1990). A research program to study marine biodiversity was established ten years ago at the Universidad de Costa Rica (Vargas 1988). Both efforts are a reflection of the increasing need for information on tropical ecosystems, as mankind puts more pressure on their use. As Tangley (1990) has clearly pointed out "to make tropical biodiversity useful to society -and thus to save it- the first step is finding out what is there to lose". This note is an effort along that line, and it is based on a study of a collection of sipunculan worms deposited at the Museo de Zoología,

Universidad de Costa Rica, and additional field sampling in 1991.

**Phylum Sipuncula**  
**Class Sipunculidea**  
**Order Sipunculiformes**  
**Family Sipunculidae**

*Sipunculus nudus* Linnaeus, 1766. Fig. 2A.

Punta Morales intertidal mud flat, Gulf of Nicoya (Fig. 1, 01), November 24, 1987. Collector: José A. Vargas, 1 specimen (UCR-25) found in sediments containing 65% sand, 32% silt + clay. Accompanying fauna described in Vargas (1988). Gulf of Nicoya, subtidal, R/V Skimmer stations 27 and 29 (Fig. 1, 02 and 03 respectively), July 7, 1980. Collectors: Harlan K. Dean, Don Maurer and José A. Vargas, with a modified Smith-McIntyre benthic grab. Station 27 (12 m deep, 24% silt + clay), 1 specimen (UCR-02). Station 29 (18 m deep, 27% silt + clay), 1 specimen (UCR-03). Accompanying fauna described in Maurer and Vargas (1984).

**Distribution:** This cosmopolitan species is found in shallow (intertidal to 30 m, but a few records between 100-900 m) waters in temperate, subtropical, and tropical regions (Cutler and Cutler 1985). Collected in Puntarenas, Gulf of Nicoya (Fig. 1), by Keferstein (1866).

*Sipunculus phalloides* (Pallas 1774). Fig. 2B.

Cahuita National Park (Fig. 1, 04), December 27, 1967. Collector: R.I. Nishimoto, under coral fragments, 1 specimen (UCR-04). Conchal beach (Fig. 1, 05), May 4, 1976. Collector: José A. Vargas, in fine sand, 1 specimen (UCR-05).

\* CIMAR contribution 165

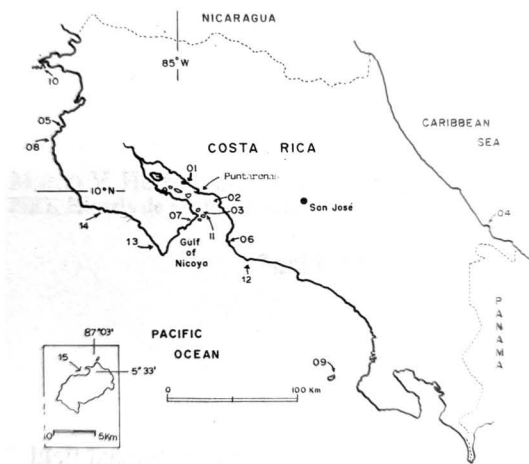


Fig. 1. Sipunculan worms from Costa Rica. Collecting sites on the Atlantic and Pacific coasts: 01-Punta Morales, 02-R/V Skimmer station 27, 03-R/V Skimmer station 29, 04-Cahuita National Park (coral reef), 05-Conchal beach, 09-Isla del Caño, 10-Islas Murciélagos, 11-R/V Skimmer station 25. 12-Punta Judas, 13-Mal País, 14-Sámara beach, 15-Bahía Wafer, Isla del Coco National Park.

Gulf of Nicoya, off Bahía Herradura (Fig. 1, 06), November 8, 1983. Collector: Bernal Burgos, by trawl net, in sandy bottom at 10 m depth. 1 specimen (UCR-06).

**Distribution:** Found intertidally and in shallow water in the Caribbean from the West Indies, Barbados and Brazil. In the Eastern Tropical Pacific from Costa Rica and the Galápagos Islands. One specimen found 15m off the Ivory Coast (Cutler and Cutler 1985). Collected in Puntarenas, Gulf of Nicoya (Fig. 1), by Grube and Oersted (1858).

*Xenosiphon branchiatus branchiatus* (Fisher 1895). Fig. 2C.

Gulf of Nicoya, Curú beach (Fig. 1, 07), December 6, 1984. Collector: Jorge Campos, in fine sand. 1 specimen (UCR-07). Tamarindo beach (Fig. 1, 08), August 27, 1977. Collector: Jorge Cortés, in sand. 1 specimen (UCR-08). Conchal beach (Fig. 1, 05), May 4, 1976. Collector: José A. Vargas, in fine sand. 2 specimens (UCR-09).

**Distribution:** This long species (up to 300 mm trunk length) is found in shallow water in Ecuador, Panama, Costa Rica and California (U.S.A). In the Atlantic Ocean, it is found in Puerto Rico and Florida (U.S.A), (Cutler and Cutler 1985).

*Siphonosoma vastum* (Selenka, De Bulow 1883). Fig. 2D.

Isla del Caño (Fig. 1, 09), September 10, 1980. Collector: Carlos Gamboa, under rocks and coral fragments. 2 specimens (UCR-10).

**Distribution:** This species is widespread in the Indo-West Pacific tropical region, and in subtropical waters as far north as Miyakijima, Japan (Cutler and Cutler 1982).

Not found previously in Central America; thus, this collection from the Pacific coast of Costa Rica illustrates the capacity of the species to bridge the Eastern Tropical Pacific gap.

#### Class Phascolosomatidea Order Phascolosomatiformes Family Phascolosomatidae

*Phascolosoma perlucens* Baird 1868. Fig. 3A.

Islas Murciélagos (Fig. 1, 10), August 12, 1990. Collectors: Renán Chaves, Ricardo Soto and José A. Vargas; in sandstone, intertidal. 8 specimens (UCR-11). Punta Morales, Gulf of Nicoya (Fig. 1, 01), February 8, 1991. Collectors: Edward Cutler and José A. Vargas; in sandstone, intertidal. 25 specimens (UCR-12). Punta Judas (Fig. 1, 12), August 25, 1991. Collector: Andreas Kastner, in hardened clay. 8 specimens (UCR-20). Mal País (Fig. 1, 13) July 30, 1991. Collector: Andreas Kastner, in limestone. 2 specimens (UCR-21). Bahía Wafer, Isla del Coco National Park (Fig. 1, 15). October 27, 1991. Collector: Martha Marín, under rocks, intertidal. 10 specimens (UCR-22).

**Distribution:** Common in the Caribbean (Venezuela to southern Florida) and the Western Pacific (Queensland-Australia, to central Japan). Also recorded from several Indian Ocean locations, and in the Eastern Pacific of Panama and northern Mexico. Two Eastern Atlantic records complete this circumtropical but patchy, disjunct distribution (Cutler and Cutler 1990).

*Phascolosoma nigrescens* (Kefers)  
Conchal beach (Fig. 1, 05), Ma  
Collectors: Manuel M. Murillo ar  
Vargas, in tide pools, under rocks.  
(UCR-13).

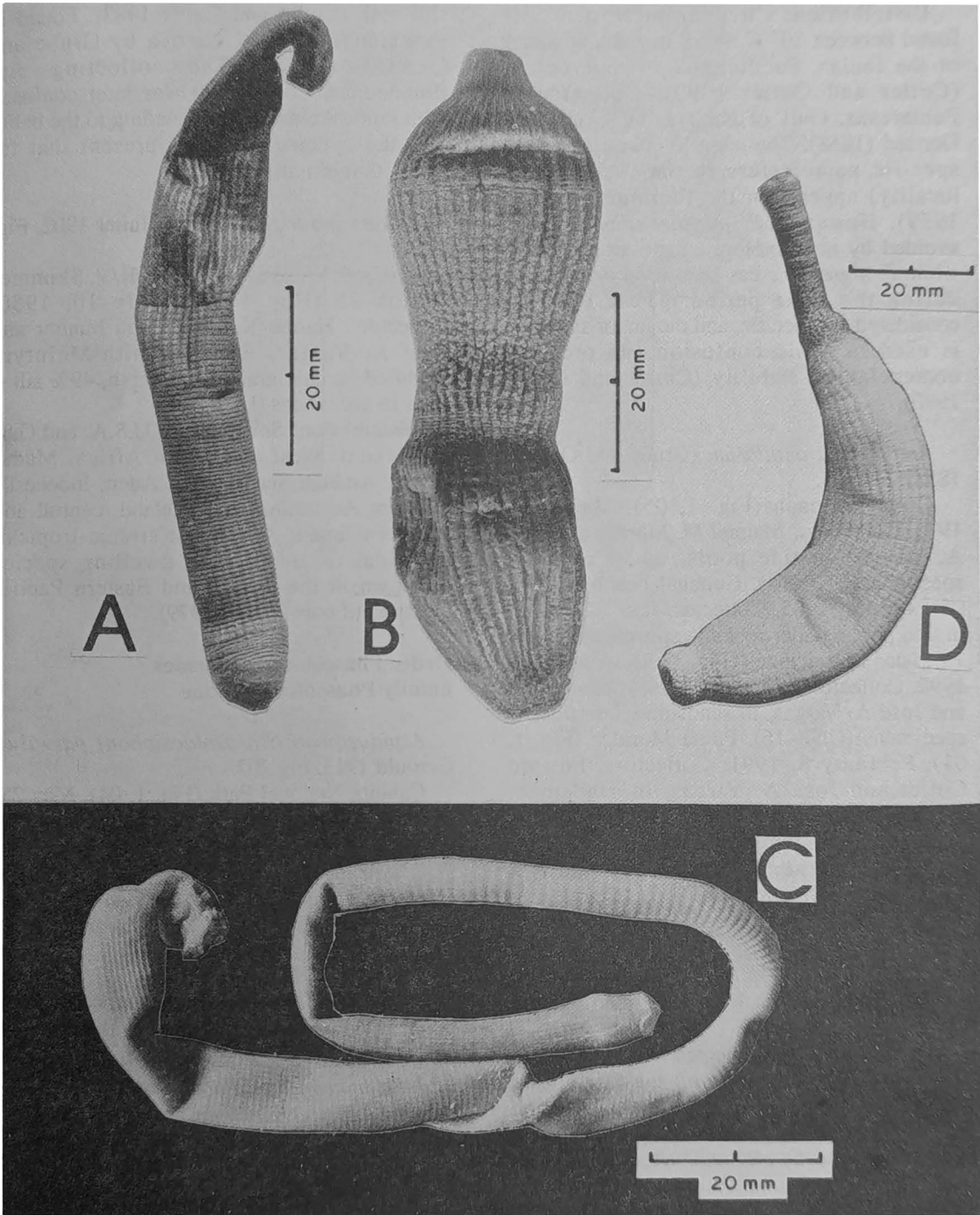


Fig. 2. Sipunculan worms from Costa Rica: A, *Sipunculus nudus*; B, *Sipunculus phalloides*; C, *Xenosiphon branchiatus branchiatus*; D, *Siphonosoma vastum*.

**Distribution:** Circumtropical, generally found between 30° N and S in shallow waters of the Indian, Pacific, and Atlantic oceans (Cutler and Cutler 1990). Collected in Puntarenas, Gulf of Nicoya, by Grube and Oersted (1858). The name *P. puntarenae* (the specific name refers to the Costa Rican locality) appears in the literature (Hyman 1959). However, *P. puntarenae* has been avoided by most biologist for over a century, while *P. nigrescens* has been used many times during the same period. These taxa are considered conspecific, and the junior synonym is used to avoid confusion and preserve nomenclatural stability (Cutler and Cutler 1990).

*Antillesoma antillarum* (Grube and Oersted 1858). Fig. 3B.

Conchal beach (Fig. 1, 05), March 30, 1975. Collectors: Manuel M. Murillo and José A. Vargas, in tide pools, under rocks. 1 specimen (UCR-14). Conchal beach (Fig. 1, 05), April 4, 1985. Collector: José A. Vargas, in tide pools, under rocks. 6 specimens (UCR-15). Islas Murciélagos (Fig. 1, 10), August 12, 1990. Collectors: Renán Chaves, Ricardo Soto and José A. Vargas, in sandstone, intertidal. 9 specimens (UCR-16). Punta Morales (Fig. 1, 01), February 8, 1991. Collectors: Edward Cutler and José A. Vargas, in sandstone, intertidal. 1 specimen (UCR-17). Punta Judas (Fig. 1, 12), August 25, 1991. Collector: Andreas Kastner, in hardened clay. 8 specimens (UCR-28). Mal País (Fig. 1, 13) July 30, 1991. Collector: Andreas Kastner, in limestone. 3 specimens (UCR-28). Sámará beach (Fig. 1, 14), December 20, 1990. Collector: Andreas Kastner, in silicified limestone. 3 specimens (UCR-24)

**Distribution:** The species has been found in the Western Atlantic and the Caribbean, from Florida to Brazil. In the Eastern Atlantic from Sierra Leone and the Ivory Coast, then into the Indian Ocean at Durban, and from South Africa, Mozambique, Madagascar, Mauritius, Maldives and Laccadive Islands, and Shri Lanka. Many localities in the Indo-West Pacific east to Hawaii. In the Eastern Tropical Pacific from Baja California to Panama. A cosmopolitan species usually wedged in crevices or burrowing in coral and

soft rock (Cutler and Cutler 1983). Found in Puntarenas, Gulf of Nicoya by Grube and Oersted (1858). The collecting site (Puntarenas, Costa Rica) was later confused with Punta Arenas (Chile) leading to the belief that the species was also present that far south: that is a mistake.

*Apionsoma trichocephala* Sluiter 1902. Fig. 3C.

Gulf of Nicoya, subtidal, R/V Skimmer station 25 (Fig. 1, 11), July 10, 1980. Collectors: Harlan K. Dean, Don Maurer and José A. Vargas, with a Smith-McIntyre modified benthic grab, 20 m depth, 49% silt + clay, 15 specimens (UCR-18).

**Distribution:** Southeastern U.S.A. and Gulf of Mexico. West and South Africa, Madagascar, Arabian Sea, Gulf of Aden, Indonesia, northern Australia, New Zealand, central and southern Japan. An almost circum-tropical, intertidal to 100m, sand dwelling species unknown in the central and Eastern Pacific Ocean until now (Cutler 1979).

## Order Phascolosomatiformes

### Family Phascolosomatidae

*Aspidosiphon (Paraspidosiphon) parvulus* Gerould 1913. Fig. 3D.

Cahuita National Park (Fig. 1, 04), May 28, 1987. Collector: Manuel Murillo, inside coral heads. 3 specimens (UCR-19).

**Distribution:** Worldwide. Western Atlantic Ocean from Cape Hatteras (U.S.A) through the Caribbean to Venezuela (Cutler and Cutler 1990).

**Comments:** A total of nine species in seven genera was indentified. Five of the species: *Xenosiphon branchiatus branchiatus*, *Siphonosoma vastum*, *Phascolosoma perlucens*, *Apionsoma trichocephala* and *Aspidosiphon (Paraspidosiphon) parvulus*, were collected for the first time in Costa Rica. Three species (*S. vastum*, *A. trichocephala*, *A. parvulus*) are also new findings in Central America. Four records are repeats of known Costa Rican species first reported in the XIX century: *Sipunculus nudus*, *S. phalloides*, *Phascolosoma nigrescens* and *Antillesoma antillarum*.

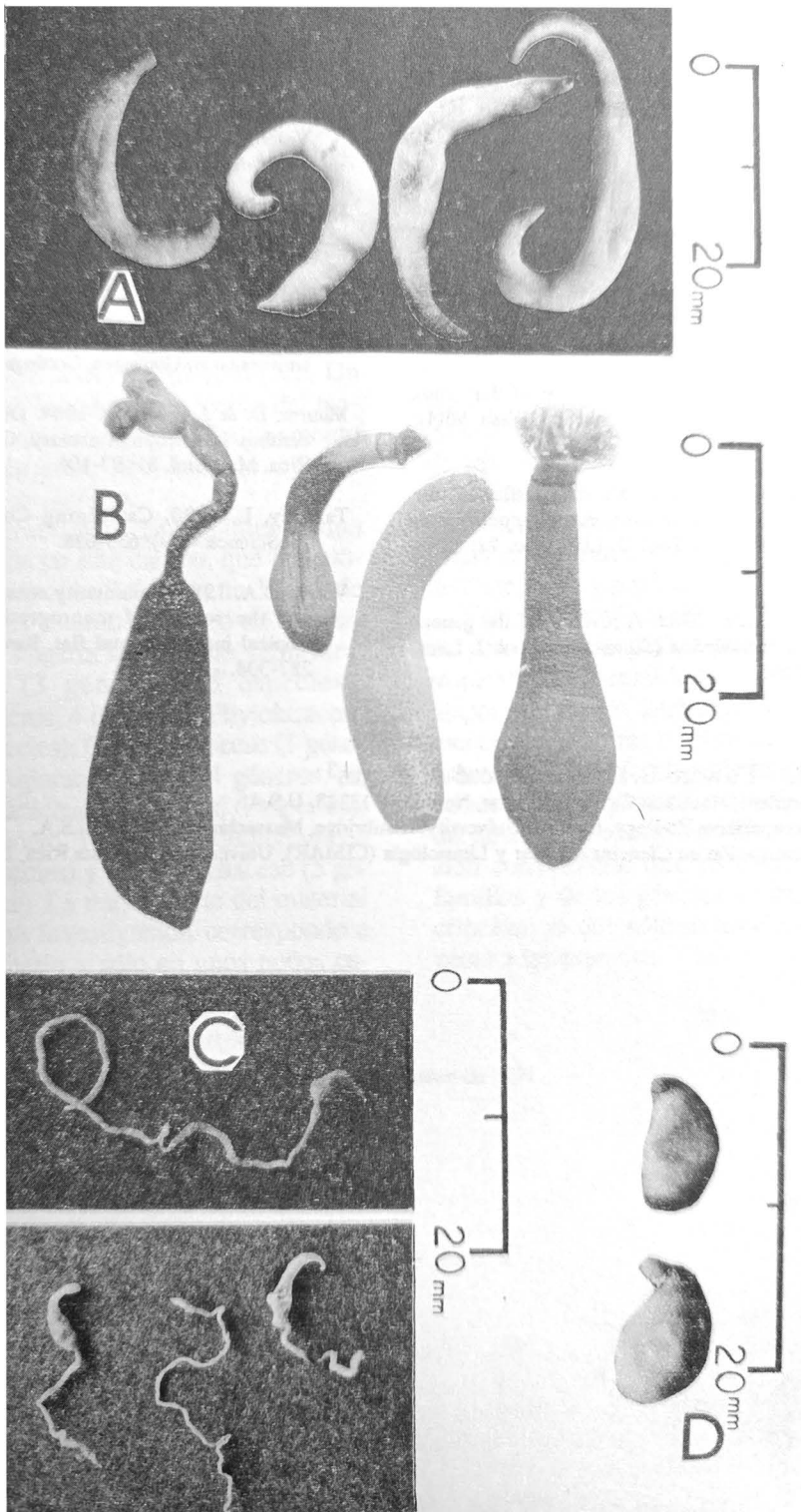


Fig. 3. Sipunculan worms from Costa Rica: A, *Phascolosoma perlucens*; B, *Antillesoma antillarum*; C, *Apionsoma trichocephala*; D, *Aspidosiphon (Paraspidosiphon) parvulus*. Bars: 10mm.

## ACKNOWLEDGEMENTS

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