FIRST RECORD OF THE PRESENCE OF MANGROVE BORER SPHAEROMA PERUVIANUM RICHARDSON (ISOPODA: SPHAEROMATIDAE) IN THE GULF OF MONTIJO, PANAMA

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ABSTRACT
A field survey was carried out to investigate the presence of mangrove borers at the mouth of San Pablo River in the Gulf of Montijo, western Pacific of Panamá. Previous reports of the National Environment Authority (ANAM) indicate a high degree of root tip atrophy and breakage in young plants of red mangrove, *Rhizophora mangle*. Samples of roots were sawed off and examined for isopod burrow openings. Analysis revealed the presence of the eastern Pacific root-boring *Sphaeroma peruvianum* Richardson. The organism bore the roots and it is the likely cause of fall trees due to the lack of root support. A voucher specimen was deposited in the Smithsonian National Museum of Natural History, Washington, DC (USNM 1139603).

KEYWORDS
Isopods, Mangrove, Root borer, *Rhizophora mangle*.

RESUMEN
Se efectuó un estudio de campo con el propósito de investigar la presencia de barrenadores de mangle en la desembocadura del río San Pablo en el Golfo de Montijo, Pacífico oeste de Panamá. Informes previos de la Autoridad Nacional del Ambiente (ANAM) describen un alto grado de atrofia radicular en plantas jóvenes de *Rhizophora mangle*. Se recolectaron muestras de raíces en busca de evidencia de isópodos barrenadores. Los análisis revelaron la presencia de *Sphaeroma peruvianum* Richardson, un barrenador de mangle rojo activo en el Pacífico y

reportado previamente para el golfo de Nicoya, Costa Rica. El organismo perfora las raíces y es la causa probable del colapso de los árboles por debilitamiento del soporte radicular. Se depositaron especímenes testigo en el Museo Nacional de Historia Natural Smithsonian en Washington, D.C. (USNM 1139603).

PALABRAS CLAVES
Isópodos, Manglar, Barrenador de Raíces, Mangle Rojo, *Rhizophora mangle*.

The Gulf of Montijo is located on the Pacific coast, about 30 km southwest of the city of Santiago, province of Veraguas, western Panama (Coordinates: 07°45'N, 081°07'W). It is an estuarine system with humid tropical climate and fringed by mangroves with a wide variety of landscapes. On 12 June 2009 we participated in a survey to explore affected areas at the mouth of San Pablo River. A general view showed that a substantial fraction of the prop roots of young red mangrove plants were colonized by oysters and barnacles. Isopod burrow opening also were evident (Fig.1).


(a)

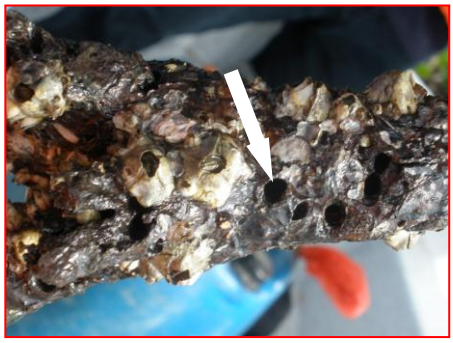
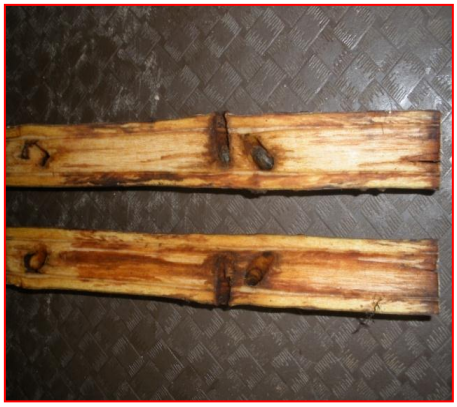

(b)

Fig. 1. Invasion of red mangrove roots by oyster, barnacles (a) and scattered burrow openings (b).

Roots were sawed off, placed into plastic bags and transported to the laboratory for analysis. Openings were habited by the eastern Pacific root-boring *Sphaeroma peruvianum* Richardson (Fig 2).



(a)

(b)

Fig. 2. Burrows excavated in young roots (a) by *Sphaeroma peruvianum* Richardson (b).

The organism was found mainly in burrows excavated in roots of red mangrove although it probably also makes burrows in roots of other species. The distribution of holes was irregular and many isopods were collected from the roots. Voucher specimens were deposited in

the Smithsonian National Museum of Natural History, Washington, DC (USNM 1139603). Wood-boring isopods are common organisms of mangrove swamps. The Pacific *Sphaeroma peruvianum* Richardson and the Caribbean *Sphaeroma terebrans* Spence –Bate, bore into the growing tips of *Rhizophora mangle* L. once the roots have reached down to the high water line. However, studies of the effect of isopods on the vitality of red mangrove plants are controversial. According to Rehm & Humm (1973), isopods bores into the growing roots of the red mangrove *R. mangle* causing failure of roots to reach the ground, decreased productivity and instability of the mangrove community. On the other hand, Simberloff et al. (1978) suggested that *Sphaeroma* stimulate new branching of aerial root tips and as a consequence, new prop roots. Perry & Brusca (1989) studied the effect of *S. peruvianum* on roots of the red mangrove *R. mangle* in a mangrove forest in the Gulf of Nicoya, Costa Rica and observed a 50% reduction in aerial root growth rate in the presence of isopods. The reduction was due to atrophy and breakage of the root tips caused by boring isopods. They concluded that the stimulation of new root tip growth does not compensate for this loss. Brooks (2004) reported the presence of *S. terebrans* in Northern Florida and suggested that changes in the root system as a result of isopod burrowing not only alter structural support and nutrient provision for the tree itself but may also affect other flora and fauna which utilize the mangrove roots as a substratum or protective habitat. The organism is here reported the first time for Panamá. The nearest location formerly reported was the Gulf of Nicoya, Costa Rica (Perry & Brusca, 1989).

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