

First record of *Petalidium suspiriosum* Burkenroad, 1937 (Dendrobranchiata, Sergestidae) in the Gulf of California, Mexico

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ABSTRACT

The pelagic shrimp *Petalidium suspiriosum* described from off Clarion Island, Mexico, in the eastern Pacific, is recorded for the first time in the Gulf of California. The unique male specimen was captured in deep water of the central Gulf of California. Diagnostic characters, including the petasma, are illustrated and briefly described.

KEYWORDS

Pelagic shrimp, eastern Pacific, deep water, Crustacea, Decapoda, geographic distribution

Petalidium Bate, 1881 is a small genus of Dendrobranchiata represented worldwide by three species (De Grave and Fransen, 2011), all pelagic. One of these species, *Petalidium suspiriosum* Burkenroad, 1937, was described based on two females collected 145 nautical miles north of Clarion Island, in the Revillagigedo Archipelago, Mexico. Both specimens were captured using midwater gear operating between surface and 500 fathoms (about 914 m depth). Burkenroad (1937) provided illustrations (female specimen) of the sternal plates (with thelycum), of branchiae on somites XI–XIII, of the forehead (including the eye), of the telson and uropods, and of the carapace in lateral view. It was only in 1974 that Wasmer (1974) reported on a large collection of specimens of *P. suspiriosum* from between 51°40.9'N and 43°23'N along the American continent, including male specimens. In addition to illustrations of the lateral carapace, the tip of the telson, the eye, and the female genital area, Wasmer (1974) provided for the first time a detailed illustration of the petasma, the antennal flagellum, and the appendix masculina of a male. Word and Charwat (1976: 27) provided a record for this species in San Clemente Basin, California, but based on the shape of the carapace they illustrated in their contribution, this record might correspond to an unidentified species of *Sergestes*. Hendrickx and Estrada-Navarrete

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(1996) summarized most post-1937 records for this species; they did not report on new material but reproduced most figures provided by Burkenroad (1937) and by Wasmer (1974). More recently, Wicksten (2012) included *P. suspiriosum* in her monograph on California-Oregon decapod crustaceans and reproduced illustrations compiled by Hendrickx and Estrada-Navarrete (1996). Additional citations of *P. suspiriosum* without illustrations were cited by Hendrickx and Estrada-Navarrete (1996) and Wicksten (2012).

The only published record for *P. suspiriosum* in the Mexican Pacific Exclusive Economic Zone (EEZ) is the one by Burkenroad (1937: type locality, off Clarion Island). In this contribution, this species is reported for the first time in the Gulf of California. The unique specimen collected was caught during an exploratory cruise of deep-water communities aboard the B/O "El Puma" (Universidad Nacional Autónoma de México) in the central Gulf of California (TALUD X) in a benthic sledge. A pelagic species, *P. suspiriosum* entered the net during the descent or the ascent of the gear in the water column. The material has been included in the holdings of the Regional Collection of Marine Invertebrates (ICML-EMU) in Mazatlán, Mexico.

SYSTEMATICS

Suborder Dendrobranchiata Bate, 1888

Family Sergestidae Dana, 1852

Genus *Petalidium* Bate, 1881

Petalidium suspiriosum Burkenroad, 1937

(Fig. 2)

Petalidium suspiriosum Burkenroad, 1937: 325, figs. 8–12.—Pearcy and Forss, 1966: 1136–1140 (parsim).—Pearcy and Forss, 1969: 757 (Table 1).—Wasmer, 1974: 160, figs. 1–8.—Walters, 1976: 824.—Word and Charwat, 1976: 27–28 (textfig.).—Hanamura, 1983: 73.—Krygier and Wasmer, 1988: 71.—Hendrickx and Estrada-Navarrete, 1989: 110.—Hendrickx and Estrada-Navarrete, 1996: 75–76, figs. 47–48.—Pérez-Farfante and Kensley, 1997: 193.—Wicksten 2002: 131.—Poupin *et al.* 2009: 216 (table).—De Grave

and Fransen, 2011: 244 (list).—Wicksten, 2012: 30, fig. 5N–S.

Petalidium suspiriosum.—Ebeling *et al.*, 1969: 12.

Material examined. TALUD X cruise, station 10 (27°48'30"N 112°17'12"W), Feb 10, 2007, 1 male (CL 10.2 mm), benthic sledge operating at 1396–1422 m (ICML-EMU-8097).

Geographic distribution. Northeastern Pacific, from 51°40.9'N 138°30.3'W to 20°36'N 115°07'W; Clarion Island (type locality); SW off the Baja California Peninsula (about 13°28'N 120°07'W and 23°N 125°W) (Hanamura, 1983); off Hawaiian Islands (Walters, 1976); Central Gulf of California (material examined); a possible record off NE Japan (Hanamura, 1983). An unpublished record is available in the United States National Museum catalogue (USNM 170359). This material, identified by F.A. Chace is from off Ensenada (32°01'30"N 117°13'30"W), Mexico, collected on May 27, 1957, in a plankton net (reported depth: 1372 m). There are therefore three records for western Mexico EEZ (Fig. 1).

Depth distribution. According to Wicksten (2012), *P. suspiriosum* occurs in a wide depth range, from 150 to 1750 m. Records from off Oregon indicate a maximum population density in 200–1000 m using a multiple plankton sampler (Pearcy and Forss, 1966; Wasmer, 1974).

Remarks. The general shape of the carapace of the specimen examined (Fig. 2A) fits well with the illustrations provided by Burkenroad (1937: type material) and by Wasmer (1974), with the exception of the pointed tip of the rostrum observed in the type material but not in the Oregon material (Wasmer 1974). The eye (Fig. 2B) possesses the typical, well-developed tubercle at the base of the cornea and the additional, shallow projection, further proximally, as described by Burkenroad (1937) and by Wasmer (1974). The inferior antennal flagellum (Fig. 2C) also fits well with the illustration provided by Wasmer (1974), including the number of blunt, spatulate spines (16) on the inferior margin of prolongation of third article and on the superior margin of the prolongation of the fourth article (9 instead of 10), the latter also

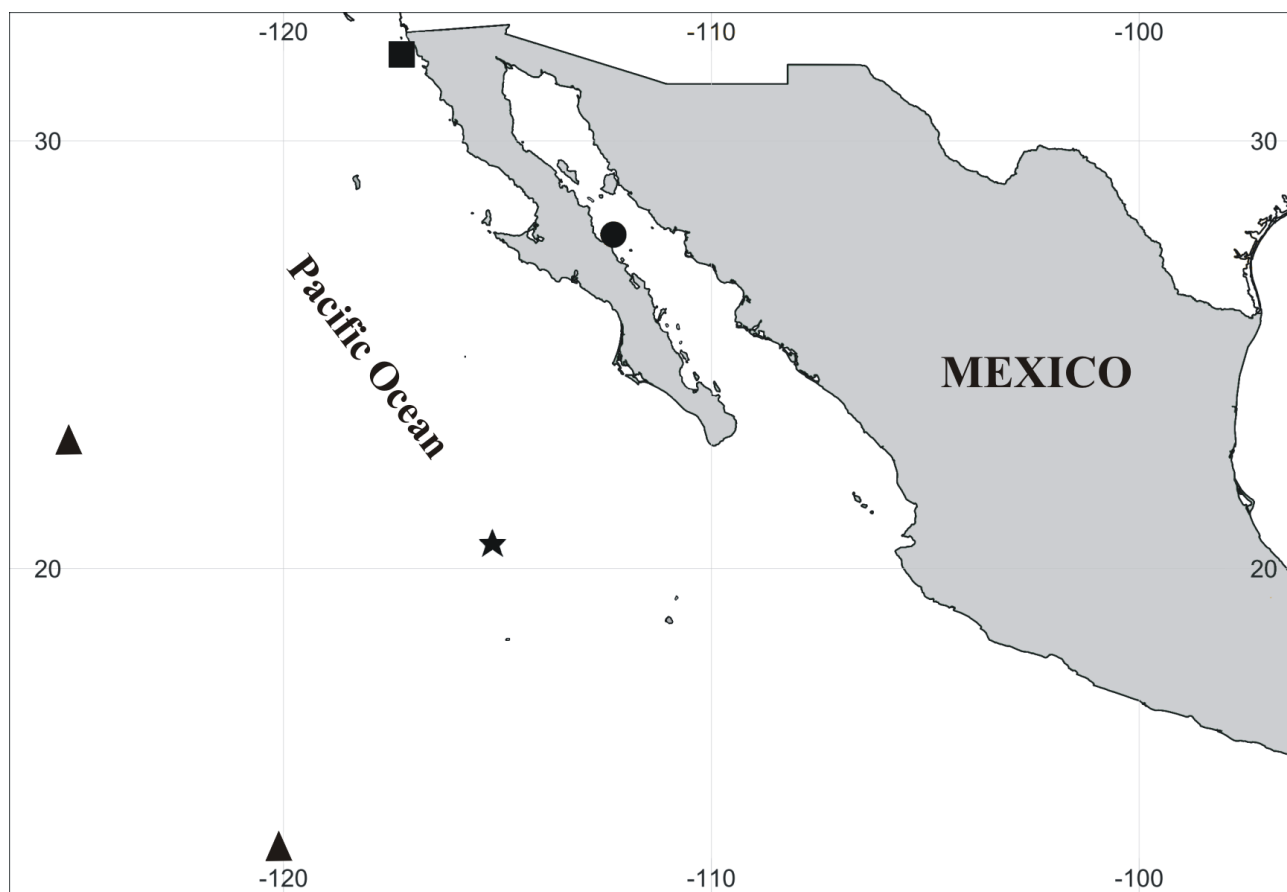


Figure 1. Localities off western Mexico where *Petalidium suspiriosum* Burkenroad, 1937 was captured. (★) Burkenroad, 1937; (▲) Hanamura, 1983; (■) USNM 170359; (●) present study.

featuring a strong, subconical (instead of rounded) distal protuberance. The petasma of the unique male available in this study (Fig. 2D) matches the illustration provided by Wasmer (1974), including the position and proportion of the branches of the lobus armatus, of the processus ventralis, and of the lobus terminalis, with their respective series of crochets. The shape and proportion of the telson-uropods (Fig. 2E) are also similar to what was described by Burkenroad (1937) and Wasmer (1974): telson a little more than half as long as external margin of uropodal exopodite, narrowing abruptly to a small terminal spine flanked by a pair of fixed lateral spines, uropodal exopodite slender, longer than endopodite by about half its length. Lateral spines of the examined specimen, however, are reduced or wanting probably due to damage.

Considering the higher number of deep, midwater samples collected in western Mexico during the TALUD cruises, from 1989 to 2014 (see Hendrickx, 2012; Hendrickx and Hernández-Payán, 2018), it is rather

surprising that only one specimen of *P. suspiriosum* was found during these extensive exploratory cruises. In contrast, Wasmer (1974) indicated that over 1000 specimens of this species were obtained during sampling operations in the NW Pacific between 1961 and 1974, and Hanamura (1983) reported on 105 specimens in four samples taken near seamounts off western Mexico in 1979. Were it not for the unique record within the Gulf of California included herein, *P. suspiriosum* would appear to be restricted to the California Current area (Oregon, California, Baja California area) and to the North Equatorial Current (seamount at 13°28'N 120°07'W). The Gulf of California material of *P. suspiriosum*, if part of a more abundant population, might be somehow isolated from the main distribution area of this species. Records available from off western Mexico (Burkenroad, 1937; USNM material; this study) do not allow for precise information about depth at which the few specimens were captured.

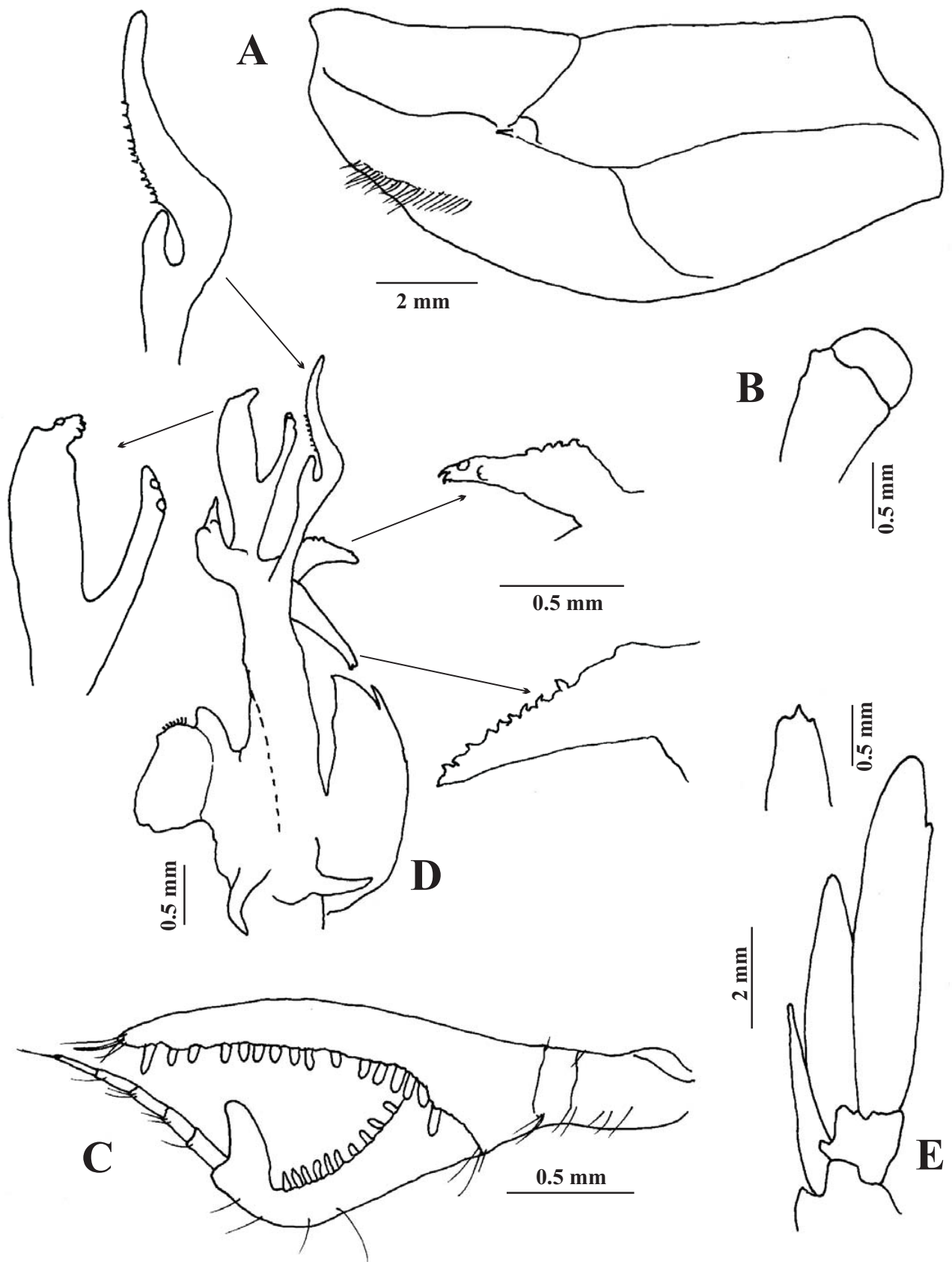


Figure 2. *Petalidium suspiciosum* Burkenroad, 1937 (ICML-EMU-8097), male (CL 10.2 mm). **A**, Carapace, lateral view; **B**, eye, dorsolateral view; **C**, inferior antennal flagellum, medial view; **D**, left petasma, anterior view; **E**, telson and uropods, lateral view (setae omitted).

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