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# First Report of the Invasive Medusa, *Phyllorhiza punctata* von Lendenfeld (1884), in Galveston Bay, Texas

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## SHORT PAPERS AND NOTES

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FIRST REPORT OF THE INVASIVE MEDUSA, *PHYLLORHIZA PUNCTATA* VON LENDENFELD (1884), IN GALVESTON BAY, TEXAS.— A single specimen of the medusa *Phyllorhiza punctata* von Lendenfeld (1884) was collected on 30 May 2006 in Eckert's Bayou (Galveston Bay; 29°13.308'N 094°55.985'W), TX. The specimen was collected in good condition using a beam trawl at 1 m water depth close (~5 m) to the shore. The temperature of the collection spot was 24 C and the salinity was 22 ppt. The medusa was placed in a bucket of ambient seawater and transferred to a 38-liter rectangular glass tank at The Aquarium at Moody Gardens for observation and identification; the specimen responded well to the transport and was still in good condition once at the aquarium (Fig. 1A, B). The tank was aerated and circulated via a sponge filter. Ten-liter water changes were performed every other day. The temperature and salinity were kept at 23 C and 18 ppt, respectively. Feeding of newly hatched *Artemia* nauplii was twice daily, and the animal survived a total of 23 d in captivity under this regime. Upon fixation in molecular-grade ethanol (190 proof), the medusa had a bell diameter of 50 mm. Gonadal tissue was dissected and sent to the Dauphin Island Sea Lab for genetic confirmation. The remainder of the specimen was sent to the Smithsonian Institution to be catalogued into its collection.

Morphological identification of the medusa to species was made using previous descriptions provided in Graham et al. (2003) and references therein [e.g., Mayer (1910) and Kramp (1961)]. However, recent work by Bolton and Graham (2004) revealed substantial morphological variation among populations of *P. punctata*. Therefore, molecular confirmation was performed using sequence data from mitochondrial 16S ribosomal genes, which were identical to those of animals collected in southern coastal Louisiana (Bayha et al., unpubl. data). These jellyfish have consistently inhabited Louisiana waters since 2002 and were found in large numbers in coastal Alabama in 2000 (Graham et al., 2003). This species previously had been confirmed as far to the east and north as the Indian River Lagoon on the east coast of Florida (Graham et al. 2003) and as far to the west as Sabine Pass near the Texas–Louisiana border (WMG, unpubl. data).

To date, this specimen is the westward-most collection of *P. punctata* since its identification in 2000 as a nuisance marine invasive species of the Gulf of Mexico, occurring first along the Alabama, Louisiana, and Mississippi coasts where blooms numbered in the thousands (Graham et al. 2003). The species is thought to have been introduced to the Atlantic Basin as a result of shipping nearly 45 yr ago (da Silveira and Cornelius, 2000). The population inhabiting the northern Gulf of Mexico is of the same population found in the Caribbean. The transport of the medusae from the Caribbean to the Gulf of Mexico has been attributed to the Loop

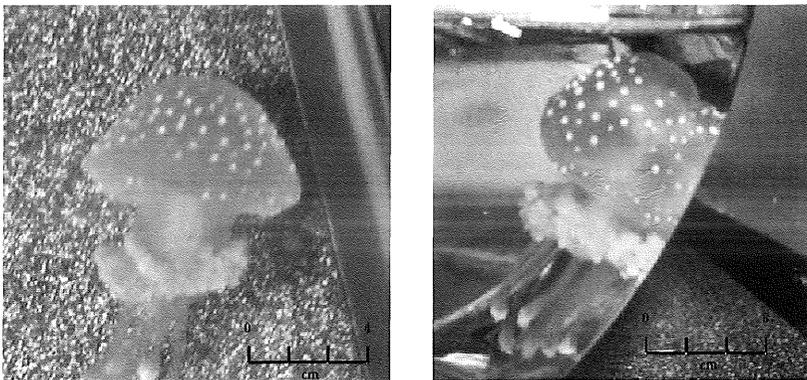


Fig. 1. The medusa feeding upon *Artemia* (A) (left), and the medusa in a cylindrical viewing tank (B) (right). Both photographs taken at The Aquarium at Moody Gardens, Galveston, TX. Photos courtesy of the author (A) and Texas Parks and Wildlife (B).

Current and its circulation properties (Johnson et al., 2005). Although only a single specimen was collected, the fact that it was in good condition, well within the confined area of Eckert's Bayou inside Galveston Bay, suggests plausible hydrographic circumstances for additional coastal advection (presumably from Louisiana) and survival in Texas waters. Therefore, we suggest an updated description of its distribution to be centralized in the northern Gulf of Mexico along southern coastal Louisiana and occasionally distributed as far to the east as Indian River Lagoon (Florida east coast) and as far west as Galveston Bay (Texas).

This medusa, known regionally as the "Australian spotted jellyfish," should be regarded as highly invasive owing to its persistent occurrence and documented problems, especially with commercial and recreational fishing activity (Graham et al. 2003). Direct impacts may include clogged nets and damaged boat intakes. Indirect impacts include predation on fish eggs (Graham et al. 2003) and other key species in the region. We strongly suggest that public education be increased regarding this species, so that proper and timely identifications can be made and reported to marine resources authorities, to document further population spread.

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