

LIGIA BAUDINIANA (ISOPODA, LIGIIDAE) ON THE GULF COAST OF THE
UNITED STATES

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INTRODUCTION

The authors first became acquainted with Ligia baudiniana in February 1946 when they observed literally thousands at night on the sea wall at Pass Christian, Mississippi. This is the north shore of the Gulf of Mexico (Caribbean Sea). In checking the two standard works on North American isopods (Richardson 1905 and Van Name 1936), they found only generalized statements relating to the distribution of these species.

Ligia baudiniana Milne-Edwards is one of the larger species of Oniscidea and belongs to the family Ligiidae whose members are found on the shores of the oceans throughout the world. Most workers consider them to be primitive members of the Oniscidea. They may represent a group intermediate between marine and terrestrial isopods. The genus Ligia was last revised by Jackson (1922) who recognised 15 species. Verhoeff (1926) divided the genus into a number of genera which have not been accepted by modern workers. Ligia baudiniana may be separated easily from other members of the genus by the comb on the long setae on the carpus and merus of the first leg (Fig. 1A) and by the shape of the posterior border of the telson (Fig. 1B).

ECOLOGY

Ligia baudiniana occupies an ecological niche at the upper end of the littoral zone. This area is affected by both runoff from the land and by the influx of new material being deposited every high tide. Large populations are found on stone breakwaters and sea walls. Although most active at night, they can be observed at almost any time of the day. In spite of the fact that they are gill breathers, they appear to have the ability to rest on the surface of rocks above the high tide mark for long periods. Upon being disturbed, they run rapidly into the water where they burrow into the sand where they can stay for long periods. Small numbers may be found also under debris on tidal mud flats. We have observed Ligia baudiniana in such a habitat on Galveston Island and Shultz (1974) has reported this species from similar sites from several islands in the south Caribbean. In summary, Ligia baudiniana occurs along the shore of the Gulf of Mexico from Florida to Texas and on islands in the Atlantic Ocean and the Caribbean Sea.

Unfortunately, few weather stations on the Gulf Coast

collect data on water temperatures. The U.S. Coast and Geodetic Survey (U.S. Department of Commerce) has a reading station at Pensacola, Escambia County, Florida, which has recorded water temperatures since 1923. Based on data obtained by this station, it would appear that the mean annual water temperature along the northern Gulf Coast is about 20 °C. Based on our observations, Ligia baudiniana is well-adapted to live in this environment and appears to remain active throughout the year.

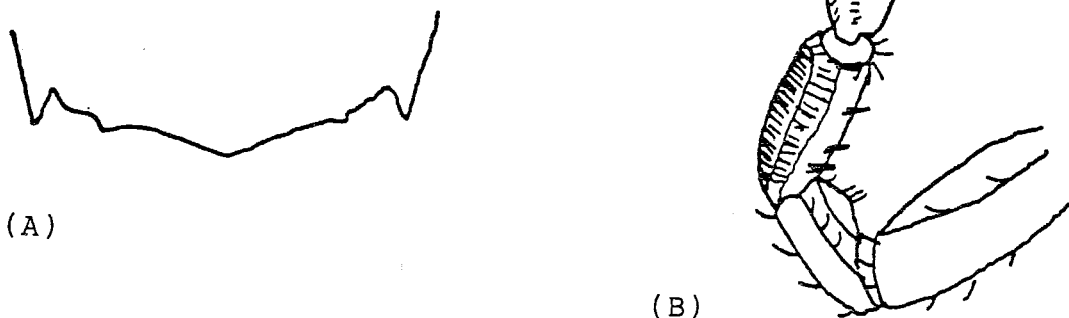


Fig. 1 : Distinguishing features of Ligia baudiniana. (A) telson, (B) first leg of male.

DISTRIBUTION

As was stated earlier, published distribution data is very general. Van Name (1936, p.59), the most recent general publication on American isopods, gives the following: "Atlantic Gulf and Caribbean Sea coasts from Florida to Brazil and in the West Indies". In spite of the fact that the type locality is San Juan d'Ulloa, near Veracruz, Mexico, no locations are given for the Gulf of Mexico. It is interesting to note that Van Name (1936) does not list this species as occurring on the Gulf Coast of the United States.

Schultz (1974) adds the following locations: Florida (Coot Bay Pond, Everglades National Park; Bahamas (North Bimini);

Virgin Islands; Tobago; Trinidad; Bonaire; Aruba and the east coast of Panama.

The authors have collected or examined specimens of Ligia baudiniana from the following locations:-

Bahamas

Clarence Town, Long Island - 24 July 1936, collected by Russell & McLean, Museum of Comparative Zoology, Harvard University (= 'MCZ' below).

Simm's, Long Island - 7 July 1936 (MCZ).

Bermuda

The MCZ has two collections of this species which unfortunately have no data. Both collections were examined by Harriet Richardson and these data were probably utilized in her 1905 Monograph.

Florida

Key West, Monroe County - no date (MCZ).

Little Torch Key - 14 April 1968 (four specimens, females with eggs, University of Kansas collection).

Miami, Dade County - 14 March 1898, collected by Mrs. A.J. Slosson (MCZ).

Yankeetown, Levy County - 24 June 1978, stone breakwater, west of Yankeetown, on Withlacoochee Bay, Gulf of Mexico - very abundant, approximately 100 per square metre.

Mississippi

Bay Saint Louis, Hancock County - 5 October 1975 and 27 March 1977, on breakwater leading to a fishing pier, 75 to 100 per square metre.

Biloxi, Harrison County - 5 October 1975, common on the breakwater, 75 to 100 per square metre.

Gulfport, Harrison County - 5 October 1975, common on the breakwater, 100 to 125 per square metre.

Long Beach, Harrison County - 5 October 1975, common on the breakwater, 75 to 100 per square metre.

Pass Christian, Harrison County - 15 February 1946. At this time there was a concrete sea wall approximately three miles long which at night, had thousands of Ligia baudiniana resting on it. It was destroyed by the hurricane of 1958.

Pass Christian, Harrison County - 3 October 1975 and 27 March 1977. On both these dates, large numbers were observed on the breakwater of the yacht basin at a density of about 100 per square metre.

Waveland, Hancock County, Buccaneer State Park - 27 March 1977, common on breakwater, 75 to 100 per square metre.

Texas

Corpus Christi, Nueces County - 12 May 1975, found under rocks

at shore line (R.E. Beer, University of Kansas Museum).
Galveston Island, Galveston County - 11 October 1980, under
debris on mud flats, uncommon.

In summary, it appears that Ligia baudiniana is more widely distributed along the shores of the Gulf of Mexico and the Caribbean Sea than earlier published records indicate. There is no question that much additional fieldwork is needed, especially on the Caribbean coast of Mexico, Central and South America.

DISCUSSION

One of the major questions which arises from a study of this species on the Gulf Coast of the United States is 'where did this species live prior to the construction of stone breakwaters?'. Today, the vast majority of stone breakwaters along the Gulf Coast are supporting large populations. In fact, it is difficult to find this species in large numbers except on these man-made structures. When one is fortunate to find this species under debris on mud flats, only one or two specimens are found.

It is safe to state that probably the earliest stone breakwaters were constructed not more than 150 years ago! In fact the breakwaters which support the highest populations are made of broken concrete and probably were constructed within the past 75 years. If we assume that the natural habitat of Ligia baudiniana was under various types of debris on mud flats located within the tidal zone, can we assume that this species had a far lower population than we have today? Based upon our observations, it appears that this species has, in a short period of years (<100?), been able to adapt to and colonise a totally man-made habitat.

REFERENCES

- JACKSON, H.G. (1922). A revision of the isopod genus Ligia (Fabricus). Proc. zool. Soc. Lond., (1922), 683-702.
RICHARDSON, H. (1905). A monograph of the isopods of North America. Bull. U.S. Natl. Mus., 54, 1-727.
SCHULTZ, G.A. (1974). Terrestrial isopod crustaceans (Oniscoidea) mainly from the West Indies and adjacent regions. I. Tylos and Ligia. Studies on the Fauna of Cucacoo and other Caribbean Islands, 45, 162-173.
VAN NAME, W.G. (1936). The American land and freshwater isopod Crustacea. Bull. Am. Mus. Nat. Hist., 71, 1-525.
VERHOEFF, K.W. (1926). Isopoda Terrestria von Neu-Caledonein und den Loyalty-Inseln. Nova Caledonia, Zool., 4, 243-366.