

AN ECOLOGICAL STUDY OF THE RECENT OSTRACODS OF THE GULF COAST OF FLORIDA¹

Neil C. Hulings^{2*}

ABSTRACT

Three major environments on the west coast of Florida were sampled for ostracods during 1956 and 1957. These environments included: Ochlockonee Bay, a positive estuary; Apalachee Bay, designated as the inner neritic zone; and an offshore transect from Panama City to St. Petersburg, designated as the outer neritic zone.

A total of 165 bottom samples, collected with a Petersen grab, were analyzed for ostracods. Hydrographic data were collected in Ochlockonee Bay and Apalachee Bay prior to and during the sampling for ostracods. Fifty-four bottom samples were taken in Ochlockonee Bay during July 1956 and 87 samples were taken in Apalachee Bay during September 1956 and March and June 1957. Twenty-four bottom samples were collected in the outer neritic zone during July 1957.

Ochlockonee Bay is a typical brackish-water environment. The bay is about 5 miles long and averages 1½ miles in width. Most of the fresh water flowing into Ochlockonee Bay originates from the Ochlockonee-Sopchoppy River system. The bottom salinity ranges from freshwater to 30 o/oo. The salinity of the region west of the bridge (U. S. Highway 98) ranges from freshwater to about 15 o/oo. The region east of the bridge has an average salinity range of approximately 16 o/oo to 30 o/oo. The annual temperature range is in the vicinity of 10° C to 30° C. The sediments of the estuary are predominantly mud, defined as a mixture of predominantly clay and silt size particles, although extensive shell and sand bottoms occur. The organic content of the mud, in the form of plant detritus, is high. The shell bottoms are formed chiefly of living and dead oyster reefs and occur east of the bridge.

The hydrography of Apalachee Bay is influenced primarily by two factors, estuarine discharge and the encroachment of Gulf water. The estuarine water originates from Ochlockonee Bay and the St. Marks River. The flow from Ochlockonee Bay is about three times that of the St. Marks River. The salinity is lowered considerably in the vicinity of the mouths of these two estuaries. Considering the entire area of Apalachee Bay sampled, the bottom salinity ranged from 19 o/oo to 35 o/oo. An annual temperature range of 13° C to 30° C was encountered in Apalachee Bay. Samples were collected from a depth range of 2 to 25 feet. The dominant sediments of Apalachee Bay are detrital quartz sands. In certain areas, especially in the vicinity of the mouth of Ochlockonee Bay, mixtures of mud and sand occur. Grass flats are also common throughout the area. Two major types of sediments are recognized, sand and muddy sand. The latter is defined as sand containing 10% or more mud.

The outer neritic zone is considered, for the most part, as a more normal marine environment. A bottom salinity range of 33 o/oo to 36 o/oo and a bottom temperature range of 24° C to 30° C was recorded during the sampling. Samples were collected from a depth range of 30 to 165 feet. Three types of sediments were encountered, gravel, carbonate and sand. The carbonate sediments are defined as containing 25% or more carbonate material formed of limestone

detritus, algal and shell fragments. Gravel is defined as any material coarser than sand (2 mm) and formed of shell and limestone fragments.

A total of 83 species of ostracods was encountered in this study. Of this total, 47 have been positively identified to species.

A total of 26 species was recorded from Ochlockonee Bay. Eleven of this total were found to be restricted to this environment. The species included *Aurila conradi* var. A. (Howe and Brown), *Cushmanidea* sp. E, *Cyprideis littoralis* Brady, *Cytheretta multicarinatralis* (Swain), *Cytheromorpha pascagoulensis* Mincher, *Darwinula* sp. *Microcythere johnsoni* Mincher, *Paracytheridea troglydata* Swain, *Perissocytheridea bicelliforma* Swain, *P. brachyforma* Swain and *rugata* Swain.

Fifty-six species were found in Apalachee Bay of which 13 were limited to this area. These species include *Campylocythere laevis* Edwards, *C. multipunctata* (Edwards), *Cushmanidea* sp. B, *Cytherella* sp. A, *Cytherelloidea* spp. A and B, *Cytherura* sp. D, *Eucythere triangulata* Puri, *Hemicytherideis* sp., *Hemicytherura* sp., *Microcythere* sp. *M. stephensoni* Puri, *Paracyris*? sp. B, *Paradoxostoma* sp. and *Xestobris depressa* Sars.

A total of 47 species was encountered in the outer neritic zone. The species found only in this environment include *Caudites* sp. *Cushmanidea* spp. C and D, *Cypridina* sp., *Cytherella* sp. B, *Cythere* *loidea* spp. C and D, *Cytheropteron alatum* Sars, *Echinocythere echinata* (Sars), *Eucythere* sp., *Loxocochoa* sp., *L. guttata* Norma L. *wilberti* Puri *Orionina bermudae* (Brady).

In each of the three major environments, various biotopes were established primarily on the basis of the type of substratum or the specific composition of the living ostracods. Two biotopes were established in Ochlockonee Bay, an upper bay biotope having diagnostic species and a lower bay biotope having 5 diagnostic species. In Apalachee Bay, three biotopes were established. These were the muddy sand biotope which was found to have 24 diagnostic species, the sand biotope which yielded 9 diagnostic species and the grass-flat biotope having 2 diagnostic species. The biotope established in the outer neritic zone were carbonate biotope, sand biotope and gravel biotope. The latter yielded no diagnostic ostracod species. Twenty-three species were found to be diagnostic of the carbonate biotope and 10 species diagnostic of the sand biotope.

On the basis of limited hydrographic data, especially temperature, certain species are recognized as stenohaline or euryhaline, stenothermal or eurythermal. Certain species also exhibited restricted depth ranges.

The ostracod fauna of the neritic zone of the central west coast of Florida show affinities with the Miocene and post-Miocene fauna of the Gulf coastal regions. The fauna of the outer neritic zone has several species in common with the ostracod fauna of the Florida Bay region. Several species found in Ochlockonee Bay were typical estuarine ostracods as has been found in other areas.

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² Oceanographic Institute, Florida State University, Tallahassee.