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Occurrence of the Cephalocarid Crustacean *Lightiella floridana* in the Northern Gulf of Mexico with Notes on its Habitat

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OCCURRENCE OF THE CEPHALOCARID CRUSTACEAN *Lightiella floridana* IN THE NORTHERN GULF OF MEXICO WITH NOTES ON ITS HABITAT[1]

The relict crustacean subclass Cephalocarida (Sanders, 1955) includes a group of relatively uncommon microscopic animals consisting of three genera and eight species. *Lightiella floridana* McLaughlin, 1976, is known only from the type locality, Anclote Anchorage, and nearby on the central west coast of Florida (McLaughlin, 1976; Saloman, 1978). McLaughlin collected 58 specimens from a habitat described as fine-grained quartz sand overlain by a flocculent layer of high organic content in a shallow bed of turtlegrass, *Thalassia testudinum.* Two of the specimens were trapped in algal mats taken in a trawl sample. Twelve specimens of *L. floridana* were collected by Saloman (1978) in an extensive survey of macrobenthos off Pinellas County, Florida. Saloman's collections provided useful information on the habitat of *L. floridana;* all specimens collected by him came from a hard, shelly sand with no vegetation. Prior to his report all cephalocarids were taken from sediments with a large silt-clay fraction, normally a flocculent surficial layer. Saloman's discovery of *L. floridana* in shelly sediments with less than 1.0% silt-clay seems to refute the conclusion of Sanders and Hessler (1964) that the genus *Lightiella* is limited to sediments with an organic and flocculent surface layer, as is *Hutchinsoniella macracantha* (Sanders, 1963). It was suggested that Cephalocarida are incapable of feeding in other habitat types. Saloman reported that the only similarity occurring between the sediments of his collection site and those where other cephalocarideans have been found was a high organic content, 18 to 27% of the sediment dry weight.

During a recent survey of macrobenthos at four sites in Apalachee Bay, Florida (Stoner, 1979, 1980), 17 specimens of *Lightiella floridana* were collected at three field sites in shallow subtidal sediments (Fig. 1). All of the specimens were collected using a hand-held coring device (7.6 cm diameter) and were retained on a sieve with 0.50 mm mesh. Two specimens were taken at station F11, 4 at station F12, and 11 at station E12. Rarity of the species in Apalachee Bay is illustrated by the fact that only 17 specimens were collected in over 1000 benthic samples collected at monthly intervals over nearly two years. *Lightiella floridana* was collected in all months except July, August, and March during the period from May 1977 to April 1978. All specimens were adults between 1.9 and 3.0 mm in length. None was ovigerous.

All of the sites were polyhaline with salinities ranging from 19 to 34‰ and were subject to wind and tide induced water levels (1.0-2.2 m). The sites were characterized by clear water, low in color and turbidity. Station F11 was devoid of vegetation, station F12 was characterized by a sparse macrophyte cover of manatee grass, *Syringodium filiforme,* and turtlegrass, *Thalassia testudinum,* and station E12 had a heavy cover of seagrass composed primarily of *T. testudinum.* Despite differences in macrophytes at the three field sites, sedimentological characteristics were quite similar (Table 1). Mean grain diameter at all of the sites was in the fine sand category and the sediments were well sorted, with a skew towards finer particles (for more detailed station description see Stoner, 1979, 1980).

Although the sediments of the Apalachee Bay sites contained little shell or other large particles and the mean grain size was smaller than those reported by Saloman (1978) (1.423-0.131 phi), the low

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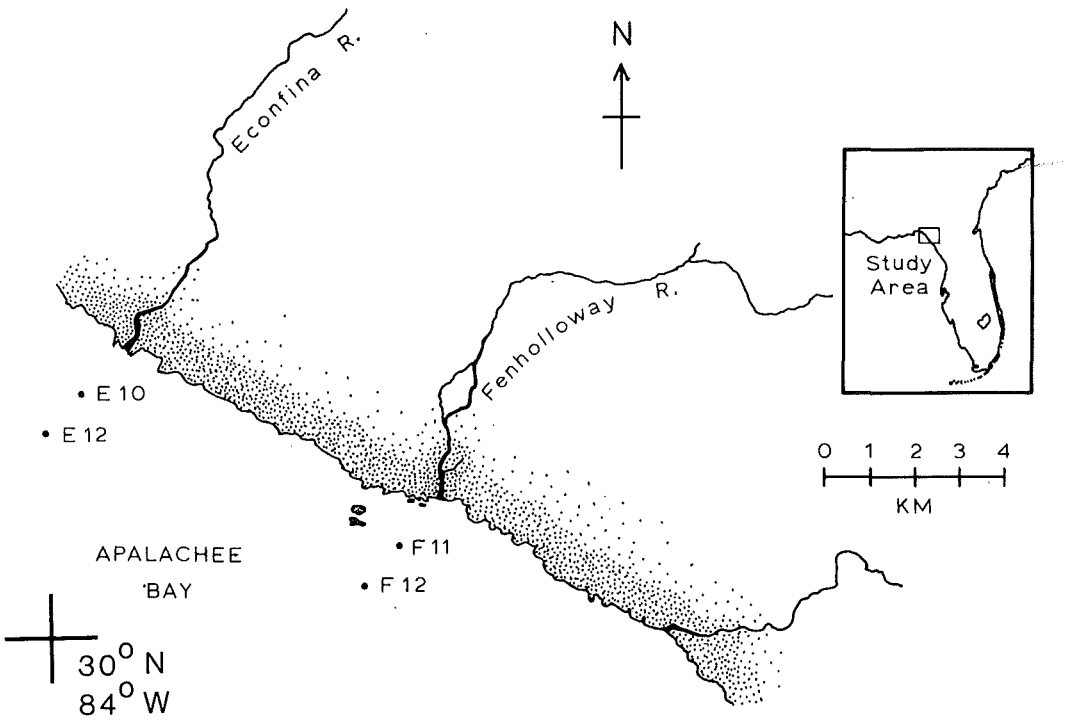

Figure 1. Study sites in Apalachee Bay, Florida. *Lightiella floridana* was found at stations F-11, F-12, and E-12.

percentage of silts and clays in Apalachee Bay sediments (0.67 - 2.75% of dry weight) confirms Saloman's conclusion that abundance of clay-sized particles may not be requisite for the presence of *L. floridana.* Unlike Saloman's sites or any other sites where cephalocarideans have been found, the Apalachee Bay stations were low in organic content (2.8 - 5.6%) despite the presence of seagrasses at two of the statons. In an earlier study (Stoner, 1980) I hypothesized that low abundance of finer particles and organic matter at these stations was a result of scouring by both heavy wave action during fall and winter months and relatively rapid tidal currents. The greatest numbers of *L. floridana* were collected in the fall and winter (November through February) when grain size and organic content of the sediments were lowest (Stoner, unpublished data). It thus appears that neither a silt-clay fraction nor high sediment organic content may be of great consequence in the distribution of this cephalocaridan species.

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TABLE 1. Summary of sedimentological characteristics at three sites in Apalachee Bay, Florida. (mean ± S.D.; n for organic content = 12; n for granulometric parameters = 4).

Station	F11	F12	E12
Organics (% dry wt.)	2.8 ± 0.8	5.6 ± 0.7	2.9 ± 0.5
Mean Grain Diameter:			
(phi)	2.32 ± 0.13	1.98 ± 0.16	2.33 ± 0.01
(mm)	0.20 ± 0.02	0.25 ± 0.03	0.20 ± 0.01
Sorting	0.86 ± 0.15	1.31 ± 0.12	0.74 ± 0.06
Kurtosis	7.79 ± 0.94	2.85 ± 0.39	6.22 ± 1.76
Skewness	-0.84 ± 0.07	-0.34 ± 0.08	-0.57 ± 0.12

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who provided preliminary identifications of *Lightiella floridana*. P.A. McLaughlin made the final species verification and specimens have been placed in the Indian River Coastal Museum, Link Port, Fort Pierce, Florida (IRCM 089: 4492). Benthic surveys were sponsored by a grant (R-805288010) from the U.S. Environmental Protection Agency to R.J. Livingston. R.H. Gore and R.W. Virnstein provided helpful criticism of the manuscript.

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