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- PERRIN, W. F.; D. K. CALDWELL, AND M. C. CALDWELL. 1994. Atlantic spotted dolphin *Stenella frontalis* (G. Cuvier, 1829), p. 173–190. In: Handbook of Marine Mammals. Vol. 5. S. H. Ridgway and R. J. Harrison (eds.). Academic Press, London.
- , E. D. MITCHELL, J. G. MEAD, D. K. CALDWELL, M. C. CALDWELL, P. J. H. VAN BREE, AND W. H. DAWBIN. 1987. Revision of the spotted dolphins, *Stenella* spp. Mar. Mamm. Sci. 3(2):99–170.
- SCHMIDLEY, D. J. 1981. Marine mammals of the southeastern United States coast and Gulf of Mexico. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, DC. FWS/OBS-80/41.
- , M. H. BELEAU, AND H. HILDEBRAN. 1972. First record of Cuvier's dolphin from the Gulf of Mexico with comments on the taxonomic status of *Stenella frontalis*. J. Mammal. 53:625–628.
- , AND B. A. MELCHER. 1974. Annotated checklist and key to the cetaceans of Texas waters. Southwest Nat. 18:453–464.
- , AND S. H. SHANE. 1978. A biological assessment of the cetacean fauna of the Texas coast. Report of the U.S. Marine Mammal Commission. MMC-74/05.
- WADE, P. R., AND T. GERRODETTE. 1993. Estimates of cetacean abundance and distribution in the eastern tropical Pacific. Rep. Int. Whaling Comm. 43: 477–493.
- WHITEHEAD, H., AND B. KAHN. 1992. Temporal and geographical variation in the social structure of female sperm whales. Can. J. Zool. 70:2145–2149.
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NOTES ON THE OCCURRENCE OF *GUAVIDA GUAVIDA* (PISCES: ELEOTRIDAE) IN EAST CENTRAL FLORIDA: FIRST NORTH AMERICAN CONTINENTAL RECORD.—Eleotrid fishes (Perciformes: Gobioidei) are common components of the fish faunas of many subtropical and tropical freshwater and estuarine habitats. Nelson (1994) recognized about 150 species of these relatively small (<60 cm) demersal fishes. Despite their diversity and abundance, however, eleotrids have received little scientific scrutiny.

Guavina guavina (Cuvier et Valenciennes) has been reported as “generally common” or

“very common” in fresh and brackish waters from Puerto Rico and Cuba along the east coast of tropical America to Rio de Janeiro (Jordan and Evermann, 1896; Evermann and Marsh, 1900). However, few recent scientific collection records are available. Meek and Hildebrand (1916) describe a similar geographic range and habitat preferences and report on five specimens (105–185 mm), and Evermann and Marsh (1900) describe two specimens, 6.5 in. (16.2 cm) and 8.5 in. (21.2 cm). Vostradovská and Vostradovsky (1969) determined that *G. guavina* comprised 0.37% of seine collections (no numbers given) in a freshwater impoundment in Cuba. Preferred habitats were open water without emergent vegetation. Cervigoñ (1993) gives the distribution of this species from the “. . . southern United States . . . to Brazil,” and notes the scarcity of literature references. Habitat preferences are characterized as shallow, muddy, brackish waters, but five fishes (165–230 mm TL) in his collection from Venezuela came from a hypersaline lagoon. In one of the more detailed ecological studies of *G. guavina*, Teixeira (1994) collected 15 specimens (113–170 mm TL) over a 1-year seine study of a saline lagoon in northeast Brazil. Dietary preferences, reproductive state, and niche overlap with two other sympatric eleotrids were investigated.

Below, I report the collection in east-central Florida of the first known specimen of *G. guavina* from North America, along with a description of the collection site and associated fish species.

Materials and methods.—The single specimen of *G. guavina* was collected on 17 Aug. 1995 in a 400-m-long, 2–3-m-wide ditch entering Port Canaveral, Florida (lat. 28°25', long. 80°37'), a busy commercial port connected to the adjacent Indian River Lagoon (IRL) via a lock system. The ditch follows an irregular path with several right-angle turns, passes under two roadways, and terminates at the port through a 75-m-long, 1.5-m-diameter concrete culvert. Water depth in the ditch ranges from 15 to 25 cm, depending on tidal stage and rainfall runoff. The bottom is soft mud. Sewage apparently enters the ditch from a malfunctioning sewage line at the upper end, and this has promoted dense growth of the grasses *Distichlis* and *Paspalum*. Cordgrass (*Spartina alterniflora*) lines both sides of the ditch throughout much of its length, and saltgrass (*Distichlis*) dominates at the upper end. Burrows of the great land crab, *Cardisoma guanhumii*, are abundant in the upper reaches of the ditch. Burrows are particu-

larly concentrated around the source of incoming sewage effluent.

Results.—The specimen of *G. guavina* measured 65.5 mm SL. The fish was collected near the upper end of the ditch (approximately 350 m from ocean water) in a crab burrow. Water temperature in the burrow was 30 C and salinity was 0 ppt. However, nearby pools of isolated water had temperatures as high as 39 C and salinity was 10 ppt. The burrow was immediately adjacent to the suspected sewage outfall and the water in the burrow was very black with a dissolved oxygen level of 0.4 ppm.

Water temperatures and salinities in burrows and open-water areas of the ditch ranged from 24–31 C and 0–30 ppt during nine other collections (from 23 Aug. 1991 to 11 Oct. 1995) with burrow traps (Taylor, 1990), wire minnow traps, and seine. Other fish species collected in open-water areas of the ditch were *Gambusia holbrooki*, *Poecilia latipinna*, *Cyprinodon variegatus*, *Fundulus grandis*, *Centropomus undecimalis*, *Megalops atlanticus*, *Mugil curema*, *Eucinostomus* sp., *Evorthodus lyricus*, *Dormitator maculatus*, and *Eleotris pisonis*.

Discussion.—Cervigoñ (1993) states that *G. guavina* ranges south from the southern United States, but the above collection appears to be the first record of this species on the North American continent. As no additional specimens were collected prior to or after the collection date, it is likely that this specimen represents an isolated individual. The mode of arrival of this individual remains open to speculation. The fish may have rafted ashore from a more southerly point of origin, either in egg, larval, or juvenile form. Conversely, as Port Canelas is an international port, “ballast riding” is also a possibility.

Gilmore and Hastings (1983) and others have noted the occurrence of tropical peripheral fishes on the east coast of Florida. These distributions are thought, in part, to be due to oceanic current patterns that result in deposition on the east coast of Florida. Oceanic dispersal of gobioid fishes is a strong possibility, given the euryhaline nature of this group (Gilmore and Hastings, 1983) and the fact that larval forms may be swept out to sea in masses of vegetation during rainy seasons (Nordlie, 1981). The summer of 1995 was very active in tropical weather systems approaching the east coast of Florida, which may have enhanced onshore transport of entrained organisms.

Other specimens of *G. guavina* reported in the literature are considerably larger than the

one reported here. It may be that juvenile *G. guavina* are utilizing cryptic habitats (i.e., crab burrows) and are overlooked or missed by conventional collection techniques. Teixeira (1994) suggests that the comparative lack of *G. guavina* specimens in his survey (15 specimens, compared to 1991 *D. maculatus* and 162 *E. pisonis*) may be attributed to their preference for *Rhizophora mangle* roots and the difficulties in sampling therein. It is also worth noting that both *D. maculatus* and *E. pisonis* were sympatric with *G. guavina* in the present collections.

The *Cardisoma guanhumi* burrows at Port Canelas are well north of other known concentrations of the crab, which reaches the northern limit of its distribution in east-central Florida (pers. observ.). *Cardisoma guanhumi* burrows have harbored other eleotrid fishes in the IRL: both juvenile *D. maculatus* and a 90-mm specimen of *E. pisonis* have been collected (unpubl. data).

This occurrence may represent an example of oceanic dispersal and the potential for colonizing species to establish populations in the IRL. Possibly the only barrier to permanent establishment of such eleotrids along the IRL is the lower thermal limits encountered during subtropical winters.

This specimen has been placed in the Florida State Museum Collection, Gainesville, Florida, catalog number UF101745.

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LITERATURE CITED

- CERVIGOÑ, F. 1993. Los peces de Venezuela. Vol. III. Fundación Científica los Roques, Linares, Venezuela.
- EVERMANN, B. W., AND M. C. MARSH. 1900. The fishes of Porto Rico. U.S. Fish. Comm. Bull. 1900:289–290.
- GILMORE, R. G., AND P. A. HASTINGS. 1983. Observations on the ecology and distribution of certain tropical peripheral fishes in Florida. Fla. Sci. 46(1):31–51.
- JORDAN, D. S., AND B. W. EVERMANN. 1896. The fishes of north and middle America. Bull. U.S. Natl. Mus. 47:2198–2199.
- MEEK, S. D., AND S. F. HILDEBRAND. 1916. The fishes of the fresh waters of Panama. Field Mus. Natl. Hist. Chicago X(15):360–361.
- NELSON, J. S. 1994. Fishes of the world. 3rd Ed. John Wiley and Sons, New York. 600 pp.
- NORDLIE, F. G. 1981. Feeding and reproductive bi-

- ology of eleotrid fishes in a tropical estuary. *J. Fish Biol.* 18:97-110.
- TAYLOR, D. S. 1990. Adaptive specializations of the cyprinodont fish *Rivulus marmoratus*. *Fla. Sci.* 53(3):239-248.
- TEIXEIRA, R. L. 1994. Abundance, reproductive period and feeding habits of eleotrid fishes in estuarine habitats of north-east Brazil. *J. Fish Biol.* 45: 749-761.
- VOSTRADOVSKÁ, M., AND J. VOSTRADOVSKY. 1969. Aprovechamiento de peces en lagunas y presas. *Acad. Cienc. Cuba Ser. Biol.* 12:3-8.
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