

OBSERVATIONS ON TROPICAL MARINE FISHES FROM THE NORTHEASTERN GULF OF MEXICO¹

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Recent reports (Caldwell and Briggs, 1957; Briggs and Caldwell, 1957; Briggs, 1958) have revealed the presence of a Florida marine tropical shorefish fauna in the northeastern Gulf of Mexico extending for approximately 60 miles of shoreline from about Panama City to Destin, with the greater concentration of records at Panama City. The extent of this fauna inshore has not been clearly demonstrated—by species or geographical range. The tropical fishes might occur all along the western edge of peninsular Florida in deep water, but there are as yet no published records of occurrence inshore between Panama City and the Keys—despite extensive studies of inshore fishes at Alligator Harbor, some 120 shoreline miles east of Panama City (Joseph and Yerger, 1956); and at Cedar Keys, some 115 shoreline miles further east and south of Alligator Harbor (Reid, 1954; Kilby, 1955; Caldwell, 1954, 1955, 1957; Berry, 1958a, 1958b). Unpublished observations by other workers indicate that some species of tropical shorefish may occur, close inshore, further north along peninsula Florida than the Keys. West of Destin, the extent of the fauna is uncertain—there being unconfirmed and unpublished reports of tropical fishes (species unlisted) as far west as Pensacola, Florida (40 shoreline miles west of Destin), although my own limited collecting inshore there failed to produce any. Boschung, in his 1957 list of Alabama shore fishes (particularly Mobile Bay, 50 shoreline miles west of Pensacola), lists none of the typically tropical fishes recorded from Destin and Panama City.

The tropical fauna at Panama City and Destin is a summer one, and a possible explanation for its occurrence may lie in a combination of factors—pelagic larvae (or at least young that are known to drift in the shelter of floating seaweed) of the tropical species of fish there, and the recently discovered current patterns in the Gulf of Mexico. In this latter regard, Leipper (1954: 121) reports

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summer surface currents in the Gulf, and his illustration shows a sweep of a branch of the Gulf Stream flowing northward through the central Gulf from the Caribbean—where these fishes are always in evidence. This branch is shown as dividing off the Mississippi River Delta with the easterly section bending shoreward in the region including Panama City and Destin. Some young fishes, as inhabitants of floating weed or as pelagic larvae (hatched further south in late winter, spring, or early summer), could be easily swept inshore at this point, and there find suitable habitat until the cold of fall and winter drives them into deeper and warmer water or kills them. As corroborating evidence for such a recruitment of young, only a few adults are found. The great majority of the fauna consists of small individuals probably in their first year. The few adults may move to deep water in fall and winter and return inshore with the onset of warm weather, and while conditions may permit these few to spawn, it appears that the bulk of the summer tropical population may be maintained through annual recruitment from the Caribbean. Why *Acanthurus randalli* Briggs and Caldwell might have become established as a replacement in the northeastern Gulf for the more southern *A. bahianus* Castelnau is not understood. Perhaps future collections will show instead that it does not replace *A. bahianus*, but that both occur there. If the differences between *A. randalli* and *A. bahianus* are the result of ecological influence, it is surprising that the other tropical Western Atlantic species of the genus, *A. chirurgus* (Bloch) and *A. coeruleus* Bloch and Schneider, are not also influenced (Caldwell and Briggs, 1957: 4; Briggs and Caldwell, 1957: 43).

The eastward section of the Gulf Stream branch noted above turns south after bathing the Panama City-Destin shore and flows offshore out of the Gulf through the Florida Straits. In its southward flow it causes some circulation of water back north inshore along the west coast of the Florida peninsula (Leipper, 1954: 121) which may deposit some of the tropical fishes, escaping from the main stream, along the southwestern shore of the Peninsula, and in addition may help populate the more offshore coral and sponge patches shown by Hedgpeth (1954: 206). The absence of tropical species inshore between Panama City and somewhere south of Cedar Key may be due in part to lack of suitable habitat and to too few recruits remaining in the current by the time it influences

that part of the coast. Briggs (1958: 244) opined that the apparent differences between the shorefish faunas of the eastern and western Gulf are due to differences in bottom type. Therefore, the presence of many tropical elements in the eastern Gulf is probably influenced by the combined factors of suitable habitat and regular recruitment by currents from further south.

The occasional record of a tropical species from Texas (Baughman, 1950) may be the result of similar recruitment aided by the portion of the Gulf Stream branch that flows westward after it divides off Louisiana. Less frequent areas of suitable habitat (Briggs, 1958: 244) for the recruits would seem to account for the smaller number of records for tropical fishes in the northwestern Gulf—both as individuals and species.

The following notes on tropical species have been assembled to record one species each from Panama City and Destin for the first time, to indicate that specimens are now available of another species previously recorded only on sight records, to extend the range of a species known only from its type locality at Panama City, and to modify statements regarding three species recorded by Caldwell and Briggs (1957).

Lengths are standard length. UF refers to the University of Florida Collections at Gainesville. BLBG refers to the collections (no catalog numbers) of the United States Fish and Wildlife Service Biological Laboratory at Brunswick, Georgia.

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ANNOTATED LIST

Abudefduf saxatilis (Linnaeus). In reporting this species from Panama City, Caldwell and Briggs (1957: 4) overlooked a paper by Baughman (1950: 252) which questionably included a supposed sight record of *A. saxatilis*, under the name of *A. marginatus* (Bloch), in a list of notes on Texas fishes. I wish to thank Victor G. Springer for bringing Baughman's paper to my attention. The Panama City record is thus the first from the *northeastern* Gulf of Mexico, an area often considered faunistically distinct from the northwestern Gulf west of the Mississippi Delta (see Briggs, 1958: 242).

Chaetodon ocellatus Bloch. This species previously was reported (Caldwell and Briggs, 1957: 3) from Destin, Florida. Specimens have now been taken at the jetties at Panama City by the staff of Florida's Gulfarium in June, 1958. These are: UF 7205, two, 18 and 39 mm.; and BLBG, two, 22 and 25 mm.

Baughman (1950: 252) listed this species from Blind Pass, St. Joseph's Island, Texas. Like the record of *Abudefduf* noted above, this Texas record was overlooked, and the specimens from Destin and Panama City are thus the first from the *northeastern* Gulf of Mexico and have the same zoogeographic significance as those of *Abudefduf*.

Chaetodon striatus Linnaeus. Although reported previously from Panama City (Caldwell and Briggs, 1957: 3), the record was based on sight observations only. Specimens collected by the staff of Florida's Gulfarium in June, 1958, from Destin, corroborate the earlier record of this species in the region. These specimens are: UF 7206, two, 35 and 39 mm.; and BLBG, one, 33 mm.

Eupomacentrus variabilis Castelnau. In an earlier paper listing tropical fishes from Panama City (Caldwell and Briggs, 1957: 4), the name *Pomacentrus xanthurus* Poey was tentatively applied to this damselfish. In a subsequent examination of the material, Loren P. Woods, of the Chicago Natural History Museum, applied the name *E. variabilis*.

Acanthurus randalli Briggs and Caldwell. In preparing the original description for this species (Briggs and Caldwell, 1957), specimens were available only from the type locality at Panama City. There is now an 88-mm. specimen (UF 5674), from off Destin, collected in the fall of 1956 by the staff of Florida's Gulfarium. While the distance involved is only some 60 shoreline miles, this specimen is of interest as it provides for the first time a "range" other than the type locality.

Dermatolepis inermis (Valenciennes). A single 365-mm. specimen, BLBG, was collected in the fall of 1957 off Destin by the staff of Florida's Gulfarium. Briggs (1958: 271) lists the range of this species as Bermuda and southern Florida to Fernando de Noronha, Brazil; and the Destin specimen is therefore apparently the first record from the northern Gulf of Mexico.

Thallasoma bifasciatum (Bloch). A 90-mm. specimen, BLBG, collected in the summer of 1958 by the staff of Florida's Gulfarium,

apparently constitutes a range extension to the Panama City jetties from the Florida Keys. Briggs (1958: 284) listed this species as occurring from Bermuda and the Florida Keys to Colombia and the southwestern Gulf of Mexico.

LITERATURE CITED

BAUGHMAN, J. L.

1950. Random notes on Texas fishes. Part II. *The Texas Jour. Sci.*, 2(2): 242-263.

BERRY, FREDERICK H.

- 1958a. Additions to the fishes known from the vicinity of Cedar Key, Florida. *Quart. Jour. Florida Acad. Sci.*, 20(4): 232.
1958b. Additions to the fishes of Cedar Key, Florida, and a list of Gulf of Mexico Carangidae. *Quart. Jour. Florida Acad. Sci.*, 21(2): 190.

BOSCHUNG, HERBERT T., JR.

1957. The fishes of Mobile Bay and the Gulf coast of Alabama. Doctoral thesis, University of Alabama, 1957. 626 pp.

BRIGGS, JOHN C.

1958. A list of Florida fishes and their distribution. *Bull. Florida St. Mus., Biol. Sci.*, 2(8): 223-318.

BRIGGS, JOHN C., and DAVID K. CALDWELL

1957. *Acanthurus randalli*, a new surgeon fish from the Gulf of Mexico. *Bull. Florida St. Mus., Biol. Sci.*, 2(4): 43-51.

CALDWELL, DAVID K.

1954. Additions to the known fish fauna in the vicinity of Cedar Key, Florida. *Quart. Jour. Florida Acad. Sci.*, 17(3): 182-184.
1955. Further additions to the known fish fauna in the vicinity of Cedar Key, Florida. *Quart. Jour. Florida Acad. Sci.*, 18(1): 48.
1957. Additional records of marine fishes from the vicinity of Cedar Key, Florida. *Quart. Jour. Florida Acad. Sci.*, 20(2): 126-128.

CALDWELL, DAVID K., and JOHN C. BRIGGS

1957. Range extensions of Western North Atlantic fishes with notes on some soles of the genus *Gymnachirus*. *Bull. Florida St. Mus., Biol. Sci.*, 2(1): 1-11.

HEDGPETH, JOEL W.

1954. Bottom communities of the Gulf of Mexico. In Galtsoff, Paul S., Gulf of Mexico. Its origin, waters, and marine life. *U. S. Fish and Wildlife Service, Fish. Bull.*, no. 89, 55: 203-214.

JOSEPH, EDWIN B., and RALPH W. YERGER

1956. The fishes of Alligator Harbor, Florida, with notes on their natural

history. *Florida State Univ. Studies*, no. 22, *Papers from the Oceanogr. Inst.*, no. 2, pp. 111-156.

KILBY, JOHN D.

1955. The fishes of two Gulf coastal marsh areas of Florida. *Tulane Stud. Zool.*, 2(8): 175-247.

LEIPPER, DALE F.

1954. Physical oceanography of the Gulf of Mexico. In Galtsoff, Paul S., Gulf of Mexico. Its origin, waters, and marine life. *U. S. Fish and Wildlife Serv., Fish. Bull.*, no. 89, 55: 119-137.

REID, GEORGE K., JR.

1954. An ecological study of the Gulf of Mexico fishes, in the vicinity of Cedar Key, Florida. *Bull. Mar. Sci. of the Gulf and Carib.*, 4(1): 1-94.



Caldwell, David

K.

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. 1959. "Observations on tropical marine fishes from the northeastern Gulf of Mexico." *Quarterly journal of the Florida Academy of Sciences* 22, 69–74.

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