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First North American Continental Record of *Gobionellus pseudofasciatus* (Pisces: Gobiidae)

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- FIRST NORTH AMERICAN CONTINENTAL RECORDS OF *Gobionellus pseudofasciatus* (PISCES: GOBIIDAE)¹**
- Recent studies have shown the Indian River region of east-central Florida to contain a rich and diverse assemblage of fishes, with a total of 609 species having been recorded from the area (Gilmore, 1977a). Subsequent collections, further examination of the material obtained in the above survey, and examination of the fishes collected from the area in the mid 1950's by the late Dr. Robert W. Harrington, have revealed the presence of several additional species to be included in the overall faunal list of the region (Gilmore, 1977a). These additional records include the first North American continental records of *Gobionellus pseudofasciatus* Gilbert and Randall, in Gilbert and Kelso (1971), a species previously recorded from Trinidad westward to Costa Rica and northward to Belize (Gilbert and Kelso, 1971; Thomerson and Greenfield, 1975). The record of *Gobionellus shufeldti* from the Indian River region (Gilmore, 1977a) was based on a misidentification of *G. pseudofasciatus*. *G. shufeldti* occurs along the Atlantic coast from North Carolina southward to northeastern Florida (Daytona Beach area) and apparently does not occur in the Indian River region (C. R. Gilbert, pers. comm.).
- Standard length of all specimens was measured to the nearest mm. Abbreviations are as follows: RWH = Robert W. Harrington; UF = Florida State Museum, University of Florida.
- Four lots of *G. pseudofasciatus* have been taken from the following localities in Indian River County, Florida: RWH 55-13, 4 individuals (25-32 mm SL), 20 May 1955, South Relief Canal,

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from US 1 to Indian River, temperature and salinity unknown. UF 100055, 2(28-35), 18 May 1974, North Prong of Sebastian Creek, canal C-54, 3.2 km west of railroad bridge, below floodgate S-157, temperature and salinity unknown. UF 100056, 2(26-31), 28 June 1976, South Prong of Sebastian Creek, 0.8 km west of railroad bridge, temperature = 27.5°C, salinity = 3 ppt. UF 100057, 13 (19-34), 16 March 1978, same locality as UF 100055, temperature = 25°C, salinity = 0-2 ppt.

G. pseudofasciatus appears to be a fresh or brackishwater species, having been collected in coastal regions of Central and South America and eastern Florida. It has been recorded from fresh water in Trinidad, Costa Rica, Guatemala, and Belize (Gilbert and Kelso, 1971; Thomerson and Greenfield, 1975). The 16 March 1978 specimens from Sebastian Creek were taken over a sand bottom with some detritus in an area where deeply stained freshwater was flowing over a spillway and mixing with the brackish waters of lower Sebastian Creek.

Meristic data taken from the Florida specimens are given below: Dorsal VI(21)-12(20), 13(1); Anal 12(1), 13(20); Pectoral 16(2), 17(33), 18(5); lateral series scales 29(2), 30(7), 31(13), 32(7), 33(2), 34(2). Fin-ray counts agree with those given in the original description, except that one individual has 13 dorsal rays and another 12 anal rays, instead of the typical 12 dorsal and 13 anal rays. Similar variants in fin-ray counts are seen in other species of *Gobionellus* (Ginsburg, 1932). Greater variation is seen in the lateral series scale counts of the Florida specimens (29-34) than given in the original description (31-33). Some difficulty was encountered in enumerating scale rows as the sizes of

scales along the length of the body vary greatly (being small anteriorly and large posteriorly). This may partly account for different counts. Also, the central scale row in the posterior region of the fish is much enlarged with smaller scales above and below it, some of which encroach on the central scale row. Counts were made of the central row (neglecting the smaller rows above and below) from the upper pectoral base to the caudal base.

Color notes taken from kodachromes of freshly preserved female and male specimens (34 and 29 mm SL, respectively) are given below. *Female*: background color of body straw dorsally grading to white ventrally. Body with five dark lateral blotches on midline, first under spinous dorsal, last on caudal peduncle. First through fourth oblong, fifth rounded. Body covered with numerous black flecks of varying size, most of which are highlighted with rust-colored flecks. A dark line present on pectoral base. Belly and pectoral base covered with a yellow-orange wash. Chest with a bluish wash. Head olive, with numerous black and rust-colored flecks. Intense black blotch present on preoperculum, extending from lower posterior margin upward and forward to above posterior edge of upper jaw. Subocular bar extending from anterior half of orbit to middle of upper jaw. Faint dark bar above subocular bar extending from anterior edge of eye forward to snout. Two faint horizontal dark bars on preopercle. Black wedge present at lower corner of operculum. Branchiostegals white. Iris orange. Spinous dorsal with three rust-colored bands separated by two yellow-orange bands. Tip of membrane between each spine bright orange. Soft dorsal with irregular streaks of rust and yellow-

Figure 1. *Gobionellus pseudofasciatus*, UF 100057: A) 25 mm SL female; B) 34 mm SL female; C) 24 mm SL female.

orange. Anal fin with a bluish cast. Melanophores present on central part of fin, sparse anteriorly, becoming concentrated posteriorly. Distal one-fourth of anal fin white. Caudal fin with irregular streaks of rust and yellow-orange. Lower edge of caudal fin white. Pectoral fin with five vertical dark bands. Pelvic fin yellow-orange medially grading to blue distally. *Male*: color similar to female though less intense. Orange on tips of membranes between dorsal spines I, II, III and IV only. No white border on anal fin nor lower margin of caudal fin. Anal fin and lower caudal fin blue to edge. Differences between male and female specimens could be the result of the size difference

of the individuals rather than sexual differences. Smaller individuals from the same collection are not as intensely pigmented as these two individuals.

The coloration of specimens in preservative (Fig. 1) agrees closely with that given in the original description. The preopercular blotch, though consistently present, varies in shape and intensity from two separate blotches (Fig. 1A) to a dark blotch posteriorly with a less intense anterior extension (Fig. 1B) to a uniform diagonal slash (Fig. 1C). However, in all specimens melanophores are present from the lower posterior corner of the preoperculum to above the corner of the upper jaw though some may be contracted in

the anterior region of the slash. The common name of "slashcheek goby" is proposed for inclusion in the American Fisheries Society list of common and scientific names of fishes in recognition of this distinctive color characteristic.

G. pseudofasciatus has been recorded from Trinidad, Panama, Costa Rica, Guatemala (Gilbert and Kelso, 1971) and Belize (Thomerson and Greenfield, 1975) and may thus be considered a southern tropical continental species, a designation given to species occurring from Nicaragua southward to the northern South American coast (Robins, 1971; Gilbert, 1973). The occurrence of *G. pseudofasciatus* in east-central Florida is an exception to this general distributional pattern as is the occurrence of the striped croaker, *Bairdiella sanctaeluciae*, along the Florida east coast (Bailey *et al.*, 1970; Gilbert and Kelso, 1971; Gilbert, 1973). A number of other fishes that occur in continental waters of the southern Caribbean also occur along the southeastern Florida coast, and, although they generally have wider northern distributions, they parallel in some ways the distributional pattern of *G. pseudofasciatus*. Among these are *Oostethus lineatus*, *Scorpaena isthmensis*, *Pomadasys crocro*, *Diapterus auratus*, *D. rhombeus*, *Gobiomorus dormitor*, *Awaous tajasica*, and *Sphoeroides testudineus* (Briggs, 1958; Deckert, 1973; Gilmore, 1977b; McEachran and Eschmeyer, 1973; Shipp, 1974).

The Florida Current moderates temperatures within the Indian River region of east central Florida, thus providing suitable habitat for tropical fish species (Gilmore, 1977a). Further, the Florida Current provides a dispersal mechanism into the area for eggs and larvae of

southern species (Gilmore, 1977a) and possibly adults of some species through rafting. The habitat of *G. pseudofasciatus* (i.e., fresh or brackish water) would not seem to make the species conducive to transport via oceanic currents. *Oostethus lineatus*, a species often collected with *G. pseudofasciatus* and with a similar though more widespread distribution, breeds in fresh or brackish waters, but development of the young apparently occurs in oceanic or high salinity waters (Gilbert and Kelso, 1971; Hastings and Bortone, 1976; Gilmore 1977b). However, nothing is known of the larval development of *G. pseudofasciatus*. Another possibility accounting for the species' occurrence in Florida is that the Indian River region is a northern refuge for a fauna which was once more widely distributed. The occurrence of *G. pseudofasciatus* on the lower east Florida coast represents a range extension of approximately 1400 km northeastward from Belize. It is possible that the species occurs in Cuba as this large island provides adequate habitat for continental species (Robins, 1971; Gilbert, 1973) and is geographically central to the species distribution.

The possibility exists that the presence of *G. pseudofasciatus* in Florida is the result of an introduction from the aquarium fish industry (Courtenay and Robins, 1973). Although it is unlikely that this species would be intentionally imported, it is possible that eggs or larvae of it could have been accidentally transported from Central or South America with other organisms. Although not conclusively disproven, this possibility has been discounted based on the early date (1955) at which Dr. R. W. Harrington collected the species in Florida and on the parallel distributional pattern seen in other fish species.

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