Japanese Journal of Ichthyology
Vol. 16, No. 4 December 25, 1969

魚類学雑誌
16巻4号 1969年12月25日

Notes on Some Intertidal Serranid, Pseudochromid, and Apogonid Fishes of Okinawa-Jima, Ryukyu Islands

Clifford Ray Johnson

(Received July 15, 1969)

Abstract From 1964 through 1965 the intertidal fishes of Okinawa-jima were investigated. This paper concerns the families Serranidae, Pseudochromidae, and Apogonidae of which three serranids, one pseudochromid and three apogonids were found to inhabit the intertidal zone either as juveniles or adults. *Epinephelus melanostigma* and *Apogon nigrofasciatus* are reported for the first time from the Ryukyu Islands.

Introduction

Many workers have collected and reported upon the fishes of the Ryukyu Islands. Jordan and Starks (1907) published the first significant work concerning the fish fauna of Okinawa-jima and a few years later Snyder (1912) added many species to the known fish fauna of the island. Most of their work was based upon collections secured from local markets in Naha over a short period of time and specific locations for much of the material was unknown.

This study is based upon specimens collected by the author and associates during the years 1964 and 1965. Three areas were selected for intensive study, and are described as follows from the northernmost to the southernmost location.

1.6 km S of Ginama.—This area, lying on the west coast 3.2 km S of Hedo-misaki, represents the northernmost reef collected. It can be classed as an exposed, rocky, intertidal environment with the reef about 0.8 km long and 90.1 m wide when exposed at low tide. Characteristically large pools 27 to 72 m^2 in area and as deep as 1.8 m are common, as are surge channels.

1.6 km N of Sate.—Sate, a small fishing village like Ginama, is located about 9.6 km S of Hedo-misaki on the western side of Okinawa-jima. The intertidal area is not extensive and is characterised by a steep, shelving, highly exposed region, which at low tides is only about 27 m wide. Surge channels are abundant and some deep (up to 2.4 m) tidal pools afford shelter to larger fishes such as serranids, acanthurids and siganids.

0.8 km S of Komesu.—An extremely large reef located on the southern tip of the island which exposed at low tides actually consists of two environments, an exposed rocky reef, and a large expanse of deep, sheltered pools connected in places with the open sea. These pools, about 180 m long and up to 9 m deep in spots, were more characteristic of the subtidal environment and were not sampled because the fishes inhabiting them resembled offshore reef form assemblages.

Fishes were collected in the intertidal zone using rotenone and calcium hypochlorite. Sampling was conducted for a period of a year and a half at two to three week intervals. All fishes were removed and great care was exercised to insure that all poisoned specimens were collected. Upon capture they were preserved in formalin and later transferred to the laboratory where they were sorted into groups by family for further identification. All color notes were made on preserved material.

The material was deposited at the California Academy of Sciences in San Francisco, Stanford University at Stanford, California and at the United States National Museum in Washington, D. C. with the majority of the material donated to the California Academy of Sciences.

Family Serranidae

Epinephelus hexagonatus (Bloch and Schneider)

Juvenile specimens up to 140 mm were taken from 1.6 km N of Sate and 0.8 km S of Komesu. The specimens from Okinawa vary slightly in color from those described by Schultz et al. (1953) from the Marshall and Marianas Islands. Color description of Okinawan specimens follows: Background color whitish, everywhere covered with hexagonal brown spots separated by narrow white lines, dark spots darkened opposite blackish blotches to form dark bars; brown spots occur on median fins; pectoral fins dusky with distinct markings; pelvics dusky, with outer edge white and inner rays with some brown spots; anal dusky to blackish distally with outer edge white; caudal spotted, with lower half dusky and lower edge partially white; five black blotches along back, two along base of spinous dorsal, two along base of soft dorsal, and one on dorsal edge of caudal peduncle, two lighter blotches occur anterior to spinous dorsal, one above and behind eye, the other immediately anterior to spinous dorsal.

There appears to be some confusion with synonymies with this species and *E. merra* Bloch. The species that I described as occurring on Okinawa fits the description given by Schultz et al. (1953) for *E. hexagonatus* with the dark blotches along the base of the dorsal fin, whereas *E. merra* lacks these blotches. Both Jordan and Starks (1907) Snyder (1912) reported *E. merra* from Okinawa, but from their papers it is impossible to ascertain which species they were reporting. Weber and de Beaufort (1931) reported *E. hexagonatus* as a synonym for *E. merra* Bleeker while Schultz splits them into individual species based upon the presence or absence of these dark blotches. Snyder (1912) reported *E. stellatus* Snyder from Okinawa-jima which is now synonymous with *E. hexagonatus*. Katayama (1960) and Masuda (1942) reported *E. hexagonatus* from the Okinawan Islands.

Epinephelus melanostigma Schultz

Three specimens, one specimen 86 mm was taken from a large tidal pool in the lower intertidal zone 0.8 km S of Komesu and two specimens 105 and 111 mm in standard length were collected 1.6 km S of Ginama. These juvenile specimens were usually collected from pools which were actively influenced by surge channels and not sealed off from the ocean. This is the first report of this species from the Ryukyu Islands. They agreed closely with descriptions of the holotype and paratypes from the Marshall and Marianas Islands (Schultz et al. 1953). Description of my specimens follows: Dorsal rays XI, 15; anal III, 8; pectoral ii, 17; scales in a row from anal origin to lateral line 24, from lateral line to base of soft dorsal 10–11. Background color light tan with hexagonal brownish spots on sides ventrally these spots are round in shape and separated by white interspaces; no white spots present (as in *E. hexagonatus*; pectoral, pelvic, and anal fins with brown spots; posterior margins of all fins edged in white; on anal a submarginally dusky streak inside the white edge; centers of brown spots on fins without pale centers; one intense black blotch on back between dorsal spines 8 and 11 on basal one-half of dorsal fin.

Grammistes sexlineatus (Thunberg)

Specimens 46 to 58 mm were collected 0.8 km S of Komesu and 1.6 km S of Ginama which compared favorably with descriptions of specimens from the Marshall and Marianas Islands.

Family Pseudochromidae

Plesiops coeruleolineatus Rüppell

Many specimens 24 to 59 mm were collected 1.6 km S of Ginama and 1.6 km N of Sate. Schultz et al. (1953) failed to describe the color of the young but stated that the young of a related species, *P. corallicola* Bleeker, sometimes have five to six vertical brown bars on the sides. The juveniles of *P. coeruleolineatus* (24 to 33 mm in standard length) may have four to five vertical dark brown bars with alternating paler interspaces. Otherwise they resemble the adults with the background color dark brown with the distal edge of dorsal fin white to yellowish; pectoral fin pale to dusky; caudal and anal fins dark brown. Snyder (1912) reported *P. melas* Bleeker from Okinawa-jima. Bleeker (1853) realized after he had described *P. melas* that it was synonymous with *P. coeruleolineatus*. Jordan and Seale (1906), Günther (1861) and Smith (1952) confirmed Bleeker's conclusion (Inger, 1955). Schultz et al. (1953) corrected his mistaken identification of *P. melas* from the Marshall and Marianas to *P. coeruleolineatus* in his later work (Schultz, et al. 1966).

Family Apogonidae

Apogon robustus (Smith and Radcliffe)

Many specimens 49 to 68 mm were collected from 1.6 km N of Sate and 1.6 km S of Ginama. These specimens did not vary from the descriptions by Schultz et al. (1953). Snyder (1912) also found this species abundant in the tidal pools near Naha.

Apogon nigrofasciatus Lachner

A single specimen 45 mm was captured 1.6 km N of Sate. Counts and measurements agreed with those of the holotype and paratypes as given in Schultz et al. (1953). Slight variations were noticed in color. Color description is as follows: Background coloration dark tan; five horizontal dark brown stripes; dorsal stripe begins at mid-interorbital area and extends to the base of the spinous dorsal, splits and ends about the midbase of the soft dorsal; dorsolateral stripe begins at tip of snout and passes posteriorly touching dorsal edge of eye and extends to dorsolateral portion of caudal peduncle and to base of caudal fin where it fuses with black spot at midbase of caudal; a median stripe from tip of snout passes through eye along midbody to base of caudal where it is enlarged forming a spot, and extends on the rays of the caudal fin to form a streak; ventrolateral stripe begins at tip of snout, passes between eye and upper jaw through pectoral base to ventrolateral portion of the caudal peduncle and unites with spot; pectoral and pelvic fins are pale to transparent; spinous dorsal dusky; soft dorsal and anal fins with dark brown bars that run parallel to the body; caudal fin transparent except for the above described streak. This is the first report of this species in the Ryukyu Islands.

Cheilodipterus macrodon (Lacépède)

A single specimen 92 mm in standard length was collected 1.6 km N of Sate. The specimen agreed well in counts and measurements with descriptions from the Marshall and Marianas Islands. Color agreed closely except that only five stripes occurred in base of anal fin as opposed to six in specimens from the Marshall and Marianas.

Acknowledgments

Many persons played an important role in making this study possible. I wish to express my gratitude first to Cdr. William F. Russell, CEC, USN, for his aid and cooperation that so greatly increased the success of the field work. My appreciation and thanks goes to Mr. Steven Sutay for his efforts, and without whose help many of the specimens would not have been collected. Others who aided in the collecting were Messrs. Melvin F. Rose, Roger Ingram, Roland Ladd, James Carter and Harold Albert. Thanks are due Mr. W. I. Follett,

California Academy of Sciences; Drs. V. Springer, Robert H. Kanazawa, Leonard P. Schultz, United States National Museum, and Warren Freihofer, Stanford University, for their aid in identification of some of the specimens and assistance with review of the literature. Drs. George H. Allen, Warren Houck, and George Crandell, Humboldt State College, reviewed the manuscript.

Literature cited

Bleeker, P. 1853. Diagnostische beschrijvingen van nieuwe of weinig bekende vischsoorten van Sumatra. Natuurk. Tijdschr. v. Nederland.—Indie, 4: 243–302.

Günther, A. 1861. Catalogue of the acanthopterygian fishes in the collection of the British Museum. Taylor & Francis, London 3: xxiii+586 pp.

Inger, R. F. 1955. A revision of the fishes of the genus *Plesiops* Cuvier. Pacific Sci., 9 (3): 259–276.

Jordan, D. S. and A. Seale. 1906. The fishes of Samoa. U. S. Bur. Fish., Bull. 25: 173–455, pls. 33–53, 111 text figs.

————. and E. C. Starks. 1907. List of the fishes recorded from Okinawa of the Riu Kiu Islands of Japan. Proc. U. S. Nat. Mus. 32 (1541): 491–504, figs. 1–5.

Katayama, M. 1960. Fauna japonica, Serranidae. Tokyo News Service, Ltd., Tokyo, Japan, 189 pp.

Masuda, S. 1942. Notes on the Japanese fishes of the genus *Epinephelus*. Annt. Zool. Jap., 21 (2): 106–122, figs. 1–4.

Schultz, L. P., E. S. Herald, E. A. Lachner, A. D. Welander and L. P. Woods. 1953. Fishes of the Marshall and Marianas Islands. U. S. Nat. Mus. Bull., 202: i-xxxii, 1–685, figs. 1–90, pls. 1–74.

Schultz, L. P., L. P. Woods and E. A. Lachner. 1966. Fishes of the Marshall and Marianas Islands. U. S. Nat. Mus., Bull. 202: x–176, figs. 133–155, pls. 124–148.

Smith, J. L. B. 1952. Plesiopid fishes from South and East Africa. Ann. Mag. Nat. Hist., 12 (5): 139–151, 1 fig., pls. 9–10.

Snyder, J. O. 1912. The fishes of Okinawa, one of the Riu Kiu Islands. Proc. U. S. Nat. Mus., 42 (1913): 487–519, pls. 62–70.

Weber, M. and L. F. de Beaufort. 1931. The fishes of the Indo-Australian Archipelago. VI. E. J. Brill, Leiden: i-xii, 1–448, figs. 1–81.

(Department of Zoology, University of Queensland St. Lucia, Brisbane, 4067, Australia)

沖縄島の潮間帯のスズキ科，メギス科，テンジクダイ科の若干種の記録　　**C. R. Johnson**

1964年-1965年に沖縄島の潮間帯数個所の魚類を採集した．本報告では，スズキ科3種，メギス科1種，テンジクダイ科3種，計7種を記録した．各魚種につき，幼魚，成魚の何れかの主として生時色彩を記載し，また，既往の文献により，他の海域の同種と比較した．このうち，*Epinephelus melanostigma* と *Apogon nigrofasciatus* は沖縄島からの新記録である．

(ブリスベン，オーストラリア　クインスランド大学動物学部)