

**A CASE OF TOTAL ALBINISM IN *SYNAPTURA PANOIDES* BLEEKER  
(PISCES: TELEOSTEI: SOLEIDAE) FROM THE CHAO PHRAYA RIVER,  
THAILAND**

*Thosaporn Wongratana\**

ABSTRACT

An albino specimen, 166.0 mm in standard length, of the sole, *Synaptura panoides* (Family Soleidae) is reported from Ayutthya Province, Thailand. It is normal in all respects except for the complete absence of melanophores on the ocular side and pinkish eyes. Since the species was recorded locally by Dr. H.M. Smith in 1945 and several specimens collected in Nakhon Sawan Province in 1964 were recently found by the author in a local museum, no further Thai specimens had been collected until this unusual totally albino specimen. Freshwater flatfishes appear to be declining in abundance in Thailand due to severe pollution and degradation of benthic habitats.

INTRODUCTION

Colour anomalies in flatfishes have been found in many parts of their distribution which is cosmopolitan. The cases are generally grouped into three main types: ambicolouration, albinism, and xanthochroism (NORMAN, 1934; COLMAN, 1972). The literature contains a number of references to partial and complete albinism in the flatfishes. Complete absence of pigments on the ocular side or true albinism, however, is very rare (NORMAN, 1934; LUX, 1959) but partial albinism is not uncommon. I am aware of no reference concerning albinism in *Synaptura* or other flatfishes of the Southeast Asian region. Within the Soleidae, albinism of different degrees has been reported by GARTNER (1986) only in *Trinectes maculatus fasciatus* (Lacepède) from Texas, *Gymnachirus melas* Nichols from the east coast of Florida, and *Achirus lineatus* (Linnaeus) from the western central Atlantic coast.

Partial albinism is defined as lack of pigmentation over some or most of the surface of the eyed side, making it closely resemble in colouration the normal blind side. Small-to-very-small areas of black chromatophores are usually present between the eyes and snout or on fin membranes in almost completely albinistic specimens. It appears significant that this phenomenon is often associated with morphological anomalies. DAWSON (1967) wrote that partial albinism usually results from a wound or the effects of adverse environmental factors. He further maintained that most

---

\* University Museum of Zoology, Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok 10500, Thailand.

partial albinism in fishes is caused by past injuries, although wounds do not necessarily lead to the pigment deficiencies.

The present note records an occurrence of perfect albinism in a freshwater specimen of a sole, locally called "Pla lin kwai" (meaning buffalo-tongue fish), or *Synaptura panoides* Bleeker, 1851, of the family Soleidae. The fish was collected from Chao Phraya River, at Bang Sai District, Ayutthaya Province, in January 1988 by a local fisherman. After death of the fish, the specimen was received by Mr. Chavalit Vidthayanon of the Department of Fisheries, Bangkok, who forwarded it to me. It is now deposited at the Chulalongkorn University Museum of Zoology, catalogue number CUMZ 2531.3.25.1. Previously, colour anomaly in flatfishes for Thailand has been reported only by WONGRATANA (1986), who found ambicolouration in *Cynoglossus bilineatus* (Lacpède, 1802) of the family Gynoglossidae.

#### COMPARATIVE MATERIALS

Nineteen specimens of *Synaptura panoides* in the Kasetsart University Museum of Fisheries, Bangkok: KUMF 1193 (2), 91 – 104 mm SL, from Nong Bang Ngu, Rajburi Province, 11 – 14 Nov. 1964, coll. T. Wongratana; KUMF 1206 (2), 145 – 153 mm SL, from Gulf of Siam, off Samut Prakarn Province, 19 Jan. 1926, coll. H.M. Smith; KUMF 1207(1), 126 mm SL, from Chao Phraya River at Bang Torani, 16 March 1928, coll. H.M. Smith; KUMF 1208(2), 114 – 147 mm SL, from Chao Phraya River, Nonthaburi Province, Dec. 1921, coll. H.M. Smith; KUMF 1209(9), 112 – 177 mm SL, from Chao Phraya River, Nakorn Sawan Province, May 1964, coll. S. Punpoka; KUMF 1210(1), 106 mm SL, from Klong Ban Poh, 8 Dec. 1923, coll. H.M. Smith; KUMF 1211(2), 124 – 143 mm SL, no date, no locality, coll. H.M. Smith.

#### OBSERVATIONS

(Fig. 1)

The present specimen of *Synaptura panoides*, measuring 166 mm in standard length (SL), is typical of the species in all respects other than the lack of melanophores on the ocular side. Careful investigation for any trace of dark pigments on snout and other parts of the head or fins revealed no evidence of such. No visible signs of injury to the head, body or fins was found. The eyes were pale, but since the anomalous fish had been preserved in formalin for a few weeks and later transferred to alcohol, the colour of the eyes in life could not be accurately determined. However, all longer-preserved normal specimens kept in the Kasetsart University Museum of Fisheries in Bangkok show normal black pupils. Mr. K. Jaruthanun who saw the fish alive, noted that the eyes of the fish had looked red.

The eyes are on the right side of the head and have reached their normal final migrated position. They were separated by a scaly interorbital space as in normal

specimens. Lips of the ocular side have a row of fleshy appendages, which are more numerous and longer on the lower lip. Two tube-like nostrils are horizontally and closely arranged anterior to the lower eye, the anterior one longer. The posterior nostril on blind side is situated far behind the anterior one, both surrounded by fleshy filaments. Scales on both sides ctenoid, but those at the anterior part of head on the blind side are replaced by many short fleshy tentacles. Only one lateral line is present on each side along the the axis of body, devoid of scale rows as usual.

Taxonomic proportions of the albinistic specimen fall within or (rarely) very near to the range of variation of the species. Head in SL 5.30, longitudinal eye diameter in head length (HL) 11.1, body depth in SL 2.64, preanal fin length in SL 3.98, prepectoral fin length in SL 5.06, prepelvic fin length in SL 5.51, longest dorsal fin-ray in HL 1.85, longest anal fin-ray in HL 1.90, longest caudal fin-ray in HL 1.08.

All fins are present and have reached their final conformations; all fin-ray divided and segmented, with only pectoral fin-rays simple but segmented. Pectoral fin of blind side with 5 fin-rays, and 7.0 mm in length, and as long as pelvic fins, the left and right of which have 4 fin-rays on each side about equal in length, 7.1 (left) and 7.0 mm (right). Pectoral fin of eyed side with only 3 fin-rays, and 4.8 mm in length. Caudal fin with 15 fin-rays, and 40.8 mm in length.

Counts of dorsal and anal fin-rays are 78 and 61, respectively. The total scales in row just above the lateral line are 91 on eyed side and 101 on blind side. These counts agree fairly well with the counts in 15 normal specimens from the Chao Phraya and Tapi Rivers, Thailand, given by SMITH (1945): 69–82 for dorsal fin-ray counts, 54–61 for anal fin-ray counts, and 92–105 for lateral scale counts. These are, however, very slightly lower than the counts given by WEBER & DE BEAUFORT (1929), who possibly based their study mainly on specimens from waters outside Thailand (presumably, Singapore, Sumatra or Borneo). They gave 80–83 for dorsal fin-ray counts, 63 for anal fin-ray counts, 4–5 for pectoral fin-ray counts, 4 for pelvic fin-ray counts, and 110 for lateral scale counts. These minor but perhaps significant differences may be due to geographical or racial variation. Recently Kottelat (1984) synonymized Durand's *S. krempfi* and Joglekar's *Chabanaudetta smithi* with *S. siamensis* Sauvage and treated it tentatively distinct from *S. panoides*.

#### DESTRUCTION OF FRESHWATER BOTTOM HABITATS

At or prior to the time when SMITH (1927, 1945) and SUVATTI (1949) studied freshwater flatfishes in Thailand, several species, viz, *Cynoglossus xiphoideus*, *Synaptura anea*, *S. orientalis*, *S. panoides* and possibly also *Achiroides leucorhynchus* as well, were common or fairly common, whereas *C. microlepis* was rare and *S. harmandi* was known only from the type specimen. Within the past 20 years, for example, *S. panoides* had never been represented in any collection (ANON., 1980) made exclusively in the Chao Phraya basin or other water bodies throughout the country until the capture of the present specimen. A decade from now some

freshwater flatfish species as well as many other similar aquatic dwellers may not be found by future collectors at all. This is most serious for locally endemic species like *S. panoides* which has only been recorded from the lower Chao Phraya and Tapi Rivers (SMITH, 1927, 1945; SUVATTI, 1949), and also Meklong River (WONGRATANA, 1964).

Many bottom habitats, especially at the lower courses of rivers and canals throughout the country are already in an unfavorable condition, and covered with deposits or contaminated with polluted substrates to some degree that strictly bottom dwellers can hardly tolerate. The causes of the water pollution in Thailand are chiefly domestic and industrial effluents, agricultural wastes, pesticides and poisons. Decomposing organic materials as a result of deforestation and flooding above many newly-built dams additionally destroy the quality of water downstream. Another severe source of pollution which causes a large oxygen deficit in the aquatic environment is poor circulation that prevents the deeper water from moving. Excessive growth of water weeds in many major water-ways and swamps or tanks may also cause many adverse eutrophic conditions. In addition, the local waters of most parts of the country are considered to be the proper final place of residence for household garbage from nearby communities.

The depletion of freshwater flatfishes from inland waters of Thailand therefore reflects not only the pollution of bottom habitats of rivers and canals, but also inadequate fishery management. This serious problem will have to be dealt with by the appropriate authorities with public cooperation to ensure the safety of our environment.

#### A C K N O W L E D G E M E N T S

I am grateful to Mr. Kittipong Jaruthanun, and to Mr. Chavalit Vidthayanon of the Department of Fisheries, Bangkok, for making the albinistic specimen known. Thanks are also due to Dr. Prajit Wongrat of the Kasetsart University Museum of Fisheries, Bangkok, for permission to examine some specimens in his care and to Dr. Warren Y. Brockelman for reading and criticising the manuscript. Financial support was provided in part by the Faculty of Science Alumni, Chulalongkorn University, Bangkok. This article is dedicated to late Prof. Dr. Kloom Vajropala who passed away peacefully on 7<sup>th</sup> December 1987, according to heart failure. He taught me when I was a child by one of his contributions on natural science. After his retirement he was a regular visitor to our department, and he constantly attended the Conference at the Royal Institute where we also met each other. I was also inspired by his kind manners and his continuous encouragement rendered to me.



Figure 1. Eyed side of the completely albinistic *Synaptura panoides* Bleeker, CUMZ 2531.3.25.1, 166.0 mm in standard length.

## REFERENCES

- ANON. 1980. Freshwater fish resources of important inland waters of Thailand. *Nat. Inland Fisher. Inst., Dept. of Fisher., Bangkok* 1(2523): 1 – 137. (in Thai).
- COLMAN, J.A. 1972. Abnormal pigmentation in the sand flounder (note). *New Zealand J. Mar. Freshw. Res.* 6(1 – 2): 208 – 213.
- DAWSON, C.E. 1962. Notes on anomalous American Heterosomata with descriptions of five new records. *Copeia* 1962 (1): 138 – 146.
- DAWSON, C.E. 1967. Three new records of partial albinism in American Heterosomata. *Trans. Amer. Fisher. Soc.* 96: 400 – 404.
- GARTNER, J.U. JR. 1986. Observations on anomalous conditons in some flat fishes (Pisces : Pleuronectiformes), with a new record of partial albinism. *Environ. Biol. Fish.* 17(2): 141 – 152.
- KOTTELAT, M. 1984. A review of the species of Indochinese fresh-water fishes described by H.-E. Sauvage. *Bull. Mus. Natn. Hist. Nat., Paris* 4e ser. 6, section A(3): 791 – 822.
- LUX, F. E. 1959. Partial albinism in the four-spotted flounder, *Hippoglossus oblongus*. *Copeia* 1959 (3): 253.
- NORMAN, J. R. 1934. *A systematic monograph of the flatfishes (Heterosomata)*, 1. British Museum (Nat. Hist.), London 459 pp.
- PUNPOKA, S. 1964. A review of the flatfishes (Pleuronectiformes = Heterosomata) of the Gulf of Thailand and its tributaries in Thailand. *Kasetsart Univ. Fisher. Res. Bull., Bangkok* 1: 1 – 86.
- SMITH, H.M. 1927. The so-called musical sole of Siam. *J. Siam Soc. Nat. Hist. Suppl.* 7: 49 – 54.
- SMITH, H. M. 1945. The fresh-water fishes of Siam, or Thailand. *Bull. U.S. Nat. Mus.* 188: 1 – 622, 107 figs.
- SUVATTI, C. 1949. *Fauna of Thailand*. Dept. of Fisher., Bangkok 1098 pp.
- WEBER, M. and L.F. DE BEAUFORT. 1929. *The Fishes of the Indo-Australian Archipelago*, V. E.J. Brill, Leiden 458 pp.
- WONGRATANA, T. 1964. *The pla soi (Cyprinidae) in Nong Bang Ngu at Rajburi*. B. Sc. Thesis, Kasetsart University, Bangkok 77 pp.
- WONGRATANA, T. 1986. Record of ambicoloration in *Cynoglossus* (Pisces : Cynoglossidae) from Thailand. *Nat. Hist. Bull. Siam Soc.* 34(1): 65 – 70.