

The mangrove swamp eel, *Ophisternon bengalense*, in Singapore

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Subjects: Mangrove swamp eel, *Ophisternon bengalense* (Teleostei: Synbranchiformes: Synbranchidae).

Subjects identified by: Author.

Location, date and time: Singapore Island - Mandai mangroves, Sungei Pandan mangroves, Johor Strait at Pasir Ris, Lower Seletar Reservoir, Lower Peirce Reservoir, Singapore River; 1996 - 2017 (refer to Observations).

Habitat: Estuarine and freshwater.

Observers: Various collectors (refer to Observations).

Observations: The following preserved specimens were examined by the author at the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum, at the National University of Singapore.

- 1) One juvenile (4.5 cm total length), ZRC 41645; Singapore River; collected by National University of Singapore Reef Ecology Study Team, 25 March 1996.
- 2) One example (29.0 cm total length), ZRC 46002; Sungei Pandan mangroves; collected by D. C. J. Yeo, February 2000 [Fig. 1 & 2].
- 3) Two juveniles (6.5 & 17.5 cm total length), ZRC 49333; Mandai mangroves; collected by H. H. Tan et al., 10 May 2004.
- 4) One example (39.0 cm total length), ZRC 49564; Sungei Mandai, tidal creek and pools; collected by H. H. Tan et al., 29 December 2003.
- 5) One example (26.5 cm total length), ZRC 51854; Lower Seletar Reservoir; collector unknown, 12 March 2009.
- 6) One juvenile (17.6 cm total length), ZRC 52089; Lower Seletar Reservoir; collected by H. H. Tan et al., 1 November 2010.
- 7) One example (26.7 cm total length), ZRC 56452; Lower Peirce Reservoir; collected by D. C. J. Yeo et al., 17 May 2017.
- 8) One juvenile (5.4 cm total length), ZRC 58237; Pasir Ris eastern shore between mouth of Sungei Api Api and Sungei Tampines; collected by the Comprehensive Marine Biodiversity Survey, 1 May 2012.



Fig. 1. Lateral view of entire specimen of *Ophisternon bengalense* (ZRC 46002) with head pointing left. Note that finnage is confined to the rear one-fifth of the fish.

Remarks: The mangrove swamp-eel is very poorly known in Singapore, and appears to have been first mentioned as occurring there by Tan et al (2010: 143 as *Opisternon* [sic] *bengalense*) based on the 4.5 cm juvenile (ZRC 41645) from the Singapore River. Larger individuals can easily be mistaken for the Sunda swamp-eel (*Monopterus javanensis*) which it superficially resembles and with which it can co-occur (ZRC 51854 was taken with a *Monopterus javanensis* at Lower Seletar Reservoir).

With closer inspection, *Ophisternon bengalense* can be identified as follows: the eyes are located almost at the end of the head (Fig. 2), the origin of the dorsal fin is in front of the anus, and the gill opening is undivided and confluent gill membranes are free from the isthmus. In the Sunda swamp-eel (*Monopterus javanensis*), the eyes are located further away from the tip of the snout, the dorsal fin origin is behind the anus, and the confluent gill membranes are attached to the isthmus by a median septum that also divides the gill opening (Kottelat et al., 1993: 140; Rainboth, 1996: 177; *Monopterus javanensis* as *Monopterus albus*).

The mangrove swamp-eel is known to have a preference for estuarine and tidal habitats (see Rainboth, 1996: 177). However, three of the eight specimens cited here were taken from freshwater. Examples from Lower Seletar Reservoir are likely to have descended from individuals trapped inland when the mouth of the Sungei Seletar was dammed from the Johor Strait around 1983 and 1984 (Quek et al., 2011: 60), and gradually adapted to freshwater. The single example from Lower Peirce Reservoir could have been taken there with water channeled from Lower Seletar or other coastal reservoirs.



Fig. 2. Head of *Ophisternon bengalense*, with dorsal (top), lateral (middle) and ventral (bottom) aspects. Note eyes located at the end of the head (A) and gill slit across the throat (B).

References:

- Kottelat, M., A. J. Whitten, S. N. Kartikasari & S. Wirjoatmodjo, 1993. *Freshwater Fishes of Western Indonesia and Sulawesi*. Periplus Editions (HK) Ltd. Ivii + 293 pp., 84 colour plates.
- Rainboth, W. J., 1996. *FAO Species Identification Guide for Fishery Purposes. Fishes of the Cambodian Mekong*. FAO, Rome. 265 pp., 27 colour plates.
- Quek B. S., H. H. Ng, H. T. W. Tan & P. K. L. Ng, 2011. The history of Singapore's reservoirs. In: Ng, P. K. L., R. T. Corlett & H. T. W. Tan (eds.). *Singapore Biodiversity. An Encyclopedia of the Natural Environment and Sustainable Development*. Editions Didier Millet and Raffles Museum of Biodiversity Research. pp. 59-61.
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