

Notes on the Snake Eel *Neenchelys buitendijki* (Ophichthidae: Myrophinae), a New Record for Malaysia

(Mengenai Belut Ular *Neenchelys buitendijki* (Ophichthidae: Myrophinae),
Satu Rekod Baru untuk Malaysia)

HSUAN-CHING HO, HONG-WOOI TEOH & VING-CHING CHONG*

ABSTRACT

Neenchelys buitendijki Weber and de Beaufort, 1916 from Malaysia is reported for the first time. Five specimens collected from Matang, Peninsular Malaysia, represent the third record in the Indo-western Pacific region. A detailed description is provided to document the species into the fish fauna of Malaysia.

Keywords: Anguilliformes; fish; *Neenchelys*; new record; taxonomy

ABSTRAK

Neenchelys buitendijki Weber and de Beaufort, 1916 dari Malaysia telah dilaporkan buat kali pertama. Lima spesimen yang telah dikutip dari Matang, Barat-Laut Semenanjung Malaysia, merupakan rekod ketiga dari rantau Indo Pasifik Barat. Huraian terperinci telah diterangkan untuk mendokumentasi spesis ini dalam senarai fauna ikan di Malaysia.

Kata kunci: Anguilliformes; ikan; *Neenchelys*; rekod baru; taksonomi

INTRODUCTION

The snake eel genus *Neenchelys* is a small group of elongated fishes comprising at least 8 species (Ho, pers. data) which can be found in the West-Indo Pacific Ocean. Among them, *Neenchelys buitendijki* Weber and de Beaufort, 1916 is one of the most poorly known species. The species was described from Bay of Jakarta, Indonesia and subsequently recorded from India by Mohamed (1958) and from Red Sea by Manilo and Bogorodsky (2003). Nelson (1966) studied the osteology and suggested species of *Neenchelys* to be placed under subfamily Echelinae (= Myrophinae) of Ophichthidae. Although Mohamed (1958) provided additional information for the species and suggested *N. buitendijki* to be common in India, no further taxonomic information was provided for more than five decades. While investigating the fish fauna in the Matang Mangrove Forest Reserve (MMFR), five specimens were collected from a mudflat off the Selinsing River, Straits of Malacca, northwestern Peninsular Malaysia (Figure 1). These specimens represent the first record from Malaysia and a detailed description is provided to document this species into the fish fauna of Malaysia.

METHODS AND MATERIALS

The fishes were collected by a small otter trawl over the mudflats in Selinsing Bay and vicinities. Total length (TL) was used as fish size measurement. The terminology and methods for taking morphometric measurements (15 measurements) and meristic counts (12) followed that of

Böhlke (1989). The specimens used in this study were deposited at National Museum of Marine Biology & Aquarium, Taiwan (NMMB-P).

RESULTS

NEENCHELYS BUITENDIJKI WEBER AND DE BEAUFORT, 1916

Neenchelys buitendijki Weber and de Beaufort, 1916: 268, Figures 116-117 (Type locality: Bay of Jakarta, Java; Moluccas).

Material examined. All material were collected from Matang, Malaysia. NMMB-P 13649 (238 mm TL), off shore, 4°49'30.42"N, 100°29'11.76"E, small otter trawl, 6 Oct. 2009. NMMB-P 13650 (198 mm TL), mudflat, 4°51'1.26"N, 100°31'10.8"E, small otter trawl, 3 m, 1 Dec. 2009. NMMB-P 13651 (211 mm TL), offshore, 449°54.18"N, 100°29'37.38"E, small otter trawl, 3.3m, 16 Jan. 2010. NMMB-P 13652 (225 mm TL), mudflat, 4°50'53.64"N, 100.30'49.32"E, small otter trawl, 1.9 m, 16 Jan. 2010. NMMB-P 13653 (192 mm TL), mudflat, 4°50'48.48"N, 100°31'31.74"E, 2.1 m, small otter trawl, 3 Aug. 2010.

Diagnosis. A species of *Neenchelys* with strongly pointed snout; a well-developed pectoral fin, 4.0-4.8 in HL; origin of dorsal fin relatively forward, at first fifth of trunk; a relatively large gill opening, its height 6.8-8.5 in HL; 18-20 predorsal, 49-51 preanal and 137-140 total vertebrae; 13-14 prepectoral, 20-22 pre-dorsal and 51-54 predorsal lateral-line pores.

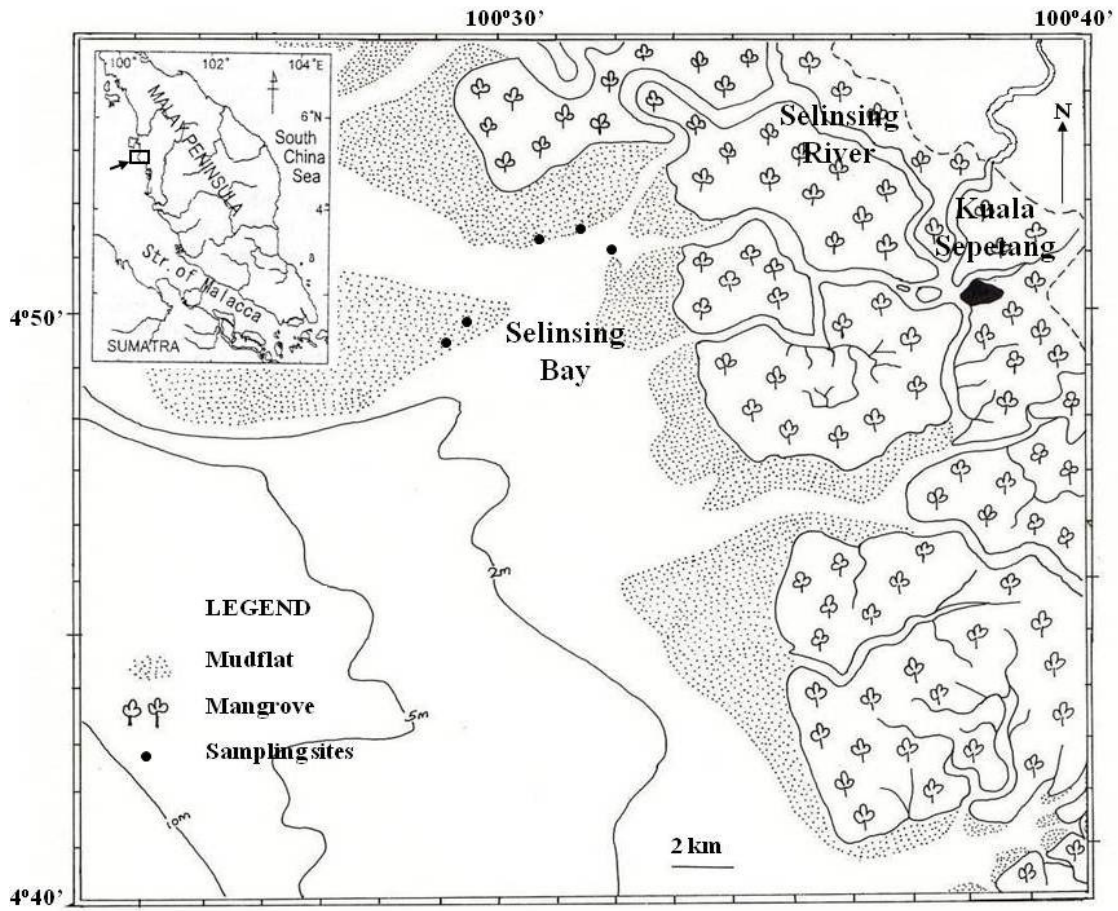


FIGURE 1. Map of the study site

Description. Morphometric and meristic data of each specimen are provided in Table 1.

Head length 8.1-9.1 in TL; predorsal length 5.4-6.0; trunk length 3.1-3.5; preanus length 2.2-2.5; tail length 1.6-1.8. Pectoral fin length 3.9-4.8 in HL; snout length 6.1-6.7; eye diameter 18.7-22.5; upper jaw length 3.4-3.7; interorbital width 11.8-13.5; postorbital length 1.2-1.4; gill opening height 6.8-8.5; body depth at head 5.1-5.7; body depth at anus 2.6-3.2; body width at anus 3.3-4.8.

Body relatively short, somewhat cylindrical with tail gradually compressed posteriorly; depth of body relatively uniform over length, tapering gradually to tip of tail; depth of head not greatly different from depth of body. Tail moderately long, anus at first fourth of total length. Dorsal and anal fins low and fleshy, continuous with a small but distinctly rayed caudal fin; origin of dorsal fin closer to origin of pectoral fin than that of anal fin. Pectoral fin well-developed, broad at base and pointed posteriorly.

Head terete in profile; snout strongly pointed, tip of snout well overhanging lower jaw. Anterior nostril tubular, directed antero-ventrally, its tube distinctly notched dorsally. Posterior nostril in front of lower margin of eye, the opening directed ventrally, in lateral aspect appearing as a diagonal slit whose posterior end is highest. Behind and below the nostril and paralleling it, is a groove that is longer than the

nasal slit. Snout narrow and strongly pointed, housing an extensive nasal organ on either side. Lower jaw included, its tip just reaching forward to level of posterior margin of anterior nostril. Angle of gape about two eye diameters behind a vertical through posterior margin of pigmented eyeball. Tongue not free, well attached to the mouth floor. Gill opening a broad vertical slit, situated at antero-ventral corner of pectoral fin base.

Teeth slender, pointed, the tips directed backward, all equal in size in each series. Three large teeth on premaxillary patch, one anterior and two paired posteriorly; vomerine teeth uniserial, ranging from 4-8 in number, with one extra lateral side pair between second and third teeth; maxillary teeth uniserial, 8-12 in number; dentary teeth in same arrangement as the maxillary tooth patch.

Cephalic lateral-line system with 2 pores in preopercular canal; 7 pores on each side of lower jaw; 4 pores in supraorbital series, 1 at anterodorsal edge of eye, 1 above anterior end of posterior nostril, 1 above anterior edge of anterior nostril and 1 at anterior tip of snout; 5 pores of infraorbital canal, two anterior between anterior nostril and posterior nostril, 1 behind posterior nostril, 1 at each upper and lower posterior corners of eye; 1 median dorsal pores marking frontal commissure on a line drawn between posterior margins of pupils; 3 pores on supratemporal canal.

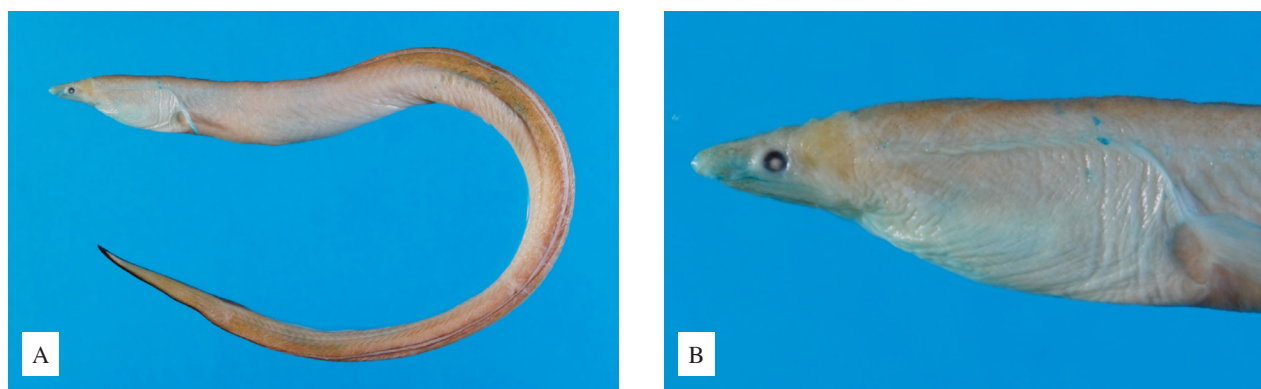


FIGURE 2. *Neeenchelys buitendijki*, NMMB-P, 239 mm TL, Matang, Malaysia. A. Lateral view of whole fish. B. Lateral view of left head. Note that the body is partially stained by blue color

TABLE 1. Morphometric and meristic data of *Neeenchelys buitendijki* collected from Matang, Perak, Malaysia

Total length (mm)	239	225	207	200	195		
Morphometric							
% TL						Mean	SD
Head length	12.4	11.3	11.9	12.2	11.0	11.8	0.6
Predorsal length	18.6	16.6	17.0	17.1	16.7	17.2	0.8
Trunk length	32.4	29.3	29.0	29.5	29.7	30.0	1.4
Preanal length	44.9	40.2	41.1	41.5	41.0	41.7	1.8
Tail length	61.3	55.2	59.9	58.5	61.0	59.2	2.5
% HL							
Pectoral fin length	25.2	21.4	20.6	25.5	22.4	23.0	2.2
Snout length	14.7	15.9	15.0	16.0	16.4	15.6	0.7
Eye diameter	4.7	4.8	4.5	5.3	5.1	4.9	0.4
Upper jaw length	27.3	26.9	29.1	28.0	27.6	27.8	0.8
Interorbital width	7.6		8.5	7.4	7.5	7.7	0.5
Postorbital length	82.0	78.6	83.4	74.1	72.4	78.1	4.8
Gill opening height	14.7	11.8	12.1	11.9	12.1	12.6	1.2
Depth at head	17.6	19.6	19.0	18.5	22.9	19.5	2.0
Depth at anus	38.5	32.5	35.6	30.9	36.0	34.7	3.0
Width at anus	29.9	20.7	26.7	21.4	25.2	24.8	3.8
Meristic							
Total vertebrae	138	137	138	135	140		
Predorsal vertebrae	19	19	18	18	20		
Preanal vertebrae	51	51	49	49	-		
Prepectoral pores	14	14	14	13	13		
Predorsal pores	21	21	21	20	22		
Preanal pores	51	52	52	51	54		
Infraorbital pores	4	4	4	4	-		
Supraorbital pores	5	5	5	5	-		
Mandibular pores	7	7	7	7	-		
Preopercular pores	2	2	2	2	-		
Supratemporal pores	3	3	3	3	-		
Frontal pore	1	1	1	1	-		

Lateral line incomplete, pores small and inconspicuous, extending posterior to about one head length before caudal fin; 13-14 pores on head before pectoral fin base, 20-22 before origin of dorsal fin and 51-54 before origin of anal fin. Total of 135-140 vertebrae; 18-20 predorsal vertebrae; 49-51 preanal vertebrae.

Coloration. The preserved specimens are pale brown dorsally and paler ventrally, with posterior portions of dorsal and anal fins black. Pectoral fin whitish.

Remarks. Although *N. buitendijki* is morphologically similar to *N. parvipectoralis*, it differs from *N. parvipectoralis* by having a well-developed pectoral fin (vs. a tiny flap); relatively few preanal vertebrae 49-51 (vs. 53-54), 4 infraorbital pores (vs. 5), 5 supraorbital pores (vs. 6), and 2 preopercular pores (vs. mainly 1).

All five specimens of *Neenchelys buitendijki* were collected from the mudflat by a small otter trawl indicating that this species is bottom-living as suggested by Mohamed (1958), and burrows in the mud (McCosker 1999). The place where the specimens were collected also suggests that this species inhabits the shallow waters around the muddy bottom of the river mouth. The new record of a snake eel species in Malaysia, a hitherto unnoticed species, indicates the lack of taxonomic and ecological studies of this or related species despite its first description nearly a century ago. The species may not be rare since we have recently also collected specimens from the Kuala Selangor mudflats, but is rather an indication of the tough, soft mud environment that has so far deterred scientific surveys and samplings.

ACKNOWLEDGEMENTS

The National Museum of Marine Biology & Aquarium and University of Malaya are acknowledged for providing research facilities. This study was supported by a Japan International Research Center Agricultural Sciences (JIRCAS) research grant to VCC and partially by National Museum of Marine Biology & Aquarium (NMMBA 100200354) to HCH.

REFERENCES

- Böhlke, E.B. 1989. Fishes of the Western North Atlantic. Number 1. Memoirs of the Sears Foundation of Marine Research Part 9. (Vol. 1.) *Orders Anguilliformes and Saccopharyngiformes*. New Haven: Yale University Press.
- Manilo, L.G. & Bogorodsky, S.V. 2003. Taxonomic composition, diversity and distribution of coastal fishes of the Arabian Sea. *Journal of Ichthyology* 43(1): S75-S149.
- McCosker, J.E. 1999. Ophichthidae. In *Species Identification Guide for Fisheries Purposes. The Living Marine Resources of the Western Central Pacific. Batoid fishes, chimeras and bony fishes part 1 (Elopidae to Linophrynidae)*, Carpenter, K.E. and V.H. Niem. p. 724-733 FAO, Rome.
- Mohamed, K.H. 1958. On the occurrence of the eel *Neenchelys buitendijki* Weber & de Beaufort in Indian waters. *Journal of Bombay Natural History Society* 55(3): 511-517.
- Nelson, G.J. 1966. Osteology and relationships of the eel, *Neenchelys buitendijki*. *Copeia* 1966(2): 321-324.

Hsuan-Ching Ho
National Museum of Marine Biology & Aquarium
Institute of Marine Biodiversity and Evolutionary Biology
National Dong Hwa University
No. 2, Houwan Rd., Checheng
Pingtung
944 Taiwan

Hong-Wooi Teoh & Ving-Ching Chong*
Institute of Ocean and Earth Sciences/Institute of Biological Sciences
University of Malaya
50603 Kuala Lumpur
Malaysia

*Corresponding author; email: chong@um.edu.my

Received: 5 October 2011

Accepted: 21 March 2012