Vol. 1 No. 1 December 2010
CHED Accredited Research Journal, Category A
Print ISSN 2094-5019 • Electronic ISSN 2244-0461
doi: http://dx.doi.org/10.7828/ajob.v1i1.105

Asian Journal of Biodiversity
Art. #105, pp. 126-138

An Annotated Checklist of Eels in Bago River, Negros Occidental, Philippines

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Date Submitted: October 19, 2010
Final Revision Complied: Nov. 7, 2010
Gunning Fog Index: 11.59
Plagiarism Detection: Passed
Original: 91.30%
English Writing Readability: 44.18

Abstract - The eels occurring in Bago River, Negros Occidental, Philippines are briefly annotated. Order Synbranchiformes is represented by the swamp eel *Ophisternon bengalense* while Anguilliformes (or true-eels) consist of 10 species belonging to four families. Snake-eels (Ophichthidae) consist of seven species while Freshwater Eels (Anguillidae), Spaghetti Eels (Moringuidae), Moray Eels (Muraenidae) are represented by a single species each.

Keywords: *Eels, river, brackish water, freshwater, Negros Occidental*

INTRODUCTION

Eels are a diverse group of fishes characterized by having elongate, snake-like or worm-like bodies (Smith & McCosker 1999) and, except the synbranchids, all have leptocephalic larval stage (Smith 1979; Smith & Castle 1972; Castle 1966, 1968; Miller & Tsukamoto 2004).

The eels in the Philippines have been the subject of numerous studies. Among the earliest publications included, but not limited to, the following: Bleeker (1864), Herre (1923, 1924). The Albatross Expedition had collected fishes in most islands in the Philippines (Smith & Williams 1999), including southern and northern Negros. Some of the species collected during the Albatross are now deposited in the United States National Museum of Natural History (USNM) and reported by Smith (2004). Since the late 1990s, several new species have been added to the eel fauna of the Philippines (e.g. McCosker 1998; Castle & Smith 1999; Böhlke 2000; Böhlke & Smith 2002; Smith & Karmovskaya 2003; McCosker 2010). Several undescribed species that have been discovered recently, awaiting formal description while certain groups such as moringuids and ophichthids need taxonomic revision (D.G. Smith and J.E. McCosker pers.comm.).

Armada (1997) briefly reported on the larvae (leptocephalic) in the Visayan and Sulu Seas and partly in the Guimaras Strait where our study site is located.

The purpose of this paper is to present the species of eels thus far known from Bago River, Negros Occidental.

MATERIALS AND METHODS

We collected samples of eels from the four collecting stations in Bago River, Negros Occidental (Fig. 1 p. 136) using a variety of gears such as garab (an indigenous gear), spears, fine-nets and bamboo

traps. Some of the samples were purchased directly from local fishers.

Collected samples were immediately fixed in 10% formalin and 70% ethanol. Presently, our samples are retained in the R.B. Gonzales Museum of Natural History at Silliman University, Dumaguete City. Photographs were also obtained for each species then sent to eel specialists (D.G. Smith in the Division of Fishes, United States National Museum of Natural History, Smithsonian Institution and J.E. McCosker of the California Academy of Sciences, USA) for verification.

Identification follows Smith & McCosker (1999) for ophichthids, Böhlke et al. (1999) for muraenids, and Smith (1999) for moringuids.

CHECKLIST

Below is an annotated checklist of the 11 species of eels (including one synbranchid or swamp eel) recently collected from the Bago River, majority are known as burrowers inhabiting the estuarine area, belonging to the Moringuidae and Ophichthidae families. The photographs of the eels are found on pages 137-138 Figs. 2-6.

Some of the eel species need further taxonomic attention; some of these aspects are briefly discussed.

ORDER SYNBRANCHIFORMES
FAMILY SYNBRANCHIDAE (Swamp Eels)

Ophisternon bengalense McClelland, 1844
One-gilled Eel, sili-sili

Remarks: The current accepted name is *Ophisternon bengalense* (Froese & Pauly 2010) but early authors often used the original name *Synbranchus bengalensis* (see Herre 1923). Although indicated above as McClelland 1844, other authors (e.g. Herre 1923), however, indicated "McClelland 1845". Rudimentary fins are reduced to mere folds of skin, anal opening far back, and the gillopenings are confluent in

a single ventral slit. In Lopez Jaena, Murcia, a single specimen was purchased from a local fisher. The eel was brought to the surface using electro-fishing. Despite of their resemblance to true-eels, they differ significantly from the latter in terms of morphology and osteology. They also lack the leptocephalus larval stage, which is common among true-eels and their allies.

ORDER ANGUILLIFORMES

FAMILY ANGUILLIDAE (Freshwater Eels)

Anguilla marmorata Quoy and Gaimard, 1824 (Fig. 2)
Giant Mottled Eel, bais

Remarks: Distinguished easily from other *Anguilla* by its mottled color and long dorsal fin which originates closer to the gill opening than the anus (Smith 1999a). The largest individual that we caught (Station 1 in Don Salvador Benedicto) measures ca 2m and weighs 14 kg.

FAMILY MORINGUIDAE (Spaghetti Eels)

Moringua raitaborua Hamilton, 1822 (Fig. 3)
Purple Spaghetti eel, sili-sili

Remarks: Ontogenetic and sexual variations (Smith & Castle 1972; Smith 1999) have caused taxonomic confusion within the genus *Moringua*. Some of the species have been assigned erroneously to different families and genera. The immature forms of *Moringua* were described many times in the literature as *Apthalmichthys*, *Stilbiscus*, and *Anguillichthys* (Gosline & Strasburg 1956; Gordon 1954; Castle 1968; Castle & Smith 1972).

The actual number of species of *Moringua* has not yet been determined. Numerous names have been published in the literature (see Castle 1968), but the actual number of species is probably small (Smith 1999, 2010 pers.comm).

Herre (1924) published nominal names such as *Moringua cagayana* and *M. robusta*. It appears that *M. robusta* might be a maturing female of *M. raitaborua*. However, the entire genus needs revision and variations within the genus will be discussed later.

Careful examination of the body proportions, vertebral counts, developmental changes and sexual dimorphism suggest the samples we obtained are *Moringua raitaborua*.

Aside from Kottelat (1993), no other report of its occurrence in the Philippines is available to us (see also fishbase.org). The eel documented by Lesley Lubos of Liceo de Cagayan from the estuary of Oro River, Cagayan de Oro might be attributed to this species.

In Bago River, *M. raitaborua* is priced 200-300 pesos per kilo.

FAMILY OPHICHTHIDAE (Snake or Worm Eels)

Subfamily Myrophinae
Neenchelys sp. (Fig. 4)
Worm Eel, sili-sili

Remarks: Specimens were found in the estuarine area of Bago River. Due to the fact that the genus is taxonomically confusing, identification is limited to the generic level.

Muraenichthys thompsoni Jordan & Richardson, 1908 (Fig. 5)
Worm Eel, sili-sili

Remarks: A few samples were obtained from the estuarine area with the use of a local gear garab. McCosker (1970) considered *M. malabonensis* as a synonym of *M. thompsoni*.

Scolecenchelys Ogilby, 1867
Scolecenchelys sp.
Worm Eel, sili-sili

Remarks: Distinguished from the genus *Muraenichthys* by the presence of teeth on vomer, maxilla and dentary (McCosker 1970). Because only a single specimen is available and the number of vertebrae cannot be determined at this time, we limit our identification up to the genus level.

Cirrhimuraena chinensis Kaup, 1856
Worm Eel, sili-sili

Remarks: Identification provisionary given that the genus needs revision (McCosker, J. pers. comm.). It has been erroneously used by many authors.

Pisodonophis cancrivorus Richardson, 1844
Worm Eel, sili-sili

Remarks: Its broad pectoral fin base, paler yellowish coloration on belly and generally dark-brown coloration, and presence of a small papilla protruding halfway between the anterior nostril and the eye (Herre 1923) confirms its identity. The only known specimen was found near the estuary in Pungtod Islet of the Bago River.

Phaenomonas cooperae Palmer, 1970
Worm Eel, sili-sili

Remarks: Small, slender specimens were obtained in the muddy estuary of the Bago River estuary using the indigenous gear garab.

FAMILY MURAENIDAE (Morays)

Strophidon sathete Hamilton, 1822 (Fig. 6)
Moray eel, nipa-nipa (Ilonggo)

Remarks: Juvenile samples were found in the muddy estuary while the single adult specimen was captured from the mouth of the river of the Bago River.

ACKNOWLEDGMENTS

We wish to acknowledge the Commission on Higher Education (CHED) for funding the research project "Hydrology and Ecology of the Bago River". We are also thankful to Dr. Angel C. Alcala (Director of SU-CHED ZRC and SUAKCREM) for the encouragement and guidance throughout the conduct of the study. The help on the taxonomic identification provided by Dr. David G. Smith (USNM) and Dr. J.E. McCosker (California Academy of Sciences) are also acknowledged. D.G. Smith also provided additional relevant reference materials used in this study.

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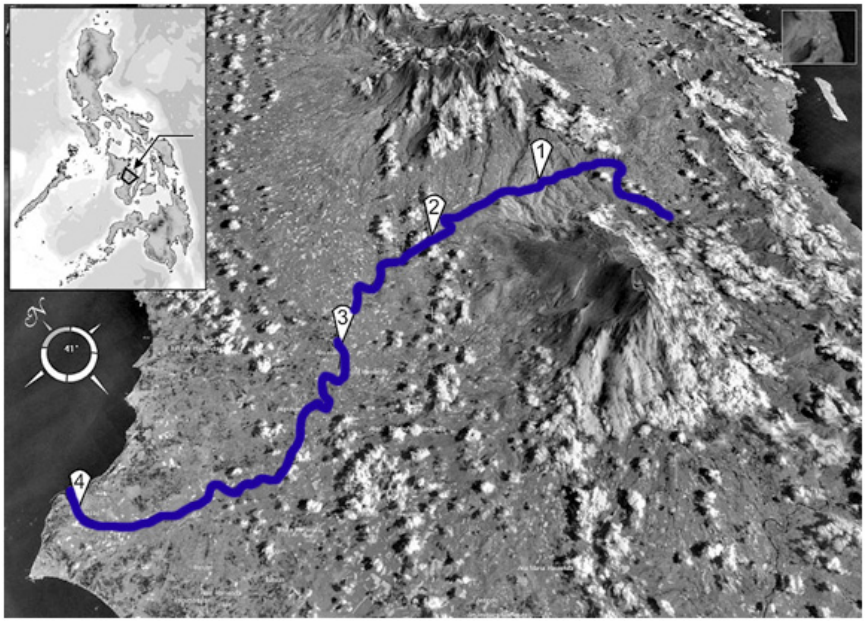

Fig. 1. A map showing the entire Bago River, Negros Occidental.

Fig. 2. The Mottled Eel *Anguilla marmorata* from Bago River

Fig. 3. *Moringua raitaborua* from Bago River Estuary, Negros Occidental.

Fig. 4. The snake eel *Neenchelys sp.* from the estuary of Bago.

Fig. 5. *Muraenichthys thompsoni* from Bago River estuary.

Fig. 6. A moray eel (*Strophidon sathete*) from Bago River.