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Taxonomic Review of the Sea Catfish Family Ariidae in Taiwan

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ABSTRACT

The family Ariidae comprises bottom-dwelling fishes inhabiting tropical and subtropical coasts in marine and brackish waters. Historically, ten nominal species have been recorded in Taiwanese waters. However, due to close morphological similarities among species and a lack of detailed investigation, confusion has persisted regarding the actual number of species present in Taiwan. In this study, a total of 337 specimens were newly collected, and 187 museum specimens were thoroughly examined. Based on morphological and osteological characteristics—including the patterns of tooth patches on the upper jaw, the lateral fenestra and lateral ethmoid, the supraoccipital bone, and the dorsomedial groove—all specimens were classified into three genera, each represented by a single species. In addition, 249 *COI* sequences were generated and combined with 308 public sequences for species delimitation. The results confirm the presence of three ariid species in Taiwan: *Arius* maculatus, *Netuma bilineata*, and *Plicofollis nella*.

Keywords: biodiversity, ichthyology, taxonomy, synonymy, morphology.

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1 INTRODUCTION

The sea catfish family Ariidae is a group of small to moderately large fishes, primarily inhabiting marine waters, with some species extending into freshwater and brackish environments (Marceniuk et al., 2024). They are found worldwide in tropical to warm temperate regions, with approximately 157 valid species (Marceniuk et al., 2024). Acero and Betancur-R (2007) identified four anatomical synapomorphies: lapillus otoliths extraordinarily developed; bones of the otic capsules (prootic, pterotic, exoccipital, and epioccipital) profoundly inflated; the presence of a well-developed ventral process of the basioccipital; and male mouthbrooding of eggs and embryos.

In Taiwan, ariid species are typically diagnosed by the following morphological traits: a large, broad, and flat head; cylindrical trunk with a compressed tail; an upper jaw extending beyond the lower jaw; villiform tooth bands on both jaws and palatines; three pairs of barbels; two nostrils, with a small valve on the posterior nostril; and closed branchiostegal membranes on the isthmus. Additionally, these species lack body scales; possess strong, serrated spines on the dorsal and pectoral fins with venom glands; have a large adipose fin, and exhibit a deeply forked caudal fin with the upper lobe longer than the lower. Their coloration typically ranges from dark brown or blue dorsally to light gray laterally, with a pale abdomen (Chen, 1969; Chen & Yu, 1985; Shen, et al., 1993).

Ariid species in Taiwan are primarily found along the western coasts, where shallow sandy and muddy environments and large estuaries prevail. Several studies have focused on the fisheries of these species in various localities (Tzeng & Wang, 1997; Hsiao et al., 2017; Lo et al., 2017; Su et al., 2017). For instance, Lee (1992) reported that ariids constituted over 60% of the total catch in the estuary of the Tamsui River. Other research has focused on specific biological aspects of ariids, such as age and growth (Chu et al., 2011, 2012) and sound production (Lin, 2010). Despite their relatively low commercial value in Taiwan, ariids play an essential ecological role due to their abundance and dominance in these coastal environments. Notably, the critically endangered Chinese white dolphin (*Sousa chinensis*) relies on sea catfish as a significant prey item (Pan et al., 2016).

A total of ten nominal ariid species have been documented in the literature in Taiwan, including seven *Arius* species, one *Netuma*, and two *Plicofollis*. Early works by Chen (1954a, 1954b, 1969) and Shen (1984) recorded *Arius sinensis* and *Arius thalassinus* (= *Netuma thalassina*). Chen and Yu (1985) listed *Arius maculatus*, *Arius sagor* (= *Hexanematichthys sagor*), and *A. thalassinus* (= *N. thalassina*). The occurrence of *Plicofollis polystaphylodon* has also been listed in the Fish Database of Taiwan (Shao, 2024). Kailola (1999) added *Arius arenarius* and *Arius dispar*, while Shen and Wu (2011) reported *Arius arius*, *A. maculatus, A. thalassinus* (= *N. thalassina*), and *Plicofollis nella*. More recently, Koeda and Ho (2020) recorded *A. maculatus* and *P. nella.*

However, a long-standing taxonomic challenge remains unresolved: how many sea catfishes are present in Taiwan, and how can they be reliably and readily distinguished? Without a detailed investigation and evaluation of these names, biological and ecological studies that require precise species identification will continue to face difficulties. To address this issue, we conducted a comprehensive taxonomic review of the sea catfish family Ariidae in Taiwan. This study integrates morphological and molecular data, including examinations of fresh and museum specimens, otolith morphology, osteology, and DNA barcoding, to clarify the taxonomy of the family in Taiwan.

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2 METHODS AND MATERIALS

2.1 Sampling, Preparation, and Museum Collections

A total of 337 fresh specimens were collected by local fishermen from multiple localities along the western coast of Taiwan, Penghu, and Matsu (Figure 1, Appendix 1). Of these, 159 specimens were registered in museum collections, while 178 were dissected for otolith (lapillus or utricular otolith) or skeletal (neurocranium) studies and registered under the code CHLOL (Appendix 1). For the preparation of neurocranium specimens, soft tissue was removed, and the specimens were placed in a 5% hydrogen peroxide solution, followed by drying in an oven at 40 °C overnight. To enhance bone suture visibility, the neurocrania were stained using an Alizarin Red S solution (3–5 ml Alizarin Red S mixed with 250 ml isopropanol and 500 ml water) and then dried again at 40 °C overnight.

All fresh specimens examined in this study were obtained from local fish markets and commercial fishers as part of their routine fishing activity. No live specimens were handled, euthanized, or subjected to experimental procedures requiring ethical approval under Institutional Animal Care and Use Committee (IACUC) regulations.

A total of 187 additional specimens from museum collections in Taiwan were also examined (Appendix 2), including those from the Biodiversity Research Museum, Academia Sinica, Taiwan (ASIZP); the Fisheries Research Institute, Council of Agriculture, Keelung, Taiwan (FRIP); the National Museum of Marine Biology and Aquarium, Pingtung, Taiwan (NMMB-P); the National Museum of Marine Science and Technology, Keelung, Taiwan (NMMST-P); the National Museum of Natural Science, Taichung, Taiwan (NMNSF); the National Taiwan Museum, Taipei, Taiwan (NTMP); and the National Taiwan University Museums, Taipei, Taiwan (NTUM). In addition, two specimens from the fish collection of Kyoto University (FAKU) at the Maizuru Fisheries Research Station, Kyoto, were included in this study.

2.2 Measurements

The terminology and methods for taking measurements and meristics followed Kailola (1999), Marceniuk et al. (2017), and Takahashi et al. (2019) (Figure 2). Skeletal terminology followed Acero and Betancur-R (2007) and Murray and Holmes (2022), while lapillus otolith terminology followed Lin and Chang (2012), Ohe (2000), and Lin et al. (2022) (Figure 2). The systematics follows the classification of Marceniuk et al. (2024).

Marine Research of the National Academy of Marine Research
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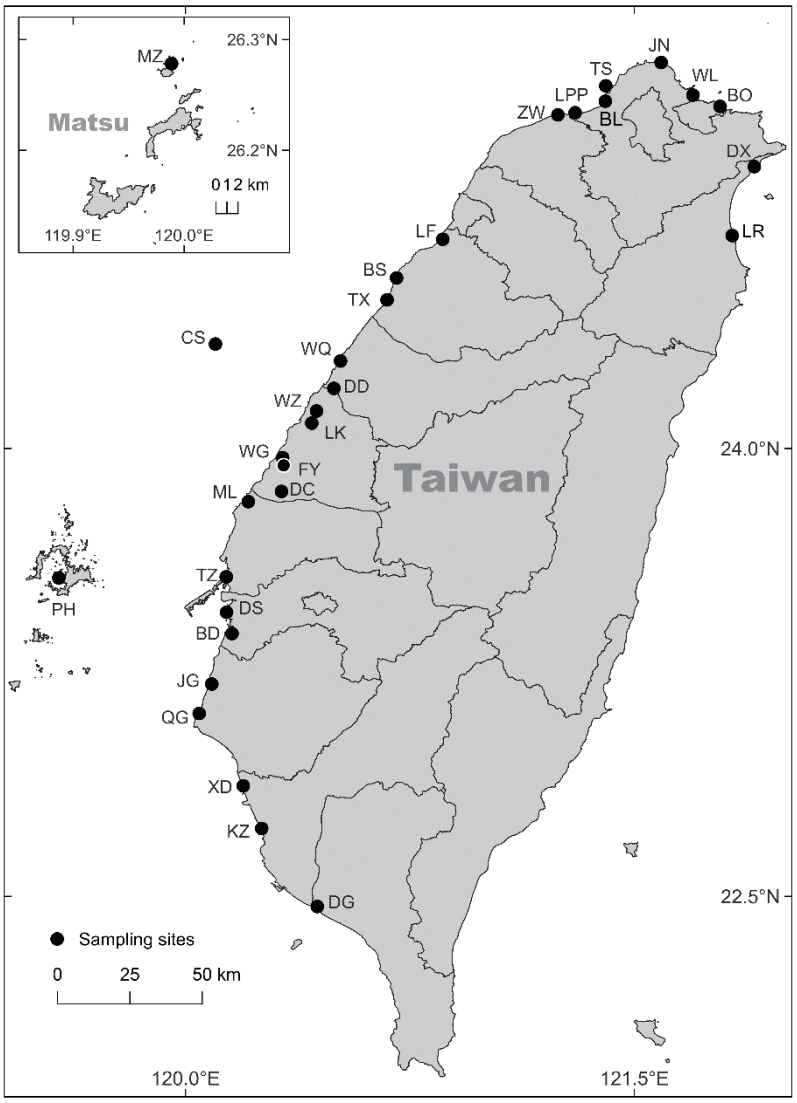

Figure 1. Sampling sites. BD, Budai Fishing Port, Chiayi; BL, Bali, New Taipei City; BO, Badouzi Fishing Harbor, Keelung; BS, Baishatun, Miaoli; CS, Changhua Sea; DC, Dacheng, Changhua; DD, Dadu River, Taichung; DG, Donggang, Pingtung; DS, Dongshi Fishing Port, Chiayi; DX, Daxi Fishing Port, Yilan; FY, Fangyuan, Changhua; JG, Jiangjun Fishing Port, Tainan; JN, Jinshan, New Taipei City; KZ, Kezailiao Harbor, Kaohsiung; LF, Longfeng Fishing Port, Miaoli; LK, Lukang, Changhua; LR, Lanyang River, Yilan; ML, Mailiao, Yunlin; MZ, Qiaozi, Matsu; LPP, Linkou Power Plant, New Taipei City; PH, Penghu; QG, Qigu District, Tainan; TX, Tongxiao Township, Miaoli; TS, Tamsui First Fishing Harbor, New Taipei City; TZ, Taizi Village Fishing Port, Yunlin; WG, Wanggong Fishing Port, Changhua; WL, Wanli, New Taipei City; WQ, Wuqi Fishing Port, Taichung; WZ, Wenzi Fishing Port, Changhua; XD, Xing Da Harbor, Kaohsiung; ZW, Zhuwei Fishing Harbor, Taoyuan.

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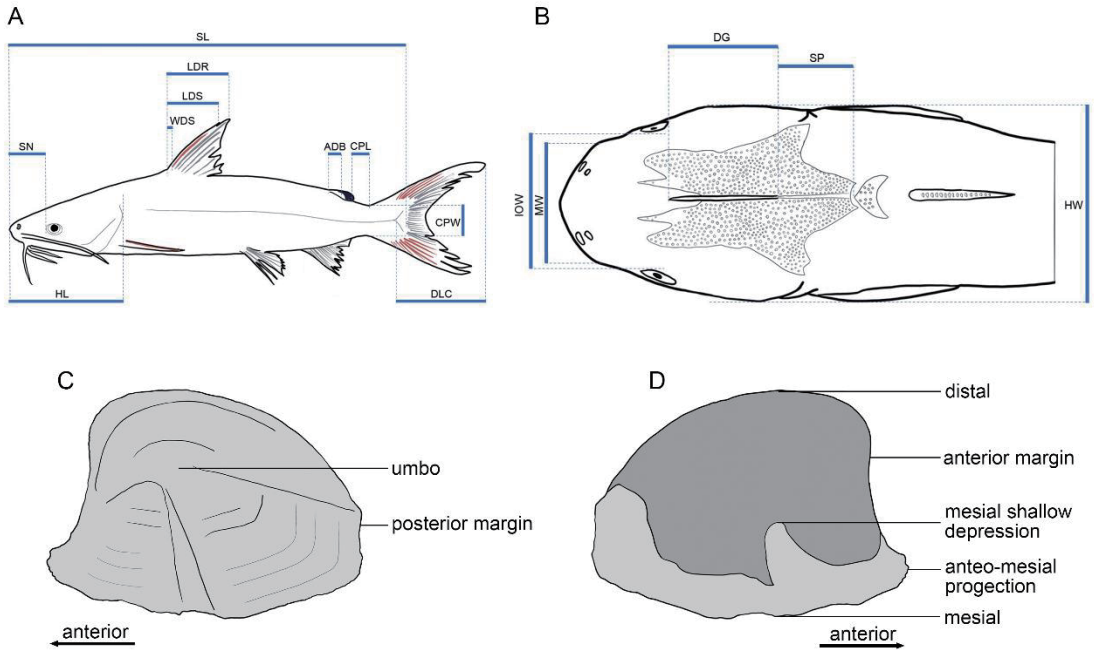

Figure 2. Schematic illustrations depicting the morphometric measurements (A–B) and otolith anatomical terminology (C–D) in Ariidae. A, lateral view of the fish; B, dorsal view of the head; C, dorsal view of the lapillus otolith; D, ventral view of the lapillus otolith. ADB, adipose-fin base length; CPL, caudal peduncle length; CPW, caudal peduncle width; DG, dorsomedial groove length; DLC, dorsal lobe length of caudal-fin. HL, head length; HW, head width; IOW, interorbital width; LDR, length of first dorsal-fin ray; LDS, length of dorsal-fin spine; MW, mouth width; SL, standard length; SN, snout length; SP, supraoccipital process length; WDS, width of dorsal spine.

2.3 DNA Extraction and Polymerase Chain Reaction (PCR)

Muscle tissue samples sliced from the collected ariid specimens were preserved in 95% EtOH and stored at -20 °C until DNA extraction. Some ariid individuals deposited at the Biodiversity Research Museum, Academic Sinica, Taiwan preserved both voucher and tissue specimens. The study not only morphologically inspected these ariid voucher specimens but also included their tissue specimens in the molecular phylogenetic analysis. DNA was extracted from 249 tissue samples by using a DNA Extraction Kit (GT100, Geneaid, Taiwan). PCR amplifications of the partial mitochondrial *COI* gene (approximately 650 bp) were performed in a mixture containing 5 ng template DNA, 12.5 µL of 2x Taq PCR MasterMix (GN-PCR201-01, Genomix), and 12.5 µmol of each forward and reverse primer—forward: FishF1+2 (5'-TCR ACY AAY CAY AAA GAY ATY GGC AC-3'); reverse: FishR1 (5'- TAG ACT TCT GGG TGG CCA AAG AAT CA-3') or FishR2 (5'-ACT TCA GGG TGA CCG AAG AAT CAG AA-3') (Chang et al., 2016)—made up to a final volume of 25 µL using distilled water. Thermal cycling began with one cycle at 95 °C for 4 min, followed by 35 cycles of denaturation at 95 °C for 30 s, 45-55 °C for 30 s, 72 °C for 30 s and, finally, a single extension step at 72 °C for 7 min. PCR products were purified using a PCR DNA Fragment Extraction Kit (Geneaid, Taipei, Taiwan). Sequencing was performed by Mission Biotech Inc., Taipei, Taiwan, using the same forward primer applied in PCR. The primer sequences linked to the amplified *COI* barcode sequence of each sample were trimmed using BioEdit 7.2 software. The final length of each *COI* sequence was 531 base pairs for *Arius* and *Plicofollis*, and 567 base pairs for *Netuma*. A total of 249 *COI* sequences generated in this study have been submitted to GenBank under accession numbers PQ656173 to PQ656300 and PQ658235 to PQ658355 (Appendix 3).

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2.4 Phylogenetic Analysis

The phylogenetic analyses were separately conducted for the three distinct ariid genera, *Arius, Netuma*, and *Plicofollis*. Additional relevant sequences were downloaded from the NCBI GenBank database (Appendix 3). Three ariid *COI* datasets were aligned using MACSE v2, a software designed to align protein-coding nucleotide sequences based on their corresponding amino acid translations (Ranwez et al., 2018). The DnaSP v5 software was used to identify the haplotypes for each dataset, and only the haplotypes for each dataset underwent the Neighbor-Joining (NJ) analysis, based on Kimura 2-parameter (K2P) distances, to construct a distance tree with 10,000 bootstrap replicates using MEGA X (Kumar et al., 2018).

To construct the distance tree, only unique haplotypes were used to prevent redundancy while preserving all relevant genetic diversity. This approach is widely adopted in phylogenetic and species delimitation studies, as it allows for a clearer visualization of genetic relationships without the excessive representation of identical sequences (Xiao et al., 2022; Palandačić et al., 2024). Since the primary goal of this study was to resolve species boundaries rather than analyze intraspecific variation, the inclusion of redundant sequences would not have contributed additional taxonomic resolution.

3 RESULTS

3.1 Systematics

Family Ariidae Regan, 1911

Genus *Arius* Valenciennes, 1840

Arius Valenciennes in Cuvier & Valenciennes, 1840: 53 (type species: *Pimelodus arius* Hamilton, 1822; by absolute tautonymy). For the diagnosis of the genus, see Marceniuk et al. (2024: 452).

Arius maculatus (Thunberg, 1792)

Common name: Spotted catfish (English); 斑海鯰 (Chinese)

Figures 3A and 4

Silurus maculatus Thunberg, 1792: 31 (type locality: China, Japan; no types known).

Arius arius (not of Hamilton, 1822): Shen and Wu, 2011: 175.

Arius maculatus (Thunberg, 1792): Chen, 1969: 181; Shen, 1984: 136; Chen and Yu, 1985: 299; Shen, 1993: 146; Shen and Wu, 2011: 175; Koeda and Ho, 2020: 228.

Arius sinensis (not of Lacepède, 1803): Chen, 1954a, 1954b: 26.

Specimens examined. *Fresh material*: 158 specimens (see Appendix 1 for details). *Museum material*: 130 specimens (see Appendix 2 for details).

Diagnosis. *Arius maculatus* is a medium-sized fish reaching up to 400 mm TL. It can be distinguished from other ariids found in Taiwan by the following combination of characters: a longer dorsomedial groove that starts from the junction of the dorsomedian ridge (Figure 3) and extends to the posterior margin of the orbit; a conspicuous and high number of rugose granules on the supraoccipital bone; and a pair of large to medium-sized palatine tooth patches (Figure 4).

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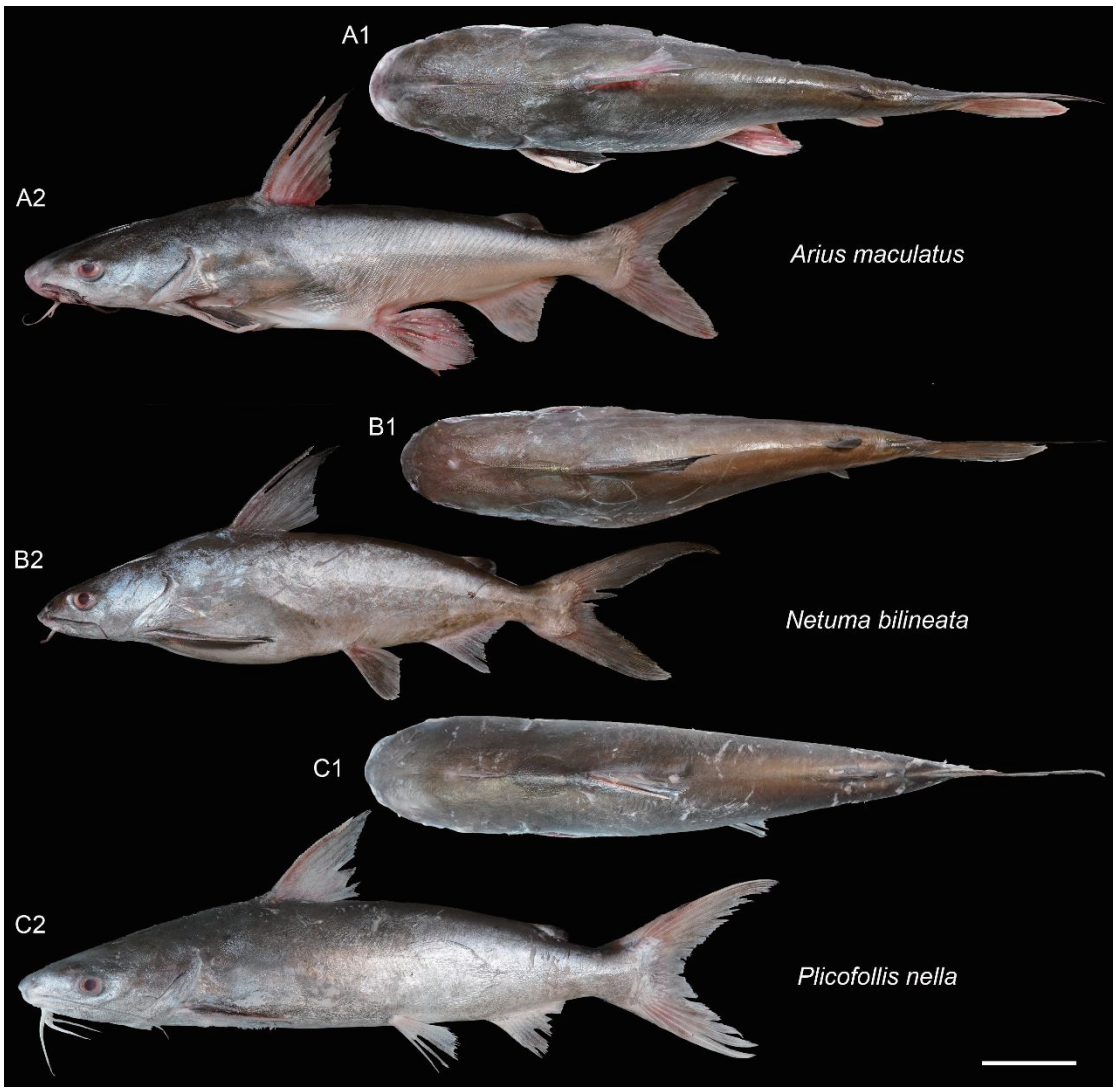

Figure 3. Fresh specimens of Ariidae species from Taiwan, shown in dorsal (1) and lateral (2) views. A, *Arius maculatus*, NTMP1735, 293.9 mm SL; B, *Netuma nilineata*, NTMP1753, 263.51 mm SL; C, *Plicofollisn nella*, NTMP1775, 310.35 mm SL. Scale bar = 5 cm.

Marine Research of the National Academy of Marine Research
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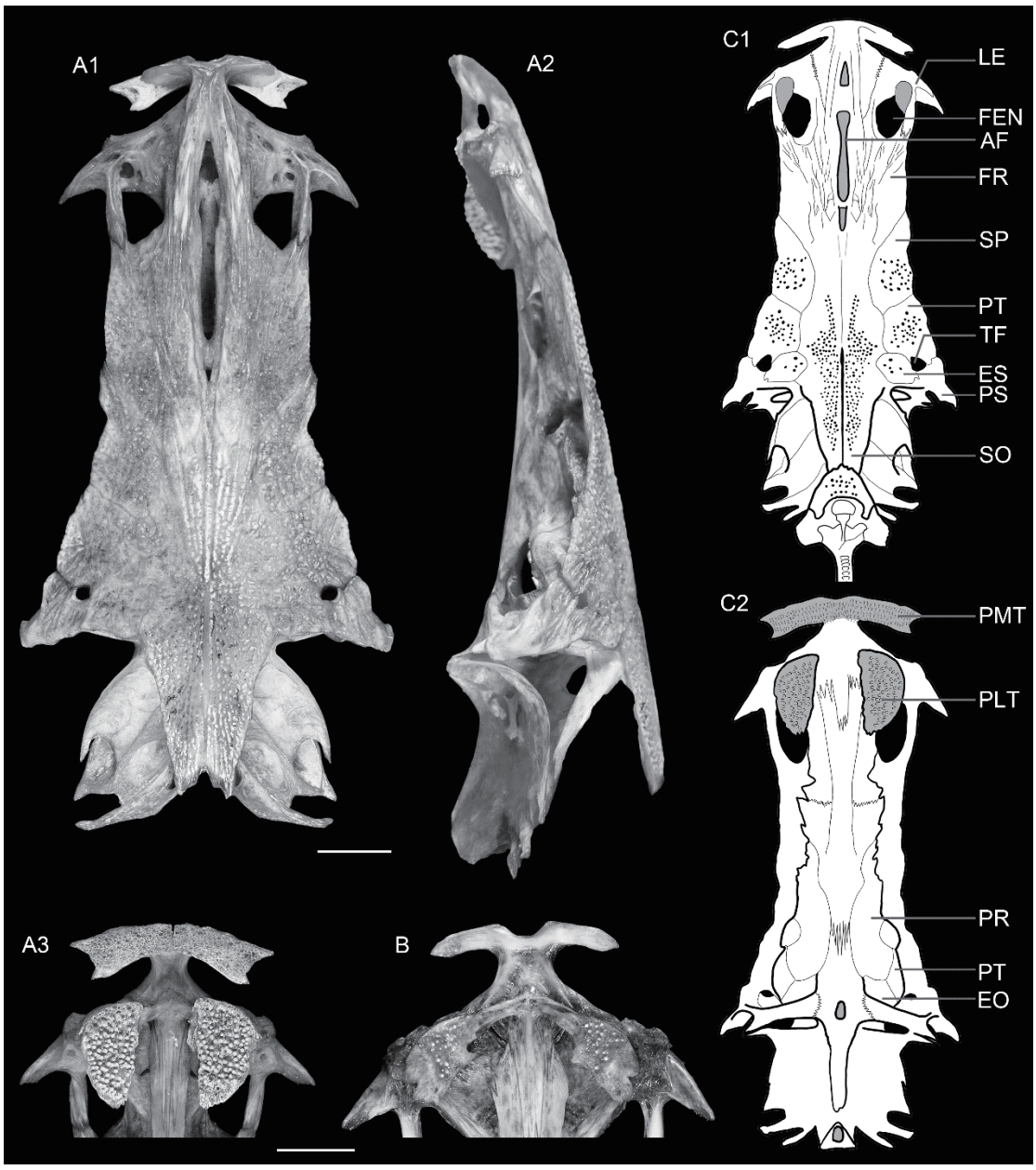

Figure 4. Neurocrania of *Arius maculatus*. A, CHLOL1318, 251.08 mm SL (A1 = dorsal view, A2 = lateral view, A3 = close-up of teeth); B, CHLOL1323, 300.29 mm SL, close-up of teeth (note that PMT was lost during specimen preparation); C, schematic illustrations depicting anatomical terminology (C1 = dorsal view, C2 = ventral view). AF, fontanelle; EO, exoccipital; ES, extrascapular; FEN, fenestra; FR, frontal; LE, lateral ethmoid; PLT, palatine tooth patch; PMT, premaxillary teeth; PR, prootic; PS, posttemporo-supracleithrum; PT, pterotic; SO, supraoccipital process; SP, sphenotic; TF, temporal fossa. Scale bars = 10 mm.

Marine Research of the National Academy of Marine Research
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Description. The body is fusiform, scaleless, and smooth. The deepest part of the body is at the origin of the dorsal fin. The dorsal profile slopes gently from the dorsal fin to the end of the caudal peduncle but inclines more steeply toward the snout. An adipose fin is located just anterior to the caudal peduncle, with its base length about half that of the anal fin base. A prominent black blotch is visible on the upper part of the adipose fin. The dorsal and pectoral fin spines are very robust, bearing numerous small serrations that vary greatly in number. There are seven dorsal-fin rays, with the first one being conspicuously the longest. Additional morphometric data and meristic counts are provided in Tables 1 and 2.

Head: The head is dorso-ventrally compressed, while the body is laterally compressed. The supraoccipital bone is not conspicuously elevated but narrows posteriorly and ends in a truncated posterior tip. A distinct dorsomedial groove extends from the posterior margin of the orbit to the end of the supraoccipital bone. The supraoccipital bone is covered with irregular, rugose granules, which are easily visible from above. The mouth is inferior in position, with one pair of barbels on the maxilla and two pairs on the mandible. The maxillary barbels are longer than the mandibular barbels, extending nearly to the base of the pectoral fin. The outer mandibular barbels are longer than the inner ones. The nostrils are directed anteriorly; the anterior nostrils are oval, while the posterior nostrils are covered by flaps.

Teeth: The premaxillary teeth are villiform and pointed, forming a laterally broad band. A pair of medium-sized palatine tooth patches is located just behind the premaxillary teeth band. The palatine teeth are larger and more granular compared to the villiform premaxillary teeth. Two morphs of palatine tooth patches were observed (validated as belonging to a single species based on our molecular data; see Phylogenetic Analyses below): one with an elongated, parallel triangular shape converging posteriorly with up to 130 teeth (Type I; see Figure 4A3), and another with a small, widely divergent triangular shape with about 25 teeth (Type II; see Figure 4B). Teeth on the dentary form a pair of wide tooth bands similar to those of the premaxilla.

Coloration: The body and head are bluish-brown dorsally when fresh, turning grayish after death and brownish when preserved. The ventral side of the fish is whitish. When fresh, fins are whitish to reddish, with black tips.

Distribution. Japan, Taiwan, the Philippines, Thailand, Malaysia, Indonesia (Sumatra, Java, Kalimantan), and Sri Lanka (based on Kailola, 1999).

Remarks. The absence of type material for *A. maculatus* and the lack of a detailed description in the original account present significant taxonomic challenges for this species. This ambiguity likely stems from its wide distribution across the Indo-West Pacific, where this name has been applied to ariids with similar morphological traits. Thunberg (1792) described the species based on specimens from China and Japan, although no specific locality was provided. However, since only a single Arius species is known from Japan, and it matches our *Arius* specimens, we assign our Taiwanese specimens to *A. maculatus.*

Arius maculatus closely resembles *Arius arius,* as both share similar palatine tooth patch morphology and overlapping meristic counts (Kailola, 1999). According to Günther (1864), a distinguishing feature of *A. arius* is the prominent, filamentous first dorsal-fin ray, which may extend posteriorly to the caudal peduncle (e.g., Jayaram, 1977: 17). In contrast, in *A. maculatus*, the first dorsal-fin ray does not reach that far. One of our *A. maculatus* specimens does show a more extended first dorsal-fin ray compared to all other specimens (Figure 5, specimen CHLOL21701), although it still does not reach the caudal peduncle. However, DNA barcoding confirmed that this particular specimen is nested with all other specimens (see below).

Marine Research of the National Academy of Marine Research
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Figure 5. ***Arius maculatus*****, CHLOL21701, 25.274 mm SL. Scale bar = 5 cm. Note that the dorsal fin spine was cut off when the specimen was collected.**

We recognized two palatine tooth patch patterns in *A. maculatus*. The elongate palatine tooth patch (Type I), found in our *A. maculatus* specimens, is similar to those depicted for *A. arius* by Kailola (1999: 1840). However, illustrations by Günther (1864: 170) and Jayaram (1977: 10) suggest a slightly different morphology in palatine tooth patches, particularly with more sharply constricted posterior ends in *A. arius*. In addition, the tooth patch in *A. maculatus* appears to be positioned more posteriorly, although this character is difficult to determine with certainty (Kailola, 1999: 1854). While the morphology of the palatine tooth patch and the filamentous first dorsal-fin ray are considered diagnostic features of *A. arius*, both features are distinct from those observed in our specimens.

In contrast to the more common Type I palatine tooth patch, the second pattern (Type II) is rare among the examined specimens. The Type II tooth patch is shorter and more widely separated, forming a small, triangular or irregularly rounded patch with fewer teeth (Figure 4B). This pattern resembles the palatine tooth patch of *A. dispar* illustrated by Kailola (1999: 1846), although Kailola's depiction appears more rounded in comparison.

Another species closely related to *A. maculatus* is *A. sinensis*, which occurs in Vietnam and the South China Sea and was reported by Chen (1954a, b) in Taiwan. The original description by Valenciennes (1840) is vague, with many features largely overlapping with those observed in our *Arius* specimens. However, X-ray examination of the holotype of *A. sinensis* (Muséum national d'histoire naturelle, MNHNB-2620; Figure 6) reveals lower counts of anal fin rays and vertebrae compared to our specimens (13 vs. 15–19 anal fin rays;49 vs. 50–53 vertebrae), suggesting that our specimens represent a different species. Because *A. sinensis* has been previously recognized as a junior synonym of *Arius maculatus* (Kailola, 2004; Kottelat, 2013), further investigation is needed to verify the validity of *A. sinensis.*

Marine Research of the National Academy of Marine Research
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Figure 6. *Arius sinensis*, MNHNB-2620, holotype. A, lateral view; B, dorsal view; C, ventral view; D, radiograph of dorsal view.

Kailola (1999) also listed *Arius arenarius* and *Arius dispar* as occurring in Taiwan, although no referable specimens are available. Furthermore, Kailola (1999) illustrated *A. arenarius* as having two pairs of palatine tooth patches (a smaller, rounded anterior pair and a larger, triangular posterior pair), in contrast to the single pair found in *A. maculatus.*

Genus *Netuma* Bleeker, 1858

Netuma Bleeker, 1858: 62, 67, 93 (type species: *Bagrus netuma* Valenciennes, 1840; by absolute tautonymy).

For the diagnosis of the genus, see Marceniuk et al. (2024: 450).

Netuma bilineata (Valenciennes, 1840)

Common name: Bronze catfish (English); 雙線多齒海鯰 (Chinese)

Figures 3B and 7

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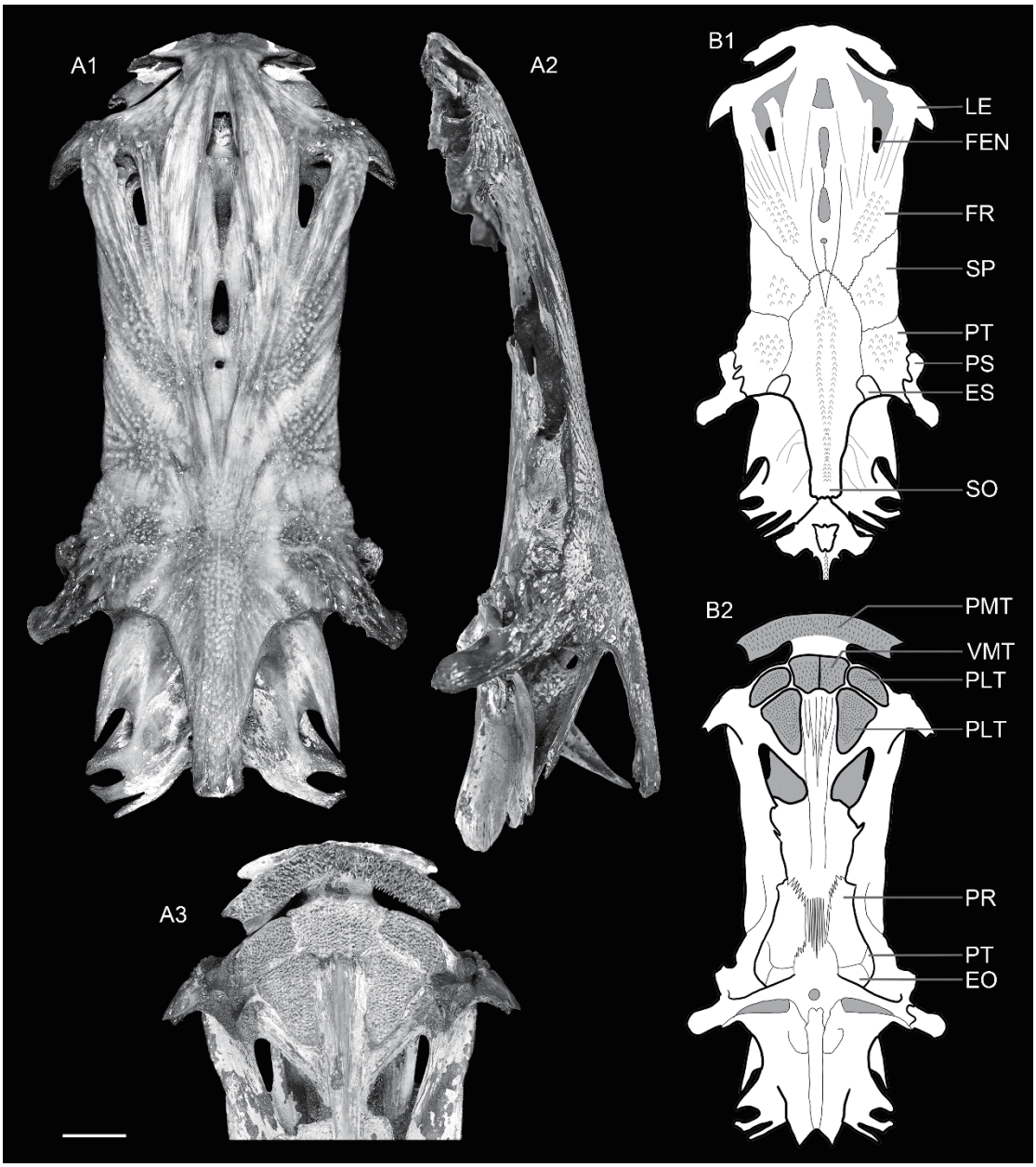

Figure 7. Neurocrania of *Netuma bilineata*. A, CHLOL1324, 307.85 mm SL (A1 = dorsal view, A2 = lateral view, A3 = close-up of teeth); B1, schematic illustrations depicting anatomical terminology (B1 = dorsal view, B2 = ventral view). AF, fontanelle; EO, exoccipital; ES, extrascapular; FEN, fenestra; FR, frontal; LE, lateral ethmoid; PLT, palatine tooth patch; PMT, premaxillary teeth; PR, prootic; PS, posttemporo-supracleithrum; PT, pterotic; SO, supraoccipital process; SP, sphenotic; VMT, vomerine tooth patch. Scale bar = 10 mm.

Bagrus bilineatus Valenciennes, 1840: 434 (type locality: India; syntypes: MNHN A-9344).

Arius thalassinus (not of Rüppell, 1837): Chen, 1954a: 8; Chen, 1969: 181; Shen, 1984: 136; Chen and Yu, 1985: 302; Chen, 2004: 37.

Arius thalassimus (not of Rüppell, 1837): Chen, 1954b: 26.

Netuma thalassina (not of Rüppell, 1837): Shen and Wu, 2011: 176.

Marine Research of the National Academy of Marine Research
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Specimens examined. *Fresh material:* 85 specimens (see Appendix 1 for details). *Museum material:* 40 specimens (see Appendix 2 for details).

Diagnosis. *Netuma bilineata* is a medium-sized fish reaching up to 400 mm TL. It differs from the two other Taiwanese ariids by having a pair of large, connected vomerine tooth patches, two pairs of autogenous tooth patches, and a lack of a dorsomedial groove.

Description. The body of *N. bilineata* is fusiform and scaleless. The dorsal profile slopes gently from the origin of the dorsal fin both toward the snout and the end of the caudal peduncle. The adipose fin is uniformly dark, with its base length less than half that of the anal fin base. The dorsal- and pectoral-fin spines are robust, though the dorsal-fin spine is narrower than the pectoral fin spines. The edges of the fin spines are covered with numerous small serrations. Additional morphometric data and meristic counts are provided in Tables 1 and 2.

Table 1. Morphometric data of ariid species from Taiwan.

	Arius maculatus			*Netuma bilineata*			*Plicofollis nella*		
SL (mm)	77.56—382.27 mm (n=171)			66.73—370.58 mm (n=102)			88.07—680.00 mm (n=99)		
%SL	Mean	Range	SD	Mean	Range	SD	Mean	Range	SD
Length of first dorsal-fin ray	25.0	19.0—32.8	3.1	26.1	18.3—32.5	2.4	21.9	17.5—25.7	1.6
Length of dorsal-fin spine	19.6	16.0—25.3	1.6	21.1	16.6—24.3	1.5	18.9	14.9—21.5	1.6
Width of dorsal spine	1.8	1.4—2.6	0.2	1.2	0.9—2.1	0.2	1.5	1.1—1.9	0.1
Dorsomedial groove length	13.3	11.3—17.0	0.9	10.0	6.4—13.7	1.5	10.4	6.5—20.9	1.9
Supraoccipital process length	10.6	9.1—13.3	0.6	13.9	9.2—16.2	1.4	12.8	10.4—15.2	0.8
Head length	29.0	23.6—33.0	1.7	28.2	24.6—32.7	2.0	30.5	23.5—34.6	1.4
Snout length	11.2	9.2—13.4	0.8	11.2	8.7—14.3	1.1	13.5	10.3—15.4	0.9
Head width	20.5	16.6—22.7	0.8	20.0	18.5—24.6	0.9	20.2	11.0—22.7	1.5
Interorbital width	14.3	10.2—17.3	1.3	14.4	11.3—17.1	1.2	16.9	12.5—19.5	1.2
Mouth width	13.9	11.5—18.1	1.0	14.7	13.1—17.6	0.9	11.7	10.0—13.9	0.8
Adipose-fin base length	6.0	1.9—9.0	1.0	4.0	3.3—4.9	0.5	4.1	2.8—5.5	0.6
Caudal peduncle length	14.7	12.4—18.1	1.1	14.0	10.9—17.2	1.1	14.3	11.7—16.7	0.9
Caudal peduncle width	6.8	5.4—8.4	0.4	6.7	6.0—8.4	0.4	7.4	5.7—9.7	0.5
Dorsal lobe length of caudal fin	25.4	19.6—29.6	1.7	32.0	20.9—38.0	2.6	26.0	15.9—29.6	2.2

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Table 2. Meristic counts of ariid species from Taiwan.

	Total gill rakers										
	n	10	11	12	13	14	15	16	17	18	19
Arius maculatus	109					1	4	15	59	23	7
Netuma bilineata	71		1	10	40	19	1				
Plicofollis nella	82	1	3	8	39	26	5				
	Pectoral-fin rays										
	n	8	9	10	11	12	13				
Arius maculatus	109	1	11	70	27						
Netuma bilineata	71			27	44						
Plicofollis nella	81			4	29	46	2				
	Anal-fins rays										
	n	14	15	16	17	18	19				
Arius maculatus	109		2	14	46	39	8				
Netuma bilineata	70	1	3	40	24	2					
Plicofollis nella	80	9	41	25	5						

Head: The head is broad laterally and compressed dorsal-ventrally. The supraoccipital bone is conspicuously elevated, narrowing posteriorly to a truncate posterior tip. The dorsomedial groove is covered by a thin layer of skin and is not visible. The supraoccipital bone is adorned with irregular, rugose granules. The mouth is inferior and round, accompanied by one pair of maxillary barbels and two pairs of mandibular barbels. The maxillary barbels are the longest but do not reach the base of the pectoral fin. The outer mandibular barbels are longer than the inner ones. The nostrils are directed anteriorly, with oval anterior nostrils and larger posterior nostrils covered by flaps.

Teeth: The premaxillary teeth are needle-shaped, forming a laterally broad, elongate band. A pair of vomerine tooth patches is tightly connected at the midline. Two pairs of autogenous tooth patches are located behind the vomerine tooth patches: a pair of subrectuangular anterior patches and a larger pair of triangular posterior patches with an elongated posterior end. Both the vomerine and autogenous tooth patches are densely packed with villiform teeth.

Coloration: The body and head are uniformly brownish to bronze dorsally and whitish ventrally. The fins are white, with dusk-colored tips.

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Distribution. Widespread across Indo-West Pacific, including waters off Japan, Taiwan, the Philippines, Indonesia, New Guinea, Australia, the South China Sea, Vietnam, Thailand, Myanmar, Singapore, India, the Arabian Sea, Pakistan, and the Persian Gulf (Kailola, 1986; Kailola in Randall & Lim, 2000; Ng, 2003; Ng, 2012; Psomadakis et al., 2015; Psomadakis et al., 2019; Sonoyama et al., 2020).

Remarks. In Taiwan, *Netuma bilineata* has long been misidentified as *N. thalassina*, a closely related congeneric species. However, recent morphological and molecular evidence has confirmed the distinctiveness of *N. bilineata* from *N. thalassina* (Takahashi et al., 2019). Our specimens of *N. bilineata* differ from those of *N. thalassina* described by Kailola (1986) and Takahashi et al. (2019) in several diagnostic features: *N. bilineata* possesses a pair of connected vomerine tooth patches (vs. separated vomerine tooth patches in *N. thalassina*), a rounded snout (vs. a pointed snout), and a narrower supraoccipital bone.

Genus *Plicofollis* Kailola, 2004

Plicofollis Kailola, 2004: 141 (type species: *Arius argyropleuron* Valenciennes, 1840; by original designation).
For the diagnosis of the genus, see Marceniuk et al. (2024: 451).

Plicofollis nella (Valenciennes, 1840)

Common name: Smooth-headed catfish (English); 內爾褶囊海鯰 (Chinese)

Figures 3C and 8

Marine Research of the National Academy of Marine Research
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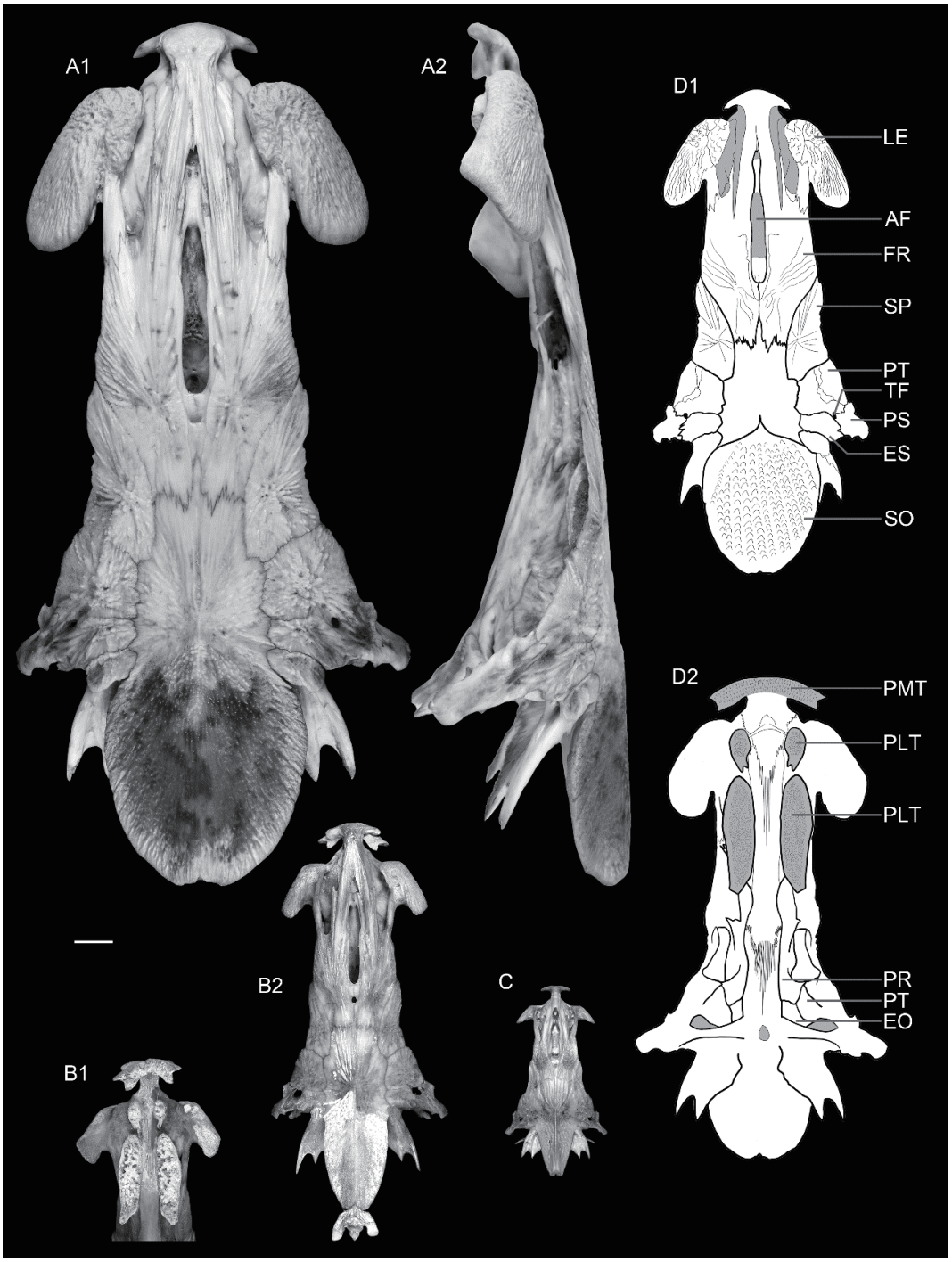

Figure 8. Neurocrania of *Plicofollis nella*. A, CHLOL5866, 545.00 mm SL (A1 = dorsal view, A2 = lateral view); B, CHLOL1390, 239.33 mm SL (B1 = close-up of teeth, B2 = dorsal view); C, CHLOL21712, 136.72 mm SL; D, schematic illustrations depicting anatomical terminology (D1 = dorsal view, D2 = ventral view). AF, fontanelle; EO, exoccipital; ES, extrascapular; FR, frontal; LE, lateral ethmoid; PLT, palatine tooth patch; PMT, premaxillary teeth; PR, prootic; PS, posttemporo-supracleithrum; PT, pterotic; SO, supraoccipital process; SP, sphenotic; TF, temporal fossa. Scale bar = 10 mm.

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Pimelodus nella Valenciennes in Cuvier & Valenciennes, 1840: 162 (type locality: India; holotype not exist).

Plicofollis nella (Valenciennes, 1840): Jayaram and Dhanze, 1978: 48; Kailola, 1999: 1858; Kailola in Randall & Lim, 2000: 589; Kailola, 2000: 127; Ng, 2003: 10; Kailola, 2004: 142; Marceniuk and Menezes, 2007: 93; Ferraris, 2007: 52; Shen and Wu, 2011: 175; Marceniuk et al., 2012: 667; Kottelat, 2013: 250; Marceniuk et al., 2017; Koeda and Ho, 2019: 229.

Specimens examined. *Fresh material:* 94 specimens (see Appendix 1 for details). *Museum material*: 19 specimens (see Appendix 2 for details).

Diagnosis. *Plicofollis nella* is a large-sized fish, reaching up to 700 mm TL. It differs from the other two ariids found in Taiwan by having a large, oblong ethmoid bone that is prominent in dorsal view, a nearly smooth supraoccipital bone, and a pair of extremely elongated palatine autogenous tooth patches. The mouth is relatively small in compared to other ariid species in Taiwan.

Description. The body is fusiform and the skin is scaleless. The dorsal profile slopes gently from the origin of the dorsal fin toward both the snout and the end of the caudal peduncle. The adipose fin is uniformly dark, with its base length less than half that of the anal-fin base. The dorsal- and pectoral-fin spines are strong and of similar size. The edge of the fin spines presents numerous small serrations. Additional morphometric data and meristic counts are provided in Tables 1 and 2.

Head: The head is dorsal-ventrally compressed and tapers anteriorly. The supraoccipital bone is slightly elevated along the midline, widening halfway to form a salient, circular shield. In younger individuals, the supraoccipital bone has a more triangular outline (Figure 8C). The dorsomedial groove is deep but short, extending to the base of the supraoccipital bone but not reaching the posterior margin of the orbit. When fresh, a noticeable white blotch is visible just anterior to the dorsomedial groove. In larger individuals, a limited number of rugose granules are present only on the anterior part of the supraoccipital bone. The ethmoid bone, located just anterior to the orbit, is large, oblong, and conspicuously raised. The mouth is inferior and relatively small. A pair of maxillary barbels and two pairs of mandiblar barbels are present. The maxillary barbels are the longest, nearly reaching the margin of the opercle. The outer mandibular barbels are longer than the inner ones, both reaching the orbits. The nostrils are oval and anteriorly directed, with larger posterior nostrils covered by flaps.

Teeth: The premaxillary teeth are villiform, forming an elongate lateral band. A pair of oval vomerine tooth patches and a pair of markedly elongated palatine autogenous tooth patches are present. These tooth patches are entirely filled with villiform teeth, aligned parallel to the mesial axis, and spaced apart from one another.

Coloration: The body is bluish-brown dorsally when fresh, becoming dark gray after death. The ventral side is uniformly whitish. When fresh, the fins are whitish to reddish, with black-tipped edges.

Distribution. Taiwan, the Philippines, South China Sea, Vietnam, Thailand, Malaysia, Singapore, Indonesia, India, New Guinea, and Australia (Jayaram & Dhanze, 1978; Kailola, 1999; Kimura et al., 2009; Kottelat, 2013; Kimura et al., 2019).

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Remarks. *Plicofollis nella* closely resembles the tropical congener *P. polystaphylodon.* According to Marceniuk (2017), the key distinguishing feature is the width of the supraoccipital bone. In *P. polystaphylodon,* the supraoccipital bone is more restricted and does not form a prominent, round shield, whereas in *P. nella,* the shield is wide and circular. In addition, the dorsomedial groove in *P. polystaphylodon* is longer, extending anteriorly to just behind the nostrils. In contrast, the dorsomedial groove in *P. nella* is shorter, and does not extend to the posterior margin of the orbit (Kailola, 1999).

3.2 Phylogenetic Analyses

The *Arius, Netuma*, and *Plicofollis COI* datasets for the NJ analysis were 504 base pairs long and included 71, 57, and 15 taxa, respectively. *Arius* contained 161 variable sites and 150 parsimony-informative sites; *Netuma* contained 165 variable sites and 94 parsimony-informative sites; and *Plicofollis* contained 83 variable sites and 60 parsimony-informative sites. The NJ analysis for *Arius* revealed seven monophyletic groups with an average K2P distance of 0.1157. All *A. maculatus* specimens from Taiwan were closely related, with an average K2P distance of 0.0039, and clustered together in group I with high statistical support (bootstrap values > 70; Figure 9). Sequences from three specimens exhibiting the Type II palatine tooth patch were nested within those of the more common Type I tooth patch (haplotypes AH2 and AH5), indicating that both tooth types represent a single species—*A. maculatus.*

Marine Research of the National Academy of Marine Research
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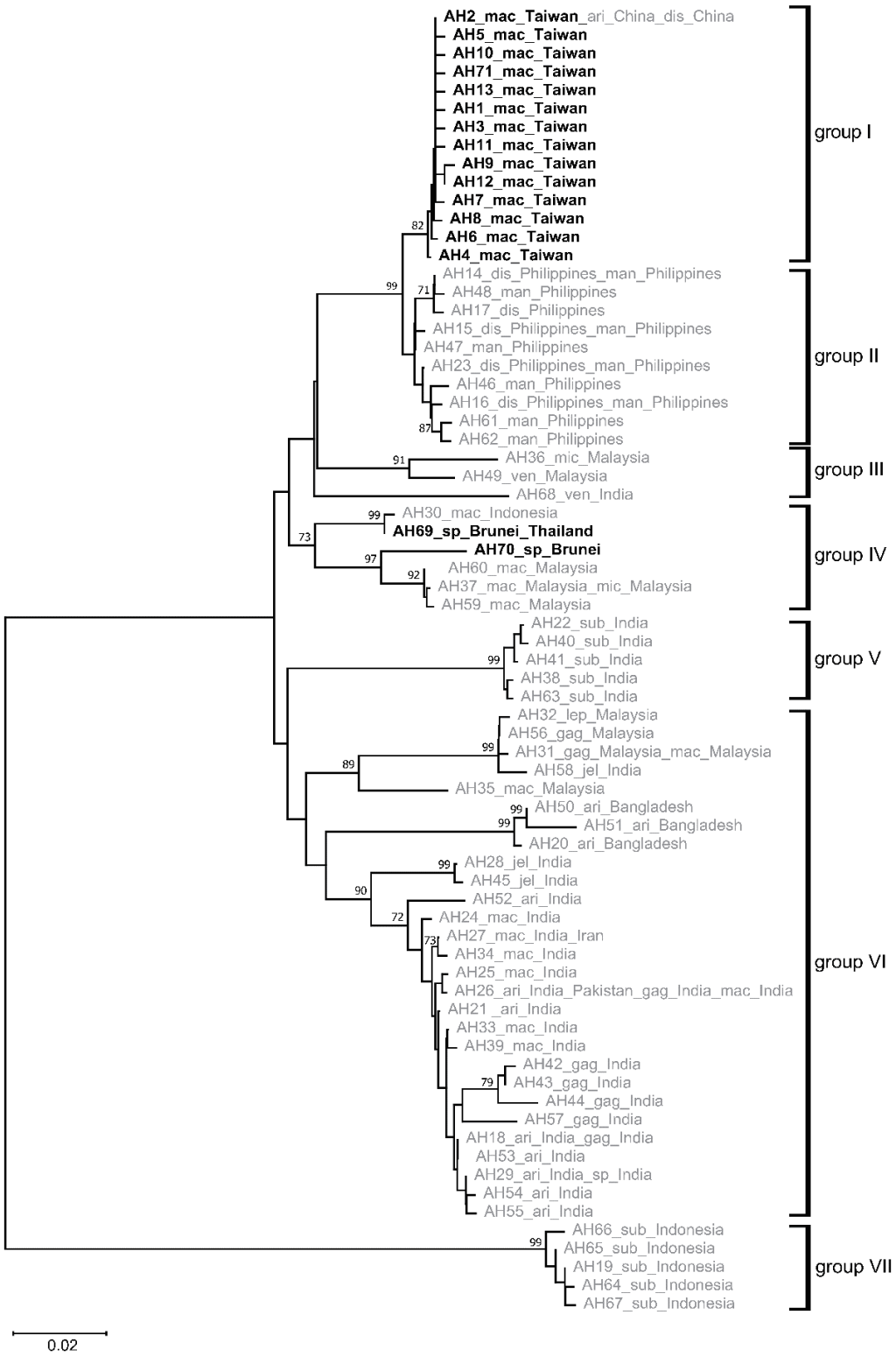

Figure 9. Neighbor-joining tree based on the cytochrome oxidase subunit I (*COI*) gene, showing the relationships among *Arius* species. Haplotype names are presented in Appendix 3. ari, *A. arius*; dis, *A. dispar*; gag, *A. gagora*; jel, *A. jella*; lep, *A. leptonotacanthus*; mac, *A. maculatus*; man, *A. manillensis*; mic, *A. microcephalus*; sub, *A. subrostratus*; ven, *A. venosus*; sp, *Arius* sp. Bold text represents data from this study and gray-colored text represents NCBI data.

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For *Netuma*, the NJ analysis revealed six monophyletic groups, with an average K2P distance of 0.1307. The *N. bilineata* specimens from Taiwan are distributed in group I, which also includes sequences of *N. thalassin*a (Figure 10). It was also observed that *N. bilineata* and *N. thalassina* share some *COI* haplotypes.

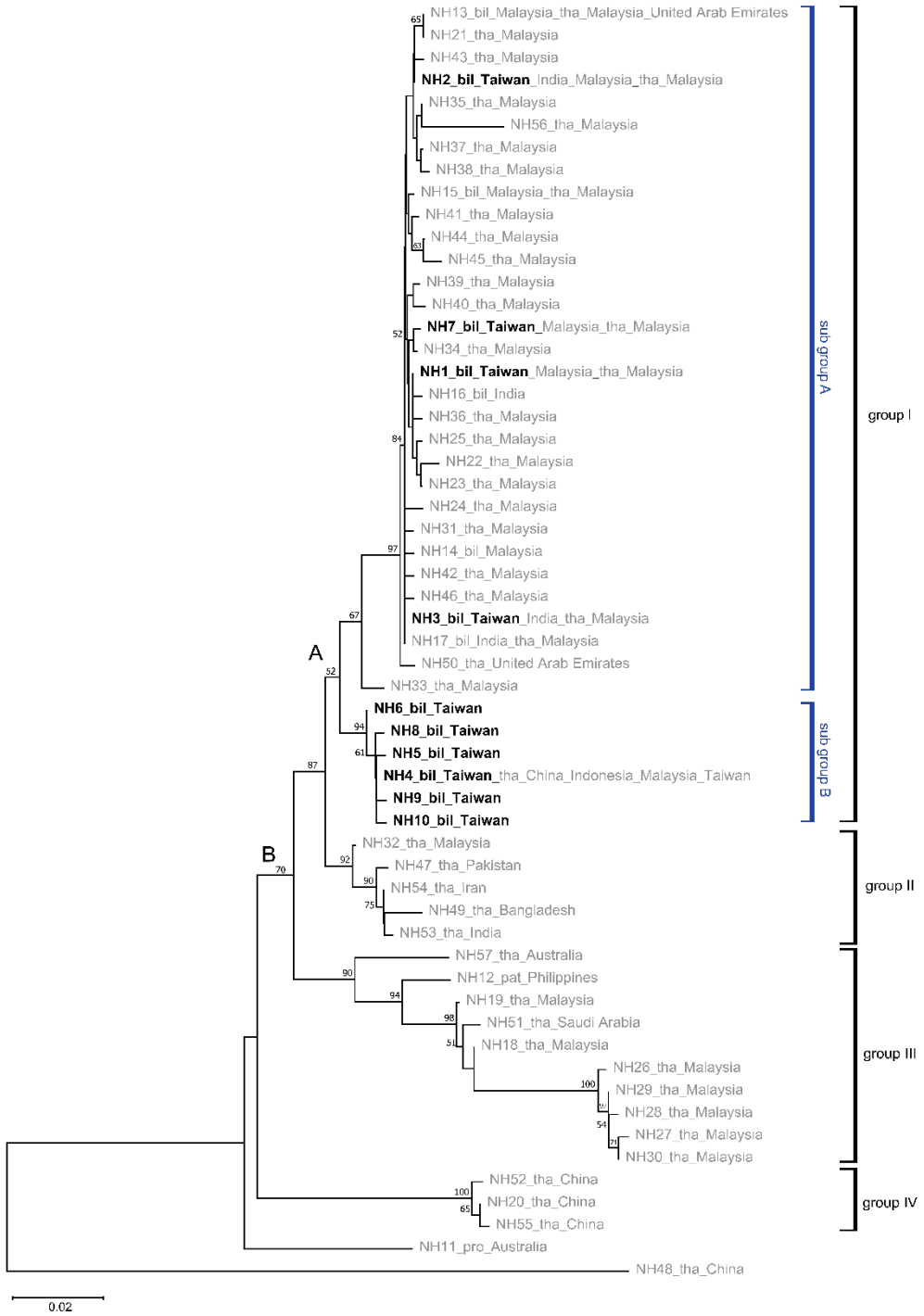

Figure 10. Neighbor-joining tree based on the cytochrome oxidase subunit I (*COI*) gene, showing the relationships among *Netuma* species. Haplotype names are presented in Appendix 3. bil, *N. bilineata*; pat, *N. patriciae*; pro, *N. proxima*; tha, *N. thalassina*. Bold text represents data from this study and gray-colored text represents NCBI data.

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In the NJ analysis for *Plicofollis*, three monophyletic groups were identified, with an average K2P distance of 0.0749 (Figure 11). All *P. nella* specimens from Taiwan are in group I, which also contains one *P. polystaphylodon* haplotype. The average K2P distance among these taxa in group I is 0.0067.

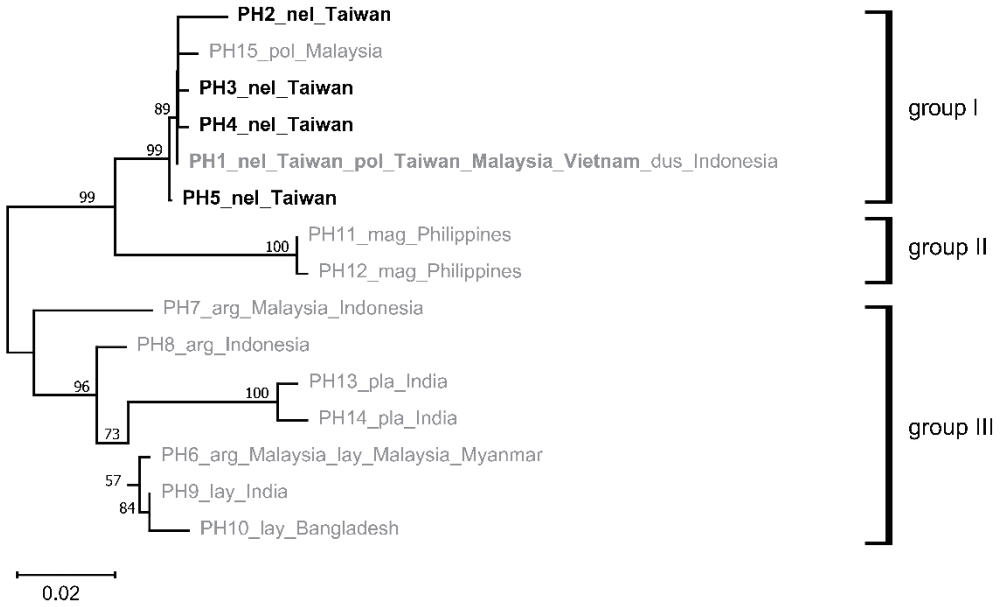

Figure 11. Neighbor-joining tree based on the cytochrome oxidase subunit I (*COI*) gene, showing the relationships among *Pliocfollis* species. Haplotype names are presented in Appendix 3. arg, *P. argyropleuron*; dus, *P. dussumieri*; lay, *P. layardi*; mag, *P. magatensis*; nel, *P. nella*; pla, *P. platystomus*; pol, *P. polystaphylodon*. Bold text represents data from this study and gray-colored text represents NCBI data.

4 DISCUSSION

4.1 Morphological Comparisons of Neurocrania and Otoliths

A typical neurocranium in the family Ariidae is characterized by a rigid head shield composed of a large supraoccipital bone (with the parietal fused to the supraoccipital; see Malabarba & Malabarba, 2020), a "complex centrum" formed by the fusion of the first four vertebrae (Malabarba & Malabarba, 2020), and swollen otic capsules (bulla acoustico utricularis) made up of the prootic, pterotic, and exoccipital bones (Acero & Betancur-R, 2007).

The dorsal view of the neurocranium reveals the most distinct differences among the three ariid species found in Taiwan. The fenestra between the lateral ethmoid and frontal bones (Murray & Holmes, 2022) is present only in *A. maculatus* and *N. bilineata,* with the size of the fenestra being significantly larger in *A. maculatus.* In contrast, in *P. nella*, this fenestra is filled by the parasphenoid. Additionally, the lateral ethmoid in *P. nella* is markedly swollen and hyperostotic, both laterally and posteriorly. The anterior fontanelle in *N. bilineata* is fused in the middle, forming two separate fontanelles, while in *A. maculatus* and *P. nella,* it remains unfused and bar-like. Furthermore, the temporal fossa is present in both *A. maculatus* and *P. nella.* The epioccipital bone is dorsally exposed in *P. nella,* whereas its condition is less determinate in *A. maculatus* and *N. bilineata.* Finally, the supraoccipital bone varies in shape: it is widest and rounded in *P. nella,* triangular in *A. maculatus*, and narrowest in *N. bilineata.*

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

The otoliths described in this study are all lapilli, the largest of the three pairs of otoliths found in Ostariophysi (Cypriniformes and Siluriformes) fishes (Nolf, 1985). Lapilli in ariids are typically thick and bulky, with a distinct subtriangular outline (Ohe, 2006; Lin & Chien, 2022; Lin et al., 2018, 2022). The dorsal face is marked by an elevated umbo, and annuli (growth rings) can be observed in the mesial area. On the ventral face, a shallow mesial depression is present in the middle of the otolith. The anterior rim of the otoliths has an anterior-mesial projection, while the posterior rim varies in shape from angular to rounded (Ohe, 2006; Aguilera et al., 2013; Aguilera et al., 2020). The lapilli of *A. maculatus*, *N. bilineata*, and *P. nella* are best distinguished by the shape of the posterior rim: it is gently curved in *A. maculatus,* truncated in *N. bilineata*, and pointed in *P. nella* (Figure 12). The umbo is prominently elevated, forming a discontinuous surface on the dorsal face in both *N. bilineata* and *P. nella*, whereas in *A. maculatus*, it appears to be less pronounced, and the dorsal surface is smoother.

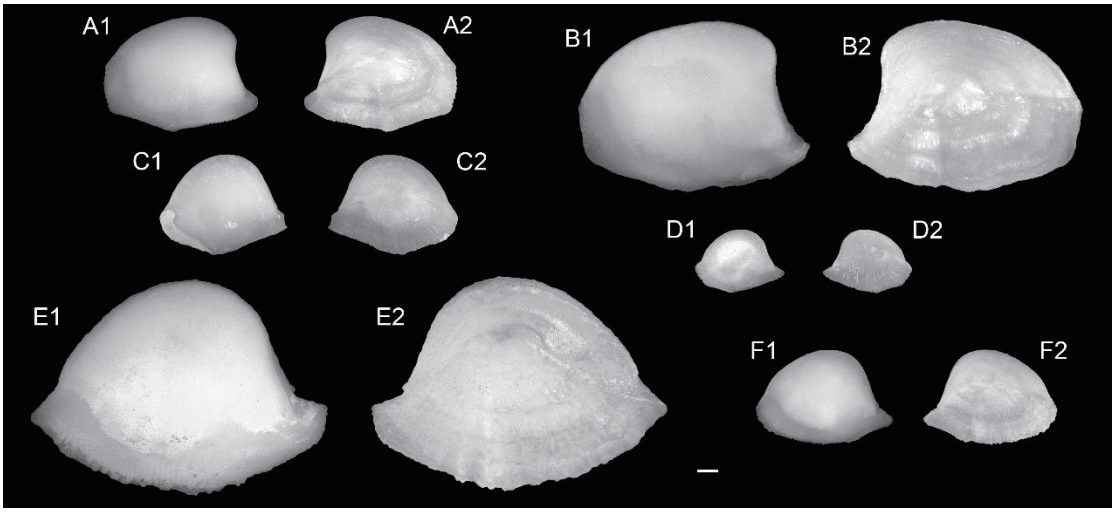

Figure 12. Otoliths (lapilli) of ariid species from Taiwan. A–B, *Arius maculatus*; C–D, *Netuma bilineata*; E–F, *Plicofollis nella*; 1 = ventral view; 2 = dorsal view. A, CHLOL21711, 123.79 mm SL; B, CHLOL21778, 213.06 mm SL; C, CHLOL21676, 125.28 mm SL; D, CHLOL21788, 66.73 mm SL; E, CHLOL5866, 545 mm SL; F, CHLOL21712, 136.72 mm SL. Scale bar = 1 mm.

4.2 How Many Sea Catfishes Are Present in Taiwan? — Molecular Evidence

The results of the NJ analyses, combined with morphological evidence, confirm the presence of only three ariid species in Taiwan: *A. maculatus*, *N. bilineata*, and *P. nella.* However, the NJ analyses frequently revealed that a single *COI* haplotype may represent multiple ariid species, and haplotypes from the same species did not always cluster into monophyletic groups. This phenomenon may be attributed to several factors, including gene flow between species (e.g., hybridization or introgression) or insufficient divergence time between species for complete lineage sorting. Alternatively, it is more likely that the presence of subtle diagnostic characters in ariid fishes and incomplete taxonomic work have led to misidentifications, complicating molecular analyses. Therefore, the NJ analyses could not reveal a one-species-to-one-monophyletic-group relationship.

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

For example, haplotype AH2 was found in specimens identified as *A. arius* and *A. dispar* from China, as well as *A. maculatus* from Taiwan. The Chinese sequences were obtained from GenBank but lack formal publication and are not linked to any verifiable voucher specimens, making their taxonomic validity uncertain. Given that *A. maculatus* is well-supported as a distinct species in our study—validated by multiple voucher specimens deposited in public museums—the presence of the same haplotype in other Arius species suggests either misidentification in the Chinese records or unresolved historical taxonomical issues. This underscores the need for a comprehensive taxonomic reassessment of *Arius* species from China to resolve these discrepancies. Similarly, the NJ analysis for *Arius* revealed that *A. maculatus* from Taiwan (group I in Figure 9) is closely related to *A. dispar* and *A. manillensis* from the Philippines (group II in Figure 9). Referring to the previous fish barcoding studies in the Western Pacific Ocean (Chang et al., 2017; Hou et al., 2018; Thu et al., 2019; Huang et al., 2023), the average K2P genetic distance between these two groups (0.016) falls between intraspecific and congeneric levels, highlighting the need for taxonomical revision of these three species.

The NJ analysis for *Netuma* also suggests that individuals of *N. bilineata* are often misidentified as *N. thalassina.* Additionally, *N. thalassina* appears to comprise multiple cryptic species, as it exhibits a polyphyletic pattern in the NJ analysis (see also Takahashi et al., 2019).

For *P. nella*, specimens from Taiwan formed a monophyletic group with *P. polystaphylodon* from Malaysia (haplotype PH15). However, the Malaysian sequence retrieved from GenBank lacks formal documentation and is not linked to authenticated voucher specimens, raising uncertainty about its taxonomic reliability. Given that *P. nella* is clearly defined both morphologically and genetically in our study, and considering that *P. polystaphylodon* has been historically confused with *P. nella* in previous literature, our results suggest that the Malaysian specimen identified as *P. polystaphylodon* may, in fact, be *P. nella.* Nevertheless, a comprehensive taxonomic reassessment of Malaysian specimens—integrating both morphological and molecular data—is necessary to confirm their true identity.

In addition, we recommend the revision of misidentified Ariidae specimens from Taiwan, such as ASIZP0803238–39 (*N. thalassina*) to *N. bilineata* and ASIZP0900157 (*A. leiotetocephalus*), ASIZP0807329 (*P. polystaphylodon*), and ASIZP0917391 (*P. polystaphylodon*) to *P. nella.* There is also a need to revise the names of Ariidae sequences from Taiwan uploaded to GenBank, such as KU943008–09 (*N. thalassina*) to *N. bilineata.*

Overall, these results emphasize the need for a comprehensive taxonomic revision of Ariidae in the region. Enhanced molecular analyses, combined with detailed morphological studies, are essential to resolve the persistent issues of misidentification and cryptic diversity within this family (Marceniuk et al., 2024).

4.3 Taxonomic Resolution and Regional Implications for Ariidae in Taiwan

Despite the historical use of numerous scientific names in the literature, our study confirms the presence of only three species of Ariidae in Taiwan, belonging to three genera: *A. maculatus*, *N. bilineata*, and *P. nella.* While previous studies suggested the presence of multiple *Arius* species, direct comparison with *A. maculatus* specimens from Japan (the type locality) supports the identification of the Taiwanese *Arius* species, even in the absence of type material. Our comparison with *N. bilineata* specimens described by Takahashi et al. (2019) validated the identity of our *Netuma* species, which has long been misidentified as *N. thalassina*, and we suggest that all *Netuma* specimens from Taiwan should be assigned to *N. bilineata.* The distinct morphological characteristics of *P. nella* made it the easiest species to confirm.

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In summary, the morphological distinctions among these three ariid species are based on the following characteristics: the pattern of tooth patches on the upper jaw, the size of lateral fenestra and lateral ethmoid, the shape of the supraoccipital bone, and the extent of the dorsomedial groove. These morphological features are supported by otolith morphology and molecular evidence. Figure 13 provides a pictorial summary of these distinctions.

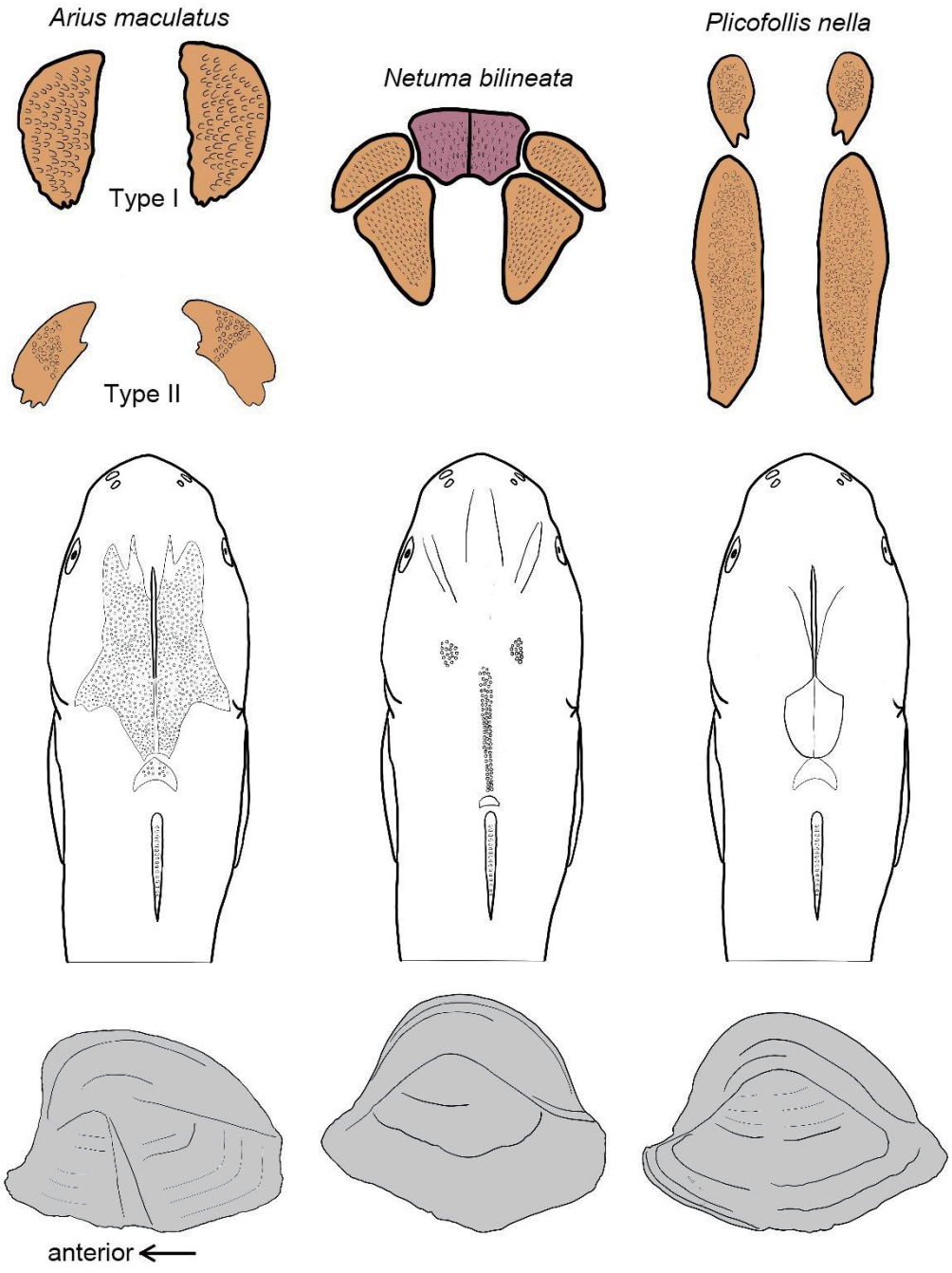

Figure 13. Summary of key morphological differences among ariid species in Taiwan, highlighting distinguishing characteristics of *Arius maculatus*, *Netuma bilineata*, and *Plicofollis nella*. Upper row: tooth patch patterns (orange: palatine tooth patches; dark pink: vomerine tooth patch); middle row: dorsal views of the fish; lower row: lapillus otoliths.

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Our study indicates that the three ariid species in Taiwan exhibit overlapping geographic distributions along the western coastal waters of Taiwan. Based on available records and specimen collection data, we observed no clear evidence of geographic segregation among these species. We recommend that further ecological and biogeographical studies be conducted following our taxonomic revision, as such insights would be valuable for improving conservation strategies and fisheries management of Taiwan's coastal ariid species.

Notably, the diversity of ariid fish in the West Pacific appears to decline with increasing latitude. Ariids are extremely rare in temperate Japanese waters (Y. Kai, pers. comm.), with *A. maculatus*, *N. bilineata*, and *P. nella* being the only three species documented in both Taiwan and Japan (Nakabo, 2013). In contrast, the diversity of sea catfishes increases significantly in lower latitudes, as demonstrated in the Philippines, where Kailola (1999) listed 12 ariid species, including *Arius manillensis*, *Arius venosus*, *Arius dispar*, *A. maculatus*, *Arius utik* (= *Arius oetik*), *Arius arenarius*, *Arius sagor* (= *Hexanematichthys sagor*), *A. thalassinus* (= *N. thalassina*), *A. bilineatus* (= *N. bilineata*), *Arius argyropleuron* (= *Plicofollis argyropleuron*), *A. nella* (= *P. nella*), *Arius crossocheilus* (= *Plicofollis tonggol*). Moreover, Takahashi et al. (2019) described yet another species, *Netuma patriciae*, from the Philippines. However, the identification of these closely related ariid species remains extremely challenging due to the lack of detailed diagnoses and clear species delimitations.

Sea catfishes are economically important in coastal areas of Southeast Asia, yet taxonomic work on this group lags behind, which may pose challenges for fishery management. Although molecular data on sea catfishes exist (Nasihin-Seth et al., 2019; Santo & Quilang, 2011; Quilang & Yu, 2015; Yu & Quilang, 2014), these studies often lack the necessary morphological evidence and voucher specimens, making the DNA sequences insufficient for taxonomic purposes. Our extensive sampling, examination of museum collections, and combination of detailed morphological descriptions with molecular data provide a solid foundation for clarifying the relatively simple taxonomy of this family in Taiwanese waters. This approach also offers valuable insights for resolving more complex taxonomic groups in lower latitudes. However, further studies employing similar methodologies are needed in adjacent regions to ensure comprehensive taxonomic understanding.

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REFERENCES

Acero, A., & Betancur-R, R. (2007). Monophyly, affinities, and subfamilial clades of sea catfishes (Siluriformes: Ariidae). *Ichthyological Exploration of Freshwaters, 18*(9), 133–143.

Aguilera, O. A., Moraes-Santos, H., Costa, S., Ohe, F., Jaramillo, C., & Nogueira, A. (2013). Ariid sea catfishes from the coeval Pirabas (Northeastern Brazil), Cantaure, Castillo (Northwestern Venezuela), and Castilletes (North Colombia) formations (early Miocene), with description of three new species. *Swiss Journal of Palaeontology, 132*, 45–68. https://doi.org/10.1007/s13358-013-0052-4

Aguilera, O., Lopes, R. T., Rodriguez, F., Santos, T. M., Rodrigues-Almeida, C., Almeida, P., Machado, A. S., & Moretti, T. (2020). Fossil sea catfish (Siluriformes; Ariidae) otoliths and in-skull otoliths from the Neogene of the Western Central Atlantic. *Journal of South American Earth Sciences, 101,* 102619. https://doi.org/10.1016/j.jsames.2020.102619

Chang, C. H., Lin, H. Y., Ren, Q., Lin, Y. S., & Shao, K. T. (2016). DNA barcode identification of fish products in Taiwan: Government-commissioned authentication cases. *Food Control, 66*, 38–43. https://doi.org/10.1016/j.foodcont.2016.01.034

Chang, C. H., Shao, K. T., Lin, H. Y., Chiu, Y. C., Lee, M. Y., Liu, S. H., & Lin, P. L. (2017). DNA barcodes of the native ray-finned fishes in Taiwan. *Molecular Ecology Resources, 17*(4), 796–805. https://doi.org/10.1111/1755-0998.12601

Chen, C. H. (2004). *Checklist of the fishes of Penghu.* FRI Special Publication. (In Chinese)

Chen, J. T., & Yu, M.-J. (1985). *A synopsis of the vertebrates of Taiwan* (Revised and enlarged edition). The Commercial Press. (In Chinese)

Chen, J. T. (1954a). *List of common names of the fishes of Taiwan in Chinese, English and Japanese*. Fisheries Agency, Council of Agriculture.

Chen, J. T. (1954b). *Fishes of Taiwan.* Bank of Taiwan. (In Chinese)

Chen, J. T. (1969). *A synopsis of the vertebrates of Taiwan.* Commercial Press. (In Chinese)

Chu, W. S., Hou, Y. Y., Ueng, Y. T., & Wang, J. P. (2012). Correlation Between the Length and Weight of *Arius maculatus* off the Southwestern Coast of Taiwan. *Brazilian Archives of Biology and Technology*, *55*(5), 705–708. https://doi.org/10.1590/S1516-89132012000500009

Chu, W. S., Hou, Y. Y., Ueng, Y. T., Wang, J. P., & Chen, H. C. (2011). Estimates of age, growth and mortality of spotted catfish, *Arius maculatus* (Thunberg, 1792), off the Coast of Yunlin. Southwestern Taiwan, *African Journal of Biotechnology, 10*(68), 15416–15421. http://dx.doi.org/10.5897/AJB11.1552

Cuvier, G., & Valenciennes, A. (1840). *Histoire naturelle des poissons* (Vol. 15). Paris, Chez F. G. Levrault, Siluroïdes, *15*, 1–540. https://doi.org/10.5962/bhl.title.12283

Ferraris, C. J. (2007). Checklist of catfishes, recent and fossil (Osteichthyes: Siluriformes), and catalogue of siluriform primary types. *Zootaxa*, *1418*(1), 1–628. https://doi.org/10.11646/zootaxa.1418.1.1

Günther, A. C. L. G. (1864). *Catalogue of the fishes in the British Museum.* London, British Museum (Natural History). Department of Zoology, 1859–1868. https://doi.org/10.5962/bhl.title.8809

Hou, G., Chen, W. T., Lu, H. S., Cheng, F., & Xie, S. G. (2018). Developing a DNA barcode library for perciform fishes in the South China Sea: Species identification, accuracy and cryptic diversity. *Molecular Ecology Resources, 18*(1), 137–146. https://doi.org/10.1111/1755-0998.12718

Hsiao, P. Y., Wu, Y. L., Lan, K. W., & Lee, L. S. (2017). Seasonal variations of fishery resources structure of Trammel nets in the coastal water of Changyuen Rise, Taiwan. *Journal of The Fisheries Society of Taiwan, 44*(3), 171–183. https://doi.org/10.29822/JFST.201709_44(3).0004

Huang, W. C., Evacitas, F. C., Balisco, R. A., Nañola Jr, C. L., Chou, T. K., Jhuang W. C., Chang, C. W., Shen, K. N., Shao, K. T., & Liao, T. Y. (2023). DNA barcoding of marine teleost fishes (Teleostei) in Cebu, the Philippines, a biodiversity hotspot of the coral triangle. *Scientific Reports, 13*, 14867. https://doi.org/10.1038/s41598-023-41832-9

Jayaram, K. C., & Dhanze, J. R. (1978). Siluroid fishes of India, Burma and Ceylon. 22. A preliminary review of the genera of the family Ariidae (Pisces: Siluroidea). *Matsya, 4*, 42–51.

Jayaram, K. C. (1977). *Aid to the identification of the siluroid fishes of India, Burma, Sri Lanka, Pakistan, and Bangladesh.* Calcutta: Director, Zoological Survey of India.

Kailola, P. J. (1986). Ariidae systematics: comparison of the giant sea catfishes *Arius thalassinus* and A. *bilineatus* of the Indo-Pacific. In Uyeno T., Arai R., Taniuchi T. & Matsuura K. (Eds), *Indo-Pacific Fish Biology: Proceedings of the Second International Conference on Indo-Pacific Fishes* (pp. 540–549). Ichthyological Society of Japan, Tokyo.

Kailola, P. J. (1999). The Living Marine Resources of the Western Central Pacific. In K.E. Carpenter and V.H. Niem (Eds.), *FAO Species Identification Guide for Fishery Purpose* (Vol. 3, pp. 1827–1879). FAO, Rome. http://www.fao.org/docrep/009/x2401e/x2401e00.htm

Kailola, P. J. (2000). Six New Species of Fork-tailed Catfishes (Pisces, Teleostei, Ariidae) from Australia and New Guinea. *The Beagle: Records of the Museums and Art Galleries of the Northern Territory, 16,* 127–144. https://doi.org/10.5962/p.254542

Kailola, P. J. (2004). A Phylogenetic Exploration of the Catfish Family Ariidae (Otophysi: Siluriformes). *The Beagle: Records of the Museums and Art Galleries of the Northern Territory, 20,* 87–116. https://doi.org/10.5962/p.286323

Kimura, S., Imamura, H., Van Quan, N., An., P., T., Biên, Đ., C., Quan Van, N., Và, Q., & Dương, P. T. (2019). *Fishes of Ha Long Bay*. Fisheries Research Laboratory, Mie University.

Kimura, S., Satapoomin, U., & Matsuura, K. (2009). *Fishes of Andaman Sea: west coast of southern Thailand.* National Museum of Nature and Science.

Koeda, K., & Ho, H. C. (2020). *Fishes of Southern Taiwan* (2nd ed., Vol. 1). National Marine Museum of Biology and Aquarium. (In Chinese)

Kottelat, M. (2013). The Fishes of the Inland Waters of Southeast Asia: A Catalogue and Core Bibliography of the Fishes Known to Occur in Freshwaters, Mangroves and Estuaries. *Raffles Bulletin of Zoology, 27,* 1–663.

Kumar, S., Stecher, G., Li, M., Knyaz, C., & Tamura, K. (2018). MEGA X: Molecular Evolutionary Genetics Analysis across Computing Platforms. *Molecular Biology and Evolution, 35*(6), 1547–1549. https://doi.org/10.1093/molbev/msy096

Lee, S. C. (1992). Fish fauna and abundance of some dominant species in the estuary of Tanshui, northwestern Taiwan. *Journal of The Fisheries Society of Taiwan, 19*(4), 263–271. https://doi.org/10.29822/JFST.199212.0004

Lin, C. H., & Chang, C. W. (2012). *Otolith Atlas of Taiwan Fishes*. National Museum of Marine Biology and Aquarium.

Lin, C. H., & Chien, C. W. (2022). Late Miocene otoliths from northern Taiwan: insights into the rarely known Neogene coastal fish community of the subtropical northwest Pacific. *Historical Biology, 34*(2), 361–382. https://doi.org/10.1080/08912963.2021.1916012

Lin, C. H., Wang, L. C., Wang, C. H., & Chang, C. W. (2018). Common early Pleistocene fish otoliths from Niubu in Chia-Yi County, southwestern Taiwan. *Journal of the National Taiwan Museum, 71*(3), 47–68. https://doi.org/10.6532/JNTM.201809_71(3).04

Lin, C. H., Wang, Y. C., Ribas-Deulofeu, L., Chang, C. W., & Li, K. T. (2022). Changes in marine resource consumption over the past 5000 years in southwestern Taiwan revealed by fish otoliths. *Journal of Archaeological Science: Reports, 42,* 103400. https://doi.org/10.1016/j.jasrep.2022.103400

Lin, S. Y. (2010). Sound Production of the Spotted Catfish (*Arius maculatus*) in Cigu lagoon, Tainan, Taiwan [Master's thesis, National Sun Yat-sen University]. National Digital Library of Theses and Dissertations in Taiwan. https://hdl.handle.net/11296/fxtmmg (In Chinese)

Lo, K. C., Teng, S. Y., Wang, Y. C., Lee, M. A., Lin, J. L., Lu, T. H., & Huang, I. L. (2017). Resource structure of an artisanal gillnet fishery in the coastal waters of Tamsui, Taiwan. *Journal of The Fisheries Society of Taiwan, 44*(3), 147–157. https://doi.org/10.29822/JFST.201709_44(3).0002

Malabarba, L. R., & Malabarba, M. C. (2020). Phylogeny and classification of Neotropical fish. In B. Baldisserotto, E. C. Urbinati, & J. E. P. Cyrino (Eds.), *Biology and Physiology of Freshwater Neotropical Fish* (pp. 1–19). Academic Press. https://doi.org/10.1016/B978-0-12-815872-2.00001-4

Marceniuk A. P., & Menezes, N. A. (2007). Systematics of the family Ariidae (Ostariophysi, Siluriformes), with a redefinition of the genera. *Zootaxa, 1416*, 1–126. https://doi.org/10.11646/zootaxa.1416.1.1

Marceniuk, A. P., Bogorodsky, S. V., Mal, A. O., & Alpermann, T. J. (2017). Redescription of the blacktip sea catfish *Plicofollis dussumieri* (Valenciennes) (Siluriformes: Ariidae), with a new record from the Red Sea and notes on the diversity and distribution of *Plicofollis* spp. *Marine Biodiversity, 47*, 1239–1250. https://doi.org/10.1007/s12526-017-0760-x

Marceniuk, A. P., Menezes, N. A., & Britto, M. R. (2012). Phylogenetic analysis of the family Ariidae (Ostariophysi: Siluriformes), with a hypothesis on the monophyly and relationships of the genera. *Zoological Journal of the Linnean Society, 165*(3), 534–669. https://doi.org/10.1111/j.1096-3642.2012.00822.x

Marceniuk, A. P., Oliveira, C., & Ferraris Jr, C. J. (2024). A new classification of the family Ariidae (Osteichthyes: Ostariophysi: Siluriformes) based on combined analyses of morphological and molecular data. *Zoological Journal of the Linnean Society, 200*(2), 426–476. https://doi.org/10.1093/zoolinnean/zlad078

Murray, A. M., & Holmes, R. (2022). Osteology of the cranium and Weberian apparatus of African catfish families (Teleostei: Ostariophysi: Siluriformes) with an assessment of Palaeogene genera. *Vertebrate Anatomy Morphology Palaeontology, 9*(1), 156–191. https://doi.org/10.18435/vamp29382

Nakabo, T. (2013). *Fishes of Japan with Pictorial Keys to the Species* (3rd ed.). Tokai University Press.

Nasihin-Seth, S., Kawamura, G., Nazia, A. K., & Manjaji-Matsumoto, B. M. (2019). DNA barcoding of common catfish in Malaysia. *Aquaculture, Aquarium, Conservation & Legislation, 12*(6), 2212–2220.

Ng, H. H. (2003). *Arius verrucosus*, a new species of freshwater ariid catfish (Teleostei: Ariidae) from the Mekong River. *Occasional papers of the Museum of Zoology the University of Michigan, 734*, 1–14.

Ng, H. H. (2012). The Ariid catfishes of Singapore. *Nature in Singapore, 5,* 211–222.

Nolf, D. (1985). Otolithi Piscium. In H.P. Schultze (Ed.), *Handbook of Palaeoichthyology* (Vol. 10, pp. 1–145). Gustav Fischer Verlag.

Ohe, F. (2000). Otoliths of three species belonging to family Ariidae from East China Sea. *Kaseki No Tomo, 47,* 35–42. (In Japanese)

Ohe, F. (2006). Skulls and otoliths of eleven sea catfishes (Family Ariidae) from Malaysia and one species related to them from the East China Sea. *The Natural Environmental Science Research, 19*, 11–28. https://doi.org/10.32280/nesr.19.0_11 (In Japanese)

Palandačić, A., Diripasko O. A., Kirchner, S., Stefanov, T., & Bogutskaya N. G. (2024). An integrative approach highlights the discrepancy in the genetic, phenotypic, and presumptive taxonomic structure of *Phoxinus* (Actinopterygii, Leuciscidae, Phoxininae) in Bulgaria. *Journal of Fish Biology, 105*(1), 214–238. https://doi.org/10.1111/jfb.15765

Pan, C. W., Chen, M. H., Chou, L. S., & Lin, H. J. (2016). The Trophic Significance of the Indo-Pacific Humpback Dolphin, *Sousa chinensis*, in Western Taiwan. *PLoS ONE, 11*(10), e0165283. https://doi.org/10.1371/journal.pone.0165283

Psomadakis, P. N., Osmany, H. B., & Moazzam, M. (2015). *Field identification guide to the living marine resources of Pakistan.* FAO (pp. 163-167). https://openknowledge.fao.org/handle/20.500.14283/i4932e

Psomadakis, P. N., Thein, H., Russell, B. C., & Tun, M. T. (2019). *Field identification guide to the living marine resources of Myanmar.* FAO and MOALI (pp. 306-311). https://openknowledge.fao.org/items/1109bcd6-c6a5-434e-b2f9-d171d0df5aa4

Quilang, J. P., & Yu, S. C. S. (2015). DNA barcoding of commercially important catfishes in the Philippines. *Mitochondrial DNA, 26*(3), 435–444. https://doi.org/10.3109/19401736.2013.855897

Randall, J. E., & Lim, K. K. P. (2000). A Checklist of the Fishes of the South China Sea. *The Raffles Bulletin of Zoology, 8,* 569–667.

Ranwez, V., Douzery, E. J. P., Cambon, C., Chantret, N., & Delsuc, F. (2018). MACSE v2: Toolkit for the alignment of coding sequences accounting for frameshifts and stop codons. *Molecular Biology and Evolution, 35*(10), 2582–2584. https://doi.org/10.1093/molbev/msy159

Santos, B. S., & Quilang, J. P. (2011). DNA Barcoding of Arius Species (Siluriformes: Ariidae) in Laguna de Bay, Philippines Using the Cytochrome C Oxidase Subunit 1 Gene. *Philippine Agricultural Scientist, 94*(2), 205–210.

DOI: 10.29677/MR.202506_5(1).0004

Shao, K. T. (2024). Taiwan Fish Database. http://fishdb.sinica.edu.tw (Nov. 2024).

Shen, S. C., & Wu, K.-Y. (2011) *Fishes of Taiwan.* National Museum of Marine Biology & Aquarium. (In Chinese)

Shen, S. C. (1984). *Synopsis of Fishes of Taiwan.* Southern Materials Center Inc. (In Chinese)

Shen, S. C., Lee, S. C., Shao, K. T., MoK, H. K., Chen, C. T., & Chen, C. H. (1993). *Fishes of Taiwan.* Department of Zoology, National Taiwan University. (In Chinese)

Sonoyama, T., Ogimoto, K., Hori, S., Uchida, Y., & Kawano, M. (2020). An annotated checklist of marine fishes of the Sea of Japan off Yamaguchi Prefecture, Japan, with 74 new records. *Bulletin of the Kagoshima University Museum, 11,* 1–152.

Su, N. J., Lu, Y. S., Cheng, C. Y., Huang, L. C., & Li, C. H. (2017). Investigation on fishing activity and catch composition of coastal gillnet fisheries in waters off northwestern Taiwan. *Journal of The Fisheries Society of Taiwan, 44*(3), 159–169. https://doi.org/10.29822/JFST.201709_44(3).0003

Takahashi, Y., Kimura, S., & Motomrua, H. (2019). A new sea catfish, *Netuma patriciae* (Siluriformes: Ariidae), from the Philippines. *Ichthyological Research, 67*(2), 264–273. https://doi.org/10.1007/s10228-019-00721-w

Thu, P. T., Huang W. C., Chou, T. K., Van Quan, N., Van Chien, P., Li, F., Shao, K. T., & Liao, T. Y. (2019). DNA barcoding of coastal ray-finned fishes in Vietnam. *PLoS ONE, 14*(9), e0222631. https://doi.org/10.1371/journal.pone.0222631

Thunberg, C. P. (1792). Tvånne Japanske fiskar. Kongliga Vetenskaps-Academiens Handlingar. *Stockholm, L.L. Grefing, 13,* 1–324.

Tzeng, W. N., & Wang, Y. T. (1997). Movement of Fish Larvae with Tidal Flux in the Tanshui River Estuary, Northern Taiwan. *Zoological Studies, 36*(3), 178–185.

Xiao, J., Lyu, S., Iqbal, T. H., Hajisamae, S., Tsim, K. W. K., & Wang, W. X. (2022). Molecular phylogenetic and morphometric analysis of population structure and demography of endangered threadfin fish *Eleutheronema* from Indo-Pacific waters. *Scientific Reports*, *12,* 3455. https://doi.org/10.1038/s41598-022-07342-w

Yu, S. C. S., & Quilang, J. P. (2014). Molecular Phylogeny of Catfishes (Teleostei: Siluriformes) in the Philippines Using the Mitochondrial Genes COI, Cyt b, 16S rRNA, and the Nuclear Genes Rag1 and Rag2. *Philippine Journal of Science, 143*(2), 187–198.

DOI: 10.29677/MR.202506_5(1).0004

Appendix

Appendix 1. Fresh specimens of Ariidae from Taiwan.

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL2007	*Arius maculatus*	277.8	366	2020/8/21	WQ
CHLOL21677	*Arius maculatus*	273.87	352	2020/8/21	WQ
CHLOL1318	*Arius maculatus*	251.08	302	2020/8/21	WQ
CHLOL1319	*Arius maculatus*	261.46	296	2020/8/21	WQ
CHLOL1320	*Arius maculatus*	246.13	280	2020/8/21	WQ
CHLOL1321	*Arius maculatus*	238.59	240	2020/8/21	WQ
CHLOL1322	*Arius maculatus*	245.51	210	2020/8/21	WQ
CHLOL1323	*Arius maculatus*	300.29	388	2020/8/21	WQ
CHLOL21679	*Arius maculatus*	337.33	672	2021/10/31	WZ
ASIZP0081571	*Arius maculatus*	317.44	584	2021/10/31	WZ
CHLOL21686	*Arius maculatus*	321.48	534	2020/10/23	WQ
CHLOL21687	*Arius maculatus*	320.86	522	2020/10/23	WQ
CHLOL21689	*Arius maculatus*	281.27	428	2020/10/23	WQ
CHLOL21694	*Arius maculatus*	270.03	364	2020/11/25	WQ
CHLOL21696	*Arius maculatus*	265.67	316	2021/2/27	WZ
CHLOL21697	*Arius maculatus*	251.61	340	2021/2/27	WZ
CHLOL21698	*Arius maculatus*	257.74	336	2021/2/27	WZ
CHLOL21699	*Arius maculatus*	250.44	300	2021/2/27	WZ
CHLOL21701	*Arius maculatus*	252.74	302	2021/2/27	WZ
CHLOL21702	*Arius maculatus*	257.12	364	2021/2/27	WZ
CHLOL21703	*Arius maculatus*	264.64	380	2021/2/27	WZ
CHLOL21704	*Arius maculatus*	296.1	508	2021/2/27	WZ
CHLOL21705	*Arius maculatus*	277.87	458	2021/2/27	WZ
CHLOL21706	*Arius maculatus*	305.41	600	2021/2/27	WZ
CHLOL21707	*Arius maculatus*	356.43	1,124	2021/2/27	WZ
CHLOL21708	*Arius maculatus*	285.92	520	2021/2/27	WZ
CHLOL21710	*Arius maculatus*	251.23	338	2021/1/17	DX
CHLOL21711	*Arius maculatus*	123.79	30	2020/9/25	DS
CHLOL21717	*Arius maculatus*	245.97	294	2021/5/5	LF
CHLOL21718	*Arius maculatus*	224.8	270	2021/5/5	LF
CHLOL21719	*Arius maculatus*	218.35	246	2021/5/5	LF
CHLOL21720	*Arius maculatus*	309.65	676	2021/3/28	WZ
CHLOL21721	*Arius maculatus*	297.93	616	2021/3/28	WZ
CHLOL21722	*Arius maculatus*	285.12	488	2021/3/28	WZ

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21723	*Arius maculatus*	284.85	520	2021/3/28	WZ
CHLOL21724	*Arius maculatus*	269.72	444	2021/3/28	WZ
CHLOL21725	*Arius maculatus*	257.46	384	2021/3/28	WZ
CHLOL21726	*Arius maculatus*	268.04	398	2021/3/28	WZ
CHLOL21727	*Arius maculatus*	270.07	370	2021/3/28	WZ
CHLOL21728	*Arius maculatus*	248.76	380	2021/3/28	WZ
CHLOL21730	*Arius maculatus*	239.42	290	2021/3/28	WZ
CHLOL21731	*Arius maculatus*	260.89	386	2021/3/28	WZ
CHLOL21732	*Arius maculatus*	266.74	380	2021/3/28	WZ
CHLOL21733	*Arius maculatus*	265.34	390	2021/3/28	WZ
CHLOL21734	*Arius maculatus*	266.21	352	2021/3/28	WZ
ASIZP0081572	*Arius maculatus*	259.82	382	2021/3/28	WZ
CHLOL21735	*Arius maculatus*	277.38	508	2021/3/28	WZ
CHLOL21736	*Arius maculatus*	281.8	492	2021/3/28	WZ
CHLOL21737	*Arius maculatus*	286.49	518	2021/3/28	WZ
CHLOL21738	*Arius maculatus*	290.91	496	2021/3/28	WZ
CHLOL21739	*Arius maculatus*	252.93	318	2021/3/28	WZ
CHLOL21740	*Arius maculatus*	249.46	314	2021/3/28	WZ
CHLOL21741	*Arius maculatus*	254.56	316	2021/3/28	WZ
CHLOL21742	*Arius maculatus*	267	342	2021/3/28	WZ
CHLOL21743	*Arius maculatus*	247.45	316	2021/3/28	WZ
ASIZP0081573	*Arius maculatus*	248.77	324	2021/3/28	WZ
CHLOL21744	*Arius maculatus*	259.02	370	2021/3/28	WZ
CHLOL21745	*Arius maculatus*	270.51	370	2021/3/28	WZ
CHLOL21746	*Arius maculatus*	269.7	416	2021/3/28	WZ
CHLOL21747	*Arius maculatus*	284.79	502	2021/3/28	WZ
CHLOL21748	*Arius maculatus*	285.23	424	2021/3/28	WZ
CHLOL21749	*Arius maculatus*	265.13	320	2020/9/19	WZ
CHLOL21750	*Arius maculatus*	290.21	368	2020/9/19	WZ
CHLOL21751	*Arius maculatus*	255.41	312	2020/9/19	WZ
CHLOL21752	*Arius maculatus*	254.03	304	2020/9/19	WZ
CHLOL21753	*Arius maculatus*	258.9	304	2020/9/19	WZ
CHLOL21755	*Arius maculatus*	269.95	390	2020/9/19	WZ
CHLOL21756	*Arius maculatus*	268.4	410	2020/9/19	WZ
CHLOL21757	*Arius maculatus*	276.53	396	2020/9/19	WZ
CHLOL21758	*Arius maculatus*	308.3	582	2020/9/19	WZ
CHLOL21760	*Arius maculatus*	258.33	306	2021/3/28	WZ

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21761	*Arius maculatus*	259.02	320	2021/3/28	WZ
CHLOL21762	*Arius maculatus*	267.61	402	2021/3/28	WZ
CHLOL21763	*Arius maculatus*	265.86	398	2021/3/28	WZ
CHLOL21764	*Arius maculatus*	288.72	550	2021/3/28	WZ
CHLOL21765	*Arius maculatus*	302.88	490	2021/3/28	WZ
CHLOL21766	*Arius maculatus*	305.81	632	2021/3/28	WZ
CHLOL21767	*Arius maculatus*	305.78	656	2021/3/28	WZ
CHLOL21768	*Arius maculatus*	255.11	294	2021/3/6	DS
CHLOL21769	*Arius maculatus*	263.63	406	2021/3/6	DS
CHLOL21770	*Arius maculatus*	285.36	622	2021/3/6	DS
CHLOL21771	*Arius maculatus*	308.22	594	2021/3/6	DS
CHLOL21772	*Arius maculatus*	341.22	856	2021/3/6	DS
NTMP1732	*Arius maculatus*	247.14	270	2021/4/29	Keelung
NTMP1733	*Arius maculatus*	289.69	568	2021/4/13	JG
NMMBP37239	*Arius maculatus*	303.06	564	2021/4/13	JG
NTMP1734	*Arius maculatus*	305.2	614	2021/4/13	JG
NMMBP37231	*Arius maculatus*	307.7	608	2021/4/13	JG
ASIZP0081575	*Arius maculatus*	358.83	872	2021/4/13	JG
NMMBP37232	*Arius maculatus*	357.31	1,018	2021/4/13	JG
NMMBP37233	*Arius maculatus*	361.34	1,088	2021/4/13	JG
NTMP1735	*Arius maculatus*	293.9	484	2021/7/12	TS
NTMP1736	*Arius maculatus*	265.3	356	2021/7/9	ZW
NMMBP37226	*Arius maculatus*	255.47	312	2021/7/1	LPP
CHLOL21777	*Arius maculatus*	260.45	330	2021/7/1	LPP
NTMP1737	*Arius maculatus*	235.98	188	2021/7/1	LPP
CHLOL21778	*Arius maculatus*	213.06	154	2021/7/1	LPP
CHLOL21779	*Arius maculatus*	192.18	122	2021/7/1	LPP
NMMBP37234	*Arius maculatus*	382.27	1,080	2021/7/23	JG
NMMBP37235	*Arius maculatus*	359.02	868	2021/7/23	JG
NMMBP37236	*Arius maculatus*	346.73	730	2021/7/23	JG
NMMBP37244	*Arius maculatus*	320.37	616	2021/7/23	JG
NMMBP37243	*Arius maculatus*	310.51	596	2021/7/23	JG
ASIZP0081576	*Arius maculatus*	308.7	518	2021/7/23	JG
ASIZP0081580	*Arius maculatus*	303.63	638	2021/8/15	DS
ASIZP0081581	*Arius maculatus*	265.49	416	2021/8/15	DS
NTMP1738	*Arius maculatus*	282.54	444	2021/8/29	DS
ASIZP0081582	*Arius maculatus*	248.81	314	2021/8/29	DS

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
NTMP1739	*Arius maculatus*	253.91	234	2021/8/29	DS
NTMP1740	*Arius maculatus*	237.55	238	2021/8/29	DS
NTMP1741	*Arius maculatus*	246.44	296	2021/9/24	WZ
NMMBP37219	*Arius maculatus*	319.49	614	2021/9/24	WZ
CHLOL21790	*Arius maculatus*	119.05	30	2022/12/10	MZ
CHLOL21791	*Arius maculatus*	111.93	24	2022/12/10	MZ
ASIZP0081589	*Arius maculatus*	112.15	22	2022/12/10	MZ
CHLOL21792	*Arius maculatus*	101.56	16	2022/12/10	MZ
NMMBP37220	*Arius maculatus*	237.72	292	2021/8/6	WZ
NMMBP37229	*Arius maculatus*	260.21	368	2021/8/6	WZ
NMMBP37228	*Arius maculatus*	253.62	326	2021/8/6	WZ
NMMBP37227	*Arius maculatus*	262.41	306	2021/8/6	WZ
NTMP1742	*Arius maculatus*	265.15	378	2021/8/6	WZ
CHLOL21795	*Arius maculatus*	185.95	98	2021/12/8	LPP
NMMBP37238	*Arius maculatus*	252.84	250	2021/12/8	LPP
NMMBP37237	*Arius maculatus*	330.24	798	2021/11/12	DS
NMMBP37241	*Arius maculatus*	283.93	452	2021/11/12	DS
NMMBP37242	*Arius maculatus*	257.13	332	2021/11/12	DS
NMMBP37240	*Arius maculatus*	266.23	400	2021/9/24	WZ
NTMP1743	*Arius maculatus*	282.09	386	2021/9/24	WZ
NMMBP37230	*Arius maculatus*	269.25	476	2021/8/6	WZ
NMMBP37224	*Arius maculatus*	283.92	468	2021/8/6	WZ
NMMBP37225	*Arius maculatus*	277.15	416	2021/8/6	WZ
NMMBP37247	*Arius maculatus*	276.99	402	2021/8/6	WZ
NMMBP37245	*Arius maculatus*	261.52	354	2021/8/6	WZ
NTMP1744	*Arius maculatus*	254.31	274	2021/8/6	WZ
NTMP1745	*Arius maculatus*	284.01	406	2021/8/6	WZ
NTMP1746	*Arius maculatus*	264.65	410	2021/8/6	WZ
NTMP1747	*Arius maculatus*	280.06	372	2021/8/6	WZ
NTMP1748	*Arius maculatus*	309.33	588	2021/8/6	WZ
CHLOL21797	*Arius maculatus*	277.14	406	2021/8/6	WZ
CHLOL21798	*Arius maculatus*	275.37	424	2021/8/6	WZ
CHLOL21799	*Arius maculatus*	273.85	460	2021/8/6	WZ
CHLOL21800	*Arius maculatus*	255.72	540	2021/8/6	WZ
CHLOL21801	*Arius maculatus*	260.88	576	2021/8/6	WZ
CHLOL21802	*Arius maculatus*	278.37	638	2021/8/6	WZ
CHLOL21803	*Arius maculatus*	295.83	688	2021/8/6	WZ

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21804	*Arius maculatus*	237.56	492	2021/8/6	WZ
CHLOL21805	*Arius maculatus*	263.93	564	2021/8/6	WZ
CHLOL21806	*Arius maculatus*	275.26	600	2021/8/6	WZ
CHLOL21807	*Arius maculatus*	283.7	580	2021/8/6	WZ
CHLOL21808	*Arius maculatus*	276.89	662	2021/8/6	WZ
CHLOL21809	*Arius maculatus*	263.92	602	2021/10/28	BO
CHLOL21810	*Arius maculatus*	281.38	730	2021/10/28	BO
NMMBP37246	*Arius maculatus*	279.7	372	2021/9/24	WZ
NMMBP37222	*Arius maculatus*	271.99	396	2021/9/24	WZ
NMMBP37223	*Arius maculatus*	262.09	360	2021/9/24	WZ
NMMBP37221	*Arius maculatus*	269.56	384	2021/9/24	WZ
CHLOL21818	*Arius maculatus*	97.84	14	2022/12/10	MZ
CHLOL21819	*Arius maculatus*	92.95	14	2022/12/10	MZ
CHLOL1324	*Netuma bilineata*	307.85	530	2020/8/21	WQ
CHLOL1325	*Netuma bilineata*	301.53	470	2020/8/21	WQ
ASIZP0081570	*Netuma bilineata*	299.8	466	2020/8/21	WQ
CHLOL1327	*Netuma bilineata*	291.18	454	2020/8/21	WQ
CHLOL1328	*Netuma bilineata*	296	430	2020/8/21	WQ
CHLOL1388	*Netuma bilineata*	237.85	302	2020/9/5	CS
CHLOL1389	*Netuma bilineata*	233.14	252	2020/9/5	CS
CHLOL2008	*Netuma bilineata*	212.56	230	2020/9/5	CS
CHLOL21681	*Netuma bilineata*	221.85	234	2020/9/19	WZ
CHLOL21682	*Netuma bilineata*	215.6	224	2020/9/19	WZ
CHLOL21683	*Netuma bilineata*	212.07	202	2020/9/19	WZ
CHLOL21684	*Netuma bilineata*	213.03	204	2020/9/19	WZ
CHLOL21700	*Netuma bilineata*	344.37	814	2020/11/19	BO
CHLOL21709	*Netuma bilineata*	268.92	376	2021/1/14	BO
CHLOL21754	*Netuma bilineata*	221.3	236	2020/9/19	WZ
NTMP1749	*Netuma bilineata*	306.37	678	2021/7/12	TS
NTMP1750	*Netuma bilineata*	273.1	428	2021/7/12	TS
NTMP1751	*Netuma bilineata*	272.25	468	2021/7/12	TS
NTMP1752	*Netuma bilineata*	368.51	1,078	2021/7/12	TS
NTMP1753	*Netuma bilineata*	263.51	398	2021/7/12	TS
NTMP1754	*Netuma bilineata*	366.31	1,128	2021/7/12	TS
NTMP1755	*Netuma bilineata*	370.58	1,068	2021/7/12	TS
NMMBP37263	*Netuma bilineata*	313.47	854	2021/7/12	TS
NMMBP37264	*Netuma bilineata*	313.65	768	2021/7/12	TS

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21780	*Netuma bilineata*	187.84	152	2021/8/7	WZ
CHLOL21781	*Netuma bilineata*	208.54	212	2021/8/7	WZ
ASIZP0081577	*Netuma bilineata*	196.18	170	2021/8/7	WZ
ASIZP0081578	*Netuma bilineata*	195.09	178	2021/8/7	WZ
ASIZP0081579	*Netuma bilineata*	193.36	178	2021/8/7	WZ
CHLOL21782	*Netuma bilineata*	198.01	184	2021/8/7	WZ
CHLOL21783	*Netuma bilineata*	187.33	174	2021/8/7	WZ
CHLOL21784	*Netuma bilineata*	200.64	184	2021/8/7	WZ
CHLOL21785	*Netuma bilineata*	216.31	260	2021/8/7	WZ
CHLOL21786	*Netuma bilineata*	205.9	232	2021/8/7	WZ
NTMP1756	*Netuma bilineata*	284.78	244	2021/9/24	WZ
NMMBP37276	*Netuma bilineata*	302.99	524	2021/9/9	LF
NMMBP37278	*Netuma bilineata*	302.47	564	2021/9/9	LF
NMMBP37275	*Netuma bilineata*	276.96	448	2021/9/9	LF
NMMBP37277	*Netuma bilineata*	335.39	710	2021/9/9	LF
ASIZP0081583	*Netuma bilineata*	326.26	700	2021/9/9	LF
ASIZP0081584	*Netuma bilineata*	277.73	414	2021/9/9	LF
ASIZP0081585	*Netuma bilineata*	302.73	580	2021/9/9	LF
ASIZP0081586	*Netuma bilineata*	296.29	562	2021/9/9	LF
CHLOL21787	*Netuma bilineata*	327.42	864	2021/8/3	LF
CHLOL21788	*Netuma bilineata*	66.73	5.331	2021/8/3	LF
CHLOL21789	*Netuma bilineata*	337.32	764	2021/8/3	LF
ASIZP0081587	*Netuma bilineata*	369.69	1,124	2021/8/3	LF
ASIZP0081588	*Netuma bilineata*	344.15	874	2021/8/3	LF
NTMP1757	*Netuma bilineata*	200.16	200	2021/10/6	WZ
NTMP1758	*Netuma bilineata*	191.66	158	2021/10/6	WZ
NTMP1759	*Netuma bilineata*	217.66	228	2021/10/6	WZ
NTMP1760	*Netuma bilineata*	222.37	250	2021/10/6	WZ
NTMP1761	*Netuma bilineata*	198.16	176	2021/10/6	WZ
NTMP1762	*Netuma bilineata*	205.18	190	2021/10/6	WZ
NTMP1763	*Netuma bilineata*	198.78	218	2021/10/6	WZ
NTMP1764	*Netuma bilineata*	201.88	184	2021/10/6	WZ
NTMP1765	*Netuma bilineata*	205.31	206	2021/10/6	WZ
NTMP1766	*Netuma bilineata*	221.71	262	2021/10/6	WZ
NMMBP37257	*Netuma bilineata*	205	204	2021/10/6	WZ
NMMBP37262	*Netuma bilineata*	196.08	184	2021/10/6	WZ
NMMBP37261	*Netuma bilineata*	224.7	276	2021/10/6	WZ

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
NMMBP37256	*Netuma bilineata*	204.56	210	2021/10/6	WZ
NMMBP37260	*Netuma bilineata*	210.69	226	2021/10/6	WZ
NMMBP37255	*Netuma bilineata*	203.13	204	2021/9/24	WZ
ASIZP0081592	*Netuma bilineata*	182.16	126	2021/9/24	WZ
NMMBP37250	*Netuma bilineata*	212.8	226	2021/9/24	WZ
NMMBP37258	*Netuma bilineata*	200.98	176	2021/9/24	WZ
NMMBP37259	*Netuma bilineata*	208.13	185	2021/9/24	WZ
NMMBP37269	*Netuma bilineata*	190.28	140	2021/9/24	WZ
NMMBP37251	*Netuma bilineata*	211.18	207	2021/9/24	WZ
CHLOL21794	*Netuma bilineata*	218.94	231	2021/9/24	WZ
ASIZP0081593	*Netuma bilineata*	211.05	207	2021/9/24	WZ
NMMBP37254	*Netuma bilineata*	305.99	544	2021/8/3	LF
NMMBP37253	*Netuma bilineata*	306.14	530	2021/8/3	LF
NMMBP37274	*Netuma bilineata*	328.04	646	2021/8/3	LF
NMMBP37273	*Netuma bilineata*	345.28	778	2021/8/3	LF
NMMBP37252	*Netuma bilineata*	203.2	160	2021/9/24	WZ
NMMBP37249	*Netuma bilineata*	215.64	218	2021/9/24	WZ
NMMBP37271	*Netuma bilineata*	203.92	186	2021/9/24	WZ
NMMBP37272	*Netuma bilineata*	203.63	162	2021/9/24	WZ
NMMBP37270	*Netuma bilineata*	205.57	190	2021/9/24	WZ
NMMBP37267	*Netuma bilineata*	197.72	166	2021/9/24	WZ
NMMBP37266	*Netuma bilineata*	200.61	192	2021/9/24	WZ
NMMBP37265	*Netuma bilineata*	194.46	144	2021/9/24	WZ
NMMBP37268	*Netuma bilineata*	183.33	132	2021/9/24	WZ
CHLOL1316	*Plicofollis nella*	268.88	460	2020/9/5	CS
CHLOL1317	*Plicofollis nella*	257.72	416	2020/9/5	CS
CHLOL1326	*Plicofollis nella*	265.95	410	2020/9/5	CS
CHLOL1383	*Plicofollis nella*	263.09	374	2020/9/5	CS
CHLOL1384	*Plicofollis nella*	252.3	350	2020/9/5	CS
CHLOL1390	*Plicofollis nella*	239.33	344	2020/9/5	CS
CHLOL1385	*Plicofollis nella*	236.08	302	2020/9/5	CS
CHLOL1386	*Plicofollis nella*	235.07	286	2020/9/5	CS
CHLOL21678	*Plicofollis nella*	231.78	274	2020/9/5	CS
CHLOL1387	*Plicofollis nella*	236.51	272	2020/9/5	CS
CHLOL5782	*Plicofollis nella*	680	6,126	2021/1/13	LF
CHLOL5783	*Plicofollis nella*	620	4,728	2021/1/13	LF
CHLOL5866	*Plicofollis nella*	545	3,718	2021/1/13	LF

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21680	*Plicofollis nella*	370.04	1,056	2021/1/13	LF
CHLOL21685	*Plicofollis nella*	352.13	842	2020/10/23	WQ
CHLOL21688	*Plicofollis nella*	313.48	608	2020/10/23	WQ
CHLOL21690	*Plicofollis nella*	433.58	1,564	2020/10/11	ZW
CHLOL21691	*Plicofollis nella*	389.7	1,312	2020/10/11	ZW
CHLOL21692	*Plicofollis nella*	354.96	908	2020/10/11	ZW
CHLOL21693	*Plicofollis nella*	340.3	882	2020/10/11	ZW
CHLOL21695	*Plicofollis nella*	387.58	1,244	2021/6/29	WQ
NTMP1767	*Plicofollis nella*	544.69	2,730	2021/6/29	WQ
CHLOL21712	*Plicofollis nella*	136.72	46	2021/10/28	Keelung
CHLOL21713	*Plicofollis nella*	357.89	904	2020/11/25	WQ
CHLOL21714	*Plicofollis nella*	304.51	640	2020/11/25	WQ
CHLOL21715	*Plicofollis nella*	303.65	578	2020/11/25	WQ
CHLOL21716	*Plicofollis nella*	303.79	622	2020/11/25	WQ
CHLOL5784	*Plicofollis nella*	585	4,196	2021/1/13	LF
CHLOL5785	*Plicofollis nella*	550	3,142	2021/1/13	LF
CHLOL5786	*Plicofollis nella*	435	1,544	2021/1/13	LF
CHLOL5860	*Plicofollis nella*	635	4,938	2021/1/13	LF
CHLOL5861	*Plicofollis nella*	557	3,450	2021/1/13	LF
CHLOL5862	*Plicofollis nella*	535	3,172	2021/1/13	LF
CHLOL5863	*Plicofollis nella*	555	3,340	2021/1/13	LF
CHLOL5864	*Plicofollis nella*	451.2	1,974	2021/1/13	LF
CHLOL5865	*Plicofollis nella*	382.51	1,066	2021/1/13	LF
CHLOL21729	*Plicofollis nella*	344.88	852	2021/3/28	WZ
CHLOL21759	*Plicofollis nella*	239.65	316	2021/3/28	WZ
NMMBP37301	*Plicofollis nella*	272.03	426	2021/3/6	DS
NMMBP37303	*Plicofollis nella*	275.77	408	2021/3/6	DS
NMMBP37302	*Plicofollis nella*	290.66	524	2021/3/6	DS
NMMBP37300	*Plicofollis nella*	278.93	462	2021/3/6	DS
CHLOL21773	*Plicofollis nella*	389.81	1,442	2020/12/18	WQ
CHLOL21774	*Plicofollis nella*	375.5	1,356	2020/12/18	WQ
CHLOL21775	*Plicofollis nella*	324.38	752	2020/12/18	WQ
CHLOL21776	*Plicofollis nella*	331.9	858	2020/12/18	WQ
ASIZP0081574	*Plicofollis nella*	309.81	694	2020/12/18	WQ
NMMBP37285	*Plicofollis nella*	306.21	624	2020/12/18	WQ
NTMP1768	*Plicofollis nella*	359.81	1,144	2021/7/9	ZW
NTMP1769	*Plicofollis nella*	484.71	2,410	2021/7/17	Keelung

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
NTMP1770	*Plicofollis nella*	449.91	1,802	2021/7/23	JG
NTMP1771	*Plicofollis nella*	433.94	1,622	2021/7/23	JG
NTMP1772	*Plicofollis nella*	399.86	1,346	2021/7/23	JG
NMMBP37289	*Plicofollis nella*	275.44	522	2021/8/7	WZ
NMMBP37290	*Plicofollis nella*	285.94	614	2021/8/7	WZ
NMMBP37288	*Plicofollis nella*	278.35	574	2021/8/7	WZ
NMMBP37287	*Plicofollis nella*	304.71	662	2021/8/7	WZ
NMMBP37286	*Plicofollis nella*	300.38	584	2021/8/7	WZ
NMMBP37308	*Plicofollis nella*	382.22	1,262	2021/8/10	LF
NMMBP37307	*Plicofollis nella*	406.16	1,392	2021/8/10	LF
NMMBP37306	*Plicofollis nella*	408.02	1,472	2021/8/10	LF
NMMBP37305	*Plicofollis nella*	380.81	1,190	2021/8/10	LF
NMMBP37304	*Plicofollis nella*	383.85	1,220	2021/8/10	LF
NTMP1773	*Plicofollis nella*	409.99	1,472	2021/8/10	LF
NMMBP37279	*Plicofollis nella*	317.74	770	2021/8/29	DS
NTMP1774	*Plicofollis nella*	267.1	454	2021/8/29	DS
NTMP1775	*Plicofollis nella*	310.35	628	2021/9/24	WZ
NMMBP37293	*Plicofollis nella*	249.66	342	2021/10/6	WZ
NMMBP37294	*Plicofollis nella*	254.31	382	2021/10/6	WZ
ASIZP0081590	*Plicofollis nella*	274.64	448	2021/10/6	WZ
NMMBP37292	*Plicofollis nella*	241.77	312	2021/10/6	WZ
NMMBP37291	*Plicofollis nella*	255.71	336	2021/10/6	WZ
NMMBP37299	*Plicofollis nella*	254.59	366	2021/10/6	WZ
NMMBP37298	*Plicofollis nella*	271.99	442	2021/10/6	WZ
NMMBP37297	*Plicofollis nella*	246.44	336	2021/10/6	WZ
NMMBP37296	*Plicofollis nella*	318.05	808	2021/10/6	WZ
NMMBP37295	*Plicofollis nella*	293.38	656	2021/10/6	WZ
NMMBP37280	*Plicofollis nella*	246.84	330	2021/10/6	WZ
NMMBP37282	*Plicofollis nella*	247.12	334	2021/10/6	WZ
NTMP1776	*Plicofollis nella*	262.8	408	2021/10/6	WZ
CHLOL21793	*Plicofollis nella*	303.12	706	2021/10/6	WZ
ASIZP0081591	*Plicofollis nella*	341.27	964	2021/10/6	WZ
NMMBP37284	*Plicofollis nella*	285.51	518	2021/8/3	LF
NMMBP37283	*Plicofollis nella*	296.1	558	2021/8/3	LF
CHLOL21796	*Plicofollis nella*	460	1,980	2021/12/8	LPP
NMMBP-37281	*Plicofollis nella*	323.38	354	2021/9/24	WZ
CHLOL21811	*Plicofollis nella*	450	1,574	2021/9/9	LF

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	Species	SL (mm)	Weight (g)	Date	Sampling site
CHLOL21812	*Plicofollis nella*	440	1,726	2021/9/9	LF
CHLOL21813	*Plicofollis nella*	500	2,344	2021/9/9	LF
ASIZP0081594	*Plicofollis nella*	580	3,684	2021/9/9	LF
CHLOL21814	*Plicofollis nella*	600	3,908	2021/8/10	LF
CHLOL21815	*Plicofollis nella*	485	2,088	2021/8/10	LF
CHLOL21816	*Plicofollis nella*	435	1,376	2021/8/10	LF
CHLOL21817	*Plicofollis nella*	440	1,700	2021/8/10	LF

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Appendix 2. Museum specimens of Ariidae.

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
ASIZP0058007A	*Netuma thalassina*	*Netuma bilineata*	132.33	1990/5/1	WQ
ASIZP0058007B	*Netuma thalassina*	*Netuma bilineata*	171.39	1995/5/1	WQ
ASIZP0058069	*Arius arius*	*Arius maculatus*	154.83	1991/6/12	TX
ASIZP0058255	*Plicofollis polystaphylodon*	*Plicofollis nella*	134.87	1996/11/16	DX
ASIZP0059778	*Arius sp.*	*Arius maculatus*	58.28	1998/8/25	ZW
ASIZP0061713	*Arius leiotetocephalus*	*Plicofollis nella*	296.7	2002/6/6	Miaoli
ASIZP0061714	*Arius maculatus*	*Arius maculatus*	190.52	2002/6/6	Miaoli
ASIZP0061971	*Netuma thalassina*	*Netuma bilineata*	140.25	2002/9/3	Miaoli
ASIZP0062884	*Arius leiotetocephalus*	*Plicofollis nella*	288.19	2002/7/6	Miaoli
ASIZP0063525	*Netuma thalassina*	*Netuma bilineata*	125.88	2000/6/23	TS
ASIZP0063526	*Plicofollis nella*	*Plicofollis nella*	144.67	2000/6/23	BL
ASIZP0063527	*Arius maculatus*	*Arius maculatus*	138.56	2000/6/23	BL
ASIZP0063599	*Plicofollis nella*	*Plicofollis nella*	215.55	1999/4/8	BL
ASIZP0064248	*Arius leiotetocephalus*	*Plicofollis nella*	206.11	2004/7/29	LPP
ASIZP0064249	*Arius leiotetocephalus*	*Plicofollis nella*	179.62	2004/7/29	BL
ASIZP0066217	*Arius maculatus*	*Arius maculatus*	266.95	2005/8/26	JN
ASIZP0067361	*Arius maculatus*	*Plicofollis nella*	90.71	2006/9/23	WL
ASIZP0067459	*Arius maculatus*	*Arius maculatus*	85.07	2006/10/13	BS
ASIZP0067476	*Arius maculatus*	*Arius maculatus*	98.16	2006/10/13	BS
ASIZP0069738	*Netuma thalassina*	*Netuma bilineata*	168.42	2006/9/20	Miaoli
ASIZP0069739	*Netuma thalassina*	*Netuma bilineata*	120.99	2006/9/20	Miaoli
ASIZP0070307	*Plicofollis nella*	*Plicofollis nella*	231.47	1998/5/12	FY
ASIZP0074001	*Arius maculatus*	*Arius maculatus*	200.86	2006/8/5	TS
ASIZP0074516	*Ariidae*	*Plicofollis nella*	104.64	2010/9/20	LR
ASIZP0074603	*Arius maculatus*	*Arius maculatus*	90.67	1988/5/20	TS
ASIZP0080015	*Plicofollis polystaphylodon*	*Plicofollis nella*	113.16	2015/12/23	DC
ASIZP0080016	*Arius maculatus*	*Arius maculatus*	160.85	2015/12/23	DC
ASIZP0080051	*Arius maculatus*	*Arius maculatus*	213.39	2016/2/17	Taoyuan
ASIZP0080052	*Arius maculatus*	*Arius maculatus*	218.44	2016/2/17	Taoyuan
ASIZP0080053	*Arius maculatus*	*Arius maculatus*	234.76	2016/2/17	Taoyuan

DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
ASIZP0080057	*Plicofollis polystaphylodon*	*Plicofollis nella*	190.87	2016/2/22	WG
ASIZP0080058	*Arius maculatus*	*Arius maculatus*	179.1	2016/2/22	WG
ASIZP0080059	*Arius maculatus*	*Arius maculatus*	145.04	2016/2/22	WG
FRIP00088	*Netuma thalassina*	*Netuma bilineata*	209.71	1987/7/11	Keelung
FRIP02010	*no data*	*Arius maculatus*	295.11	2008/1/9	Taoyuan
NCHU16446-1	*Arius maculatus*	*Arius maculatus*	170.03	no data	Puzih River
NCHU16446-2	*Arius maculatus*	*Arius maculatus*	199.09	no data	Puzih River
NCHU16446-3	*Arius maculatus*	*Arius maculatus*	222.71	no data	Puzih River
NCHU16455	*Arius maculatus*	*Arius maculatus*	149.9	no data	Puzih River
NCHU16750-1	*Arius maculatus*	*Arius maculatus*	156.29	no data	Puzih River
NCHU16750-2	*Arius maculatus*	*Arius maculatus*	128.82	no data	Puzih River
NCHU16750-3	*Arius maculatus*	*Arius maculatus*	143.76	no data	Puzih River
NCHU16750-4	*Arius maculatus*	*Arius maculatus*	108.12	no data	Puzih River
NCHU16750-5	*Arius maculatus*	*Arius maculatus*	95.6	no data	Puzih River
NCHU16756-1	*Arius maculatus*	*Arius maculatus*	251.5	no data	Puzih River
NCHU16756-2	*Arius maculatus*	*Arius maculatus*	176.71	no data	Puzih River
NCHU16756-3	*Arius maculatus*	*Arius maculatus*	146.89	no data	Puzih River
NCHU16756-4	*Arius maculatus*	*Arius maculatus*	127.92	no data	Puzih River
NCHU16756-5	*Arius maculatus*	*Arius maculatus*	138.74	no data	Puzih River
NCHU16756-6	*Arius maculatus*	*Arius maculatus*	132.28	no data	Puzih River
NCHU16756-7	*Arius maculatus*	*Arius maculatus*	124.28	no data	Puzih River
NCHU16756-8	*Arius maculatus*	*Arius maculatus*	120.81	no data	Puzih River
NCHU16756-9	*Arius maculatus*	*Arius maculatus*	92.15	no data	Puzih River
NCHU16768-1	*Arius maculatus*	*Arius maculatus*	153.09	no data	Puzih River
NCHU16768-2	*Arius maculatus*	*Arius maculatus*	128.62	no data	Puzih River
NCHU17703-1	*Arius maculatus*	*Arius maculatus*	235.33	no data	Puzih River
NCHU17703-2	*Arius maculatus*	*Arius maculatus*	225.77	no data	Puzih River
NCHU17703-3	*Arius maculatus*	*Arius maculatus*	166.28	no data	Puzih River
NCHU17703-4	*Arius maculatus*	*Arius maculatus*	170.22	no data	Puzih River
NCHU17703-5	*Arius maculatus*	*Arius maculatus*	164.66	no data	Puzih River
NCHU17703-6	*Arius maculatus*	*Arius maculatus*	77.71	no data	Puzih River
NCHU17703-7	*Arius maculatus*	*Arius maculatus*	71.22	no data	Puzih River

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
NCHU17703-8	*Arius maculatus*	*Arius maculatus*	72.14	no data	Puzih River
NCHU17714-1	*Arius maculatus*	*Arius maculatus*	150.39	no data	Puzih River
NCHU17714-2	*Arius maculatus*	*Arius maculatus*	79.08	no data	Puzih River
NCHU17714-3	*Arius maculatus*	*Arius maculatus*	73.39	no data	Puzih River
NCHU17714-4	*Arius maculatus*	*Arius maculatus*	72.88	no data	Puzih River
NCHU17800-1	*Arius maculatus*	*Arius maculatus*	266.28	no data	Puzih River
NCHU17800-10	*Arius maculatus*	*Arius maculatus*	149.36	no data	Puzih River
NCHU17800-11	*Arius maculatus*	*Arius maculatus*	135.46	no data	Puzih River
NCHU17800-12	*Arius maculatus*	*Arius maculatus*	103.99	no data	Puzih River
NCHU17800-13	*Arius maculatus*	*Arius maculatus*	61.04	no data	Puzih River
NCHU17800-2	*Arius maculatus*	*Arius maculatus*	226.66	no data	Puzih River
NCHU17800-3	*Arius maculatus*	*Arius maculatus*	216.53	no data	Puzih River
NCHU17800-4	*Arius maculatus*	*Arius maculatus*	183.62	no data	Puzih River
NCHU17800-5	*Arius maculatus*	*Arius maculatus*	165.93	no data	Puzih River
NCHU17800-6	*Arius maculatus*	*Arius maculatus*	172.26	no data	Puzih River
NCHU17800-7	*Arius maculatus*	*Arius maculatus*	153.32	no data	Puzih River
NCHU17800-8	*Arius maculatus*	*Arius maculatus*	147.76	no data	Puzih River
NCHU17800-9	*Arius maculatus*	*Arius maculatus*	164.79	no data	Puzih River
NMMBP00512	*Arius maculatus*	*Arius maculatus*	65.04	1984/6/17	XD
NMMBP02598	*Arius maculatus*	*Arius maculatus*	46.36	1960/1/1	Taichung
NMMBP02993	*Arius maculatus*	*Arius maculatus*	145.16	2002/7/16	QG
NMMBP03042	*Netuma thalassina*	*Netuma bilineata*	240.66	1984/12/17	XD
NMMBP04254	*Arius maculatus*	*Arius maculatus*	143.06	1963/04	Tainan
NMMBP04261	*Arius maculatus*	*Arius maculatus*	229.1	1960/01	Taichung
NMMBP05646A	*Arius maculatus*	*Arius maculatus*	71.15	1967/11/6	DD
NMMBP05646B	*Arius maculatus*	*Arius maculatus*	65.47	1967/11/6	DD
NMMBP05646C	*Arius maculatus*	*Arius maculatus*	75.39	1967/11/6	DD
NMMBP05646D	*Arius maculatus*	*Arius maculatus*	62.46	1967/11/6	DD
NMMBP05646E	*Arius maculatus*	*Arius maculatus*	62.13	1967/11/6	DD
NMMBP06322	*Netuma thalassina*	*Netuma bilineata*	135.47	1966/1/6	LK
NMMBP06356	*Netuma thalassina*	*Netuma bilineata*	219.89	1963/4/1	Tainan
NMMBP06357	*Netuma thalassina*	*Netuma bilineata*	251.67	1962/1/18	Taichung
NMMBP06359A	*Netuma thalassina*	*Netuma bilineata*	271.75	1960/4/3	DG

DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
NMMBP06359B	*Netuma thalassina*	*Netuma bilineata*	143.43	1960/4/3	DG
NMMBP06772	*Arius maculatus*	*Arius maculatus*	108.42	2003/8/23	QG
NMMBP07424	*Arius maculatus*	*Arius maculatus*	91.97	2004/3/20	BD
NMMBP08441A	*Arius maculatus*	*Arius maculatus*	167.16	2005/5/6	Taichung
NMMBP08441B	*Arius maculatus*	*Arius maculatus*	142.27	2005/5/6	Taichung
NMMBP08461A	*Arius maculatus*	*Arius maculatus*	165.99	2005/5/6	Taichung
NMMBP08461B	*Arius maculatus*	*Arius maculatus*	110.52	2005/5/6	Taichung
NMMBP08461C	*Arius maculatus*	*Arius maculatus*	106.92	2005/5/6	Taichung
NMMBP14737	*Arius maculatus*	*Arius maculatus*	108.84	2002/7/16	QG
NMMBP15234	*Arius maculatus*	*Arius maculatus*	111.32	2011/9/11	DS
NMMBP16386	*Arius maculatus*	*Arius maculatus*	175.45	2010/5/20	DX
NMMBP16399	*Arius maculatus*	*Arius maculatus*	171.74	2010/5/20	DX
NMMBP22500	*Arius maculatus*	*Arius maculatus*	123.15	2004/4/19	QG
NMMBP22751A	*Arius maculatus*	*Arius maculatus*	153.67	2015/1/21	KZ
NMMBP22751B	*Arius maculatus*	*Arius maculatus*	130.94	2015/1/21	KZ
NMMBP25837	*Arius maculatus*	*Arius maculatus*	99.88	2017/4/15	DS
NMMBP26186	*Arius maculatus*	*Arius maculatus*	327.85	2016/5/16	TZ
NMMBP27257A	*Arius maculatus*	*Arius maculatus*	123.02	2014/7/17	no data
NMMBP27257B	*Arius maculatus*	*Arius maculatus*	109.35	2014/7/17	no data
NMMBP27257C	*Arius maculatus*	*Arius maculatus*	95.42	2014/7/17	no data
NMMBP27258	*Arius maculatus*	*Arius maculatus*	97.14	2014/4/1	no data
NMMBP28043	*Arius maculatus*	*Arius maculatus*	138.21	2018/1/18	KZ
NMMBP29346	*Netuma thalassina*	*Netuma bilineata*	328.04	2018/3/31	PH
NMMBP29932	*Arius maculatus*	*Plicofollis nella*	326.96	2018/7/4	DG
NMMBP31040A	*Arius maculatus*	*Arius maculatus*	82.13	2017/3/5	DS
NMMBP31040B	*Arius maculatus*	*Arius maculatus*	80.64	2017/3/5	DS
NMMBP31043	*Arius maculatus*	*Arius maculatus*	117.14	2017/3/5	DS
NMMBP35084	*Netuma thalassina*	*Netuma bilineata*	180.17	2019/11/13	Taichung
NMMSTP01533	*Arius maculatus*	*Arius maculatus*	179.17	2004/2/24	Miaoli
NMNSF00315A	*Netuma thalassina*	*Arius maculatus*	138.06	2004/1/15	ML
NMNSF00315B	*Netuma thalassina*	*Arius maculatus*	140.78	2004/1/15	ML
NMNSF00315C	*Netuma thalassina*	*Arius maculatus*	97.55	2004/1/15	ML

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
NMNSF00576A	*Netuma thalassina*	*Netuma bilineata*	139.56	2004/5/24	Taichung Port
NMNSF00576B	*Netuma thalassina*	*Netuma bilineata*	134.43	2004/5/24	Taichung Port
NMNSF00576C	*Netuma thalassina*	*Netuma bilineata*	132.09	2004/5/24	Taichung Port
NMNSF00858A	*Netuma thalassina*	*Plicofollis nella*	107.92	2004/8/20	Taichung Port
NMNSF00858B	*Netuma thalassina*	*Plicofollis nella*	110.75	2004/8/20	Taichung Port
NMNSF00858C	*Netuma thalassina*	*Netuma bilineata*	117.16	2004/8/20	Taichung Port
NMNSF00858D	*Netuma thalassina*	*Netuma bilineata*	102.04	2004/8/20	Taichung Port
NMNSF00858E	*Netuma thalassina*	*Netuma bilineata*	92.61	2004/8/20	Taichung Port
NTMP0593	*Netuma thalassina*	*Netuma bilineata*	242.26	1945/10-1955/04	Keelung
NTMP0712	*Arius maculatus*	*Arius maculatus*	178.57	1945/10-1955/04	TS
NTMP1492	*Arius maculatus*	*Netuma bilineata*	265.01	1945/10-1955/04	Western Taiwan
NTMP1590A	*Arius maculatus*	*Arius maculatus*	80.72	1945/10-1955/04	TS
NTMP1590B	*Arius maculatus*	*Arius maculatus*	73.54	1945/10-1955/04	TS
NTUM00267A	*Netuma thalassina*	*Arius maculatus*	190.63	1955/07	Keelung
NTUM00267B	*Netuma thalassina*	*Netuma bilineata*	169.83	1955/07	Keelung
NTUM00267C	*Netuma thalassina*	*Arius maculatus*	77.56	1955/07	Keelung
NTUM00268	*Arius maculatus*	*Netuma bilineata*	259.33	1963/4/30	Keelung
NTUM00270A	*Netuma thalassina*	*Arius maculatus*	220.12	1955/07	Keelung
NTUM00270B	*Netuma thalassina*	*Netuma bilineata*	353.77	1955/07	Keelung
NTUM00270C	*Netuma thalassina*	*Netuma bilineata*	330.52	1955/07	Keelung

DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
NTUM00270D	*Netuma thalassina*	*Netuma bilineata*	353.57	1955/07	Keelung
NTUM00270E	*Netuma thalassina*	*Netuma bilineata*	272.08	1955/07	Keelung
NTUM00270F	*Netuma thalassina*	*Netuma bilineata*	217.23	1955/07	Keelung
NTUM00270G	*Netuma thalassina*	*Netuma bilineata*	168.31	1955/07	Keelung
NTUM00270H	*Netuma thalassina*	*Netuma bilineata*	164.66	1955/07	Keelung
NTUM00270I	*Netuma thalassina*	*Netuma bilineata*	182.7	1955/07	Keelung
NTUM02172A	*Arius maculatus*	*Arius maculatus*	215.77	1963	TS
NTUM02172B	*Arius maculatus*	*Arius maculatus*	125.97	1963	TS
NTUM02172C	*Arius maculatus*	*Arius maculatus*	112.59	1963	TS
NTUM02172D	*Arius maculatus*	*Arius maculatus*	92.93	1963	TS
NTUM02172E	*Arius maculatus*	*Arius maculatus*	87.43	1963	TS
NTUM02172F	*Arius maculatus*	*Arius maculatus*	78.19	1963	TS
NTUM02172G	*Arius maculatus*	*Arius maculatus*	48.73	1963	TS
NTUM03302A	*Netuma thalassina*	*Arius maculatus*	92.29	1977/05	TS
NTUM03302B	*Netuma thalassina*	*Arius maculatus*	68.42	1977/05	TS
NTUM03302C	*Netuma thalassina*	*Arius maculatus*	73.42	1977/05	TS
NTUM03302D	*Netuma thalassina*	*Arius maculatus*	72.65	1977/05	TS
NTUM06613A	*Netuma thalassina*	*Netuma bilineata*	127.95	1977/8/25	TS
NTUM06613B	*Netuma thalassina*	*Netuma bilineata*	164.93	1977/8/25	TS
NTUM06613C	*Netuma thalassina*	*Netuma bilineata*	168.47	1977/8/25	TS
NTUM06613D	*Netuma thalassina*	*Netuma bilineata*	164.69	1977/8/25	TS
NTUM06724	*Netuma thalassina*	*Netuma bilineata*	106.39	1997/11/8	XD
NTUM06913	*Arius maculatus*	*Plicofollis nella*	115.6	1986/12/12	XD
NTUM06981A	*Arius maculatus*	*Plicofollis nella*	93.41	1997/7/15	no data
NTUM06981B	*Arius maculatus*	*Plicofollis nella*	88.07	1997/7/15	no data
NTUM06982A	*Netuma thalassina*	*Netuma bilineata*	110.13	1986/12/12	XD
NTUM06982B	*Netuma thalassina*	*Netuma bilineata*	117.79	1986/12/12	XD
NTUM08120A	*Arius maculatus*	*Arius maculatus*	128.08	1992/3/25	DD
NTUM08120B	*Arius maculatus*	*Arius maculatus*	147.66	1992/3/25	DD
NTUM08120C	*Arius maculatus*	*Arius maculatus*	143.64	1992/3/25	DD
NTUM08120D	*Arius maculatus*	*Arius maculatus*	157.88	1992/3/25	DD
NTUM08120E	*Arius maculatus*	*Arius maculatus*	139.79	1992/3/25	DD
NTUM08120F	*Arius maculatus*	*Arius maculatus*	143.47	1992/3/25	DD

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Specimen number	*Previous name in the collection*	*This paper*	SL (mm)	Sampling date	Sampling site
NTUM08120G	*Arius maculatus*	*Arius maculatus*	127.13	1992/3/25	DD
NTUM08120H	*Arius maculatus*	*Arius maculatus*	136.12	1992/3/25	DD
NTUM08120I	*Arius maculatus*	*Arius maculatus*	113.44	1992/3/25	DD
NTUM08120J	*Arius maculatus*	*Arius maculatus*	89.25	1992/3/25	DD
NTUM08123A	*Arius maculatus*	*Plicofollis nella*	246.04	1992/3/25	DD
NTUM08123B	*Arius maculatus*	*Arius maculatus*	187.59	1992/3/25	DD
NTUM08123C	*Arius maculatus*	*Arius maculatus*	156.41	1992/3/25	DD
FAKU 42097	*Arius maculatus*	*Arius maculatus*	345.22	no data	Wakasa Bay, Japan
FAKU 101601	*Arius maculatus*	*Arius maculatus*	343.55	1971/11	Wakasa Bay, Japan

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Appendix 3. Accession numbers and haplotypes of Ariidae. Haplotypes were named using a prefix (AH for *Arius* haplotype, NH for *Netuma* haplotype, and PH for *Plicofollis* haplotype), followed by the haplotype number, the first three letters of the species name, and the collection location or country of the specimen.

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	CHLOL2007	PQ658253	*Arius maculatus*	AH1_mac_Taiwan
This study	CHLOL21677	PQ658254	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL1318	PQ658255	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL1319	PQ658256	*Arius maculatus*	AH3_mac_Taiwan
This study	CHLOL1320	PQ658257	*Arius maculatus*	AH4_mac_Taiwan
This study	CHLOL1321	PQ658258	*Arius maculatus*	AH5_mac_Taiwan
This study	CHLOL1322	PQ658259	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL1323	PQ658260	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21679	PQ658318	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081571	PQ658319	*Arius maculatus*	AH6_mac_Taiwan
This study	CHLOL21686	PQ658320	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21687	PQ658321	*Arius maculatus*	AH7_mac_Taiwan
This study	CHLOL21689	PQ658322	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21694	PQ658323	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21696	PQ658324	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21697	PQ658325	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21698	PQ658326	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21699	PQ658327	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21701	PQ658328	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21702	PQ658329	*Arius maculatus*	AH7_mac_Taiwan
This study	CHLOL21703	PQ658330	*Arius maculatus*	AH1_mac_Taiwan
This study	CHLOL21704	PQ658331	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21705	PQ658332	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21706	PQ658333	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21707	PQ658334	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21708	PQ658335	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	CHLOL21710	PQ658336	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21711	PQ658337	*Arius maculatus*	AH4_mac_Taiwan
This study	CHLOL21717	PQ658338	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21718	PQ658339	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21719	PQ658340	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21720	PQ658341	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21721	PQ658342	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21722	PQ658343	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21723	PQ658344	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21724	PQ658345	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21725	PQ658346	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21726	PQ658347	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21727	PQ658348	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21728	PQ658349	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21730	PQ658350	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21731	PQ658351	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21732	PQ658352	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21733	PQ658353	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21734	PQ658354	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081572	PQ658355	*Arius maculatus*	AH1_mac_Taiwan
This study	CHLOL21735	PQ658261	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21736	PQ658262	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21737	PQ658263	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21738	PQ658264	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21739	PQ658265	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21740	PQ658266	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21741	PQ658267	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	CHLOL21742	PQ658268	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21743	PQ658269	*Arius maculatus*	AH4_mac_Taiwan
This study	ASIZP0081573	PQ658270	*Arius maculatus*	AH7_mac_Taiwan
This study	CHLOL21744	PQ658271	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21745	PQ658272	*Arius maculatus*	AH7_mac_Taiwan
This study	CHLOL21746	PQ658273	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21747	PQ658274	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21748	PQ658275	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21749	PQ658276	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21750	PQ658277	*Arius maculatus*	AH8_mac_Taiwan
This study	CHLOL21751	PQ658278	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21752	PQ658279	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21753	PQ658280	*Arius maculatus*	AH4_mac_Taiwan
This study	CHLOL21755	PQ658281	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21756	PQ658282	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21757	PQ658283	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21758	PQ658284	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21760	PQ658285	*Arius maculatus*	AH9_mac_Taiwan
This study	CHLOL21761	PQ658286	*Arius maculatus*	AH4_mac_Taiwan
This study	CHLOL21762	PQ658287	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21764	PQ658288	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21765	PQ658289	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21766	PQ658290	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21767	PQ658291	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21768	PQ658292	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21769	PQ658293	*Arius maculatus*	AH4_mac_Taiwan
This study	CHLOL21770	PQ658294	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21771	PQ658295	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21772	PQ658296	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	NTMP1732	PQ658297	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NTMP1733	PQ658298	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37239	PQ658299	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NTMP1734	PQ658300	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37231	PQ658301	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081575	PQ658302	*Arius maculatus*	AH10_mac_Taiwan
This study	NMMBP37232	PQ658303	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37233	PQ658304	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NTMP1737	PQ658305	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21778	PQ658306	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21779	PQ658307	*Arius maculatus*	AH3_mac_Taiwan
This study	NMMBP37234	PQ658308	*Arius maculatus*	AH1_mac_Taiwan
This study	NMMBP37235	PQ658309	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37236	PQ658310	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37244	PQ658311	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	NMMBP37243	PQ658312	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081576	PQ658313	*Arius maculatus*	AH11_mac_Taiwan
This study	ASIZP0081580	PQ658314	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081581	PQ658315	*Arius maculatus*	AH4_mac_Taiwan
This study	NTMP1738	PQ658316	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081582	PQ658317	*Arius maculatus*	AH12_mac_Taiwan
This study	CHLOL21790	PQ658246	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21791	PQ658245	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	ASIZP0081589	PQ658244	*Arius maculatus*	AH71_mac_Taiwan
This study	CHLOL21792	PQ658243	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21818	PQ658242	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL21819	PQ658241	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_China
This study	CHLOL32143	PQ658239	*Arius* sp.	AH69_mac_Brunei_Thailand
This study	CHLOL32144	PQ658238	*Arius* sp.	AH69_mac_Brunei_Thailand

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	CHLOL20834	PQ658236	*Arius* sp.	AH69_mac_Brunei_Thailand
This study	CHLOL20835	PQ658235	*Arius* sp.	AH69_mac_Brunei_Thailand
This study	CHLOL32145	PQ658237	*Arius* sp.	AH70_mac_Brunei
This study	CHLOL1324	PQ656233	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL1325	PQ656232	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	ASIZP0081570	PQ656234	*Netuma bilineata*	NH5_bil_Taiwan
This study	CHLOL1327	PQ656231	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_ Malaysia
This study	CHLOL1328	PQ656230	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL1388	PQ656229	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL1389	PQ656228	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL2008	PQ656227	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21681	PQ656226	*Netuma bilineata*	NH6_bil_Taiwan
This study	CHLOL21682	PQ656178	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21683	PQ656177	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21684	PQ656176	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21709	PQ656175	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21754	PQ656225	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21780	PQ656224	*Netuma bilineata*	NH6_bil_Taiwan
This study	CHLOL21781	PQ656223	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	ASIZP0081577	PQ656222	*Netuma bilineata*	NH2_bil_India_Malaysia_Taiwan_tha _Malaysia
This study	ASIZP0081578	PQ656221	*Netuma bilineata*	NH3_bil_Taiwan_India_tha_Malaysia
This study	ASIZP0081579	PQ656220	*Netuma bilineata*	NH7_bil_Taiwan_Malaysia_tha_ Malaysia
This study	CHLOL21782	PQ656219	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21783	PQ656218	*Netuma bilineata*	NH6_bil_Taiwan
This study	CHLOL21784	PQ656217	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21785	PQ656216	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL21786	PQ656215	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	NMMBP37276	PQ656214	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	NMMBP37278	PQ656213	*Netuma bilineata*	NH6_bil_Taiwan

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	NMMBP37275	PQ656212	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	ASIZP0081583	PQ656211	*Netuma bilineata*	NH6_bil_Taiwan
This study	ASIZP0081584	PQ656210	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
This study	ASIZP0081585	PQ656209	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	ASIZP0081586	PQ656208	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	CHLOL21787	PQ656207	*Netuma bilineata*	NH3_bil_Taiwan_India_tha_Malaysia
This study	CHLOL21788	PQ656206	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
This study	CHLOL21789	PQ656205	*Netuma bilineata*	NH6_bil_Taiwan
This study	ASIZP0081587	PQ656204	*Netuma bilineata*	NH8_bil_Taiwan
This study	ASIZP0081588	PQ656203	*Netuma bilineata*	NH9_bil_Taiwan
This study	NTMP1757	PQ656202	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1758	PQ656201	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1759	PQ656200	*Netuma bilineata*	NH6_bil_Taiwan
This study	NTMP1760	PQ656199	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1761	PQ656198	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1762	PQ656197	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1763	PQ656196	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1764	PQ656195	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1765	PQ656194	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NTMP1766	PQ656193	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NMMBP37257	PQ656192	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NMMBP37262	PQ656191	*Netuma bilineata*	NH6_bil_Taiwan
This study	NMMBP37261	PQ656190	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NMMBP37256	PQ656189	*Netuma bilineata*	NH6_bil_Taiwan
This study	NMMBP37260	PQ656188	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
This study	NMMBP37255	PQ656187	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	ASIZP0081592	PQ656186	*Netuma bilineata*	NH10_bil_Taiwan
This study	NMMBP37250	PQ656185	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
This study	NMMBP37258	PQ656184	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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This study	NMMBP37259	PQ656183	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	NMMBP37269	PQ656182	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	NMMBP37251	PQ656181	*Netuma bilineata*	NH6_bil_Taiwan
This study	CHLOL21794	PQ656180	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	ASIZP0081593	PQ656179	*Netuma bilineata*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	CHLOL1316	PQ656297	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL1383	PQ656296	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL1384	PQ656295	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL1390	PQ656290	*Plicofollis nella*	PH2_nel_Taiwan
This study	CHLOL1385	PQ656293	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL1386	PQ656292	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21678	PQ656289	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL1387	PQ656291	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5782	PQ656271	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5783	PQ656270	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5866	PQ656262	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21680	PQ656288	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21685	PQ656287	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21688	PQ656286	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21690	PQ656285	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21691	PQ656284	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21693	PQ656283	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21712	PQ656282	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21713	PQ656281	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21714	PQ656280	*Plicofollis nella*	PH3_nel_Taiwan
This study	CHLOL21715	PQ656279	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21716	PQ656278	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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This study	CHLOL5784	PQ656269	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5785	PQ656268	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5860	PQ656267	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5862	PQ656266	*Plicofollis nella*	PH4_nel_Taiwan
This study	CHLOL5863	PQ656265	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL5864	PQ656264	*Plicofollis nella*	PH4_nel_Taiwan
This study	CHLOL5865	PQ656263	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21759	PQ656277	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37301	PQ656243	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37303	PQ656241	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37302	PQ656242	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37300	PQ656244	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21773	PQ656276	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21774	PQ656275	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21775	PQ656274	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21776	PQ656273	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0081574	PQ656300	*Plicofollis nella*	PH4_nel_Taiwan
This study	NMMBP37285	PQ656258	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NTMP1772	PQ656237	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37289	PQ656254	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37290	PQ656253	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37288	PQ656255	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37287	PQ656256	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37286	PQ656257	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37306	PQ656238	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37305	PQ656239	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37304	PQ656240	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
This study	NMMBP37279	PQ656261	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37294	PQ656250	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0081590	PQ656299	*Plicofollis nella*	PH5_nel_Taiwan
This study	NMMBP37292	PQ656251	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37291	PQ656252	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37299	PQ656245	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37298	PQ656246	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37297	PQ656247	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37296	PQ656248	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37295	PQ656249	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37280	PQ656260	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	NMMBP37282	PQ656259	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	CHLOL21793	PQ656272	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0081591	PQ656298	*Plicofollis nella*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0917393 (tissue of ASIZP0807393)	PQ658248	*Arius maculatus*	AH1_mac_Taiwan
This study	ASIZP0917392 (tissue of ASIZP0807392)	PQ658247	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_ China
This study	ASIZP0917330 (tissue of ASIZP0080016)	PQ658252	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_ China
This study	ASIZP0912864 (tissue of ASIZP0067476)	PQ658249	*Arius maculatus*	AH2_mac_Taiwan_ari_China_dis_ China
This study	ASIZP0917387 (tissue of ASIZP0080053)	PQ658251	*Arius maculatus*	AH8_mac_Taiwan
This study	ASIZP0911618 (tissue of ASIZP0066217)	PQ658250	*Arius maculatus*	AH13_mac_Taiwan
This study	ASIZP0917076 (tissue of ASIZP0807076)	PQ658240	*Arius maculatus*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0913238 (tissue of ASIZP0803238)	PQ656174	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	ASIZP0913239 (tissue of ASIZP0803239)	PQ656173	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_ Indonesia_Malaysia_Taiwan
This study	ASIZP0900157 (tissue of ASIZP0061713)	PQ656235	*Arius leiotetocephalus*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0917329 (tissue of ASIZP0807329)	PQ656294	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
This study	ASIZP0917391 (tissue of ASIZP0807391)	PQ656236	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	GX41	OP247600	*Arius arius*	AH2_mac_Taiwan_ari_China_dis_China
NCBI GenBank	-	NC048969	*Arius dispar*	AH2_mac_Taiwan_ari_China_dis_China
NCBI GenBank	-	MH460877	*Arius dispar*	AH2_mac_Taiwan_ari_China_dis_China
NCBI GenBank	AdisB651	HQ682605	*Arius dispar*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AdisB5	HQ682609	*Arius dispar*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	TRAd2	KJ533146	*Arius dispar*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	TCAd2	KJ533144	*Arius dispar*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	TRAm1	KJ533142	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanB10	HQ682626	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanB19	HQ682625	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanB12	HQ682623	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanB23	HQ682622	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanC1	HQ682618	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AmanB25	HQ682614	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	DB 9.2	KJ013033	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	TCAm2	KF604642	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	TCAm5	KF604638	*Arius manillensis*	AH14_dis_Philippines_man_Philippines
NCBI GenBank	AdisB16	HQ682606	*Arius dispar*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AdisB11	HQ682608	*Arius dispar*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AdisB666	HQ682611	*Arius dispar*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AdisB8	HQ682612	*Arius dispar*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	TCAd1	KJ533143	*Arius dispar*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	BRAm2	KJ533141	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	CAs4	KJ533139	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AmanB7	HQ682624	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AmanB4	HQ682620	*Arius manillensis*	AH15_dis_Philippines_man_Philippines

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	AmanB17	HQ682619	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AmanB13	HQ682615	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	DB 9.1	KJ013032	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	DB 9.3	KJ013031	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	TCAm4	KF604644	*Arius manillensis*	AH15_dis_Philippines_man_Philippines
NCBI GenBank	AdisB15	HQ682607	*Arius dispar*	AH16_dis_Philippines_man_Philippines
NCBI GenBank	TRAd1	KJ533145	*Arius dispar*	AH16_dis_Philippines_man_Philippines
NCBI GenBank	AmanB650	HQ682613	*Arius manillensis*	AH16_dis_Philippines_man_Philippines
NCBI GenBank	CAs2	KF604640	*Arius manillensis*	AH16_dis_Philippines_man_Philippines
NCBI GenBank	APAm1	KF604639	*Arius manillensis*	AH16_dis_Philippines_man_Philippines
NCBI GenBank	AdisB668	HQ682610	*Arius dispar*	AH17_dis_Philippines
NCBI GenBank	ZSICF74	ON166040	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	ZSICF39	ON166005	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	WL-M667	EU148552	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	WL-M666	EU148551	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	WL-M665	EU148550	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	WL-M664	EU148549	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	WL-M663	EU148548	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	CASMBAUTRL100	KC896395	*Arius arius*	AH18_ari_India_gag_India
NCBI GenBank	RSYN01	JX260835	*Arius gagora*	AH18_ari_India_gag_India
NCBI GenBank	IFW06	MW322097	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	W20	MK041063	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF1432	KU692300	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF3555	KU692299	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF0949	KU692298	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF1427	KU692297	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF0944	KU692296	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF1429	KU692295	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF1430	KU692294	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF1428	KU692291	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF0945	KU692290	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF0947	KU692288	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	BIF3554	KU692285	*Arius subrostratus*	AH19_sub_Indonesia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

Source	Specimen number	NCBI accession number	Species	Haplotype label in this paper
NCBI GenBank	BIF3552	KU692284	*Arius subrostratus*	AH19_sub_Indonesia
NCBI GenBank	E01	MN259176	*Arius arius*	AH20_ari_Bangladesh
NCBI GenBank	FBRC_ZSI_F3057A_DNA424	MK962526	*Arius arius*	AH21_ari_India
NCBI GenBank	CASMBAUTRL170	KF824822	*Arius arius*	AH21_ari_India
NCBI GenBank	CASMBAUTRL169	KF824821	*Arius arius*	AH21_ari_India
NCBI GenBank	CASMBAUTRL168	KF824820	*Arius arius*	AH21_ari_India
NCBI GenBank	FBRC_ZSI_F3057_DNA389	MK902712	*Arius arius*	AH21_ari_India
NCBI GenBank	CASMBAUTRL86	KC595986	*Arius arius*	AH21_ari_India
NCBI GenBank	CASMBAUTRL82	KC595984	*Arius arius*	AH21_ari_India
NCBI GenBank	ASCHN1	KR011049	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	NBFGR:CHN:58A1	MK348196	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	NBFGR:CHN:57A1	MK348195	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	NBFGR:CHN:19V3	MG923345	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	NBFGR:CHN:19V1	MG923343	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	NBFGR-CHN As1	FJ869858	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	CASMBAUTRL181	KF824833	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	WL-M687	EU148556	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	WL-M686	EU148555	*Arius subrostratus*	AH22_sub_India
NCBI GenBank	TRAd3	KJ533147	*Arius dispar*	AH23_dis_Philippines_man_Philippines
NCBI GenBank	BRAm1	KJ533140	*Arius manillensis*	AH23_dis_Philippines_man_Philippines
NCBI GenBank	APAm3	KJ533138	*Arius manillensis*	AH23_dis_Philippines_man_Philippines
NCBI GenBank	DADB4	JX676113	*Arius maculatus*	AH24_mac_India
NCBI GenBank	DADB3	JX676112	*Arius maculatus*	AH25_mac_India
NCBI GenBank	DADB2	JX676111	*Arius maculatus*	AH25_mac_India
NCBI GenBank	DADB1	JX676110	*Arius maculatus*	AH25_mac_India
NCBI GenBank	CASMBAUTRL141	KF208419	*Arius arius*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	CASMBAUTRL97	KC896392	*Arius arius*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	CASMBAUTRL96	KC896391	*Arius arius*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	PMNH<PAK>:55242	MN511858	*Arius arius*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NF552	JX983226	*Arius gagora*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NF551	JX983225	*Arius gagora*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NF776	JX983224	*Arius gagora*	AH26_ari_India_Pakistan_gag_India_mac_India

Marine Research of the National Academy of Marine Research
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NCBI GenBank	Fish71-IRAN	OK287057	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR:CHN:18V5	MK348149	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR:CHN:18V4	MK348148	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR:CHN:18V3	MK348147	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR-CHN Am2	FJ869855	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR-CHN Am1	FJ869852	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	CASMBAUTRL176	KF824828	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	CASMBAUTRL175	KF824827	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	CASMBAUTRL174	KF824826	*Arius maculatus*	AH26_ari_India_Pakistan_gag_India_mac_India
NCBI GenBank	NBFGR:CHN:18V2	MK348146	*Arius maculatus*	AH27_mac_India_Iran
NCBI GenBank	Fish90-IRAN	OK285189	*Arius maculatus*	AH27_mac_India_Iran
NCBI GenBank	-	OP315319	*Arius jella*	AH28_jel_India
NCBI GenBank	CASMBAUTRL173	KF824825	*Arius jella*	AH28_jel_India
NCBI GenBank	CASMBAUTRL171	KF824823	*Arius jella*	AH28_jel_India
NCBI GenBank	MOF2F	KF511568	*Arius arius*	AH29_ari_India_sp_ari_India
NCBI GenBank	Ari1	OP215800	*Arius* sp.	AH29_ari_India_sp_ari_India
NCBI GenBank	Wk3_30	MN243485	*Arius maculatus*	AH30_mac_Indonesia
NCBI GenBank	Wk2_14	MN243473	*Arius maculatus*	AH30_mac_Indonesia
NCBI GenBank	Wk2_01	MN243468	*Arius maculatus*	AH30_mac_Indonesia
NCBI GenBank	SP-76-4	MW498521	*Arius gagora*	AH31_gag_Malaysia_mac_Malaysia
NCBI GenBank	IPMB191216-17.03	MN094541	*Arius maculatus*	AH31_gag_Malaysia_mac_Malaysia
NCBI GenBank	IPMB010716-17.14	MN094540	*Arius leptonotacanthus*	AH32_lep_Malaysia
NCBI GenBank	IPMB181216-17.01	MN094539	*Arius leptonotacanthus*	AH32_lep_Malaysia
NCBI GenBank	NBFGR:CHN:58A3	MK348199	*Arius maculatus*	AH33_mac_India
NCBI GenBank	NBFGR:CHN:18V1	MK348145	*Arius maculatus*	AH33_mac_India
NCBI GenBank	NBFGR:CHN:58A2	MK348198	*Arius maculatus*	AH34_mac_India
NCBI GenBank	NBFGR:CHN:92A1	MK348197	*Arius maculatus*	AH34_mac_India
NCBI GenBank	IPMB151016-80.01	MK887137	*Arius maculatus*	AH35_mac_Malaysia
NCBI GenBank	IPMB170816-08.07	MK604249	*Arius microcephalus*	AH36_mic_Malaysia
NCBI GenBank	IPMB010716-17.19	MK604248	*Arius maculatus*	AH37_mac_Malaysia_mic_Malaysia
NCBI GenBank	SP-125-2	MW498526	*Arius maculatus*	AH37_mac_Malaysia_mic_Malaysia
NCBI GenBank	SP-125-4	MW498525	*Arius maculatus*	AH37_mac_Malaysia_mic_Malaysia
NCBI GenBank	SP-125-5	MW498522	*Arius maculatus*	AH37_mac_Malaysia_mic_Malaysia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	NBFGR:CHN:19V2	MG923344	*Arius subrostratus*	AH38_sub_India
NCBI GenBank	DOZ AM01	HQ009490	*Arius maculatus*	AH39_mac_India
NCBI GenBank	CASMBAUTRL182	KF824834	*Arius subrostratus*	AH40_sub_India
NCBI GenBank	CASMBAUTRL180	KF824832	*Arius subrostratus*	AH41_sub_India
NCBI GenBank	CASMBAUTRL179	KF824831	*Arius gagora*	AH42_gag_India
NCBI GenBank	CASMBAUTRL178	KF824830	*Arius gagora*	AH43_gag_India
NCBI GenBank	CASMBAUTRL177	KF824829	*Arius gagora*	AH44_gag_India
NCBI GenBank	CASMBAUTRL172	KF824824	*Arius jella*	AH45_jel_India
NCBI GenBank	AmanB31	HQ682621	*Arius manillensis*	AH46_man_Philippines
NCBI GenBank	AmanB3	HQ682617	*Arius manillensis*	AH47_man_Philippines
NCBI GenBank	AmanB6	HQ682616	*Arius manillensis*	AH48_man_Philippines
NCBI GenBank	HMAV6	JX198217	*Arius venosus*	AH49_ven_Malaysia
NCBI GenBank	DUZM_MF_89	MK995087	*Arius arius*	AH50_ari_Bangladesh
NCBI GenBank	FBGN-SAU-Dhaka F1511sb-08	MF588531	*Arius arius*	AH50_ari_Bangladesh
NCBI GenBank	F1611Sb-63	MK024412	*Arius arius*	AH51_ari_Bangladesh
NCBI GenBank	NF774	JX983223	*Arius arius*	AH52_ari_India
NCBI GenBank	HHRJ01	JX260832	*Arius arius*	AH53_ari_India
NCBI GenBank	CASMBAUTRL99	KC896394	*Arius arius*	AH54_ari_India
NCBI GenBank	CASMBAUTRL98	KC896393	*Arius arius*	AH55_ari_India
NCBI GenBank	SP-76-3	MW498520	*Arius gagora*	AH56_gag_Malaysia
NCBI GenBank	SP-76-2	MW498519	*Arius gagora*	AH56_gag_Malaysia
NCBI GenBank	RSYN03	JX260834	*Arius gagora*	AH57_gag_India
NCBI GenBank	CIFEFGB-AJ-012	KU894613	*Arius jella*	AH58_jel_India
NCBI GenBank	CIFEFGB-AJ-011	KU894612	*Arius jella*	AH58_jel_India
NCBI GenBank	-	JQ697693	*Arius jella*	AH58_jel_India
NCBI GenBank	SP-125-3	MW498524	*Arius maculatus*	AH59_mac_Malaysia
NCBI GenBank	SP-125-1	MW498523	*Arius maculatus*	AH60_mac_Malaysia
NCBI GenBank	TCAm3	KF604643	*Arius manillensis*	AH61_man_Philippines
NCBI GenBank	TCAm1	KF604641	*Arius manillensis*	AH62_man_Philippines
NCBI GenBank	CIFEFGB-AS-018	KU894617	*Arius subrostratus*	AH63_sub_India
NCBI GenBank	BIF0948	KU692293	*Arius subrostratus*	AH64_sub_Indonesia
NCBI GenBank	BIF1431	KU692292	*Arius subrostratus*	AH65_sub_Indonesia
NCBI GenBank	BIF3553	KU692289	*Arius subrostratus*	AH66_sub_Indonesia
NCBI GenBank	BIF0943	KU692287	*Arius subrostratus*	AH67_sub_Indonesia
NCBI GenBank	BIF0946	KU692286	*Arius subrostratus*	AH67_sub_Indonesia
NCBI GenBank	CIFEFGB-AV-007	KU894608	*Arius venosus*	AH68_ven_India
NCBI GenBank	CIFEFGB-AV-016	KU894615	*Arius venosus*	AH68_ven_India

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	CIFEFGB-AV-017	KU894616	*Arius venosus*	AH68_ven_India
NCBI GenBank	CIFEFGB-AV-019	KU894618	*Arius venosus*	AH68_ven_India
NCBI GenBank	FRLM:43893	LC495685	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	FRLM:47238	LC495688	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	FRLM:55230	LC495687	*Netuma bilineata*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	hap04	KC569755	*Netuma thalassina*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	HMAT1	JX198176	*Netuma thalassina*	NH1_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	WL-M681	EU014253	*Netuma bilineata*	NH2_bil_Taiwan_India_Malaysia_tha_Malaysia
NCBI GenBank	WL-M679	EU014251	*Netuma thalassina*	NH2_bil_Taiwan_India_Malaysia_tha_Malaysia
NCBI GenBank	FRLM:47193	LC495690	*Netuma bilineata*	NH2_bil_Taiwan_India_Malaysia_tha_Malaysia
NCBI GenBank	hap16	KC569767	*Netuma thalassina*	NH2_bil_Taiwan_India_Malaysia_tha_Malaysia
NCBI GenBank	WL-M680	EU014252	*Netuma thalassina*	NH3_bil_Taiwan_India_tha_Malaysia
NCBI GenBank	hap05	KC569756	*Netuma thalassina*	NH3_bil_Taiwan_India_tha_Malaysia
NCBI GenBank	HMAT5	JX198179	*Netuma thalassina*	NH3_bil_Taiwan_India_tha_Malaysia
NCBI GenBank	HMAT3	JX198178	*Netuma thalassina*	NH3_bil_Taiwan_India_tha_Malaysia
NCBI GenBank	HMAT2	JX198177	*Netuma thalassina*	NH3_bil_Taiwan_India_tha_Malaysia
NCBI GenBank	ZS27TYC-L7	OL512931	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7341	GU674136	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7340	GU674135	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7360	GU674119	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7359	GU674118	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7362	GU674117	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A7361	GU674116	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	BW-A6688	GU673623	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	ma32	MH085824	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	hap20	KC569771	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	ASIZP0803238	KU943008	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan
NCBI GenBank	ASIZP0803239	KU943009	*Netuma thalassina*	NH4_bil_Taiwan_tha_China_Indonesia_Malaysia_Taiwan

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	200916-04.02	MK604251	*Netuma bilineata*	NH7_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	hap17	KC569768	*Netuma thalassina*	NH7_bil_Taiwan_Malaysia_tha_Malaysia
NCBI GenBank	AMS:I:33460-091	LC495683	*Pararius proximus*	NH11_pro_Australia
NCBI GenBank	KAUM:I:98403	LC495684	*Netuma patriciae*	NH12_pat_Philippines
NCBI GenBank	FRLM:43894	LC495689	*Netuma bilineata*	NH13_bil_Malaysia_tha_Malaysia_United Arab Emirates
NCBI GenBank	hap06	KC569757	*Netuma thalassina*	NH13_bil_Malaysia_tha_Malaysia_United Arab Emirates
NCBI GenBank	EADF_513	MT076491	*Netuma thalassina*	NH13_bil_Malaysia_tha_Malaysia_United Arab Emirates
NCBI GenBank	FRLM:43999	LC495697	*Netuma bilineata*	NH14_bil_Malaysia
NCBI GenBank	FRLM:55231	LC495696	*Netuma bilineata*	NH15_bil_Malaysia_tha_Malaysia
NCBI GenBank	260816-08.11	MK604252	*Netuma bilineata*	NH15_bil_Malaysia_tha_Malaysia
NCBI GenBank	hap35	KC569786	*Netuma thalassina*	NH15_bil_Malaysia_tha_Malaysia
NCBI GenBank	hap18	KC569769	*Netuma thalassina*	NH15_bil_Malaysia_tha_Malaysia
NCBI GenBank	WL-M682	EU014254	*Netuma thalassina*	NH16_bil_India
NCBI GenBank	WL-M683	EU014255	*Netuma thalassina*	NH17_bil_India_tha_Malaysia
NCBI GenBank	hap10	KC569761	*Netuma thalassina*	NH17_bil_India_tha_Malaysia
NCBI GenBank	FRLM:55228	LC495693	*Netuma thalassina*	NH18_tha_Malaysia
NCBI GenBank	FRLM:55227	LC495694	*Netuma thalassina*	NH18_tha_Malaysia
NCBI GenBank	FRLM:55229	LC495695	*Netuma thalassina*	NH18_tha_Malaysia
NCBI GenBank	hap30	KC569781	*Netuma thalassina*	NH18_tha_Malaysia
NCBI GenBank	FRLM:55232	LC495692	*Netuma thalassina*	NH19_tha_Malaysia
NCBI GenBank	CL048	MG574530	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	ND031	MG574529	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	DS029	MG574528	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	TWS 027	MG220574	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	-	MG587041	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	FSCS202-06	EF607328	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	FSCS205-06	EF607326	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	FSCS206-06	EF607325	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	XM035	KX254512	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	XM034	KX254511	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	XM033	KX254510	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	JLJ 018	KP260470	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	MBCSC:Fish: ZP1141251	JN242656	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	MBCSC:Fish: LCG116208	JN242655	*Netuma thalassina*	NH20_tha_China

DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	MBCSC:Fish: ZP1141238	JN242654	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	MBCSC:Fish: LCG116472	JN242653	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	MBCSC:Fish: TCL116483	JN242652	*Netuma thalassina*	NH20_tha_China
NCBI GenBank	hap36	KC569787	*Netuma thalassina*	NH21_tha_Malaysia
NCBI GenBank	hap33	KC569784	*Netuma thalassina*	NH22_tha_Malaysia
NCBI GenBank	SDAT4	JX198174	*Netuma thalassina*	NH22_tha_Malaysia
NCBI GenBank	hap34	KC569785	*Netuma thalassina*	NH23_tha_Malaysia
NCBI GenBank	SDAT5	JX198175	*Netuma thalassina*	NH23_tha_Malaysia
NCBI GenBank	hap32	KC569783	*Netuma thalassina*	NH24_tha_Malaysia
NCBI GenBank	SDAT3	JX198173	*Netuma thalassina*	NH24_tha_Malaysia
NCBI GenBank	hap31	KC569782	*Netuma thalassina*	NH25_tha_Malaysia
NCBI GenBank	SDAT1	JX198171	*Netuma thalassina*	NH25_tha_Malaysia
NCBI GenBank	hap29	KC569780	*Netuma thalassina*	NH26_tha_Malaysia
NCBI GenBank	hap28	KC569779	*Netuma thalassina*	NH27_tha_Malaysia
NCBI GenBank	hap27	KC569778	*Netuma thalassina*	NH28_tha_Malaysia
NCBI GenBank	hap26	KC569777	*Netuma thalassina*	NH29_tha_Malaysia
NCBI GenBank	hap25	KC569776	*Netuma thalassina*	NH30_tha_Malaysia
NCBI GenBank	hap24	KC569775	*Netuma thalassina*	NH31_tha_Malaysia
NCBI GenBank	hap23	KC569774	*Netuma thalassina*	NH32_tha_Malaysia
NCBI GenBank	hap22	KC569773	*Netuma thalassina*	NH33_tha_Malaysia
NCBI GenBank	hap21	KC569772	*Netuma thalassina*	NH34_tha_Malaysia
NCBI GenBank	hap19	KC569770	*Netuma thalassina*	NH35_tha_Malaysia
NCBI GenBank	hap15	KC569766	*Netuma thalassina*	NH36_tha_Malaysia
NCBI GenBank	hap14	KC569765	*Netuma thalassina*	NH37_tha_Malaysia
NCBI GenBank	hap13	KC569764	*Netuma thalassina*	NH38_tha_Malaysia
NCBI GenBank	hap12	KC569763	*Netuma thalassina*	NH39_tha_Malaysia
NCBI GenBank	hap11	KC569762	*Netuma thalassina*	NH40_tha_Malaysia
NCBI GenBank	hap09	KC569760	*Netuma thalassina*	NH41_tha_Malaysia
NCBI GenBank	hap08	KC569759	*Netuma thalassina*	NH42_tha_Malaysia
NCBI GenBank	hap07	KC569758	*Netuma thalassina*	NH43_tha_Malaysia
NCBI GenBank	hap03	KC569754	*Netuma thalassina*	NH44_tha_Malaysia
NCBI GenBank	hap02	KC569753	*Netuma thalassina*	NH45_tha_Malaysia
NCBI GenBank	hap01	KC569752	*Netuma thalassina*	NH46_tha_Malaysia
NCBI GenBank	PMNH<PAK>:54643	MN511996	*Netuma thalassina*	NH47_tha_Pakistan
NCBI GenBank	-	MW373533	*Netuma thalassina*	NH48_tha_China
NCBI GenBank	F1708SM-22	MT375177	*Netuma thalassina*	NH49_tha_Bangladesh
NCBI GenBank	EADF_480	MT076490	*Netuma thalassina*	NH50_tha_United Arab Emirates

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	EADF_385	MT076488	*Netuma thalassina*	NH50_tha_United Arab Emirates
NCBI GenBank	-	KU170635	*Netuma thalassina*	NH51_tha_Saudi Arabia
NCBI GenBank	FBBGC030-11	JQ681502	*Netuma thalassina*	NH52_tha_China
NCBI GenBank	CIFEFGB-NT-001	KU894604	*Netuma thalassina*	NH53_tha_India
NCBI GenBank	NPPF1126	HQ149893	*Netuma thalassina*	NH54_tha_Iran
NCBI GenBank	NPPF1128	HQ149892	*Netuma thalassina*	NH54_tha_Iran
NCBI GenBank	PGNT1	KF447875	*Netuma thalassina*	NH54_tha_Iran
NCBI GenBank	FSCS204-06	EF607327	*Netuma thalassina*	NH55_tha_China
NCBI GenBank	SDAT2	JX198172	*Netuma thalassina*	NH56_tha_Malaysia
NCBI GenBank	BIOUG<CAN>:BW-1816	EF609288	*Netuma thalassina*	NH57_tha_Australia
NCBI GenBank	ASIZP0807329	KU943011	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	SP-127-1	MW498760	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP13	JX198210	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP12	JX198209	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP11	JX198208	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP08	JX198207	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP15	JX198205	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	STAP14	JX198204	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	DOS03644	MK777719	*Plicofollis polystaphylodon*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	BW-A9056	JN312820	*Plicofollis dussumieri*	PH1_nel_Taiwan_pol_Taiwan_ Malaysia_Vietnam_dus_Indonesia
NCBI GenBank	FRLM:47237	LC495686	*Plicofollis argyropleuron*	PH6_arg_Malaysia_lay_Malaysia_ Myanmar
NCBI GenBank	SP-78-1	MW498759	*Plicofollis layardi*	PH6_arg_Malaysia_lay_Malaysia_ Myanmar
NCBI GenBank	USNM:444079	MH235687	*Plicofollis layardi*	PH6_arg_Malaysia_lay_Malaysia_ Myanmar
NCBI GenBank	USNM:444080	MH235686	*Plicofollis layardi*	PH6_arg_Malaysia_lay_Malaysia_ Myanmar
NCBI GenBank	SP-79-1	MW498758	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	SP-78-2	MW498757	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	SP-76-1	MW498756	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	AKMA	KY849545	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	MAA5	JX198184	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia

DOI: 10.29677/MR.202506_5(1).0004

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NCBI GenBank	MAA4	JX198183	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	MAA3	JX198182	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	MAA2	JX198181	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	MAA1	JX198180	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	gr10	MH085823	*Plicofollis argyropleuron*	PH7_arg_Malaysia_Indonesia
NCBI GenBank	BW-A7382	GU674102	*Plicofollis argyropleuron*	PH8_arg_Indonesia
NCBI GenBank	Pli5	OP215804	*Plicofollis layardi*	PH9_lay_India
NCBI GenBank	F1708SM-21	MT375176	*Plicofollis layardi*	PH10_lay_Bangladesh
NCBI GenBank	CgA4	KF604683	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA5	KF604682	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA6	KF604681	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA7	KF604680	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA1	KF604679	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA2	KF604678	*Plicofollis magatensis*	PH11_mag_Philippines
NCBI GenBank	CgA3	KF604677	*Plicofollis magatensis*	PH12_mag_Philippines
NCBI GenBank	CASMBAUTRL188	KF824840	*Plicofollis platystomus*	PH13_pla_India
NCBI GenBank	CASMBAUTRL187	KF824839	*Plicofollis platystomus*	PH13_pla_India
NCBI GenBank	CASMBAUTRL186	KF824838	*Plicofollis platystomus*	PH14_pla_India
NCBI GenBank	STAP07	JX198206	*Plicofollis polystaphylodon*	PH15_pol_Malaysia

Marine Research of the National Academy of Marine Research
DOI: 10.29677/MR.202506_5(1).0004