Thailand Natural History Museum Journal 20(1): 39–70 (2026)

A survey of fish fauna in estuary and coastal areas of Samut Songkhram and Petchaburi Provinces, the northwestern Gulf of Thailand

Ruthairat Siriwattanarat[1], Sirikanya Chungthanawong[2], Weerawich Wongroj[3], Hata Harutaka[4], Arin Ngamniyom[5], Porntep Punnarak[6], Khanin Wongroj[7], Jenjit Kudamrongsawat[8] and Veera Vilasri[2]

[1] Forensic Science, Faculty of Science and Technology, Suan Sunandha Rajabhat University, Dusit, Bangkok, 10300, Thailand

[2] Office of Natural Science Research, National Science Museum Thailand, Khlong Luang, Pathumthani, 12120, Thailand

[3] Prasarnmit Elementary Demonstration School, Srinakharinwirot University, Vadhana, Bangkok, 10110, Thailand

[4] Macroevolution Unit, Okinawa Institute of Science and Technology, 1919-1, Tancha, Onna-son, Kunigami-gun, Okinawa, Japan

[5] Faculty of Environmental Culture and Eco-tourism, Srinakharinwirot University, Vadhana, Bangkok, 10110, Thailand

[6] Aquatic Resources Research Institute, Institute Bld.3 Fl.9, Chulalongkorn University, Pathumwan, Bangkok, 10330, Thailand

[7] Newton Sixth Form School, SiamScape Building, Pathumwan, Bangkok, 10330, Thailand

[8] Department of Biology, Faculty of Science, Mahidol University, Ratchathewi, Bangkok, 10400, Thailand

Article history
Received: 11 February 2026
Accepted: 25 March 2026
Published online: 1 May 2026

Corresponding author
Veera Vilasri
E-mail: veera@nsm.or.th

Editor
Dr. Weeyawat Jaitrong
E-mail: polyrhachis@yahoo.com/
weeyawat@nsm.or.th

ABSTRACT

A survey of fish species was conducted in the estuarine and coastal areas of Samut Songkhram and Petchaburi Province, Thailand during January–April 2023. Species composition comprised of 117 species (115 indigenous and 2 introduced) belonging to 46 families and 17 orders. The dominant orders were Acanthuriformes (30 species, 26 % of total species), Carangiformes (23 species, 20 %), Gobiiformes (12 species, 10 %), and Clupeiformes (11 species, 9 %). Species diversity also varied among sampling areas. Fishing villages exhibited higher diversity than areas with extensive fish farming, which showed comparatively low diversity. Fish size also varied among species with assemblages dominated by small-bodied fishes. Medium- and large-bodied sizes were observed in fishing villages while areas with extensive fish farming consisted mainly of small-bodied species. Life-cycle classification revealed a range of life-history strategies with marine-estuarine opportunists being the most common group across all survey stations.

Keywords: species list, species composition, fish sizes, *Sarotherodon melanotheron*

Citation. Siriwattanarat, R., S. Chungthanawong, W. Wongroj, H. Harutaka, A. Ngamniyom, P. Punnarak, K.Wongroj, J. and V. Vilasri. 2026. A survey of fish fauna in estuary and coastal areas of Samut Songkhram and Petchaburi Provinces, the northwestern Gulf of Thailand. *Thailand Natural History Museum Journal* 20(1): 39–70.

INTRODUCTION

The coastal areas of Samut Songkhram and Petchaburi Provinces are located in the western part of the Inner Gulf of Thailand, covering approximately 411 km² across Mueang and Amphawa districts in Samut Songkhram Province and Ban Laem District in Petchaburi Province. The region is characterized by a predominantly flat coastal plain intersected by two major rivers, the Mae Klong and Petchaburi rivers, both of which discharge into the Gulf of Thailand and are interconnected by hundreds of natural and artificial canals. The coastline lacks offshore islands but features extensive tidal wetlands extending up to approximately 3 km from the shoreline. These geomorphological conditions promote the deposition of mixed freshwater and marine sediments derived from riverine and marine inputs. The tidal wetlands and mangrove forests provide diverse habitats for aquatic organisms, including fishes, shrimps, crabs, and mollusks, especially razor clams (*Solen* spp.; locally known as "Hoy Lot"), which are of both ecological and economic importance.

However, over the past half-century, these coastal areas have been subjected to diverse forms of land and resource use. Portions of these areas have been designated as Ramsar sites (OEPP, 2002; ONEP, 2008), while adjacent areas have long supported local fishing communities. More recently, the expansion of aquaculture activities has likely contributed to changes in regional biodiversity, as evidenced by the presence of the non-native black-chinned tilapia (*Sarotherodon melanotheron*) in the area (Worrapimphong *et al*., 2010). In fact, the region has been identified as the initial invasion site of the black-chinned tilapia (Hanpongkittikul *et al*., 2020).

Although the area has long been recognized as a major hotspot of fisheries activities in Thailand, including small-scale fisheries and aquaculture (Awaiwanont and Jindalikit, 2019; Fisheries Statistics Group, 2023), available information on fish diversity remains limited and outdated. An early survey reported only 35 species from 19 families of marine animals harvested for food in Samut Songkhram and Petchaburi Provinces (Fishing Ground Survey Group, 1969). More recently, Pengseesang *et al*. (2022) documented 19 fish species representing 13 families from the mouth of the Mae Klong River in Samut Songkhram Province. These numbers are remarkably low when compared with a previous study reporting 251 fish species in the Inner Gulf of Thailand (Chamason and Phenpraphai, 2020). Given that coastal areas function as critical habitats for fishes, such discrepancies indicate substantial data gaps that require verification. Moreover, coastal areas in Samut Songkhram and Petchaburi Provinces have undergone extensive modification, yet the ecological consequences of these changes remain poorly understood due to the absence of baseline biodiversity data for comparison.

This study provides a list of fish species collected from eight sampling stations along estuarine and coastal areas of Samut Songkhram and Petchaburi Provinces. The selected stations represented areas characterized by two types human activities–local fishing and aquaculture, which may present varying influences on fish diversity. In addition, variations of fish size classes and their life-history strategies were examined in relation to survey stations to show the ecological significance of these activities within the study areas.

MATERIALS AND METHODS

Surveys were conducted from 28th January to 1st April 2023 at eight sampling stations in Samut Songkhram and Petchaburi Provinces along the western coasts of the inner Gulf of Thailand (Figures 1–2 and Table 1). The stations were classified into three groups including (1) stations 1, 2, and 3 located at a fishing village near the mouth of Petchaburi River at Ban Laem, (2) stations 4, 5, 6 located at a fishing village near the mouth of Bang Tabun River, and (3) stations 7, 8 located in aquaculture areas. Sampling was conducted using gill nets, cast nets, hand nets, and set bag nets, as well as purchasing fish from local fishmongers to increase the probability of finding more species (ST1, 2, 4).

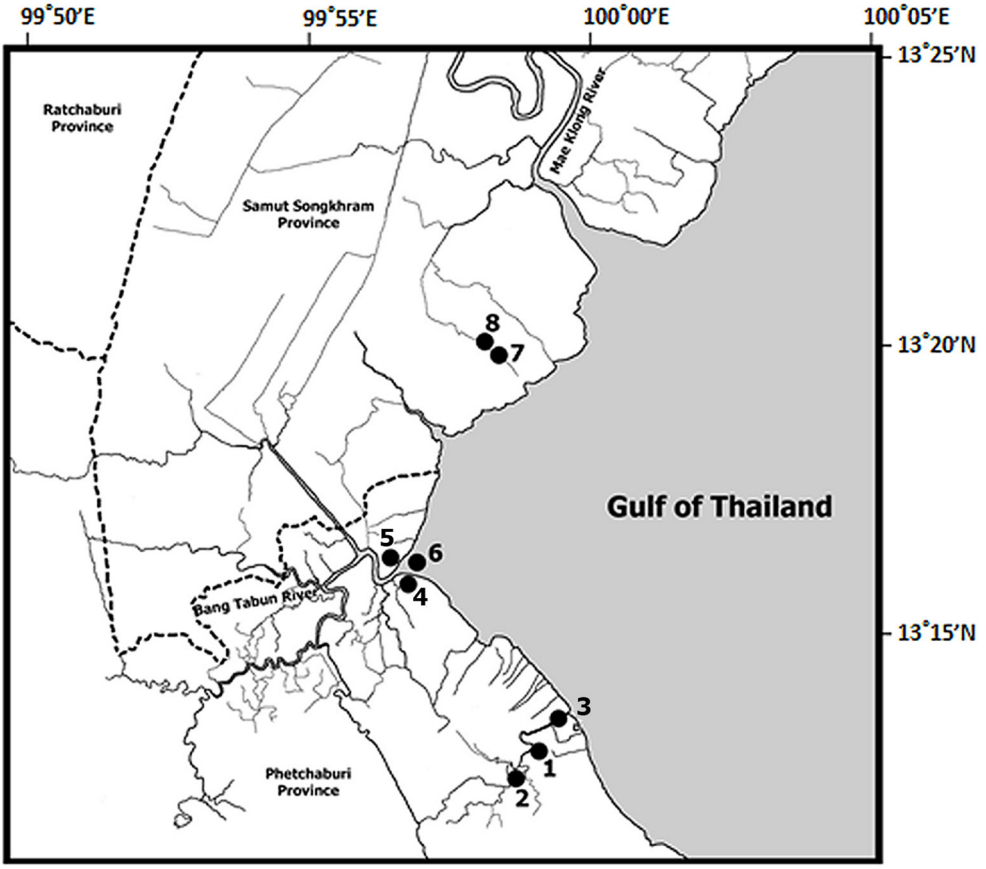

Figure 1. Map of the estuarine and coastal areas in Samut Songkhram and Petchaburi Province showing sampling stations (numbers and solid circles): 1, Wat Ton Son Market; 2, Wat Nai Klang Market; 3, the river mouth of Petchaburi River at Ban Laem; 4, Wat Pak Ao Bang Tabun Market; 5, a fishing village near the river mouth of Bang Tabun River; 6, the river mouth of Bang Tabun River; 7, Phuyai Chong Homestay; and 8, Phuyai Joy Shrimp Farm.

Figure 2. Fish collection at the sampling station 8 Phuyai Joy Shrimp Farm on 19th March 2023.

A total of 719 fish specimens were collected and curatorially prepared following Motomura and Ishikawa (2013). All specimens were deposited in the fish collection of the Natural History Museum, the National Science Museum Thailand (THNHM). Specimens were identified to species using recent references and pictorial guide books. The systematic arrangement of higher taxa followed Van der Laan *et al*. (2025). Species lists were organized alphabetically under the family level. Measurements of the standard length (SL) and the total length (TL) followed Hubbs and Lagler (1964). The body length (BL) was measured as Toyama *et al.* (2020). Figure legends of photographs of representative specimens included registered numbers, specimen sizes and condition at the time of photography as either fresh (FS) or preserved in 70% ethanol (PS).

The determination of the life cycle categories for species was modified from Potter *et al*. (1993), including marine straggler (M), marine-estuarine opportunist (ME), marine-estuarine-freshwater opportunist (MEF), estuarine straggler (E) and estuarine-freshwater opportunist (EF). Life cycle information was compiled from Matsunuma *et al*. (2011), Yoshida *et al*. (2013), Kimura *et al*. (2018), Nagao Natural Environment Foundation (2021), and Froese and Pauly (2025) (Table 1).

Proportions of fish at the family level were calculated to identify common and rare groups. Data were grouped according to survey station category, life cycle category, and maximum size class (five ranges). Results were presented descriptively in tables and diagrams.

RESULTS

Species list

Order Carcharhinidformes
Family Cacharhinidae
1. ***Carcharhinus sorrah*** **(Valenciennes, 1839)** (Plate 1A)
ST2, THNHM-F23132 (1 specimen, 820 mm TL, 20 Mar) **(1 specimen)**.

Order Myliobatiformes
Family Dasyatidae
2. ***Brevitrygon heterura*** **(Bleeker, 1852)** (Plate 1B)
ST1, THNHM-F23079 (1 specimen, 116 mm TL, 1 Apr); ST2, THNHM-F22849 (1 specimen, 301 mm TL, 20 Mar); ST5, THNHM-F23083 (1 specimen, 333 mm TL, 1 Apr), F23336–7 (2 specimens, 332–371 mm TL, 19 Mar) **(5 specimens)**.
3. ***Hemitrygon bennetti*** **(Müller and Henle, 1841)** (Plate 1C)
ST2, THNHM-F22862 (1 specimen, 400 mm TL, 20 Mar) **(1 specimen)**.

Order Anguilliformes
Family Ophichthidae
4. ***Pisodonophis boro*** **(Hamilton, 1822)** (Plate 1D)
ST4, THNHM-F23133 (1 specimen, 1,180 mm TL, 19 Mar); ST5, THNHM-F24701 (1 specimen, 1,123 mm TL, 2 May), F24703 (1 specimen, 1,142 mm TL, 2 May) **(3 specimens)**.
5. ***Pisodonophis cancrivorus*** **(Richardson, 1848)** (Plate 1E)
ST2, THNHM-F22762 (1 specimen, 720 mm TL, 20 Mar) **(1 specimen)**.
Family Muraenesocidae
6. ***Muraenesox cinereus*** **(Forsskål, 1775)** (Plate 1F)
ST1, THNHM-F23068–72 (5 specimens, 320–411 mm TL, 1 Apr), F23116–7 (2 specimens, 339–411 mm TL, 21 Mar), F23161–2 (2 specimens, 234–249 mm TL, 19 Mar); ST5, THNHM-F24704 (1 specimen, 494 mm TL, 2 May) **(10 specimens)**.

Order Clupeiformes
Family Engraulidae
7. ***Stolephorus oceanicus*** **Hardenberg, 1933** (Plate 1G)
ST2, THNHM-F22801 (1 specimen, 85 mm SL, 20 Mar) **(1 specimen)**.
8. ***Thryssa katana*** **(Hata, Lavoué and Motomura, 2022)** (Plate 1H)
ST1, THNHM-F23145 (1 specimen, 98 mm SL, 21 Mar), F23276–7 (2 specimens, 110–111 mm SL, 19 Mar); ST2, THNHM-F22753 (1 specimen, 107 mm SL, 20 Mar), F22781 (1 specimen, 75 mm SL, 20 Mar), F22797–9 (3 specimens, 101–147 mm SL, 20 Mar); ST3, THNHM-F22721 (1 specimen, 137 mm SL, 28 Jan), F22731 (1 specimen, 129 mm SL, 28 Jan); ST5, THNHM-F23042 (1 specimen, 125 mm SL, 1 Apr), F23086 (1 specimen, 120 mm SL, 1 Apr 2023), F23333–4 (2 specimens, 106–151mm SL, 19 Mar); ST6, THNHM-F23236 (1 specimen, 103 mm SL, 19 Feb), F23244–6 (3 specimens, 119–131 mm SL, 19 Feb) **(18 specimens)**.
Family Pristigasteridae
9. ***Ilisha kampeni*** **(Weber and de Beaufort, 1913)** (Plate 1I)
ST3, THNHM-F22725 (1 specimen, 152 mm SL, 28 Jan); ST5, THNHM-F23092–93 (2 specimens, 128–129 mm SL, 1 Apr); ST6, THNHM-F23248 (1 specimen, 140 mm SL, 19 Feb) **(4 specimens)**.

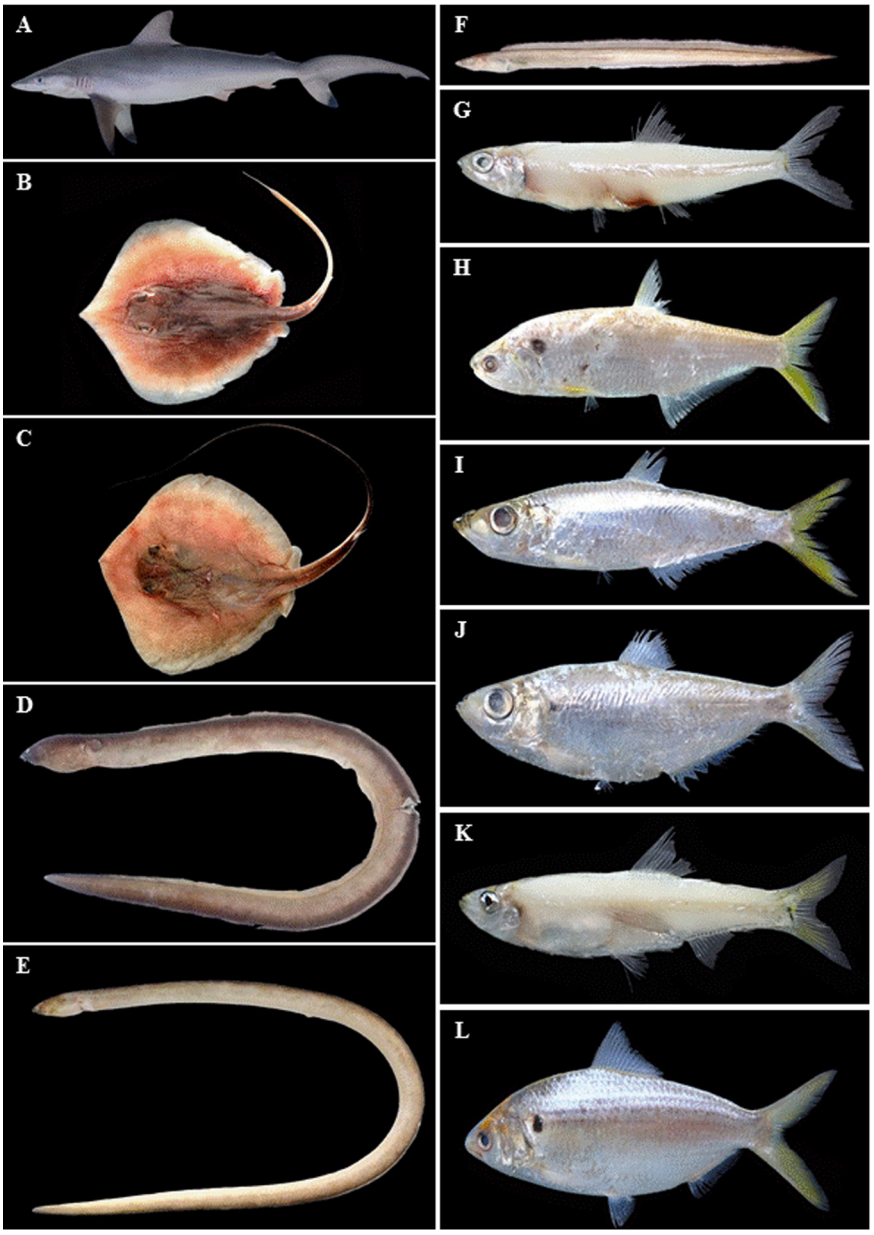

Plate 1. A, *Carcharhinus sorrah* (THNHM-F23132, 820 mm TL, FS); B, *Brevitrygon heterura* (THNHM-F22849, 301 mm TL, FS); C, *Hemitrygon bennetti* (THNHM-F22862, 400 mm TL, FS); D, *Pisodonophis boro* (THNHM-F23133, 1,180 mm TL, FS); E, *Pisodonophis cancrivorus* (THNHM-F22762, 720 mm TL, FS); F, *Muraenesox cinereus* (THNHM-F23072, 320 mm TL, FS); G, *Stolephorus oceanicus* (THNHM-F22801, 85 mm SL, FS); H, *Thryssa katana* (THNHM-F22731, 129 mm SL, FS); I, *Ilisha kampeni* (THNHM-F23092, 128 mm SL, FS); J, *Ilisha melastoma* (THNHM-F23144, 110 mm SL, FS); K, *Corica laciniata* (THNHM-F23394, 43 mm SL, FS); L, *Anodontostoma chacunda* (THNHM-F23306, 134 mm SL, FS).

10. ***Ilisha melastoma*** **(Bloch and Schneider, 1801)** (Plate 1J)
ST1, THNHM-F23143–4 (2 specimens, 106– 110 mm SL, 21 Mar), F23274–5 (2 specimens, 107–112 mm SL, 19 Mar), F23307–8 (2 specimens, 109–114 mm SL, 21 Mar); ST5, THNHM-F23328 (1 specimen, 120 mm SL, 19 Mar) **(7 specimens)**.

Family Ehiravidae

11. ***Corica laciniata*** **Fowler, 1935** (Plate 1K)
ST8, THNHM-F23394 (1 specimen, 43 mm SL, 19 Mar), F23403–17 (15 specimens, 39–49 mm SL, 19 Mar) **(16 specimens)**.

Family Dorosomatidae

12. ***Anodontostoma chacunda*** **(Hamilton, 1822)** (Plate 1L)
ST1, THNHM-F23304–6 (3 specimens, 107–134 mm SL, 21 Mar); ST5, THNHM-F23329 (1 specimen, 106 mm SL, 19 Mar) **(4 specimens)**.

13. ***Anodontostoma thailandae*** **Wongratana, 1983** (Plate 2A)
ST1, THNHM-F23281 (1 specimen, 99 mm SL, 19 Mar) **(1 specimen)**.

14. ***Escualosa thoracata*** **(Valenciennes, 1847)** (Plate 2B)
ST1, THNHM-F23170–2 (3 specimens, 74–79 mm SL, 19 Mar 2023); ST2, THNHM-F22747 (1 specimen, 78 mm SL, 20 Mar), F22782 (1 specimen, 97 mm SL, 20 Mar), F22848 (1 specimen, 67 mm SL, 20 Mar), F22897 (1 specimen, 80 mm SL, 20 Mar); ST6, THNHM-F23237 (1 specimen, 78 mm SL, 19 Feb), F23243 (1 specimen, 81 mm SL, 19 Feb) **(9 specimens)**.

15. ***Hilsa kelee*** **(Cuvier, 1829)** (Plate 2C)
ST1, THNHM-F23076 (1 specimen, 197 mm SL, 1 Apr), F23121–2 (2 specimens, 132– 143 mm SL, 21 Mar), F23154 (1 specimen, 147 mm SL, 19 Mar), F23280 (1 specimen, 81 mm SL, 19 Mar), F23309–10 (2 specimens, 116–139 mm SL, 21 Mar); ST2, THNHM-F22756 (1 specimen, 160 mm SL, 20 Mar); ST3, THNHM-F23028–9 (2 specimens, 126–147 mm SL, 28 Jan); ST5, THNHM-F23326–7 (2 specimens, 121–173 mm SL, 19 Mar), F24705 (1 specimen, 215 mm SL, 2 May); ST7, THNHM-F23393 (1 specimen, 37 mm SL, 19 Mar) **(14 specimens)**.

16. ***Sardinella albella*** **(Valenciennes, 1847)** (Plate 2D)
ST1, THNHM-F23167–8 (2 specimens, 87–97 mm SL, 19 Mar), F23311 (1 specimen, 88 mm SL, 21 Mar), F23141 (1 specimen, 86 mm SL, 21 Mar); ST2, THNHM-F22796 (1 specimen, 99 mm SL, 20 Mar); ST3, THNHM-F23024 (1 specimen, 105 mm SL, 28 Jan); ST5, THNHM-F23044 (1 specimen, 94 mm SL, 1 Apr), F23330 (1 specimen, 91 mm SL, 19 Mar); ST7, THNHM-F22823 (1 specimen, 58 mm SL, 20 Apr) **(9 specimens)**.

17. ***Sardinella gibbosa*** **(Bleeker, 1849)** (Plate 2E)
ST1, THNHM-F23140 (1 specimen, 90 mm SL, 21 Mar), F23142 (1 specimen, 108 mm SL, 21 Mar), F23169 (1 specimen, 92 mm SL, 19 Mar), F23278–9 (2 specimens, 90 mm SL, 19 Mar); ST2, THNHM-F22750–2 (3 specimens, 91–100 mm SL, 20 Mar), F22778 (1 specimen, 93 mm SL, 20 Mar); ST6, THNHM-F23236 (1 specimen, 100 mm SL, 19 Feb) **(10 specimens)**.

Order Gonorynchiformes

Family Chanidae

18. ***Chanos chanos*** **(Fabricius, 1775)** (Plate 2F)
ST3, THNHM-F22714 (1 specimen, 224 mm SL, 28 Jan) **(1 specimen)**.

Order Siluriformes

Family Plotosidae

19. ***Plotosus lineatus*** **(Thunberg, 1787)** (Plate 2G)
ST2, THNHM-F22851 (1 specimen, 204 mm SL, 20 Mar), F23252 (1 specimen with tail cut off, 63 mm HL, 20 Mar) **(2 specimens)**.

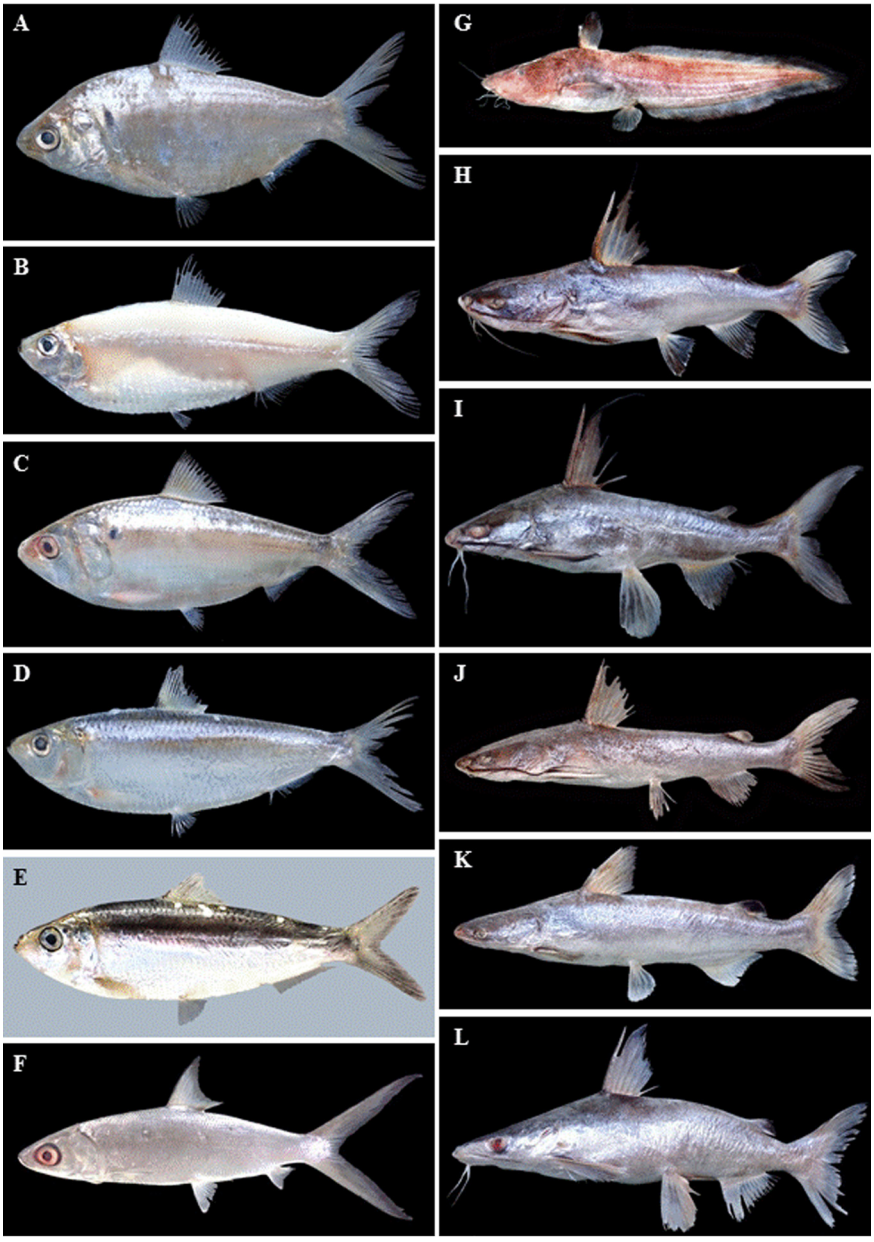

Plate 2. A, *Anodontostoma thailandae* (THNHM-F23281, 99 mm SL, FS); B, *Escualosa thoracata* (THNHM-F22897, 80 mm SL, FS); C, *Hilsa kelee* (THNHM-F23122, 143 mm SL, FS); D, *Sardinella albella* (THNHM-F23024, 105 mm SL, FS); E, *Sardinella gibbosa* (THNHM-F22778, 93 mm SL, FS); F, *Chanos chanos* (THNHM-F22714, 224 mm SL, FS); G, *Plotosus lineatus* (THNHM-F22852, 270 mm SL, FS); H, *Arius maculatus* (THNHM-F22853, 183 mm SL, FS); I, *Arius venosus* (THNHM-F23055, 115 mm SL, FS); J, *Hexanematichthys sagor* (THNHM-F22850, 179 mm SL, FS); K, *Osteogeneiosus militaris* (THNHM-F22861, 173 mm SL, FS); L, *Plicofollis dussumieri* (THNHM-F23011, 212 mm SL, FS).

Family Ariidae

20. ***Arius maculatus*** **(Thunberg, 1792)** (Plate 2H)

ST1, THNHM-F23253 (1 specimen, 169 mm SL, 19 Mar); ST2, THNHM-F22742–3 (2 specimens, 152–158mm SL, 20 Mar), F22853 (1 specimen, 183 mm SL, 20 Mar), F22898 (1 specimen, 89 mm SL, 20 Mar); ST3, THNHM-F22735–6 (2 specimens, 185–231 mm SL, 28 Jan), F23012 (1 specimen, 158 mm SL, 28 Jan); ST5, F23053–4 (2 specimens, 161–206mm SL, 1 Apr), F23335 (1 specimen, 183 mm SL, 19 Mar); ST6, THNHM-F23003 (1 specimen, 217 mm SL, 18 Feb) **(12 specimens)**.

21. ***Arius venosus*** **Valenciennes, 1840** (Plate 2I)

ST3, THNHM-F22709 (1 specimen, 163 mm SL, 28 Jan); ST5, THNHM-F23055 (1 specimen, 115 mm SL, 1 Apr); ST6, THNHM-F23250–1 (2 specimens, 148–154 mm SL, 19 Feb) **(4 specimens)**.

22. ***Hexanematichthys sagor*** **(Hamilton, 1822)** (Plate 2J)

ST2, THNHM-F22764 (1 specimen, 136 mm SL, 20 Mar), F22850 (1 specimen, 179 mm SL, 20 Mar); ST5, THNHM-F23038 (1 specimen, 228 mm SL, 1 Apr); ST6, THNHM-F23004 (1 specimen, 271 mm SL, 18 Feb); ST7, THNHM-F22824 (1 specimen, 198 mm SL, 20 Mar) **(5 specimens)**.

23. ***Osteogeneiosus militaris*** **(Linnaeus, 1758)** (Plate 2K)

ST2, THNHM-F22860–1 (2 specimens, 173–221 mm SL, 20 Mar) **(2 specimens)**.

24. ***Plicofollis dussumieri*** **(Valenciennes, 1840)** (Plate 2L)

ST3, THNHM-F23011 (1 specimen, 212 mm SL, 28 Jan); ST5, THNHM-F23037 (1 specimen, 206 mm SL, 1 Apr), F23056 (1 specimen, 171 mm SL, 1 Apr) **(3 specimens)**.

Order Aulopiformes

Family Synodontidae

25. ***Saurida micropectoralis*** **Shindo and Yamada, 1972** (Plate 3A)

ST1, THNHM-F23064 (1 specimen, 128 mm SL, 1 Apr), F23295–303 (9 specimens, 128–170 mm SL, 19 Mar); ST2, THNHM-F22768 (1 specimen, 178 mm SL, 20 Mar) **(11 specimens)**.

Order Gobiiformes

Family Eleotridae

26. ***Butis humeralis*** **(Valenciennes, 1837)** (Plate 3B).

ST7, THNHM-F22826–7 (2 specimens, 117–122 mm SL, 20 Mar), F23390 (1 specimen, 60 mm SL, 19 Mar); ST8, THNHM-F23387 (1 specimen, 56 mm SL, 19 Mar) **(4 specimens)**.

Family Gobiidae

27. ***Acentrogobius viridipunctatus*** **(Valenciennes, 1837)** (Plate 3C)

ST7, THNHM-F23376–7 (2 specimens, 64–95 mm SL, 19 Mar); ST8, THNHM-F23204–5 (2 specimens, 57–91 mm SL, 19 Mar) **(4 specimens)**.

28. ***Drombus globiceps*** **(Hora, 1923)** (Plate 3D)

ST7, THNHM-F24374–6 (3 specimens, 23–27 mm SL, 19 Mar), F24378 (1 specimen, 25 mm SL, 19 Mar) **(4 specimens)**.

Family Oxudercidae

29. ***Boleophthalmus boddarti*** **(Pallas, 1770)** (Plate 3E)

ST7, THNHM-F22818–22 (5 specimens, 114–133 mm SL, 20 Mar) **(5 specimens)**.

30. ***Eugnathogobius variegatus*** **(Peters, 1868)** (Plate 3F)

ST7, THNHM-F24362 (1 specimen, 23 mm SL, 19 Mar), F24368 (1 specimen, 24 mm SL, 19 Mar), F24382 (1 specimen, 27 mm SL, 19 Mar) **(3 specimens)**.

31. ***Gobiopterus chuno*** **(Hamilton, 1822)** (Plate 3G)

ST7, THNHM-F24301–31 (31 specimens, 17–20 mm SL, 19 Mar), F24381 (1 specimen, 19 mm SL, 19 Mar) **(32 specimens)**.

32. ***Hemigobius hoevenii* (Bleeker, 1851)** (Plate 3H)

ST 7, THNHM-F24367 (1 specimen, 17 mm SL, 19 Mar), F24379 (1 specimen, 25 mm SL, 19 Mar) **(2 specimens)**.

33. ***Periophthalmodon schlosseri* (Pallas, 1770)** (Plate 3I)

ST7, THNHM-F22812–7 (6 specimens, 53–223 mm SL, 20 Mar) **(6 specimens)**.

34. ***Pseudapocryptes elongatus* (Cuvier, 1816)** (Plate 3J)

ST2, THNHM-F22763 (1 specimen, 142 mm SL, 20 Mar) **(1 specimen)**.

35. ***Pseudogobius avicennia* (Herre, 1940)** (Plate 3K)

ST7, THNHM-F24369–73 (5 specimens, 20–31 mm SL, 19 Mar), F24380 (1 specimen, 30 mm SL, 19 Mar) **(6 specimens)**.

36. ***Stigmatogobius pleurostigma* (Bleeker, 1849)** (Plate 3L)

ST7, THNHM-F23391 (1 specimen, 47 mm SL, 19 Mar) **(1 specimen)**.

37. ***Trypauchen vagina* (Bloch and Schneider, 1801)** (Plate 3M)

ST1, THNHM-F23256–62 (7 specimens, 147–161 mm SL, 19 Mar); ST2, 20 Mar, THNHM-F22795 (1 specimen, 123 mm SL, 20 Mar), THNHM-F22854–9 (6 specimens, 133–157 mm SL, 20 Mar) **(14 specimens)**.

Order Scombriformes

Family Stromateidae

38. ***Pampus chinensis* (Euphrasen, 1788)** (Plate 3N)

ST1, THNHM-F23059 (1 specimen, 196 mm SL, 1 Apr) **(1 specimen)**.

Family Scombridae

39. ***Rastrelliger brachysoma* (Bleeker, 1851)** (Plate 3O)

ST1, THNHM-F23187 (1 specimen, 134 mm SL, 19 Mar); ST2, THNHM-F22759 (1 specimen, 154 mm SL, 20 Mar); ST3, THNHM-F22707 (1 specimen, 145 mm SL, 28 Jan), F23007 (1 specimen, 147 mm SL, 28 Jan); ST6, THNHM-F23234 (1 specimen, 147 mm SL, 19 Feb) **(5 specimens)**.

40. ***Rastrelliger kanagurta* (Cuvier, 1816)** (Plate 4A)

ST4, THNHM-F23346 (1 specimen, 164 mm SL, 19 Mar) **(1 specimen)**.

41. ***Scomberomorus commerson* (Lacepède, 1800)** (Plate 4B)

ST1, THNHM-F23060 (1 specimen, 131 mm SL, 1 Apr), F23123–4 (2 specimens, 122–131mm SL, 21 Mar), F23152–3 (2 specimens, 127–148mm SL, 19 Mar); ST2, THNHM-F22755 (1 specimen, 159 mm SL, 20 Mar); ST3, THNHM-F22719 (1 specimen, 235 mm SL, 28 Jan), F22730 (1 specimen, 193 mm SL, 28 Jan), F23025 (1 specimen, 132 mm SL, 28 Jan); ST5, THNHM-F23344 (1 specimen, 201 mm SL, 19 Mar) **(10 specimens)**.

Family Trichiuridae

42. ***Trichiurus lepturus* Linnaeus, 1758** (Plate 4C)

ST2, THNHM-F22808 (1 specimen, 309 mm TL, 20 Mar); ST3, THNHM-F23022 (1 specimen, 468 mm TL, 28 Jan) **(2 specimens)**.

Order Carangiformes

Family Latidae

43. ***Lates calcarifer* (Bloch, 1790)** (Plate 4D)

ST6, THNHM-F23001 (1 specimen, 274 mm SL, 18 Feb) **(1 specimen)**.

Family Sphyraenidae

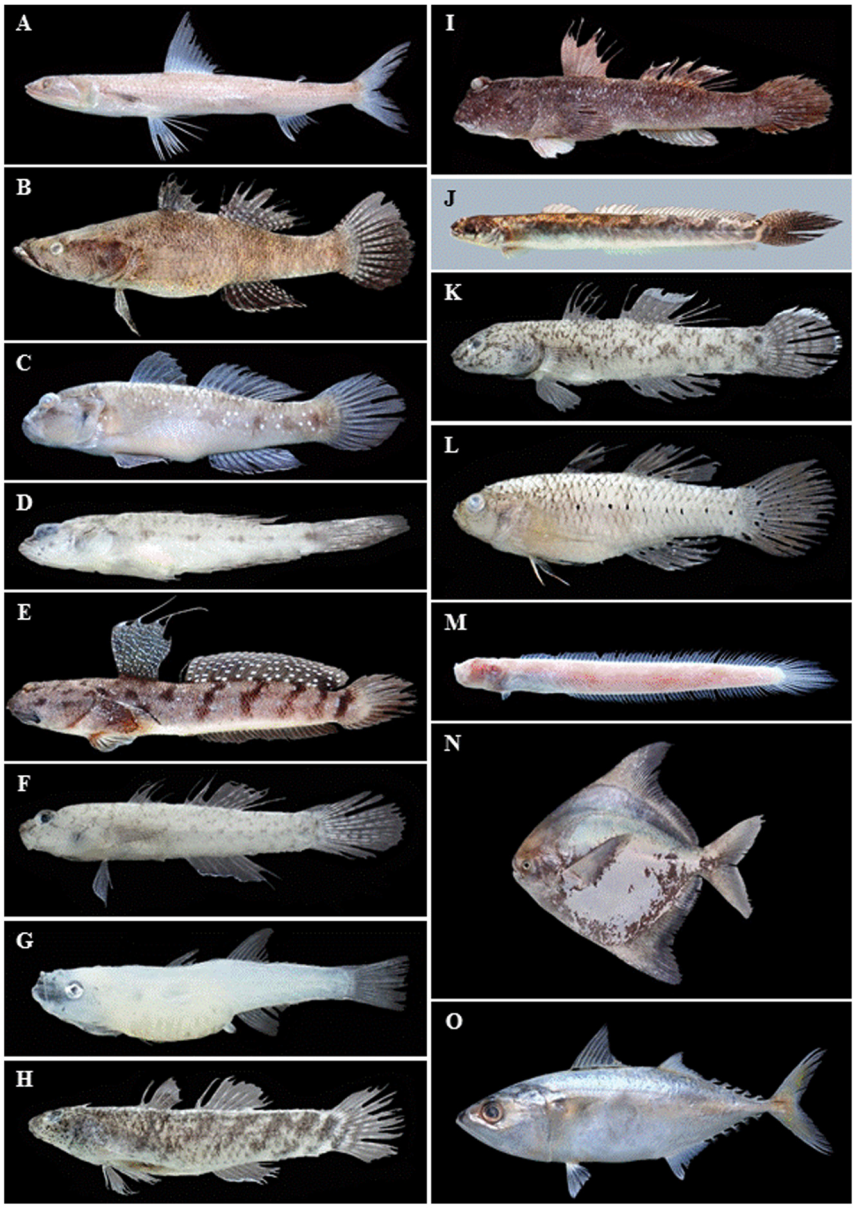

Plate 3. A, *Saurida micropectoralis* (THNHM-F23295, 152 mm SL, FS); B, *Butis humeralis* (THNHM-F22826, 117 mm SL, FS); C, *Acentrogobius viridipunctatus* (THNHM-F23205, 91 mm SL, FS); D, *Drombus globiceps* (THNHM-F24378, 25 mm SL, FS); E, *Boleophthalmus boddarti* (THNHM-F22822, 126 mm SL, FS); F, *Eugnathogobius variegatus* (THNHM-F24382, 27 mm SL, FS); G, *Gobiopterus chuno* (THNHM-F24381, 19 mm SL, FS); H, *Hemigobius hoevenii* (THNHM-F24379, 25 mm SL, FS); I, *Periophthalmodon schlosseri* (THNHM-F22815, 191 mm SL, FS); J, *Pseudapocryptes elongatus* (THNHM-F22763, 142 mm SL, FS); K, *Pseudogobius avicennia* (THNHM-F24380, 30 mm SL, FS); L, *Stigmatogobius pleurostigma* (THNHM-F23391, 47 mm SL, FS); M, *Trypauchen vagina* (THNHM-F22795, 123 mm SL, FS); N, *Pampus chinensis* (THNHM-F23059, 196 mm SL, FS); O, *Rastrelliger brachysoma* (THNHM-F23007, 147 mm SL, FS).

44. ***Sphyraena jello*** **Cuvier, 1829** (Plate 4E)
ST2, THNHM-F23199 (1 specimen, 550 mm SL, 20 Mar) **(1 specimen)**.
45. ***Sphyraena putnamae*** **Jordan and Seale, 1905** (Plate 4F)
ST3, THNHM-F23023 (1 specimen, 219 mm SL, 28 Jan); ST5, THNHM-F23036 (1 specimen, 263 mm SL, 1 Apr), F23198 (1 specimen, 264 mm SL, 19 Mar) **(3 specimens)**.
Family Polynemidae
46. ***Eleutheronema tetradactylum*** **(Shaw, 1804)** (Plate 4G)
ST1, THNHM-F23106 (1 specimen, 465 mm SL, 1 Apr), F23125 (1 specimen, 133 mm SL, 21 Mar), F23149–51 (3 specimens, 85–135 mm SL, 19 Mar), F23173 (1 specimen, 87 mm SL, 19 Mar); ST2, THNHM-F22746 (1 specimen, 138 mm SL, 20 Mar); ST3, THNHM-F22708 (1 specimen, 184 mm SL, 28 Jan), F22720 (1 specimen, 148 mm SL, 28 Jan), F23018 (1 specimen, 167 mm SL, 28 Jan); ST5, THNHM-F23048 (1 specimen, 186 mm SL, 1 Apr), F23097–100 (4 specimens, 104–159 mm SL, 1 Apr), F23321–2 (2 specimens, 159–161 mm SL, 19 Mar) **(17 specimens)**.
Family Soleidae
47. ***Dagetichthys commersonnii*** **(Lacepède, 1802)** (Plate 4H)
ST1, THNHM-F23194 (1 specimen, 138 mm SL, 19 Mar); ST5, THNHM-F23353–4 (2 specimens, 180–203mm SL, 19 Mar); ST6, THNHM-F23239 (1 specimen, 164 mm SL, 19 Feb) **(4 specimens)**.
Family Cynoglossidae
48. ***Cynoglossus arel*** **(Bloch and Schneider, 1801)** (Plate 4I)
ST3, THNHM-F23017 (1 specimen, 270 mm SL, 28 Jan); ST5, THNHM-F23041 (1 specimen, 265 mm SL, 1 Apr) **(2 specimens)**.
49. ***Cynoglossus cynoglossus*** **(Hamilton, 1822)** (Plate 4J)
ST1, THNHM-F23195–7 (3 specimens, 92–95 mm SL, 19 Mar); ST2, THNHM-F22783–4 (2 specimens, 71–108mm SL, 20 Mar) **(5 specimens)**.
50. ***Cynoglossus lida*** **(Bleeker, 1851)** (Plate 4K)
ST7, THNHM-F22838 (1 specimen, 126 mm SL, 20 Mar) **(1 specimen)**.
51. ***Cynoglossus lingua*** **Hamilton, 1822** (Plate 4L)
ST2, THNHM-F22794 (1 specimen, 148 mm SL, 20 Mar) **(1 specimen)**.
52. ***Cynoglossus puncticeps*** **(Richardson, 1846)** (Plate 4M)
ST2, THNHM-F22785–9 (5 specimens, 80–104 mm SL, 20 Mar) **(5 specimens)**.
53. ***Cynoglossus quadrilineatus*** **(Bleeker, 1851)** (Plate 4N)
ST1, THNHM-F23126 (1 specimen, 191 mm SL, 21 Mar), F23265 (1 specimen, 185 mm SL, 19 Mar); ST2, THNHM-F22790–3 (4 specimens, 134–187 mm SL, 20 Mar); ST5, THNHM-F23033–5 (3 specimens, 155–189mm SL, 1 Apr) **(9 specimens)**.
Family Carangidae
54. ***Alepes djedaba*** **(Fabricius, 1775)** (Plate 4O)
ST1, THNHM-F23184 (1 specimen, 135 mm SL, 19 Mar); ST2, THNHM-F22760 (1 specimen, 127 mm SL, 20 Mar), F22809 (1 specimen, 153 mm SL, 20 Mar); ST3, THNHM-F22705–6 (2 specimens, 145–150 mm SL, 28 Jan), F22724 (1 specimen, 160 mm SL, 28 Jan), F22729 (1 specimen, 164 mm SL, 28 Jan), F23027 (1 specimen, 147 mm SL, 28 Jan); ST5, THNHM-F23096 (1 specimen, 137 mm SL, 1 Apr), F23345 (1 specimen, 146 mm SL, 19 Mar), F24708 (1 specimen, 146 mm SL, 2 May) **(11 specimens)**.
55. ***Alepes kleinii*** **(Bloch, 1793)** (Plate 4P)
ST1, THNHM-F23181–3 (3 specimens, 99–109 mm SL, 19 Mar), F23273 (1 specimen, 108 mm SL, 19 Mar); ST2, THNHM-F22779–80 (2 specimens, 105 mm SL, 20 Mar), F22899–900

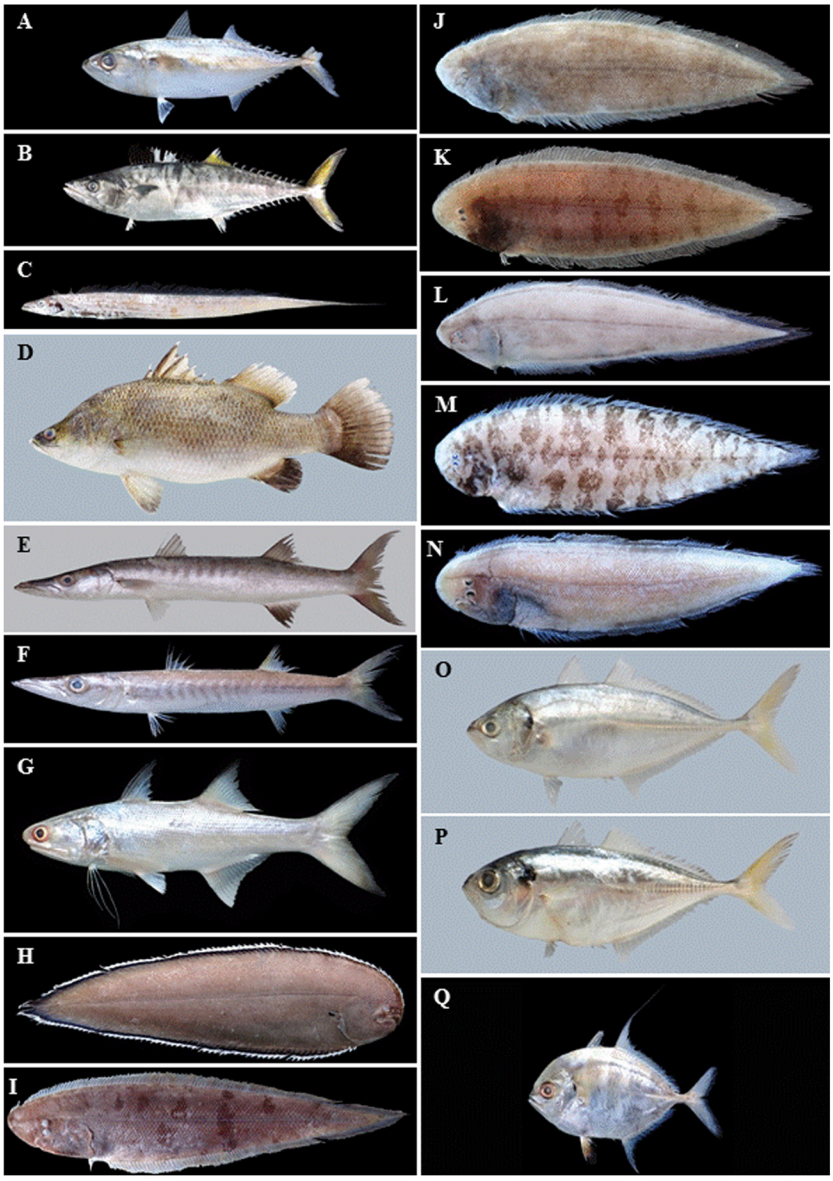

Plate 4. A, *Rastrelliger kanagurta* (THNHM-F23346, 164 mm SL, FS); B, *Scomberomorus commerson* (THNHM-F22730, 193 mm SL, FS); C, *Trichiurus lepturus* (THNHM-F22808, 309 mm TL, FS); D, *Lates calcarifer* (THNHM-F23001, 274 mm SL, FS); E, *Sphyraena jello* (THNHM-F23199, 550 mm SL, FS); F, *Sphyraena putnamae* (THNHM-F23023, 219 mm SL, FS); G, *Eleutheronema tetradactylum* (THNHM-F22708, 184 mm SL, FS); H, *Dagetichthys commersonnii* (THNHM-F23194, 138 mm SL, FS); I, *Cynoglossus arel* (THNHM-F23041, 265 mm SL, FS); J, *Cynoglossus cynoglossus* (THNHM-F22784, 108 mm SL, FS); K, *Cynoglossus lida* (THNHM-F22838, 126 mm SL, FS); L, *Cynoglossus lingua* (THNHM-F22794, 148 mm SL, FS); M, *Cynoglossus puncticeps* (THNHM-F22789, 80 mm SL, FS); N, *Cynoglossus quadrilineatus* (THNHM-F22791, 142 mm SL, FS); O, *Alepes djedaba* (THNHM-F22760, 127 mm SL, FS); P, *Alepes kleinii* (THNHM-F22779, 105 mm SL, FS); Q, *Atropus armatus* (THNHM-F23008, 111 mm SL, FS).

(2 specimens, 96–100 mm SL, 20 Mar); ST5, THNHM-F23325 (1 specimen, 102 mm SL, 19 Mar) **(9 specimens)**.

56. ***Atropus armatus*** **(Forsskål, 1775)** (Plate 4Q)

ST2, THNHM-F22754 (1 specimen, 151 mm SL, 20 Mar); ST3, THNHM-F23008 (1 specimen, 111 mm SL, 28 Jan); ST6, THNHM-F23238 (1 specimen, 133 mm SL, 19 Feb) **(3 specimens)**.

57. ***Atule mate*** **(Cuvier, 1833)** (Plate 5A)

ST5, THNHM-F23030 (1 specimen, 175 mm SL, 1 Apr) **(1 specimen)**.

58. ***Carangoides praeustus*** **(Anonymous [Bennett], 1830)** (Plate 5B)

ST3, THNHM-F22734 (1 specimen, 123 mm SL, 28 Jan); ST5, THNHM-F23332 (1 specimen, 127 mm SL, 19 Mar) **(2 specimens)**.

59. ***Megalaspis cordyla*** **(Linnaeus, 1758)** (Plate 5C)

ST1, THNHM-F23186 (1 specimen, 107 mm SL, 19 Mar); ST5, THNHM-F23045 (1 specimen, 158 mm SL, 1 Apr), F23324 (1 specimen, 167 mm SL, 19 Mar) **(3 specimens)**.

60. ***Parastromateus niger*** **(Bloch, 1795)** (Plate 5D)

ST2, THNHM-F22744 (1 specimen, 126 mm SL, 20 Mar) **(1 specimen)**.

61. ***Scomberoides commersonnianus*** **Lacepède, 1801** (Plate 5E)

ST1, THNHM-F23312 (1 specimen, 147 mm SL, 21 Mar); ST2, THNHM-F22800 (1 specimen, 253 mm SL, 20 Mar); ST5, THNHM-F23323 (1 specimen, 165 mm SL, 19 Mar); ST6, THNHM-F23249 (1 specimen, 175 mm SL, 19 Feb) **(4 specimens)**.

62. ***Scomberoides tol*** **(Cuvier, 1832)** (Plate 5F)

ST2, THNHM-F22870–1 (2 specimens, 121–128 mm SL, 20 Mar); ST3, THNHM-F23026 (1 specimen, 162 mm SL, 28 Jan) **(3 specimens)**.

63. ***Scyris indica*** **Rüppell, 1830** (Plate 5G)

ST1, THNHM-F23193 (1 specimen, 122 mm SL, 19 Mar); ST2, THNHM-F22810 (1 specimen, 121 mm SL, 20 Mar), F22894 (1 specimen, 56 mm SL, 20 Mar); ST3, THNHM-F23005 (1 specimen, 313 mm SL, 28 Jan) **(4 specimens)**.

64. ***Selaroides leptolepis*** **(Cuvier, 1833)** (Plate 5H)

ST1, THNHM-F23185 (1 specimen, 111 mm SL, 19 Mar); ST2, THNHM-F22761 (1 specimen, 100 mm SL, 20 Mar); ST6, THNHM-F23247 (1 specimen, 108 mm SL, 19 Feb) **(3 specimens)**.

Family Rachycentridae

65. ***Rachycentron canadum*** **(Linnaeus, 1766)** (Plate 5I)

ST1, THNHM-F23103–5 (3 specimens, 203–261 mm SL, 1 Apr) **(3 specimens)**.

Order Beloniformes

Family Belonidae

66. ***Strongylura leiura*** **(Bleeker, 1850)** (Plate 5J)

ST5, THNHM-F23047 (1 specimen, 163 mm BL, 1 Apr) **(1 specimen)**.

67. ***Strongylura strongylura*** **(van Hasselt, 1823)** (Plate 5K)

ST1, THNHM-F23065 (1 specimen, 232 mm BL, 1 Apr), F23107–8 (2 specimens, 134–141 mm BL, 21 Mar), F23109 (1 specimen, 254 mm SL/159 mm SL, 21 Mar), F23159 (1 specimen, 174 mm SL/103 mm SL, 19 Mar), F23160 (1 specimen, 120 mm BL, 19 Mar), F23266 (1 specimen, 263 mm SL/166 mm BL, 19 Mar), F23267–8 (2 specimens, 133–145mm BL, 19 Mar); ST3, THNHM-F22711 (1 specimen, 350 mm SL/224 mm BL, 28 Jan); ST5, THNHM-F23046 (1 specimen, 240 mm BL, 1 Apr), F23102 (1 specimen, 177 mm BL, 1 Apr) **(12 specimens)**.

Family Hemiramphidae

68. ***Hemiramphus archipelagicus*** **Collette and Parin, 1978** (Plate 5L)

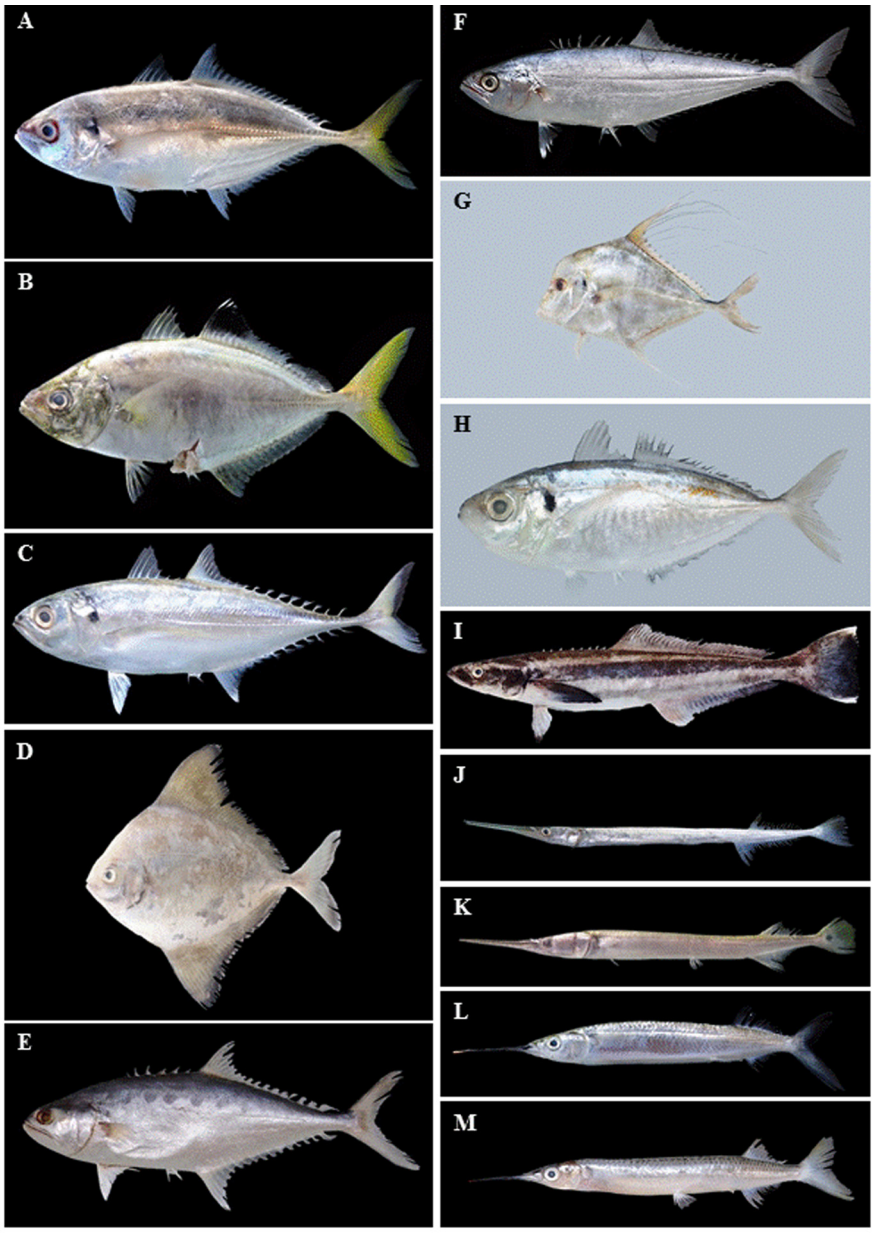

Plate 5. A, *Atule mate* (THNHM-F23030, 175 mm SL, FS); B, *Carangoides praeustus* (THNHM-F22734, 123 mm SL, FS); C, *Megalaspis cordyla* (THNHM-F23045, 158 mm SL, FS); D, *Parastromateus niger* (THNHM-F22744 , 126 mm SL, FS); E, *Scomberoides commersonnianus* (THNHM-F22800, 253 mm SL, FS); F, *Scomberoides tol* (THNHM-F22870, 128 mm SL, FS); G, *Scyris indica* (THNHM-F23005, 313 mm SL, FS); H, *Selaroides leptolepis* (THNHM-F22761, 100 mm SL, FS); I, *Rachycentron canadum* (THNHM-F23103, 261 mm SL, FS); J, *Strongylura leiura* (THNHM-F23047, 163 mm BL, FS); K, *Strongylura strongylura* (THNHM-F22711, 350 mm SL/224 mm BL, FS); L, *Hemiramphus archipelagicus* (THNHM-F23009, 176 mm SL/135 mm BL, FS); M, *Hyporhamphus limbatus* (THNHM-F23067, 137 mm SL/ 106 mm BL, FS).

ST3, THNHM-F23009 (1 specimen, 176 mm SL/135 mm BL, 28 Jan) **(1 specimen)**.
69. ***Hyporhamphus limbatus*** **(Valenciennes, 1847)** (Plate 5M)
ST1, THNHM-F23066–7 (2 specimens, 137–146 mm SL/106–115 mm BL, 1 Apr), F23110–5 (6 specimens, 115–124 mm SL/91–98 mm BL, 21 Mar), F23158 (1 specimen, 83 mm SL/65 mm BL, 19 Mar), F23269–72 (4 specimens, 136–153 mm SL/106–118 mm BL, 19 Mar); ST5, THNHM-F23101 (1 specimen, 135 mm SL/102 mm SL, 1 Apr) **(14 specimens)**.
70. ***Hyporhamphus quoyi*** **(Valenciennes, 1847)** (Plate 6A)
ST6, THNHM-F23235 (1 specimen, 169 mm SL/131 mm BL, 19 Feb) **(1 specimen)**.
71. ***Zenarchopterus ectuntio*** **(Hamilton, 1822)** (Plate 6B)
ST7, THNHM-F22828 (1 specimen, 87 mm BL, 20 Mar), F22829–36 (8 specimens, 73–101 mm SL/51–76 mm BL, 20 Mar) **(9 specimens)**.
Family Adrianichthyidae
72. ***Oryzias haugiangensis*** **Roberts, 1998** (Plate 6C)
ST7, THNHM-F24332–56 (25 specimens, 15–24 mm SL, 19 Mar) **(25 specimens)**.

Order Cichliformes
Family Cichlidae
73. ***Oreochromis mossambicus*** **(Peters, 1852)** (Plate 6D)
ST3, THNHM-F22698 (1 specimen, 78 mm SL, 28 Jan), F22703(1 specimen, 70 mm SL, 28 Jan); ST7, THNHM-F23355–6 (2 specimens, 76–80mm SL, 19 Mar), F24357–61 (5 specimens, 8–52 mm SL, 19 Mar), F24363–6 (4 specimens, 8–10 mm SL, 19 Mar); ST8, THNHM-F23219–21 (3 specimens, 55–130 mm SL, 19 Mar), F23229 (1 specimen, 57 mm SL, 19 Mar), F23231–3 (3 specimens, 41–58 mm SL, 19 Mar) **(20 specimens)**.
74. ***Sarotherodon melanotheron*** **Rüppell, 1852** (Plate 6E)
ST5, THNHM-F23057–8 (2 specimens, 175–183 mm SL, 1 Apr), F23341 (1 specimen, 158 mm SL, 19 Mar), F24710–1 (2 specimens, 156–160 mm SL, 2 May); ST7, THNHM-F23357–75 (19 specimens, 73–166 mm SL, 19 Mar); ST8, THNHM-F23222–8 (7 specimens, 44–60 mm SL, 19 Mar), F23230 (1 specimen, 59 mm SL, 19 Mar) **(32 specimens)**.

Order Mugiliformes
Family Ambassidae
75. ***Ambassis interrupta*** **Bleeker, 1853** (Plate 6F)
ST7, THNHM-F22825 (1 specimen, 65 mm SL, 20 Mar) **(1 specimen)**.
76. ***Ambassis kopsii*** **Bleeker, 1858** (Plate 6G)
ST8, THNHM-F23389 (1 specimen, 57 mm SL, 19 Mar) **(1 specimen)**.
77. ***Ambassis nalua*** **(Hamilton, 1822)** (Plate 6H)
ST7, THNHM-F22839–47 (9 specimens, 56–73 mm SL, 20 Mar) **(9 specimens)**.
78. ***Ambassis vachellii*** **Richardson, 1846** (Plate 6I)
ST1, THNHM-F23164–5 (2 specimens, 53 mm SL, 19 Mar); ST7, THNHM-F22837 (1 specimen, 61 mm SL, 20 Mar), F23392 (1 specimen, 41 mm SL, 19 Mar); ST8, THNHM-F23388 (1 specimen, 37 mm SL, 19 Mar), F23444–5 (2 specimens, 35 mm SL, 19 Mar) **(7 specimens)**.
Family Mugilidae
79. ***Moolgarda tade*** **(Fabricius 1775)** (Plate 6J)
ST1, THNHM-F23127 (1 specimen, 188 mm SL, 21 Mar) **(1 specimen)**.
80. ***Osteomugil perusii*** **(Valenciennes, 1836)** (Plate 6K)
ST1, 19 Mar, THNHM-F23188–9 (2 specimens, 71–85 mm SL, 19 Mar); ST2, THNHM-F22749 (1 specimen, 110 mm SL, 20 Mar), F22806–7 (2 specimens, 106–143 mm SL, 20 Mar) **(5 specimens)**.

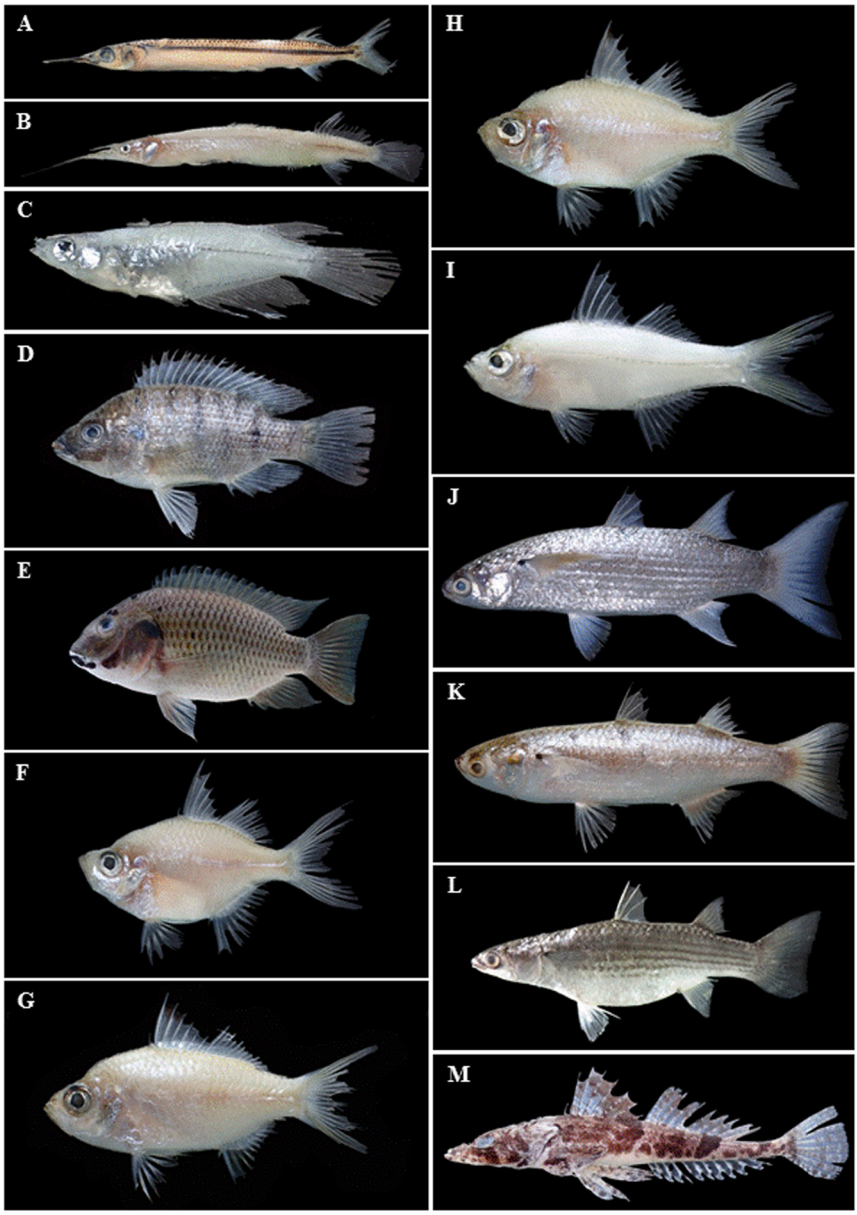

Plate 6. A, *Hyporhamphus quoyi* (THNHM-F23235, 169 mm SL/131 mm BL, PS); B, *Zenarchopterus ectuntio* (THNHM-F22829, 101 mm SL/74 mm BL, FS); C, *Oryzias haugiangensis* (THNHM-F24332, 20 mm SL, FS); D, *Oreochromis mossambicus* (THNHM-F23220, 73 mm SL, FS); E, *Sarotherodon melanotheron* (THNHM-F23058, 175 mm SL, FS); F, *Ambassis interrupta* (THNHM-F22825, 65 mm SL, FS); G, *Ambassis kopsi* (THNHM-F23389, 57 mm SL, FS); H, *Ambassis nalua* (THNHM-F22839, 67 mm SL, FS); I, *Ambassis vachellii* (THNHM-F23392, 41 mm SL, FS); J, *Moolgarda tade* (THNHM-F23127, 188 mm SL, FS); K, *Osteomugil perusii* (THNHM-F22807, 143 mm SL, FS); L, *Planiliza subviridis* (THNHM-F22717, 162 mm SL, FS); M, *Cociella punctata* (THNHM-F23091, 135 mm SL, FS).

81. ***Planiliza subviridis*** **(Valenciennes, 1836)** (Plate 6L).
ST1, THNHM-F23063 (1 specimen, 145 mm SL, 1 Apr), F23128–30 (3 specimens, 101–142 mm SL, 21 Mar), F23131 (1 specimen, 151 mm SL, 21 Mar), F23190–3 (4 specimens, 89–122 mm SL, 19 Mar); ST2, F22805 (1 specimen, 157 mm SL, 20 Mar); ST3, THNHM-F22713 (1 specimen, 122 mm SL, 28 Jan), F22716–7 (2 specimens, 145–162 mm SL, 28 Jan), F22728 (1 specimen, 162 mm SL, 28 Jan), F23014 (1 specimen, 144 mm SL, 28 Jan); ST7, THNHM-F23377–82 (6 specimens, 118–178mm SL, 19 Mar); ST8, THNHM-F23395–402 (8 specimens, 60–88 mm SL, 19 Mar) **(29 specimens)**.

Order Perciformes
Family Platycephalidae
82. ***Cociella punctata*** **(Cuvier, 1829)** (Plate 6M)
ST5, THNHM-F23091 (1 specimen, 135 mm SL, 1 Apr) **(1 specimen)**.

Order Centrarchiformes
Family Terapontidae
83. ***Terapon jarbua*** **(Fabricius, 1775)** (Plate 7A)
ST1, THNHM-F23095 (1 specimen, 125 mm SL, 1 Apr), F23166 (1 specimen, 101 mm SL, 19 Mar); ST6, THNHM-F23242 (1 specimen, 121 mm SL, 19 Feb) **(3 specimens)**.

Order Acanthuriformes
Family Gerreidae
84. ***Gerres decacanthus*** **(Bleeker, 1864)** (Plate 7B)
ST5, THNHM-F23331 (1 specimen, 85 mm SL, 19 Mar) **(1 specimen)**.
85. ***Gerres erythrourus*** **(Bloch, 1791)** (Plate 7C)
ST3, THNHM-F22740 (1 specimen, 157 mm SL, 28 Jan); ST6, THNHM-F23240–1 (2 specimens, 151–94 mm SL, 19 Feb) **(3 specimens)**.
86. ***Gerres filamentosus*** **Cuvier, 1829** (Plate 7D)
ST1, THNHM-F23163 (1 specimen, 134 mm SL, 19 Mar); ST3, THNHM-F22704 (1 specimen, 118 mm SL, 28 Jan), F22727 (1 specimen, 133 mm SL, 28 Jan) **(3 specimens)**.
Family Sillaginidae
87. ***Sillago ingenuua*** **McKay, 1985** (Plate 7E)
ST2, THNHM-F22771–4 (4 specimens, 103–124 mm SL, 20 Mar); ST3, THNHM-F23021 (1 specimen, 112 mm SL, 28 Jan); ST5, THNHM-F23085 (1 specimen, 128 mm SL, 1 Apr) **(6 specimens)**.
88. ***Sillago sihama*** **(Fabricius, 1775)** (Plate 7F)
ST2, THNHM-F22775–7 (3 specimens, 130–141 mm SL, 20 Mar); ST5, THNHM-F23040 (1 specimen, 139 mm SL, 1 Apr), F23315–8 (4 specimens, 128–158 mm SL, 19 Mar) **(8 specimens)**.
Family Drepaneidae
89. ***Drepane punctata*** **(Linnaeus, 1758)** (Plate 7G)
ST1, THNHM-F23074 (1 specimen, 110 mm SL, 1 Apr), F23146–7 (2 specimens, 87–92 mm SL, 19 Mar); ST3, THNHM-F22732–3 (2 specimens, 93–100 mm SL, 28 Jan), F22739 (1 specimen, 119 mm SL, 28 Jan), F23013 (1 specimen, 136 mm SL, 28 Jan); ST5, THNHM-F23342–3 (2 specimens, 107–138 mm SL, 19 Mar) **(9 specimens)**.
Family Sciaenidae
90. ***Dendrophysa russelii*** **(Cuvier, 1829)** (Plate 7H)
ST1, THNHM-F23061–2 (2 specimens, 114–119 mm SL, 1 Apr), F23139 (1 specimen, 111

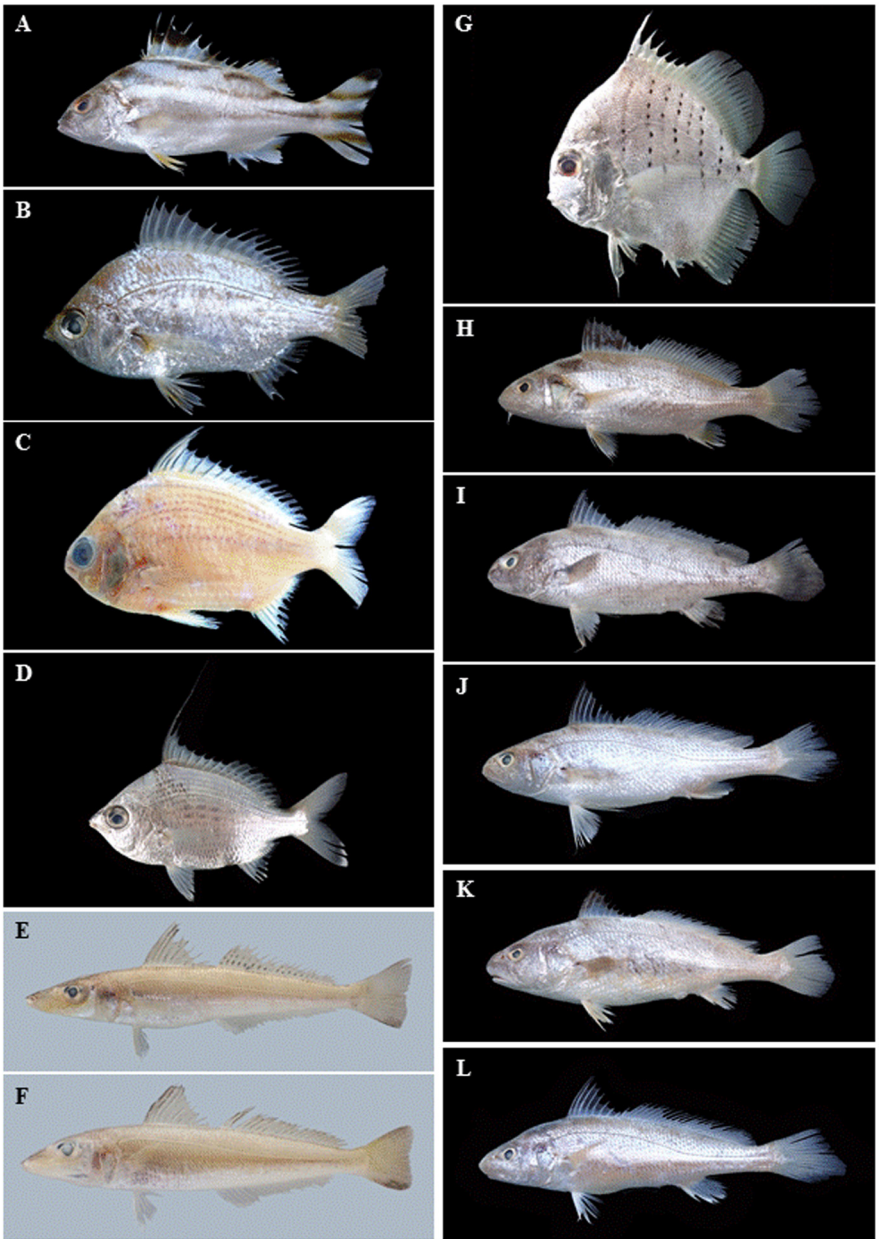

Plate 7. A, *Terapon jarbua* (THNHM-F23095, 125 mm SL, FS); B, *Gerres decacanthus* (THNHM-F23331, 85 mm SL, FS); C, *Gerres erythrourus* (THNHM-F22740, 157 mm SL, PS); D, *Gerres filamentosus* (THNHM-F22727, 133 mm SL, FS); E, *Sillago ingenuua* (THNHM-F22774, 124 mm SL, FS); F, *Sillago sihama* (THNHM-F22776, 133 mm SL, FS); G, *Drepane punctata* (THNHM-F22733, 93 mm SL, FS); H, *Dendrophysa russelii* (THNHM-F23062, 114 mm SL, FS); I, *Johnius belangerii* (THNHM-F23089, 139 mm SL, FS); J, *Johnius carouna* (THNHM-F23135, 126 mm SL, FS); K, *Johnius macrorhynus* (THNHM-F23292, 150 mm SL, FS); L, *Johnius weberi* (THNHM-F23136, 121 mm SL, FS).

mm SL, 21 Mar) **(3 specimens)**.

91. ***Johnius belangerii*** **(Cuvier, 1830)** (Plate 7I)

ST1, F23137–8 (2 specimens, 122–142 mm SL, 21 Mar), F23175–6 (2 specimens, 64–66 mm SL, 19 Mar), F23313–4 (2 specimens, 132–141mm SL, 21 Mar); ST2, THNHM-F23200 (1 specimen, 61 mm SL, 20 Mar), F22770 (1 specimen, 135 mm SL, 20 Mar); ST3, THNHM-F22712 (1 specimen, 129 mm SL, 28 Jan); ST5, THNHM-F23088–9 (2 specimens, 134–139 mm SL, 1 Apr) **(11 specimens)**.

92. ***Johnius carouna*** **(Cuvier, 1830)** (Plate 7J)

ST1, THNHM-F23135 (1 specimen, 126 mm SL, 21 Mar), F23174 (1 specimen, 126 mm SL, 19 Mar), F23178–9 (2 specimens, 67–68 mm SL, 19 Mar), F23283–91 (9 specimens, 118–136 mm SL, 19 Mar), F23294 (1 specimen, 121 mm SL, 19 Mar); ST2, THNHM-F22769 (1 specimen, 112 mm SL, 20 Mar); ST5, THNHM-F23090 (1 specimen, 106 mm SL, 1 Apr) **(16 specimens)**.

93. ***Johnius macrorhynus*** **(Lal Mohan, 1976)** (Plate 7K)

ST1, THNHM-F23292–3 (2 specimens, 150–156 mm SL, 19 Mar) **(2 specimens)**.

94. ***Johnius weberi*** **Hardenberg, 1936** (Plate 7L)

ST1, THNHM-F23136 (1 specimen, 121 mm SL, 21 Mar); ST3, THNHM-F23039 (1 specimen, 125 mm SL, 1 Apr) **(2 specimens)**.

95. ***Nibea soldado*** **(Lacepède, 1802)** (Plate 8A)

ST1, THNHM-F22999–3000 (2 specimens, 175–178 mm SL, 28 Jan), F23177 (1 specimen, 79 mm SL, 19 Mar); ST2, THNHM-F22745 (1 specimen, 138 mm SL, 20 Mar), F22802–3 (2 specimens, 133–185 mm SL, 20 Mar); ST3, THNHM-F23015 (1 specimen, 156 mm SL, 28 Jan); ST5, THNHM-F23319 (1 specimen, 152 mm SL, 19 Mar), F24706–7(2 specimens, 157–177 mm SL, 2 May) **(10 specimens)**.

96. ***Otolithes ruber*** **(Bloch and Schneider, 1801)** (Plate 8B)

ST1, THNHM-F23180 (1 specimen, 70 mm SL, 19 Mar); ST3, THNHM-F22715 (1 specimen, 200 mm SL, 28 Jan); ST5, THNHM-F23031–2 (2 specimens, 133–151 mm SL, 1 Apr) **(4 specimens)**.

97. ***Panna microdon*** **(Bleeker, 1849)** (Plate 8C)

ST3, THNHM-F22718 (1 specimen, 224 mm SL, 28 Jan), F22741 (1 specimen, 211 mm SL, 28 Jan); ST5, THNHM-F23049 (1 specimen, 181 mm SL, 1 Apr), F23320 (1 specimen, 205 mm SL, 19 Mar) **(4 specimens)**.

98. ***Pennahia aneus*** **(Bloch, 1793)** (Plate 8D)

ST2, THNHM-F22765–7 (3 specimens, 86–100 mm SL, 20 Mar); ST5, THNHM-F23094 (1 specimen, 99 mm SL, 1 Apr) **(4 specimens)**.

Family Haemulidae

99. ***Pomadasys argenteus*** **(Forsskål, 1775)** (Plate 8E)

ST5, THNHM-F23043 (1 specimen, 171 mm SL, 1 Apr) **(1 specimen)**.

100. ***Pomadasys maculatus*** **(Bloch, 1793)** (Plate 8F)

ST2, THNHM-F22804 (1 specimen, 96 mm SL, 20 Mar) **(1 specimen)**.

Family Lutjanidae

101. ***Lutjanus johnii*** **(Bloch, 1792)** (Plate 8G)

ST1, THNHM-F23282 (1 specimen, 95 mm SL, 19 Mar) **(1 specimen)**.

102. ***Lutjanus russellii*** **(Bleeker, 1849)** (Plate 8H)

ST3, THNHM-F23006 (1 specimen, 158 mm SL, 28 Jan); ST6, F23002 (1 specimen, 216 mm SL, 18 Feb) **(2 specimens)**.

Family Leiognathidae

103. ***Deveximentum insidiator*** **(Bloch, 1787)** (Plate 8I)

ST2, THNHM-F22883–90 (8 specimens, 72–79 mm SL, 20 Mar); ST3, THNHM-F23019 (1

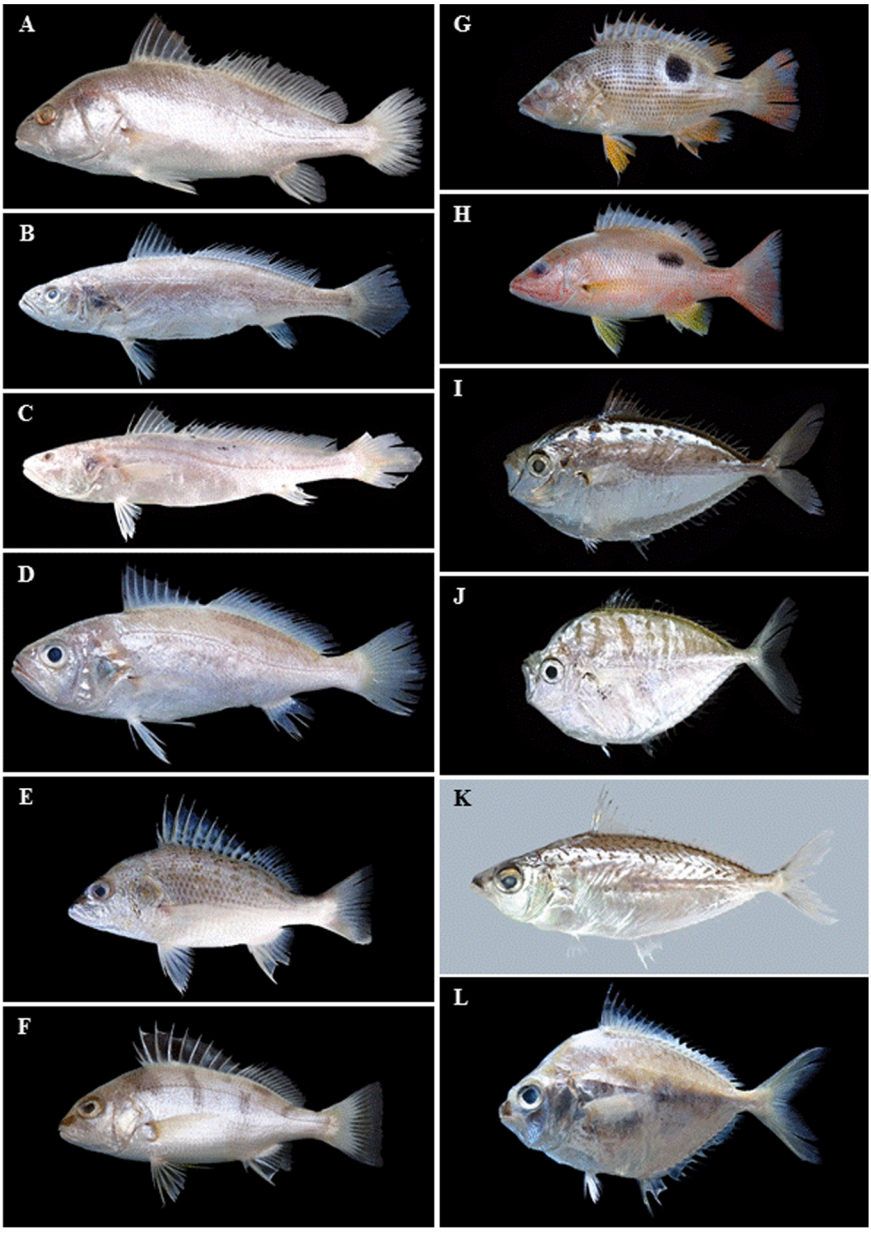

Plate 8. A, *Nibea soldado* (THNHM-F22802, 185 mm SL, FS); B, *Otolithes ruber* (THNHM-F23032, 133 mm SL, FS); C, *Panna microdon* (THNHM-F22718, 224 mm SL, FS); D, *Pennahia aneus* (THNHM-F23094, 99 mm SL, FS); E, *Pomadasys argenteus* (THNHM-F23043, 171 mm SL, FS); F, *Pomadasys maculatus* (THNHM-F22804, 96 mm SL, FS); G, *Lutjanus johnii* (THNHM-F23282, 95 mm SL, FS); H, *Lutjanus russellii* (THNHM-F23006, 158 mm SL, FS); I, *Devexímentum insidiator* (THNHM-F22886, 79 mm SL, FS); J, *Devexímentum ruconius* (THNHM-F22891, 44 mm SL, FS); K, *Equulites elongatus* (THNHM-F22748 , 69 mm SL, FS); L, *Eubleekeria jonesi* (THNHM-F23156, 96 mm SL, FS).

specimen, 75 mm SL, 28 Jan) **(9 specimens)**.
104. ***Devexim*entum *ruconius* (Hamilton, 1822)** (Plate 8J)
ST2, THNHM-F22891–2 (2 specimens, 33–44 mm SL, 20 Mar) **(2 specimens)**.
105. ***Equulites elongatus* (Günther, 1874)** (Plate 8K)
ST2, THNHM-F22748 (1 specimen, 69 mm SL, 20 Mar) **(1 specimen)**.
106. ***Eubleekeria jonesi* (James, 1971)** (Plate 8L)
ST1, THNHM-F23077 (1 specimen, 78 mm SL, 1 Apr), F23087 (1 specimen, 103 mm SL, 1 Apr), F23118–19 (2 specimens, 92–93 mm SL, 21 Mar), F23120 (1 specimen, 88 mm SL, 21 Mar), F23156–57 (2 specimens, 80–96 mm SL, 19 Mar), F23263 (1 specimen, 90 mm SL, 19 Mar), F23314 (1 specimen, 91 mm SL, 21 Mar); ST2, THNHM-F22872 (1 specimen, 53 mm SL, 20 Mar); ST3, THNHM-F23020 (1 specimen, 94 mm SL, 28 Jan); ST5, THNHM-F23340 (1 specimen, 84 mm SL, 19 Mar) **(12 specimens)**.
107. ***Gazza minuta* (Bloch, 1795)** (Plate 9A)
ST2, THNHM-F22878–82 (5 specimens, 57–68 mm SL, 20 Mar) **(5 specimens)**.
108. ***Nuchequula gerreoides* (Bleeker, 1851)** (Plate 9B)
ST1, THNHM-F23078 (1 specimen, 92 mm SL, 1 Apr); ST2, THNHM-F22875 (1 specimen, 75 mm SL, 20 Mar); ST3, THNHM-F22699 (1 specimen, 94 mm SL, 28 Jan); ST5, THNHM-F23051 (1 specimen, 95 mm SL, 1 Apr), F23338–9 (2 specimens, 98–99 mm SL, 19 Mar); ST8, THNHM-F23442–3 (2 specimens, 28–29 mm SL, 19 Mar) **(8 specimens)**.
109. ***Nuchequula longicornis* Kimura, Kimura and Ikejima, 2008** (Plate 9C)
ST1, THNHM-F23264 (1 specimen, 94 mm SL, 19 Mar); ST2, THNHM-F22873–4 (2 specimens, 68–70 mm SL, 20 Mar), F22876–7 (2 specimens, 67–68 mm SL, 20 Mar); ST3, THNHM-F22723 (1 specimen, 90 mm SL, 28 Jan) **(6 specimens)**.
Family Sparidae
110. ***Acanthopagrus pacificus* Iwatsuki, Kume and Yoshino, 2010** (Plate 9D)
ST1, THNHM-F23073 (1 specimen, 177 mm SL, 1 Apr); ST3, THNHM-F22710 (1 specimen, 138 mm SL, 28 Jan), F22738 (1 specimen, 181 mm SL, 28 Jan) **(3 specimens)**.
Family Siganidae
111. ***Siganus fuscescens* (Houttuyn, 1782)** (Plate 9E)
ST2, THNHM-F22811 (1 specimen, 39 mm SL, 20 Mar), F22864–9 (6 specimens, 35–93 mm SL, 20 Mar); ST5, THNHM-F23050 (1 specimen, 99 mm SL, 1 Apr) **(8 specimens)**.
112. ***Siganus javus* (Linnaeus, 1766)** (Plate 9F)
ST1, THNHM-F23155 (1 specimen, 126 mm SL, 19 Mar), F23254–5 (2 specimens, 123–126mm SL, 19 Mar); ST2, THNHM-F22757 (1 specimen, 130 mm SL, 20 Mar), F22893 (1 specimen, 81 mm SL, 20 Mar); ST3, THNHM-F22701 (1 specimen, 111 mm SL, 28 Jan), F23010 (1 specimen, 154 mm SL, 28 Jan), F23016 (1 specimen, 128 mm SL, 28 Jan); ST5, THNHM-F23080–2 (3 specimens, 93–110mm SL, 1 Apr), F23350 (1 specimen, 111 mm SL, 19 Mar); ST8, THNHM-F23202–3 (2 specimens, 73–156mm SL, 19 Mar) **(14 specimens)**.
Family Scatophagidae
113. ***Scatophagus argus* (Linnaeus, 1766)** (Plate 9G)
ST1, THNHM-F23075 (1 specimen, 80 mm SL, 1 Apr), F23148 (1 specimen, 110 mm SL, 19 Mar); ST2, THNHM-F22758 (1 specimen, 127 mm SL, 20 Mar); ST3, THNHM-F22700 (1 specimen, 110 mm SL, 28 Jan), F22722 (1 specimen, 101 mm SL, 28 Jan); ST5, THNHM-F23084 (1 specimen, 113 mm SL, 1 Apr), F23351–2 (2 specimens, 77–105 mm SL, 19 Mar); ST8, THNHM-F23384–6 (3 specimens, 32–64 mm SL, 19 Mar) **(11 specimens)**.

Order Tetraodontiformes
Family Triacanthidae
114. ***Triacanthus nieuhofii* Bleeker, 1851** (Plate 9H)
ST3, THNHM-F22702 (1 specimen, 120 mm SL, 28 Jan), F22726 (1 specimen, 137 mm

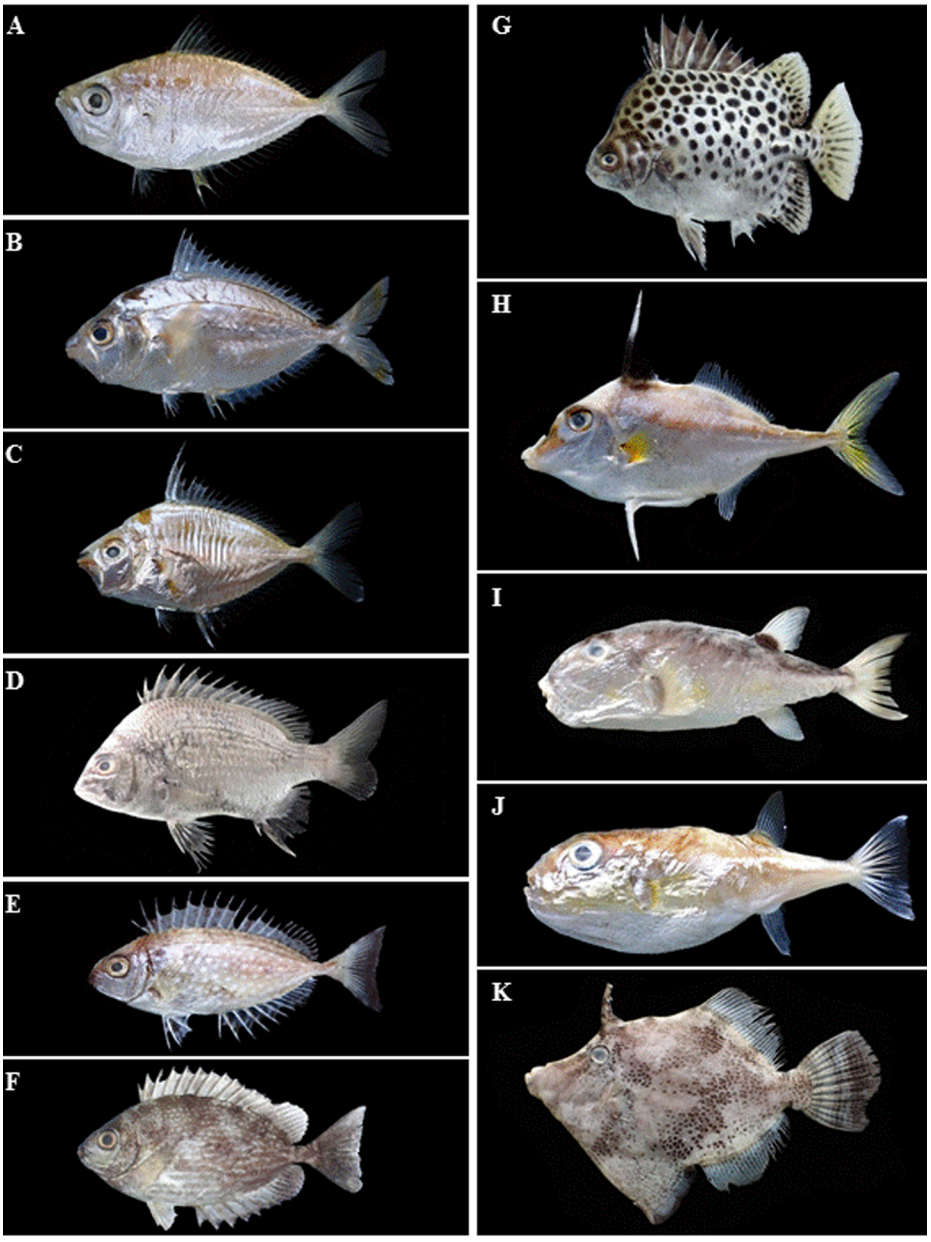

Plate 9. A, *Gazza minuta* (THNHM-F22878, 68 mm SL, FS); B, *Nuchequula gerreoides* (THNHM-F23051, 95 mm SL, FS); C, *Nuchequula longicornis* (THNHM-F22873, 70 mm SL, FS); D, *Acanthopagrus pacificus* (THNHM-F22710, 138 mm SL, FS); E, *Siganus fuscescens* (THNHM-F22864, 93 mm SL, FS); F, *Siganus javus* (THNHM-F22757, 130 mm SL, FS); G, *Scatophagus argus* (THNHM-F22758, 127 mm SL, FS); H, *Triacanthus nieuhofii* (THNHM-F22896, 97 mm SL, FS); I, *Lagocephalus lunaris* (THNHM-F24709, 155 mm SL, FS); J, *Lagocephalus spadiceus* (THNHM-F22863, 75 mm SL, FS); K, *Monacanthus chinensis* (THNHM-F24712, 130 mm SL, FS).

SL, 28 Jan), F22895–6 (2 specimens, 79–97mm SL, 28 Jan); ST5, THNHM-F23347–9 (3 specimens, 84–155 mm SL, 19 Mar); ST8, THNHM-F23206–18 (13 specimens, 61–78 mm SL, 19 Mar) **(20 specimens)**.

Family Tetraodontidae

115. ***Lagocephalus lunaris* (Bloch and Schneider, 1801)** (Plate 9I)

ST5, THNHM-F24709 (1 specimen, 155 mm SL, 2 May) **(1 specimen)**.

116. ***Lagocephalus spadiceus* (Richardson, 1845)** (Plate 9J)

ST2, THNHM-F22863 (1 specimen, 75 mm SL, 20 Mar); ST5, THNHM-F24702 (1 specimen, 105 mm SL, 2 May) **(2 specimens)**.

Family Monacanthidae

117. ***Monacanthus chinensis* (Osbeck, 1765)** (Plate 9K)

ST5, THNHM-F24712–4 (3 specimens, 124–170 mm SL, 2 May) **(3 specimens)**.

Species composition and comparison with different categories of fish sizes, sampling stations and life cycles (Table 1; Figures 3–5; Plates 1–9)

A total of 718 specimens were obtained and identified representing 117 species from 46 families and 17 orders (Table 1). Species richness was highest in Acanthuriformes with 30 species (26 %) followed by Carangiformes with 23 species (20 %). Other orders represented by more than 10 species included 11 species of Clupeiformes (9 %) and 12 species of Gobiiformes (10 %) (Figure 3). Of these recorded species, 115 species were indigenous. The remaining two species, *Oreochromis mossambicus* and *Sarotherodon melanotheron*, were non-native and detected only at a few sampling stations located in areas with extensive fish farming and two river mouth stations. Neither was observed in local markets.

Fish size varied among species. The largest species record was *Pisodonophis boro* with TL of 1,180 mm. This species was the largest among other species with TL ranging from 1,123 to 1,180 mm. In contrast, the shortest fish was *Oryzias haugiangensis* with SL ranging from 15 to 24 mm. Most fishes were small-bodied with a maximum size of 101–200 mm recorded in 62 species (53.0%) followed by those of the maximum size of ≤100 mm found in 27 species (23.1%) and those of the maximum size of 201–300 mm in 17 species (14.5%) (Table 1).

Larger size classes were represented by fewer taxa. Species with a maximum size of ≥401 mm were Anguilliformes represented by 3 species. Two species in Myliobatiformes exhibited maximum sizes of 301–400 mm. Species with maximum sizes of 201–300 mm included six species of Carangiformes and five species of Siluriformes. Species of a maximum size of 101–200 mm were dominated by 17 species in Acanthuriformes, 14 species in Carangiformes, 6 species in Clupeiformes, 5 species in Beloniformes. Species with maximum sizes of ≤100 mm included 11 species in Acanthuriformes and 7 species in Gobiiformes (Table 1).

Species diversity also varied among sampling areas (Figure 4). A fishing village near the mouth of Petchaburi River at Ban Laem exhibited highest species diversity with 88 species. Another fishing village near the mouth of Bang Tabun River showed 63 species while aquaculture areas presented lowest diversity with 28 species. In areas of extensive fish farms, the assemblage was composed of Gobiiformes with 10 species and Mugiliformes with 5 species. Although seven were found across all three groups of sampling stations, a few species were shared only between certain areas while most were restricted.

Life-cycle classification revealed diverse life-history strategies among the recorded species (Figure 5). The assemblage was dominated by adaptive species including 70 species of marine-estuarine opportunists (60%), 19 species of marine-estuarine-freshwater opportunists (16%) and 1 species of estuarine-freshwater opportunists (1%), but species completing their life cycles comprising 18 species of marine stragglers (15%) and 9 species of estuarine stragglers (8%). Marine-estuarine opportunists were the most common life cycle found in all survey stations.

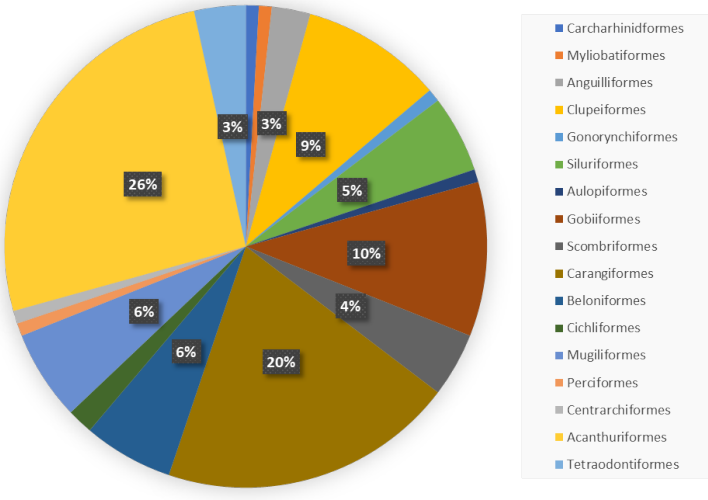

Figure 3. Proportion of different fish orders found in this study. The orders representing 1–2% were not shown in percentage.

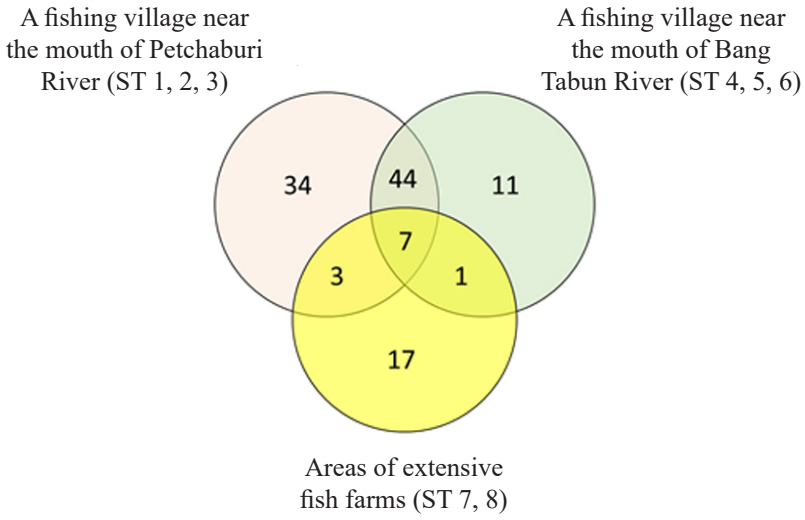

Figure 4. The number of fish species restricted and shared among the survey areas.

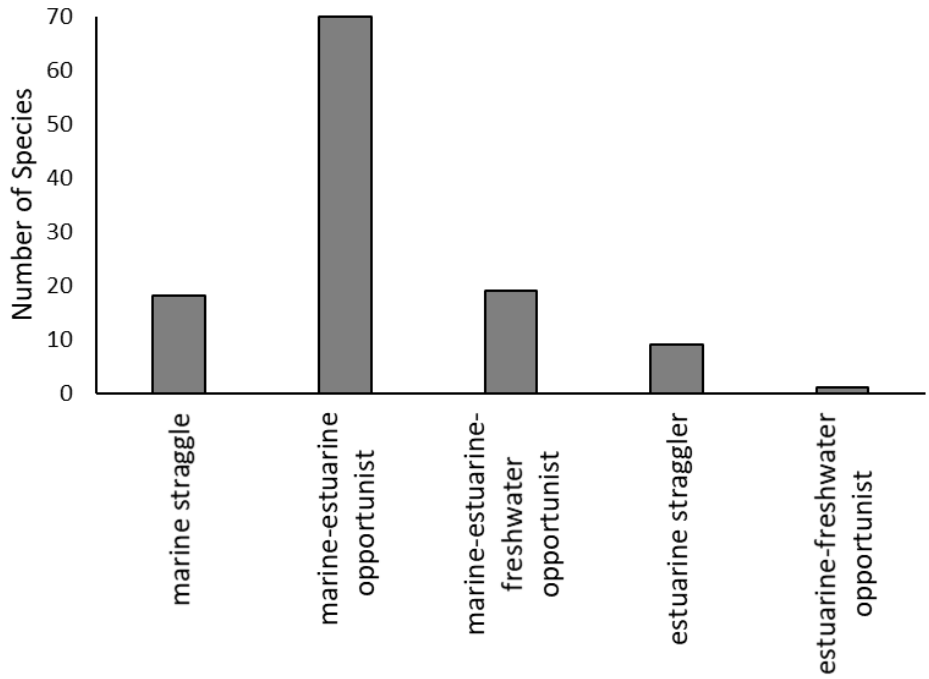

Figure 5. Proportions of five life cycles of fish observed in this study.

Table 1. The list, which indicates number of specimens collected from sampling stations and life cycle, respectively, is arranged by fish size. Species names are followed by sequencing number in species list and taxonomic rank in order—Ac, Acanthuriformes; An, Anguilliformes; Au, Aulopiformes; Be, Beloniformes; Ca, Carangiformes; Ce, Centrarchiformes; Ci, Cichliformes; Cl, Clupeiformes; Cr, Carcharhiniformes; Gb, Gobiiformes; Go, Gonorynchiformes; Mu, Mugiliformes; My, Myliobatiformes; Pe, Perciformes; Sc, Scombriformes; Si, Siluriformes; and Te, Tetraodontiformes.

Species	**No. of specimens**								**n**	**Length (mm)**	**Life-cycle category**
Station group	**A fishing village near the mouth of Petchaburi River**			**A fishing village near the mouth of Bang Tabun River**			**Extensive fish farm**				
Sampling station	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**			
Max length: ≥401 mm (7 spp., 6.0%)											
Pisodonophis boro, 4, An	-	-	-	1	2	-	-	-	3	1,123–1,180 TL	E
Carcharhinus sorrah, 1, Cr	-	1	-	-	-	-	-	-	1	820 TL	ME
Pisodonophis cancrivorus, 5, An	-	1	-	-	-	-	-	-	1	720 TL	ME
Sphyraena jello, 44, Ca	-	1	-	-	-	-	-	-	1	550 SL	ME
Muraenesox cinereus, 6, An	9	-	-	-	1	-	-	-	10	234–494 TL	ME
Trichiurus lepturus, 42, Sc	-	1	1	-	-	-	-	-	2	309–468 SL	ME
Eleutheronema tetradactylum, 46, Ca	6	1	3	-	7	-	-	-	17	85–465 SL	ME

Table 1. Continue.

Species	No. of specimens								n	Length (mm)	Life-cycle category
Station group	**A fishing village near the mouth of Petchaburi River**			**A fishing village near the mouth of Bang Tabun River**			**Extensive fish farm**				
Sampling station	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**			
Max length: 301–400 mm (4 spp., 3.4%)											
Hemitrygon bennetti, 3, My	-	1	-	-	-	-	-	-	1	400 TL	M
Strongylura strongylura, 67, Be	9	-	1	-	2	-	-	-	12	174–387 SL	MEF
Brevitrygon heterura, 2, My	1	1	-	-	3	-	-	-	5	116–371 TL	ME
Scyris indica, 63, Ca	1	2	1	-	-	-	-	-	4	56–313 SL	ME
Max length: 201–300 mm (17 spp., 14.5%)											
Lates calcarifer, 43, Ca	-	-	-	-	-	1	-	-	1	274 SL	MEF
Hexanematichthys sagor, 22, Si	-	2	-	-	1	1	1	-	5	136–271 SL	ME
Cynoglossus arel, 48, Ca	-	-	1	-	1	-	-	-	2	265–270 SL	ME
Plotosus lineatus, 19, Si	-	2	-	-	-	-	-	-	2	204–270 SL	ME
Sphyraena putnamae, 45, Ca	-	-	1	-	2	-	-	-	3	219–264 SL	ME
Rachycentron canadum, 65, Ca	3	-	-	-	-	-	-	-	3	203–261 SL	ME
Scomberoides commersonnianus, 61, Ca	1	1	-	-	1	1	-	-	4	147–253 SL	ME
Scomberomorus commerson, 41, Sc	5	1	3	-	1	-	-	-	10	122–235 SL	ME
Chanos chanos, 18, Go	-	-	1	-	-	-	-	-	1	224 SL	MEF
Panna microdon, 97, Ac	-	-	2	-	2	-	-	-	4	181–224 SL	ME
Periophthalmodon schlosseri, 33, Gb	-	-	-	-	-	-	6	-	6	53–223 SL	ME
Osteogeneiosus militaris, 23, Si	-	2	-	-	-	-	-	-	2	173–221 SL	ME
Lutjanus russellii, 102, Ac	-	-	1	-	-	1	-	-	2	158–216 SL	ME
Hilsa kelee, 15, Cl	7	1	2	-	3	-	1	-	14	37–215 SL	ME
Arius maculatus, 20, Si	1	4	3	-	3	1	-	-	12	89–213 SL	ME
Plicofollis dussumieri, 24, Si	-	-	1	-	2	-	-	-	3	171–212 SL	ME
Dagetichthys commersonnii, 47, Ca	1	-	-	-	2	1	-	-	4	138–203 SL	ME
Max length: 101–200 mm (62 spp., 53.0%)											
Otolithes ruber, 96, Ac	1	-	1	-	2	-	-	-	4	70–200 SL	ME
Pampus chinensis, 38, Sc	1	-	-	-	-	-	-	-	1	196 SL	ME
Cynoglossus quadrilineatus, 53, Ca	2	4	-	-	3	-	-	-	9	134–191 SL	ME
Moolgarda tade, 79, Mu	1	-	-	-	-	-	-	-	1	188 SL	M
Nibea soldado, 95, Ac	3	3	1	-	3	-	-	-	10	79–185 SL	ME
Sarotherodon melanotheron, 74, Ci	-	-	-	-	5	-	19	8	32	44–183 SL	MEF
Acanthopagrus pacificus, 110, Ac	1	-	2	-	-	-	-	-	3	138–181 SL	ME
Saurida micropectoralis, 25, Au	10	1	-	-	-	-	-	-	11	124–178 SL	M
Planiliza subviridis, 81, Mu	9	1	5	-	-	-	6	8	29	60–178 SL	MEF
Hemiramphus archipelagicus, 68, Be	-	-	1	-	-	-	-	-	1	176 SL	M
Atule mate, 57, Ca	-	-	-	-	1	-	-	-	1	175 SL	ME
Pomadasys argenteus, 99, Ac	-	-	-	-	1	-	-	-	1	171 SL	ME

Table 1. Continue.

Species	No. of specimens								n	Length (mm)	Life-cycle category
Station group	**A fishing village near the mouth of Petchaburi River**			**A fishing village near the mouth of Bang Tabun River**			**Extensive fish farm**				
Sampling station	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**			
Monacanthus chinensis, 117, Te	-	-	-	-	3	-	-	-	3	124–170 SL	M
Hyporhamphus quoyi, 70, Be	-	-	-	-	-	1	-	-	1	169 SL	MEF
Megalaspis cordyla, 59, Ca	1	-	-	-	2	-	-	-	3	107–167 SL	ME
Rastrelliger kanagurta, 40, Sc	-	-	-	-	1	-	-	-	1	164 SL	M
Alepes djedaba, 54, Ca	1	2	5	-	3	-	-	-	11	127–164 SL	M
Strongylura leiura, 66, Be	-	-	-	-	1	-	-	-	1	163 BL	ME
Arius venosus, 21, Si	-	-	1	-	1	2	-	-	4	115–163 SL	ME
Scomberoides tol, 62, Ca	-	2	1	-	-	-	-	-	3	121–162 SL	ME
Trypauchen vagina, 37, Gb	7	7	-	-	-	-	-	-	14	123–161 SL	ME
Sillago sihama, 88, Ac	-	3	-	-	5	-	-	-	8	128–158 SL	MEF
Gerres erythrourus, 85, Ac	-	-	1	-	-	2	-	-	3	94–157 SL	ME
Johnius macrorhynus, 93, Ac	2	-	-	-	-	-	-	-	2	150–156 SL	M
Siganus javus, 112, Ac	3	2	3	-	4	-	-	2	14	73–156 SL	ME
Lagocephalus lunaris, 115, Te	-	-	-	-	1	-	-	-	1	155 SL	ME
Triacanthus nieuhofii, 114, Te	-	-	4	-	3	-	-	13	20	61–155 SL	M
Rastrelliger brachysoma, 39, Sc	1	1	2	-	-	1	-	-	5	134–154 SL	ME
Hyporhamphus limbatus, 69, Be	13	-	-	-	1	-	-	-	14	83–153 SL	MEF
Ilisha kampeni, 9, Cl	-	-	1	-	2	1	-	-	4	128–152 SL	MEF
Atropus armatus, 56, Ca	-	1	1	-	-	1	-	-	3	111–151 SL	ME
Thryssa katana, 8, Cl	3	5	2	-	4	4	-	-	18	75–151 SL	ME
Cynoglossus lingua, 51, Ca	-	1	-	-	-	-	-	-	1	148 SL	ME
Osteomugil perusii, 80, Mu	2	3	-	-	-	-	-	-	5	71–143 SL	ME
Pseudapocryptes elongatus, 34, Gb	-	1	-	-	-	-	-	-	1	142 SL	ME
Johnius belangerii, 91, Ac	6	2	1	-	2	-	-	-	11	61–142 SL	ME
Drepane punctata, 89, Ac	3	-	4	-	2	-	-	-	9	87–138 SL	ME
Johnius carouna, 92, Ac	14	1	-	-	1	-	-	-	16	67–136 SL	ME
Cociella punctata, 82, Pe	-	-	-	-	1	-	-	-	1	135 SL	ME
Gerres filamentosus, 86, Ac	1	-	2	-	-	-	-	-	3	118–134 SL	MEF
Anodontostoma chacunda, 12, Cl	3	-	-	-	1	-	-	-	4	106–134 SL	ME
Boleophthalmus boddarti, 29, Gb	-	-	-	-	-	-	5	-	5	114–133 SL	ME
Oreochromis mossambicus, 73, Ci	-	-	2	-	-	-	11	7	20	8–130 SL	MEF
Sillago ingenuua, 87, Ac	-	4	1	-	1	-	-	-	6	103–128 SL	M
Carangoides praeustus, 58, Ca	-	-	1	-	1	-	-	-	2	123–127 SL	M
Scatophagus argus, 113, Ac	2	1	2	-	3	-	-	3	11	32–127 SL	MEF
Cynoglossus lida, 50, Ca	-	-	-	-	-	-	1	-	1	126 SL	M
Parastromateus niger, 60, Ca	-	1	-	-	-	-	-	-	1	126 SL	ME
Johnius weberi, 94, Ac	1	-	-	-	1	-	-	-	2	121–125 SL	ME
Terapon jarbua, 83, Ce	2	-	-	-	-	1	-	-	3	101–125 SL	MEF

Table 1. Continue.

Species	No. of specimens								n	Length (mm)	Life-cycle category
Station group	**A fishing village near the mouth of Petchaburi River**			**A fishing village near the mouth of Bang Tabun River**			**Extensive fish farm**				
Sampling station	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**			
Butis humeralis, 26, Gb	-	-	-	-	-	-	3	1	4	56–122 SL	E
Ilisha melastoma, 10, Cl	6	-	-	-	1	-	-	-	7	106–120 SL	ME
Dendrophysa russelii, 90, Ac	3	-	-	-	-	-	-	-	3	111–119 SL	ME
Zenarchopterus ectuntio, 71, Be	-	-	-	-	-	-	9	-	9	73–114 SL	E
Selaroides leptolepis, 64, Ca	1	1	-	-	-	1	-	-	3	100–111 SL	ME
Alepes kleinii, 55, Ca	4	4	-	-	1	-	-	-	9	96–109 SL	M
Sardinella gibbosa, 17, Cl	5	4	-	-	-	1	-	-	10	90–108 SL	ME
Cynoglossus cynoglossus, 49, Ca	3	2	-	-	-	-	-	-	5	71–108 SL	ME
Lagocephalus spadiceus, 116, Te	-	1	-	-	1	-	-	-	2	75–105 SL	ME
Sardinella albella, 16, Cl	4	1	1	-	2	-	1	-	9	58–105 SL	ME
Cynoglossus puncticeps, 52, Ca	-	5	-	-	-	-	-	-	5	80–104 SL	ME
Eubleekeria jonesi, 106, Ac	9	1	1	-	1	-	-	-	12	53–103 SL	M
Max length: ≤100 mm (27 spp., 23.1%)											
Pennahia aneus, 98, Ac	-	3	-	-	1	-	-	-	4	86–100 SL	M
Anodontostoma thailandae, 13, Cl	1	-	-	-	-	-	-	-	1	99 SL	ME
Siganus fuscescens, 111, Ac	-	7	-	-	1	-	-	-	8	35–99 SL	ME
Nuchequula gerreoides, 108, Ac	1	1	1	-	3	-	-	2	8	28–99 SL	ME
Escualosa thoracata, 14, Cl	3	4	-	-	-	2	-	-	9	67–97 SL	ME
Pomadasys maculatus 100, Ac	-	1	-	-	-	-	-	-	1	96 SL	ME
Lutjanus johnii, 101, Ac	1	-	-	-	-	-	-	-	1	95 SL	ME
Acentrogobius viridipunctatus, 27, Gb	-	-	-	-	-	-	2	2	4	57–95 SL	ME
Nuchequula longicornis, 109, Ac	1	4	1	-	-	-	-	-	6	67–94 SL	M
Stolephorus oceanicus, 7, Cl	-	1	-	-	-	-	-	-	1	85 SL	ME
Gerres decacanthus, 84, Ac	-	-	-	-	1	-	-	-	1	85 SL	ME
Deveximentum insidiator, 103, Ac	-	8	1	-	-	-	-	-	9	72–79 SL	ME
Ambassis nalua, 77, Mu	-	-	-	-	-	-	9	-	9	56–73 SL	MEF
Equulites elongatus, 105, Ac	-	1	-	-	-	-	-	-	1	69 SL	M
Gazza minuta, 107, Ac	-	5	-	-	-	-	-	-	5	57–68 SL	ME
Ambassis interrupta, 75, Mu	-	-	-	-	-	-	1	-	1	65 SL	MEF
Ambassis vachellii, 78, Mu	2	-	-	-	-	-	2	3	7	35–61 SL	MEF
Ambassis kopsii, 76, Mu	-	-	-	-	-	-	-	1	1	57 SL	MEF
Corica laciniata, 11, Cl	-	-	-	-	-	-	-	16	16	39–49 SL	EF
Stigmatogobius pleurostigma, 36, Gb	-	-	-	-	-	-	1	-	1	47 SL	E
Deveximentum ruconius, 104, Ac	-	2	-	-	-	-	-	-	2	33–44 SL	MEF
Pseudogobius avicennia, 35, Gb	-	-	-	-	-	-	6	-	6	20–31 SL	E
Drombus globiceps, 28, Gb	-	-	-	-	-	-	3	1	4	23–27 SL	E
Eugnathogobius variegatus, 30, Gb	-	-	-	-	-	-	3	-	3	23–27 SL	E
Hemigobius hoevenii, 32, Gb	-	-	-	-	-	-	2	-	2	17–25 SL	E

Table 1. Continue.

Species	No. of specimens								n	Length (mm)	Life-cycle category
Station group	**A fishing village near the mouth of Petchaburi River**			**A fishing village near the mouth of Bang Tabun River**			**Extensive fish farm**				
Sampling station	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**			
Oryzias haugiangensis, 72, Be	-	-	-	-	-	-	25	-	25	15–24 SL	MEF
Gobiopterus chuno, 31, Gb	-	-	-	-	-	-	32	-	32	17–20 SL	EF

DISCUSSION

The study areas exhibited fish assemblages that differed from those reported in previous investigations conducted in nearby regions (Fishing Ground Survey Group, 1969; Chamason and Phenpraphai, 2020; Pengseesang *et al*., 2022). Due to the absence of standardized and long-term surveys in these areas, direct conclusions regarding temporal changes in fish diversity cannot be drawn. Nevertheless, given the national importance of these areas as fishing grounds, the species richness recorded in this study appears relatively low when compared with other coastal systems, such as the Mekong Delta in Vietnam, where 224 species have been reported (Nagao Natural Environment Foundation, 2021), and Songkhla Lake, which supports 297 species (Sirimontaporn, 1984).

Fish assemblages were dominated by small-bodied species, whereas medium- and large-bodied fishes were comparatively scarce and primarily observed in fishing villages rather than in areas with extensive fish farming where most fish recorded were small-bodied. The lack of historical baseline data limits further interpretation as to whether this size structure represents a natural characteristic of the system or reflects environmental changes, such as those documented in other aquatic ecosystems experiencing anthropogenic pressures (Bianchi *et al*., 2000; Supongpan and Boochuwong, 2010; Audzijonyte *et al*., 2013; Tint *et al*., 2020).

Land-use patterns likely influenced species composition across sampling areas. Fish assemblages in local fishing villages showed greater species richness and more similar species composition to one another than those in aquaculture areas, which exhibited lower diversity. The presence of two introduce species, *Oreochromis mossambicus* and *Sarotherodon melanotheron*, in aquaculture-dominated areas is of concern, given their documented ecological impacts (Jennings and Williams, 1992; Nico *et al*., 2007; Ordoñez *et al*., 2015). *Oreochromis mossambicus* introduced to Thailand in 1949 is now widespread in freshwater and estuarine environments (Termvidchakorn *et al*., 2003). In contrast, *S. melanotheron* has rapidly expanded over the past decade across freshwater, estuarine, and coastal waters (Chaianunporn *et al*., 2024). Their absence from local fish markets suggests low consumer preference. Individuals of these species found in extensive fish farms exhibited a broader size range than those from fishing villages and river mouths (see species list). This pattern suggests that extensive fish farms, characterized by lower bank elevation and shallower waters, may provide more suitable breeding habitats for these species, likely due to reduced predation pressure from large predators. Although the effects of these species are perceived locally, systematic assessments of their impacts within the study areas remain limited.

Fish species adapted to marine and estuarine habitats were common in fishing village areas, whereas assemblages in extensive fish farms were dominated by marine–estuarine–freshwater opportunists. These aquaculture areas appear to play an important role as nursery habitats for small-bodied fishes and are strongly influenced by freshwater inputs from upstream land areas.

CONCLUSION

A total of 117 fish species representing 46 families were recorded across the sampling stations. Of these, two species were non-native and also considered invasive. Variations in size classes and life-cycle categories highlighted multiple aspects of diversity and may reflect changes occurring in the study areas. Fish assemblages differed among sampling locations with the areas of extensive fish farming presenting lowest diversity and sharing only a few taxa with in fishing villages. Although definitive conclusions are limited by the available data, the provide valuable baseline information for further ecological monitoring and conservation management, particularly assessing the ecosystem impacts of non-native species.

ACKNOWLEDGEMENTS

This study was supported by Faculty of Science and Technology, Suan Sunandha Rajabhat University; Faculty of Science, Mahidol University; and National Science Museum Thailand. Thanks are due to people of Phuyai Chong Homestay, Phuyai Joy Shrimp Farm, the fishing village near mouth of Bang Tabun River and fresh markets for assistance of fish collection. This research was fully funded by the Fundamental Fund (FF) under grant number 11761/2566. Sincere gratitude is expressed to the anonymous reviewers for their constructive comments, which greatly improved the quality of the manuscript.

REFERENCES

Audzijonyte, A., A. Kuparinen, R. Gorton and E.A. Fulton. 2013. Ecological consequences of body size decline in harvested fish species: positive feedback loops in trophic interactions amplify human impact. *Biology Letters* 9(2): 1–5. DOI: http://dx.doi.org/10.1098/rsbl.2012.1103.

Awaiwanont, K., and J. Jindalikit. 2019. *Technical Paper no. 1/2019: Small-scale fishing in Ban Lame to Cha-am District, Phetchaburi Province*. Marine Fisheries Research and Development Division, Department of Fisheries, Bangkok. 46 pp. (in Thai)

Bianchi, G., H. Gislason, K. Graham, L. Hill, X. Jin, K. Koranteng, S. Manickchand-Heileman, I. Payá, K. Sainsbury, F. Sanchez and K. Zwanenburg. 2000. Impact of fishing on size composition and diversity of demersal fish communities. *ICES Journal of Marine Science* 57(3): 558–571. DOI: https://doi.org/10.1006/jmsc.2000.0727.

Chaianunporn, T., T. Panthum, W. Singchat, K. Chaianunporn, W. Suksavate, A. Chaiyes, N. Muangmai, D. Marod, P. Duengkae and K. Srikulnath. 2024. Sustainable ecosystem management strategies for tackling the invasion of Blackchin Tilapia (*Seratherodon melanotheron*) in Thailand: guidelines and considerations. *Animals* 14(3292): 1–14. DOI: https://doi.org/10.3390/ani14223292.

Chamason, O. and P. Phenpraphai. 2020. *Fishes of Inner Gulf of Thailand caught by Research Vessel 2.* Upper Gulf Fisheries Research and Development Center (Samut Prakan), Department of Fisheries, Bangkok. 130 pp. (in Thai)

Fisheries Statistics Group. 2023. *Technical paper no. 8/2023: Statistics of marine fish farms survey 2022.* Fisheries Development Policy and Planning Division, Department of Fisheries, Bangkok. 32 pp. (in Thai)

Fishing Ground Survey Group. 1969. *Sea animals used as food for Thai people*. Department of Fisheries, Bangkok. 655 pp. (in Thai)

Froese, R. and D. Pauly (eds.). 2025. *FishBase*. Downloaded from www.fishbase.org in September 2025.

Hanpongkittikul A., W. Kamonrat, T. Thalerngkietleela and S. Chaosuan. 2020. Genetic diversity and genetic paradox of invasive Blackchin Tilapia (*Sarotherodon melanotheron* Rüppell, 1852) in Thailand. *Thai Fisheries Gazette* 3(4): 11–31. (in Thai)

Hubbs, C.L. and K.F. Lagler. 1964. *Fishes of the Great Lakes Region*. The University of Michigan Press, Michigan. 213 pp.

Jennings, D.P. and J.D. Williams. 1992. Factors influencing the distribution of blackchin tilapia *Sarotherodon melanotheron* (Osteichthyes: Cichlidae) in the Indian River System, Florida. *Northeast Gulf Science* 12: 111–117.

Kimura, S., H. Imamura, V.Q. Nguyen and T.D. Pham (eds.). 2018. *Fishes of Ha Long Bay, the natural world heritage site in northern Vietnam*. Fisheries Research Laboratory, Mie University, Mie. ix + 314 pp.

Matsunuma, M., H. Motomura, K. Matsuura, N.A.M. Shazili and M.A. Ambak (eds.). 2011. *Fishes Terengganu-east coast of Malay Peninsula, Malaysia.* National Museum of Nature and Science, Universiti Malaysia Terengganu, and Kagoshima University Museum. ix + 251 pp.

Motomura, H. and S. Ishikawa (eds.). 2013. *Fish collection building and procedures manual. English edition*. The Kagoshima University Museum, Kagoshima and the Research Institute for Humanity and Nature, Kyoto. 70 pp.

Nagao Natural Environment Foundation. 2021. *Fishes of the Indochinese Mekong*. Nagao Natural Environment Foundation, Tokyo. xii + 546 pp.

Nico, L.G., W.H. Beamish and P. Musikasinthorn. 2007. Discovery of the invasive Mayan Cichlid fish "*Cichlasoma*" *urophthalmus* (Günther, 1862) in Thailand, with comments on other introductions and potential impacts. *Aquatic Invasions* 2: 197–214.

OEPP [Office of Environmental Policy and Planning]. 2002. *An Inventory of Wetlands of International and National Importance in Thailand*. Ministry of Science, Technology and Environment, Bangkok. 410 pp.

ONEP [Office of Natural Resources and Environmental Policy and Planning]. 2008. *Natural Report on the Implementation of Convention on Wetlands*. The Ministry of Natural Resources and Environment, Bangkok. 36 pp. Downloaded from http://wetland.dwr.go.th/wetlands/paper/book/p3_8.pdf in December 2025.

Ordoñez, J.F.F., A.M.J.M. Asis, B.J. Catacutan, J.D. Pena and M.D. Santos. 2015. First report on the occurrence of invasive black-chin tilapia *Sarotherodon melanotheron* (Ruppell, 1852) in Manila Bay and Mayan cichlid *Cichlasoma urophthalmus* (Gunther, 1892) in the Philippines. *BioInvasions Records* 4: 115–124.

Pengseesang, R., Y. Soonthornkit and N. Churaroum. 2022. Species diversity of fishes in Lower Mae Klong River at Ratchaburi and Samut Songkhram. *Proceedings of the 14th NPRU National Academic Conference*: 150–157. (in Thai)

Potter, I.C., G.A. Hyndes and F.M. Baronie. 1993. The fish fauna of a seasonally closed Australian estuary. Is the prevalence of estuarine-spawning species high? *Marine Biology* 116: 19–30.

Sirimontaporn, P. 1984. *Fishes in Songkhla Lake*. Japan International Cooperation Agency, Tokyo. 91 pp.

Supongpan, M. and P. Boonchuwong. 2010. *Thailand: National Report Bycatch Management in Trawl Fisheries in the Gulf of Thailand*. Training Department, Southeast Asian Fisheries Development Center, Samut Prakran. 108 pp. Downloaded from https://repository.seafdec.or.th/bitstream/handle/20.500.12067/806/National_Report_Thailand.pdf?sequence=1&isAllowed=y in December 2025.

Termvidchakorn, A., C. Vidthayanon, Y. Getpetch, P. Sorrak and P. Paradonpanichakul. 2003. *Alien aquatic species in Thailand*. Department of Fisheries, Bangkok. 57 pp. (in Thai)

Tint, K.K., K. Ngin, A. Sapari, K. Souliphone, S. Suwannapoom, J.G. Viron and V.T.P. Thanh. 2020. Enhancing the management of the Indo-Pacific Mackerel resources in the Gulf of Thailand: a synthesis. *Fish for the People* 18(1): 14–19.

Toyama, T., T. Kawai and H. Imamura. 2020. Phylogenetic systematics of the needlefishes (Beloniformes: Belonidae). *The Thailand Natural History Museum Journal* monograph 1: 1–73.

Van der Laan, R., R. Fricke and W.N. Eschmeyer. 2025. *Eschmeyer's catalog of fishes*: *classification*. Downloaded from http://www.calacademy.org/scientists/catalog-of-fishes-classification/ in February 2026.

Worrapimphong K, N. Gajaseni, C. Le Page and F. Bousquet. 2010. A companion modeling approach applied to fishery management. *Environmental Modelling and Software* 25 (11): 1334–1344. DOI: https://doi.org/10.1016/j.envsoft.2010.03.012.

Yoshida, T., H. Motomura, P. Musikasinthorn and K. Matsuura. 2013. *Fishes of northern Gulf of Thailand*. National Museum of Nature and Science, Tsukuba, Research Institute for Humanity and Nature, Kyoto, and Kagoshima University Museum, Kagoshima. viii + 239 pp.