CHONDRICHTHYES – sharks and rays

Class Chondrichthyes is the one of 2 major lineages of fishes of the Mekong, and includes sharks, rays and allies. Most species of this group inhabit marine waters, however a few are known to enter brackish- and freshwater areas.

Although the Chondrichthyan fauna of the Mekong has not been well documented, at least 9 species of sharks and rays have been recorded reliably; all but *Rhizoprionodon acutus* (Carcharhinidae) are shown in this book. Identifications of some other sharks and rays that have at one time been recorded from the Mekong, *e.g.*, *Glyphis glyphis*, *Scoliodon laticaudus*, *Brevitrygon imbricata* (as *Himantura imbricata*), *Pateobatis uarnacoides* (as *H. uarnacoides*), and *Pastinachus sephen*, appear to need confirmations based on the voucher specimens, which are actually collected from the Mekong.

Several additional euryhaline and/or marginal freshwater species of sharks and rays are expected to be found in the estuarine areas of the Mekong (see column on p. 39), as indicated by Rainboth (1996b). In order to attain a better understanding of the Chondrichthyan fauna in the Mekong, extensive surveys are clearly needed in particular in the delta region.

Generic names of stingrays of the family Dasyatididae follow Last *et al*. (2016a, b).

Carcharhinus leucas (Müller & Henle, 1839)

Family: Carcharhinidae (FC: 029)

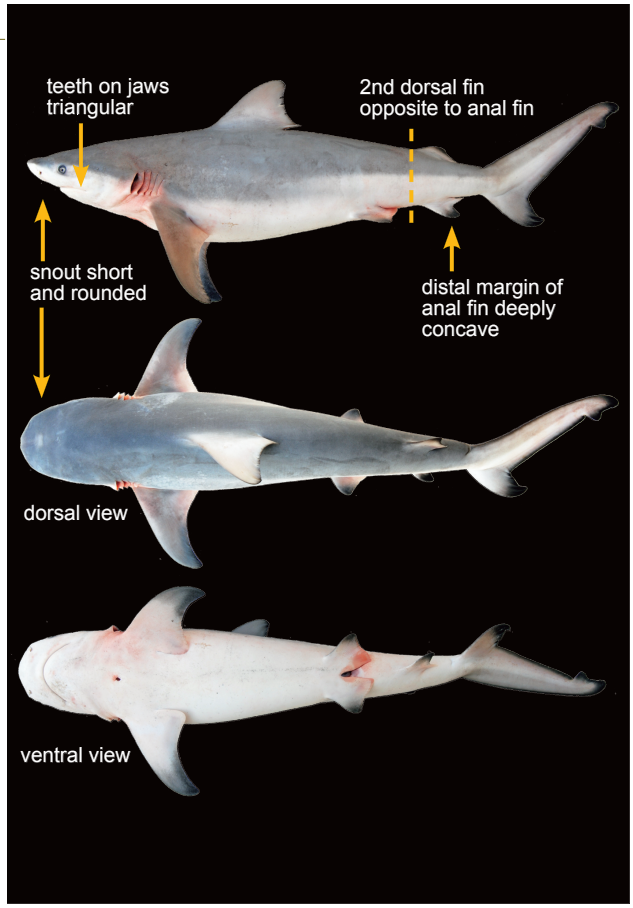
Size: 340 cm TL (Kottelat *et al.*, 1993: 1).

Distribution: Mekong Basin in Vietnam (?Cambodia); tropical and subtropical (occasionaly temperate) regions worldwide.

Notes: A coastal marine shark, also known to enter freshwater rivers and lakes; it was categorized as "Near Threatened" in the IUCN Red List of Threatened Species in 2009.

This shark is occasionally found in the local markets around the estuarine areas of the Vietnamese Mekong; according to the seller, the photographed specimen, taken at a market in Cà Mau Province of southern Vietnam on 2010, was captured from the coastal area around the estuaries. Rainboth (1996b) noted that this shark is "likely to occur in Cambodian fresh waters", but we have not yet obtained any voucher specimens from the Cambodia.

Cà Mau, Vietnam (CTU-P 3375, photo: KS)



CTU-P 3375 (photo: KS)

Cà Mau, Vietnam (CTU-P 3375, photo: KS)

Marketed fish, including a specimen of *Hemitrygon laosensis* (center fish, NUOL-P 1033), at the local market in Savannakhet, Laos (photo: KS)

Hemitrygon laosensis (Roberts & Karnasuta, 1987)

Family: Dasyatididae (FC: 055)

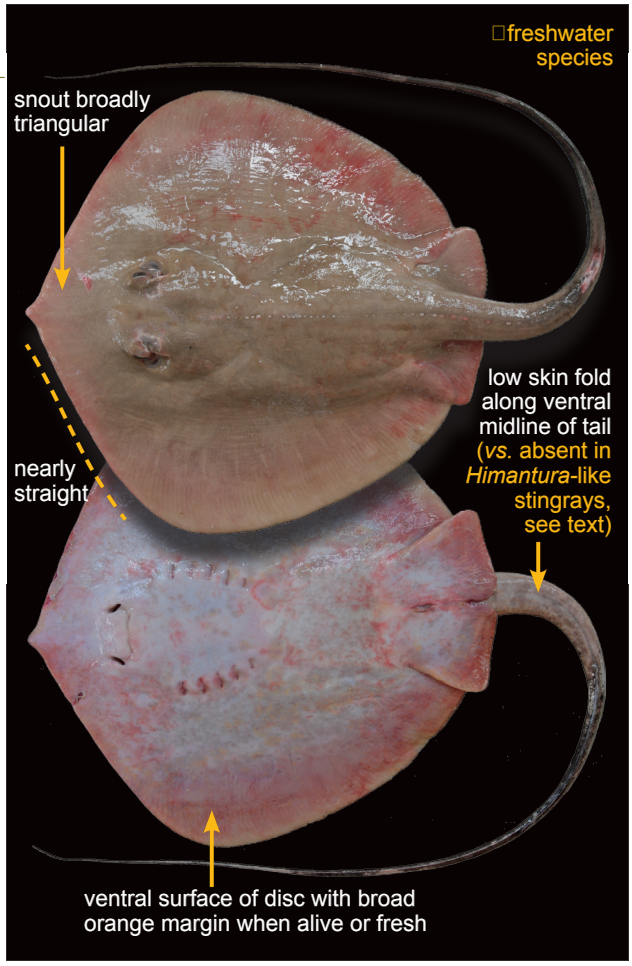
Size: 62 cm DW (Kottelat, 2001a: 25, as *Dasyatis laosensis*).

Distribution: Mekong Basin in China (Yunnan), Laos, Thailand, and Cambodia.

Notes: A medium-sized freshwater stingray, known only from the Mekong; it was categorized as "Endangered" in the IUCN Red List of Threatened Species in 2016. Vidthayanon (2002) noted that this species was heavily exploited for food fish in Thailand.

Species of the family Dasyatididae have venomous spine(s) on the dorsal surface of the tail, and thus commonly called stingrays. For safety, the local fishermen completely break the spines immediately after capture (as in the photographed specimen shown here). Last *et al*. (2016a, b) revised the classification of the dasyatidid stingrays, and, owing to their corrections, the scientific names (in particular the generic names) were drastically changed. This species was known as *Dasyatis laosensis* before Last *et al*. (2016a, b).

Hemitrygon laosensis is the only species of the genus recorded from the freshwater areas of the Mekong; the other *Dasyatis*-like stingrays [not *Himantura*-like stingrays, lacking a skin fold along ventral midline of tail (*e.g.*, *Brevitrygon*, *Fluvitrygon*, and *Urogymnus*, see pp. 36–38)] expected to be found in the Mekong are, if they actually occur, probably seen restrictedly in/around brackish estuaries (see "Note" of *Telatrygon zugei*, next page). Recent record of *Hemitrygon laosensis* from Yunnan (Chen *et al.*, 2010b, as *Dasyatis laosensis*) represents the most upriver occurrence for all stingrays in the Mekong Basin.



NUOL-P 1033 (photo: VP)

Telatrygon zugei (Bürger, 1841)

Family: Dasyatididae (FC: 055)

Size: 29 cm DW (Last & Compagno, 1999: 1501, as *Dasyatis zugei*).

Distribution: ?Mekong Basin in Vietnam; Indo-West Pacific.

Notes: A medium sized stingray, found in costal marine waters; it is also known to enter brackish estuaries. It is commonly seen at the local markets around the Mekong estuary in Vietnam, although no reliable records from the inland waters are hitherto known from the basin. Photographed specimen, taken from a market at Sóc Trăng Province of Vietnam, was probably captured from coastal marine waters nearby.

Although its general appearance is rather similar to some species of *Brevitrygon* in the Mekong (see below), *T. zuguei* has a low skin fold along ventral midline of the tail, like *Hemitrygon laosensis* (p. 35).

Brevitrygon walga (Müller & Henle, 1839)

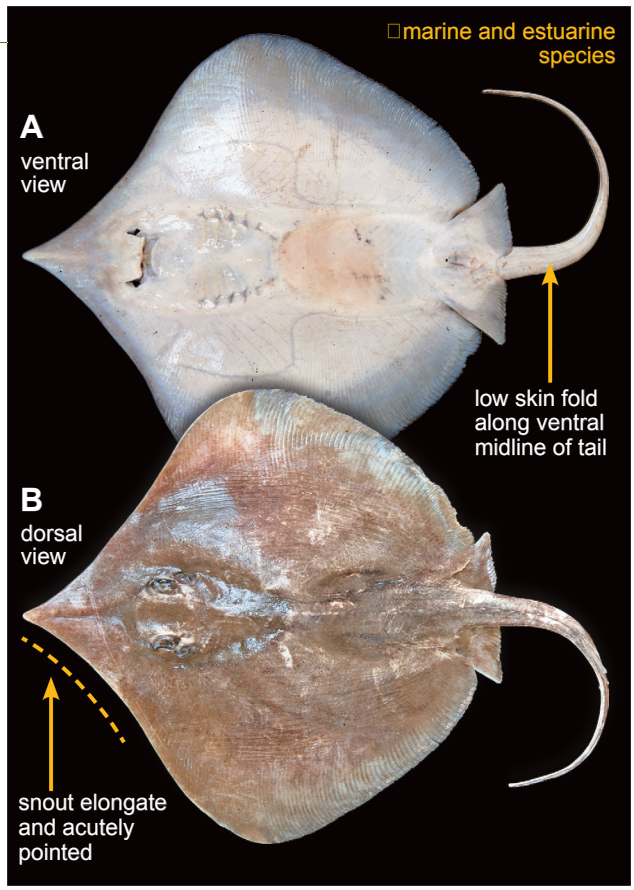
Family: Dasyatididae (FC: 055)

Size: 19.8 cm DW (CTU-P 4078).

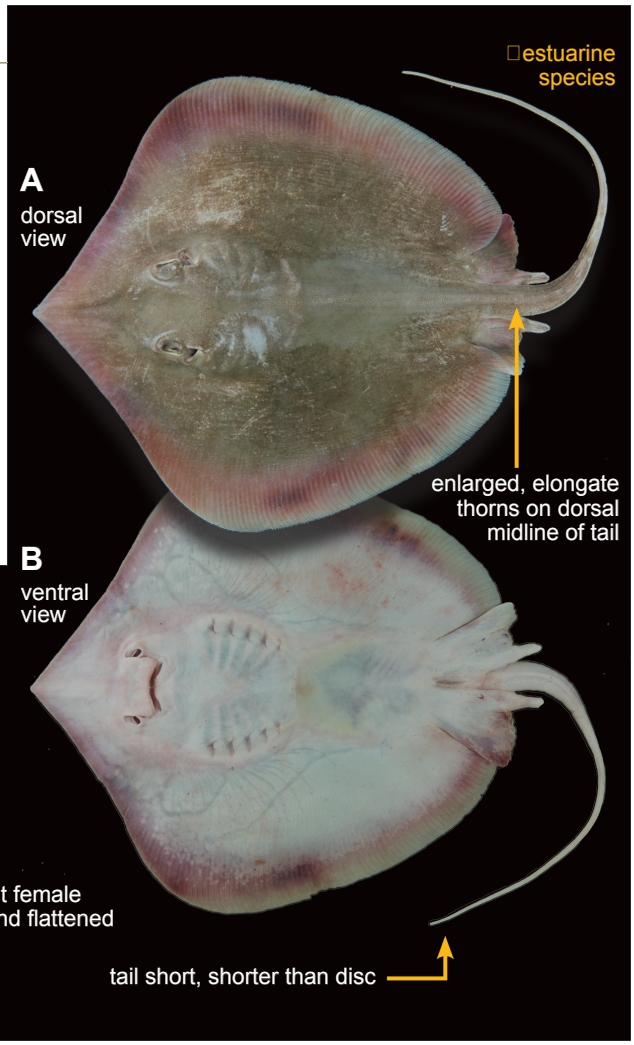
Distribution: Mekong Basin in Vietnam; Indo-West Pacific.

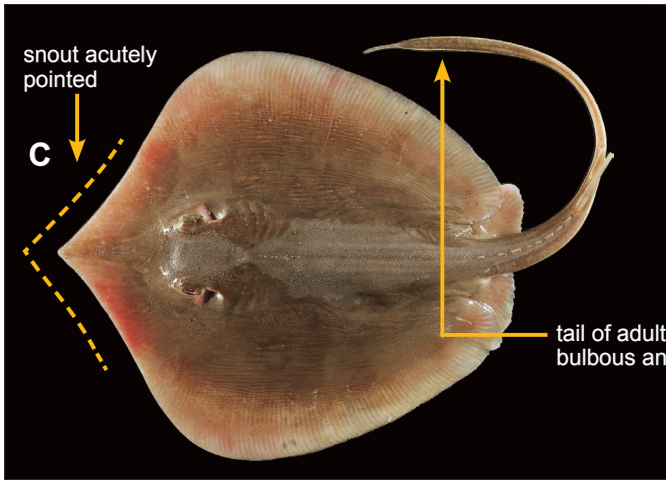
Notes: A coastal marine or estuarine stingray, commonly seen at local markets around the Mekong estuary in Vietanm.

Brevitrygon walga is very similar to the congener *B. imbricata* (not shown in this book; also reported from the Western Pacific, including Vietnam) in general appearance in particular with the short tail, but it differs in having a series of elongated, longer thorns (longer than 1/2 of eye diameter) on the dorsal midline of the tail in adult (*vs.* much smaller than 1/2 of eye diameter in adult of *B. imbricata*), and it lacks pronounced lateral keels on tail (*vs.* present) (Last & Compagno, 1999, as species of *Himantura*). Adult female *B. walga* is peculiar in having a hard, bulbous and compressed tail behind the spine (*vs.* not bulbous in *B. imbricata*). Although *B. imbricata* had been recorded from the Tonle Sap Lake, Rainboth (1996b) noted that the previous records of this species from the Mekong may refer to *Hemitrygon laosensis* (as *Dasyatis laosensis*, p. 35). Also, the records of *B. imbricata* from the Mekong Delta are likely confused with the similar *B. walga*, and should be re-confirmed based on the voucher specimens. During our field surveys in the Mekong in 2007–2013, no specimen of *B. imbricata* was collected, although it is notable that *B. walga* was commonly seen in the markets. See also "Notes" of *Urogymnus polylepis* (next page).



CTU-P 4579 (photo: LXT)





A and B) CTU-P 4076 (photo: LXT); C) CTU-P 5330 (photo: KS)

Urogymnus polylepis (Bleeker, 1852)

Family: Dasyatididae (FC: 055)

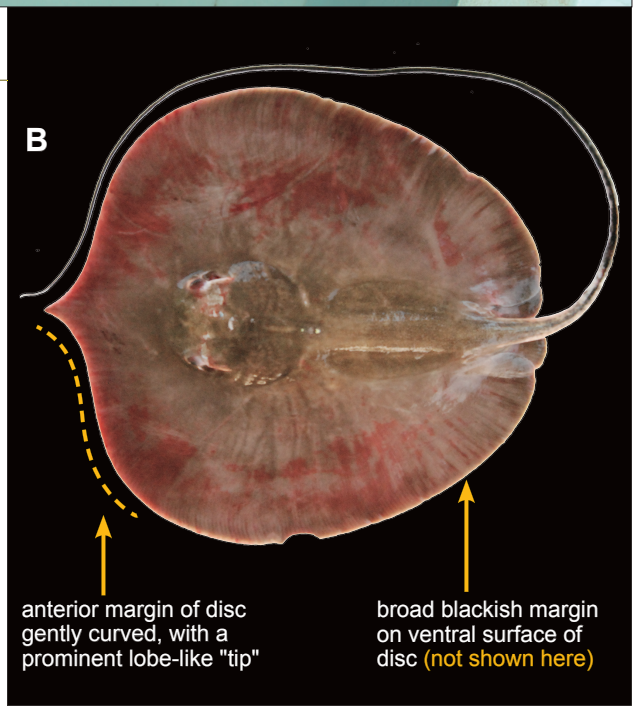
Size: 240 cm DW (Kottelat, 2001a: 25, as *Himantura chaophraya*).

Distribution: Mekong Basin in Laos, Thailand, Cambodia, and Vietnam; Indo-West Pacific.

Notes: A gigantic freshwater species, previously well known as *Himantura chaophraya*, a junior synonym of *Urogymnus polylepis* (see Last & Manjaji-Matsumoto, 2008, as *Hymantura polylepis*); it was currently categorized as "Endangered" in the IUCN Red List of Threatened Species in 2016.

Urogymnus polylepis is a characteristic, huge stingray, and is readily distinguished from the other Mekong stingrays by having an obtuse snout with a prominent lobe-like tip (see photos). A similar-looking *Urogymnus dalyensis* is known from Australia and New Guinea (Last & Manjaji-Matsumoto, 2008, as *Himantura dalyensis*).

Other than 4 species shown in this book (*Brevitrygon walga*, *Fulvitrygon oxyrhynchuus*, *F. signifer*, and *U. polylepis*), at least 2 additional species of stingrays previously assigned to *Himantura* have been recorded from the Mekong (Rainboth, 1996b; Vidthayanon, 2008): *viz*., *Brevitrygon imbricata* and *B. uarnacoides*. Of these, *B. imbricata* resembles *B. walga*, and are presumed to be mixed up in the region (see "Notes" of *B. walga*, left page). *Brevitrygon uarnacoides* is also similar to *B. imbricata* and *B. walga* in the shape of body and coloration, but has a much longer tail, broad dark margin of the ventral surface of the disc, and no enlarged thorns on tail (Last & Compagno, 1999, as species of *Himantura*). The occurrence of these 2 stingrays (*B. imbricata* and *B. uarnacoides*) from the Mekong should be confirmed based on the voucher specimens. Note that Bleeker's (1983) illustration shown by Rainboth (1996b: 52) as *Amphotistius imbricatus* (= *B. imbricata*) appears to be the retouched illustration based on Bleeker's (1983) *Leiobatis* (*Himantura*) *polylepis* (= *U. polylepis*); the original illustration (Bleeker, 1983, pl. 36, fig. 2) has a much longer tail.



A) Thai Mekong specimen (photo: CG); B) IFREDI-P 836 (photo: PT)

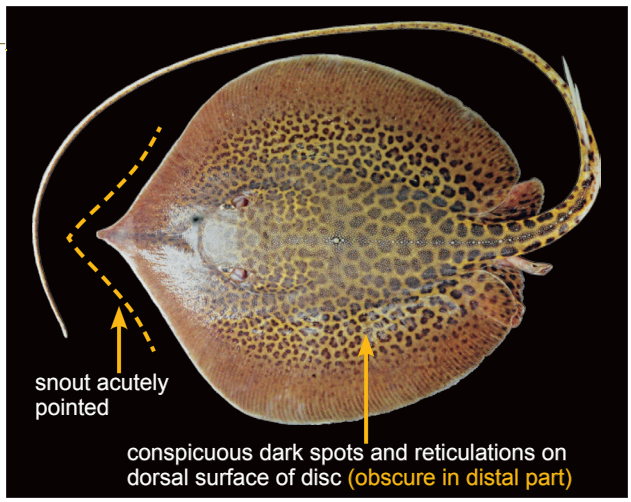
Fluvitrygon oxyrhynchus (Sauvage, 1878)

Family: Dasyatididae (FC: 055)

Size: 36 cm DW (Last & Compagno, 1999: 1503, as *Himantura oxyrhynchus*).

Distribution: Mekong Basin in Cambodia; non-Mekong Basin in Thailand and Borneo.

Notes: A relatively small-sized stingray, found in freshwater rivers and brackish estuaries, originally described from Saigon, Vietnam (Sauvage, 1878). *Dasybatus krempfi* (or *Himantura krempfi*), described from Phnom Penh, Cambodia (Chabanaud, 1923), is a junior synonym of *F. oxyrhynchus* (see Compagno, 2002: 176, as *Himantura oxyrhynchus*). Its characteristic color pattern of disc and acutely pointed snout readily distinguish it from the other stingrays in the Mekong.



Non-Mekong specimen, not preserved (Bang Pakong River, Thailand, photo: CG)

Fluvitrygon signifer (Compagno & Roberts, 1982)

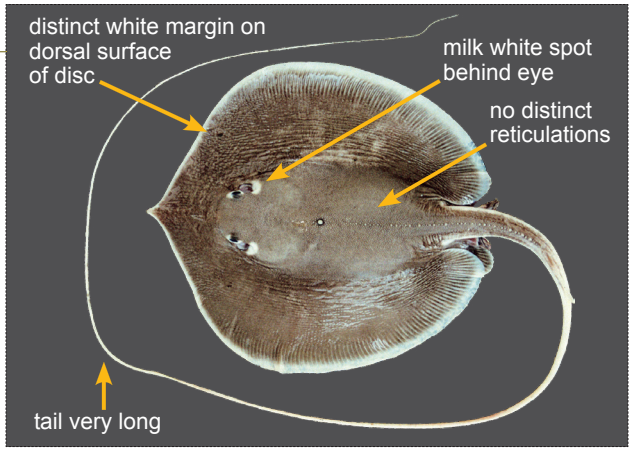
Family: Dasyatididae (FC: 055)

Size: 38 cm DW (Last & Compagno, 1999: 1503, as *Himantura signifer*).

Distribution: Mekong Basin in Cambodia and Vietnam; Thailand, Malaysia, Sumatra and Borneo.

Notes: A relatively small-sized stingray, found in fresh and brackish water rivers and lakes. The photographed specimen shown here was collected from Tonle Sap Lake, Cambodia.

Its distinct white margin of disc readily distinguishes *Fluvitrygon signifer* from the other Mekong stingrays; a milk white spot immediately behind the eye is also a characteristic.



UNMF uncatalogued (photo: CG)

Pastinachus sp. (cf. *stellurostris*)

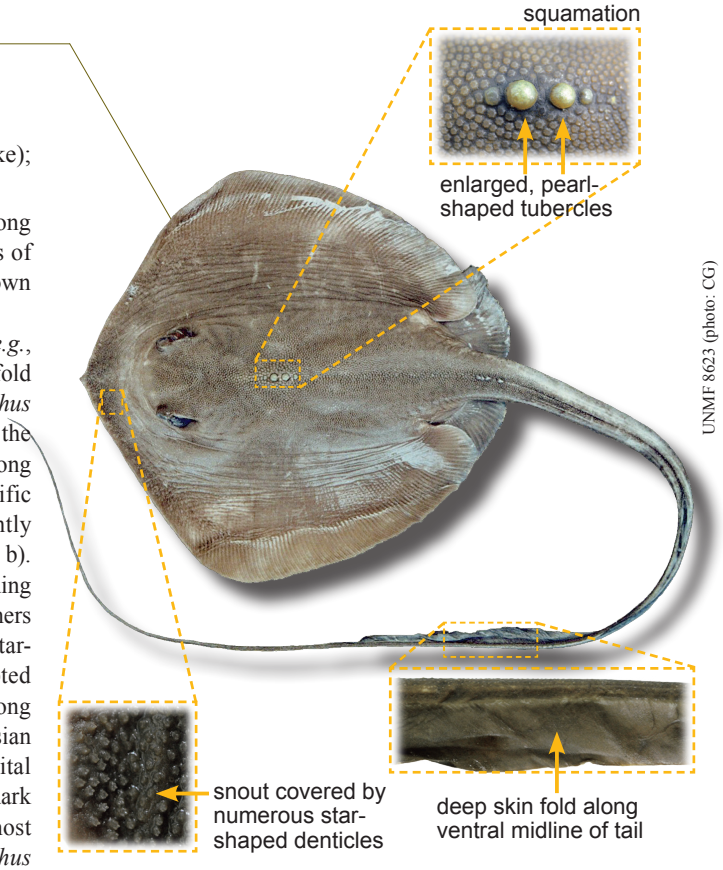
Family: Dasyatididae (FC: 055)

Size: 38.6 cm DW (UNMF 8630).

Distribution: Mekong Basin in Cambodia (Tonle Sap Lake); Chao Phraya Basin and Bang Pakong River of Thailand.

Notes: A medium-sized stingray with a broad skin fold along the ventral midline of the tail, known from the lower reaches of rivers and the adjacent lakes. The photographed specimen shown here was collected from the Tonle Sap Lake, Cambodia.

Pastinachus is similar to the other *Dasyatis*-like genera [*e.g.*, *Hemitrygon* (p. 35) and *Teratrygon* (p. 36)] by having a skin fold along the ventral midline of the tail, but the fold in *Pastinachus* is much deeper (height at deepest point twice or more than the tail depth *vs.* less than twice in the others). *Pastinachus* had long been considered as monotypic with a single Indo-West Pacific species *P. sephen*, until some additional species were recently discovered from the West Pacific (*e.g.*, Last *et al.*, 2005, 2010a, b). One of the recently-described species is *P. stellurostris*; according to Last *et al.* (2010a), it can be distinguished from the congeners by having the relatively acute snout covered by numerous star-shaped denticles. Last *et al.* (2010a: 136–137, fig. 9) doubted the conspecificity of a single specimen from the Bang Pakong River in Thailand with true *P. stellurostris* from the Indonesian Borneo, since the Thai specimen has, *e.g.*, broader interorbital space (17.5% of DW *vs.* 15.7–16.6% in *P. stellurostris*) and dark brown ventral surface of disc with some pale areas (*vs.* almost entirely white); they treated the Thai specimen as *Pastinachus* cf. *stellurostris*. The photographed specimen shown here, as well as some other UNMF specimens from the Chao Phraya Basin, appears to be identical to their *P.* cf. *stellurostris*.



UNMF 8623 (photo: CG)

Vidthayanon (2008) recorded *Pastinachus sephen* from the Mekong Delta; the identification need to be assessed based on the voucher specimen(s).

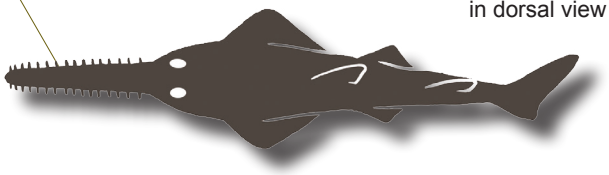
Pristis pristis (Linnaeus 1758)

Family: Pristidae (FC: 044)

Size: 656 cm TL (Compagno & Last, 1999: 1410, as *Pristis microdon*).

Distribution: Mekong Basin in southern Laos, Cambodia, and Vietnam; Indo-West Pacific.

Notes: A large-sized sawfish, found in inshore waters, estuaries, and freshwater rivers. Like the congeners, *Pristis pristis* is a globally threatened fish, categorized as "Critically Endangered" in the IUCN Red List of Threatened Species in 2011. During our field surveys in 2007–2013, no sawfishes were seen in the Mekong. Rainboth (1996b: 52, as *Pristis microdon*) noted that the recent decrease of *P. pristis* in the Mekong was due to extensive drift gill-netting.



Its unique appearance, particularly the long saw-like snout (rostral saw), readily distinguishes the sawfish from the other Mekong fishes. Since some similar-looking congeners are also expected to be present in this region, the species identification needs voucher specimens.

Other chondrichthyans likely to be found in the Mekong estuaries

Various kinds of additional sharks and rays are found in the local markets around the Mekong estuaries. According to the sellers, in many cases, these sharks/rays were not fish captured from the rivers, rather they were transported from the coastal marine areas. However, several of these sharks/rays are known to occur occasionally in the brackish estuaries of the other geographic regions, and are expected to be found in the Mekong.

Three examples of such rays, taken from Bạc Liêu, Sóc Trăng, and Bến Tre provinces of Vietnam, are shown here. All these rays were caught from the coastal areas near the local markets. Although hitherto there are no definite records from the Mekong, these rays would be likely to enter the brackish estuaries, considering their habitat preferences (see Compagno & Last, 1999; Compagno, 2002; Satapoomin & Poovachiranon, 1997).

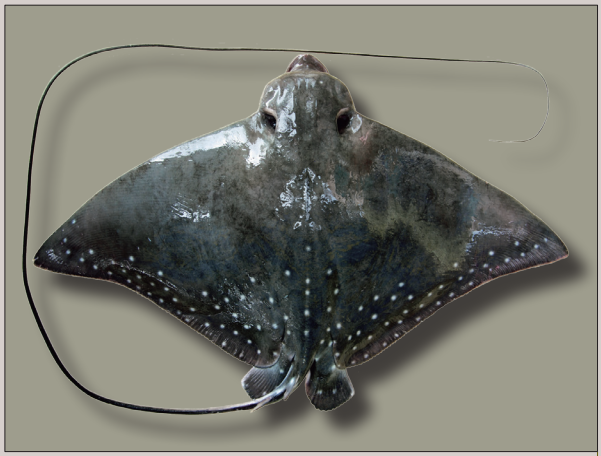
Marketed fish (Bạc Liêu, Vietnam, photo: KS)

Maculabatis gerrardi (Gray, 1851)

Family: Dasyatididae (FC: 055)

Size: 90 cm DW (Last & Compagno, 1999: 1487, as *Himantura gerrardi*).

Distribution: Indo-Pacific.



CTU-P 4577 (photo: LXT)

Aetobatus ocellatus (Kuhl, 1823)

Family: Myliobatidae (FC: 058)

Size: 300 cm DW (White *et al*., 2010: 152).

Distribution: Indo-Pacific.

CTU-P 4913 (photo: HVM)

Gymnura poecilura (Shaw, 1804)

Family: Gymnuridae (FC: 057)

Size: 82 cm DW (Compagno & Last, 1999: 1510).

Distribution: Indo-Pacific.

A local fisherman, setting gill net (Nam Ngum River, Vientiane, Laos, photo: KS)