



Awaous flavus (size not recorded;
max. size 8.2 cm SL)



Gobioides broussonnetii (size not
recorded; max. size 55.3 cm SL)



BATRACHOIDIFORMES

BATRACHOIDIDAE (TOADFISHES) (p. 396)



Thalassophryne amazonica (9.0 cm SL)

BELONIFORMES

BELONIDAE (NEEDLEFISHES) (p. 397)



Pseudotylurus microps (40 cm SL)



Potamorrhaphis guianensis (23 cm SL)

68 **SYNBRANCHIFORMES**

SYNBRANCHIDAE (SWAMP EELS) (p. 399)



Synbranchus marmoratus (80 cm TL)



Synbranchus marmoratus (50 cm TL)

SYNGNATHIFORMES

SYNGNATHIDAE (PIPEFISHES) (p. 399)

Microphis brachyurus (14 cm SL)



PLEURONECTIFORMES

ACHIRIDAE (AMERICAN SOLES) (p. 400)



Hypoclinemus mentalis (18 cm SL)



Apionichthys finis (6.6 cm SL)

TETRAODONTIFORMES

TETRAODONTIDAE (PUFFERFISHES) (p. 402)

Colomesus asellus (6.0 cm SL)



THE FISH FAMILIES

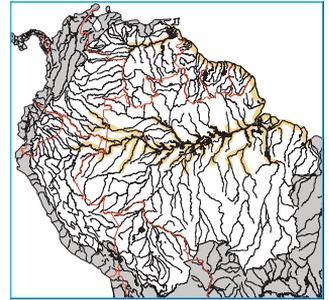
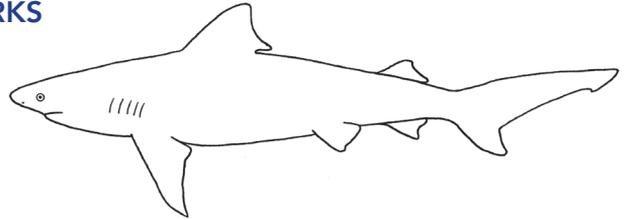
FAMILY CARCHARHINIDAE—REQUIEM SHARKS

— PETER VAN DER SLEEN and JAMES S. ALBERT

Family includes 59 species in 12 genera worldwide, including several species that enter freshwater. In the Amazon, one species, *Carcharhinus leucas* (the Bull shark), is occasionally encountered.

Carcharhinus (420 cm SL)

Distinguished from other sharks by: gray coloration; heavy body; short, rounded snout; large pectoral fins; small round eyes; 5 gill openings, the fifth behind origin of pectoral fin; mouth large and subterminal; upper teeth triangular and serrated; caudal peduncle with a precaudal pit; dorsal fin with lateral undulations along posterior margin. **SPECIES** 35, with only 1 species, *C. leucas* (the Bull shark), in the AOG region. **COMMON NAMES** *Cação fidalgo*, *Sicuri branco* (Brazil); *Tiburón gris* (Colombia); *Cazón*, *Tiburón ñato* (Peru). **DISTRIBUTION AND HABITAT** Recorded in Iquitos (Peru), Leticia (Colombia), Manaus, Santarém, and Belém (Brazil); see Thorson (1972) and Soto and Castro-Neto (1998). **BIOLOGY** Bull sharks normally feed on fishes, but are known to attack humans. They are viviparous, producing 1–13 young per litter, generally in estuaries. Length up to 220 cm in the Amazon, but can reach more than 4 m in the ocean.



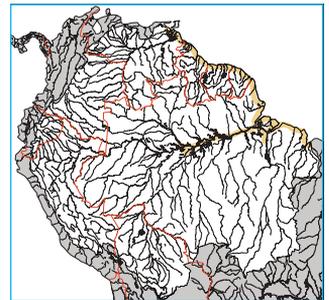
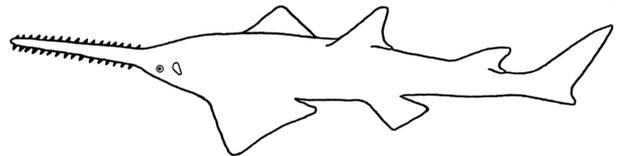
FAMILY PRISTIDAE—SAWFISHES OR CARPENTER SHARKS

— PETER VAN DER SLEEN and JAMES S. ALBERT

Family includes 7 species in 2 genera worldwide: *Pristis* (6 species) and *Anoxypristis* (1 species). In AOG, species of the genus *Pristis* are occasionally encountered.

Pristis (250–750 cm TL)

Distinguished by an elongate, blade-like snout, with a single row of large teeth on each side; a large and shark-like body, with anterior margin of pectoral fins attached to head; two large dorsal fins of equal size, widely separated; and the nostrils well anterior, not connected to mouth. **SPECIES** Six, including three in the AOG region: *P. pristis*, *P. perottetz*, and *P. pectinata*. **COMMON NAMES** *Araguaguá*, *Peixe serra* (Brazil); *Pez sierra*, *Pez rastrillo* (Spanish). **DISTRIBUTION AND HABITAT** Mostly tropical and subtropical coastal waters; some enter estuaries and the lower parts of large rivers. *Pristis pristis* has been caught 750 km up the Amazon River; *P. perotteti* in the Amazon River up to Santarém (Thorson 1974, Lovejoy et al. 2006). **BIOLOGY** Feed on fishes and bottom-living animals and are harmless to humans. The saw-like rostrum is covered with sensitive pores that help to detect the movement of buried prey. The rostrum is also used to injure prey items as well as for defense. In the ocean, sawfishes can grow to larger sizes (6–8 m), but individuals caught in the Amazon are usually 1.5–2.0 m. Sawfishes are yolk-sac viviparous. All species are listed as critically endangered (IUCN 2013) as a result of overfishing and habitat degradation (Palmeira et al. 2013).



FAMILY POTAMOTRYGONIDAE—RIVER STINGGRAYS

— PETER VAN DER SLEEN and JAMES S. ALBERT

DIVERSITY 33 species in 4 genera, with 28 species in the AOG region. River stingrays originated from marine ancestors when shallow seas encroached into the center of the continent, forming large lakes and mega-wetland systems extending across much of the area of the western Amazon basin (Lovejoy et al. 2006). The marine ancestors of river stingrays adapted to freshwater conditions when the Andean uplift eventually caused this seaway to become landlocked and it transformed into the modern Amazon basin.

COMMON NAMES *Raia*, *Rodeirão* (Brazil); *Raya* (Peru).

GEOGRAPHIC DISTRIBUTION All South American rivers that drain into the Atlantic Ocean or Caribbean Sea. Many river systems in the Amazon have one or two endemic species of stingray and only a few species are widely distributed (e.g., *P. motoro* and *P. orbignyi*).

ADULT SIZES Range in disk diameter from 25 to 110 cm.

DIAGNOSIS OF FAMILY Body strongly flattened dorsoventrally and with a circular (disk-like) form; elongate tail with one or more strong spines. Many species have colorful dorsal patterns and are covered with many denticles, thorns, and tubercles. Family can be distinguished from marine and freshwater stingrays of other families by the well-developed anteromedian projection of their pelvic girdle, called the prepelvic process (Rosa et al. 1987). Other derived characters include blood with low concentrations of urea, and reduction of the rectal gland (Rosa et al. 1987, de Carvalho et al. 2003).

SEXUAL DIMORPHISM Males can be recognized by the presence of claspers on the posterior portion of the pelvic fins.

HABITATS Sandy bottoms in lakes, rivers, and streams, but also found on rocky bottoms and very common in shallow rapids of the Xingu, Trombetas, Tocantins, and Tapajós rivers (J. Zuanon pers. comm.). There might be sexual and ontogenetic segregation in habitat (Rosa et al. 2010). Juvenile rays often stay in shallow waters to avoid predators. Adult rays generally remain in deeper waters. Predominantly female and male rays are caught at specific locations along the reproduction cycle.

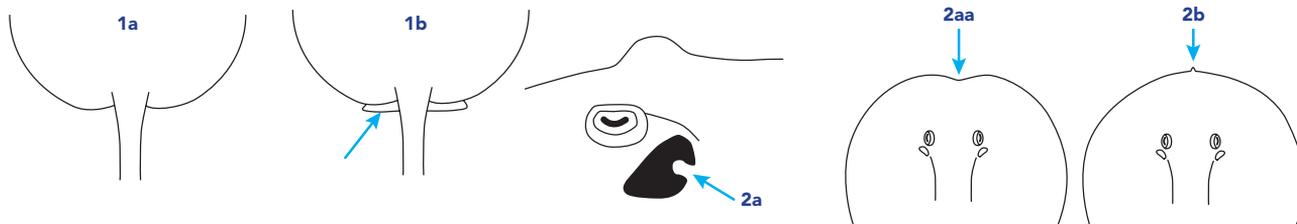
FEEDING ECOLOGY Diet includes a wide variety of items: worms, insect larvae, mollusks, crustaceans, and fishes. They find most of their food in the sediment and literally suck it up. Teeth are small rounded molars that form a flat surface designed to grip and crush but not to cut. Review of literature on diet and feeding in Rosa et al. (2010).

BEHAVIOR Potamotrygonids are all ovoviparous (aplacentally viviparous), and the developing embryos are nourished by uterine milk secreted by trophonemata (Thorson et al. 1983). Number of young produced in each gestation varies among species, but is usually from two to seven (de Carvalho et al. 2003, Charvet-Almeida et al. 2005).

ADDITIONAL NOTES River stingrays are much feared because of their venomous caudal barb or sting. These stings are continuously worn and replaced and up to four stings may be present in one individual. Being stung by a ray can lead to infection and tissue necrosis if left untreated, and can cause weeks of agonizing pain; however, they pose little threat when not stepped on. A common advice of local people is to “shuffle your feet” while walking through shallow water.

KEY TO THE GENERA FROM ROSA ET AL. (2010)

- 1a. Distance from mouth to anterior of disk relatively long, 2.2–3.3 times in disk width; pelvic fins dorsally covered by disk (fig. 1a) 2
- 1b. Distance from mouth to anterior of disk relatively short, 3.6–5.6 times in disk width; pelvic fins exposed behind posterior margin of disk (fig. 1b)..... 3



- 2a. A knob-shaped process on the external margin of the spiracles (fig. 2a); anterior margin of disk concave, lacking anteromedian prominence (fig. 2aa); caudal sting present *Paratrygon*
- 2b. Knob-shaped process on the external margin of the spiracles absent; anterior margin of disk rounded, with a small anteromedian prominence (fig. 2b); caudal sting absent or minute *Heliotrygon*