

EELS

Even if the eels, in the perception of most people, constitute a readily recognizable group of elongated and snakelike fish, the eels do not constitute a taxonomic group. There is considerable confusion related with the systematics of the eels, in the following the system used in “*Fishes of the Cambodian Mekong*” by Rainboth (1996) will be observed. In the Mekong, two orders (Anguilliformes and Synbranchiformes) including five eel-like fish families are represented: The true eels (Anguillidae), the worm eels (Ophichthidae), the dwarf swamp eels (Chaudhuriidae), the swamp eels (Synbranchidae), and the spiny eels (Mastacembelidae). Of these the swamp eels and spiny eels are by far the most important in the fisheries.

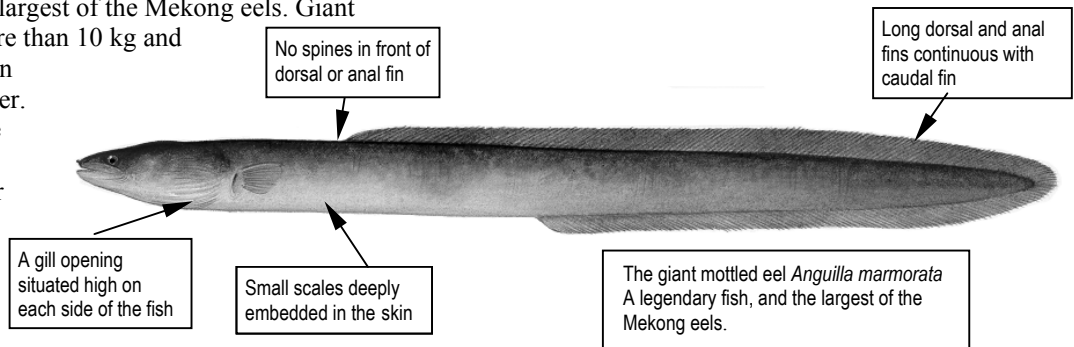
True eels or Freshwater eels – Anguillidae:

The name “freshwater eels”, is not a good name in describing the habits of the species in this family. All the anguillid species are catadromous (a catadromous fish is born in the sea, but lives most of its life in fresh water). The sexually mature fish migrates down to the sea to spawn, and the juveniles “the elvers” move, sometimes for considerable distance, up the rivers to find their nursery areas.

The true eels, contrary to most of the other Mekong eels, have two gill openings, which are situated high, on each side of the fish. The body is covered with small scales that are deeply imbedded in the skin. Pelvic fins are absent, while pectoral fins are well developed. The long dorsal and anal fins are continuous with the caudal fin, and the fins are not preceded by any spines.

Two true eel species occur in the Mekong: The short fin eel (*Anguilla bicolor*), and the giant mottled eel (*A. marmorata*), which is the largest of the Mekong eels. Giant mottled eels weighing more than 10 kg and measuring 1.5 m have been caught in the Mekong River.

In some areas the true eels are only rarely consumed because of their mythical status and the mysticism, which surrounds them. The information available on the biology of this fish in the Mekong is very sparse, and in many areas, it is very difficult to get information about the species from fishermen, because they feel uncomfortable talking about it. A fisher, who by accident hooks a giant mottled eel, will often cut the line rather than touch it. If someone mentions the giant mottled eel, women and children often immediately disappear from the scene. Two commonly encountered beliefs are that it is electric and that it eats people.



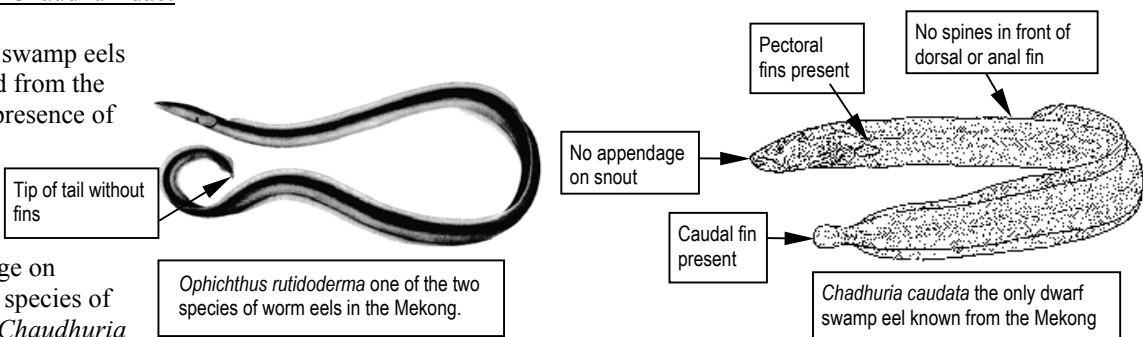
Meter long giant mottled eels with eggs are caught every year in Cambodia, at the end of the rainy season. These individuals, presumably, are on their way to their spawning grounds in the sea. The elvers can be seen at certain places in the Lao PDR in February. They are so abundant, in some places, that people make special dishes of them – the juveniles, apparently, are not surrounded with the same superstition as the adults. Future surveys in mountain areas, where the true eels tend to be more abundant, will probably throw further light on the biology of this fish.

Worm eels - Ophichthidae

The worm eels are similar to the true eels except that the head is smaller, the body scale-less, and the tip of the tail is without fins. All the species are mainly estuarine, but the two species *Ophichthus rutidoderma* and the rice paddy eel (*Pisodonophis boro*) that have been recorded so far, may occur as far upstream the Mekong as Cambodia.

Dwarf swamp eels - Chaudhuriidae:

The dwarf swamp eels can be distinguished from the swamp eels by the presence of pectoral and caudal fins, and from the spiny eels by the absence of both fin spines and appendage on the snout. Only one species of dwarf swamp eels (*Chaudhuriia*



caudata) is known from the Mekong, and it is without commercial importance, because of its small size - it only grows up to 6 cm in length.

Swamp eels - Synbranchidae

In the Mekong Basin, the most common of the eels are the swamp eels. The swamp eels are medium sized fish, which grow up to about 1 m. They exist in tropical and subtropical regions all over the world in fresh or brackish water.

Only two species of this family have been identified from the Mekong: *Monopterus albus* and the estuarine Bengal mud eel (*Ophisternon bengalense*). The almost complete lack of external characters makes the separation of species extremely difficult. It is therefore possible that more species will be distinguished, using genetic techniques, in the future.

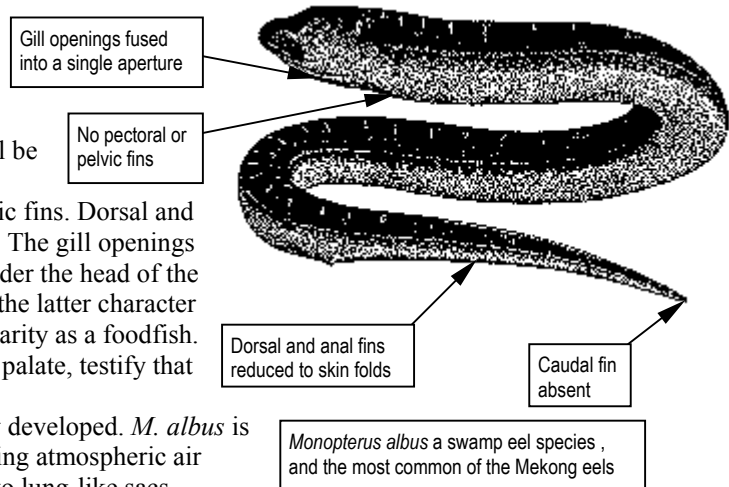
The adult swamp eels lack pectoral and pelvic fins. Dorsal and anal fins are reduced to folds of skin without fin rays. The gill openings are fused into a small slit or pore, which is located under the head of the fish. Swamp eels have no swimbladder and no ribs – the latter character have probably contributed significantly to their popularity as a foodfish.

The small eyes, and teeth in jaws and on the palate, testify that the swamp eels are nocturnal predators.

The gills in swamp eels are small and poorly developed. *M. albus* is capable at supplementing its oxygen intake by breathing atmospheric air through an accessory respiratory organ, formed by two lung-like sacs, originating from the gill chamber. These “lungs” enable *M. albus* to survive in places where no other fish can withstand, and they are common inhabitants in oxygen poor swamps, canals, ditches or even sewers.

M. albus has an interesting reproductive habit, whereby the eggs are placed in a nest consisting of slime bubbles blown by one of the parents. Another interesting peculiarity relating to reproduction in the swamp eels is that they are capable of changing sex during their life cycle.

M. albus can easily be caught with hook and line, in bamboo tubes or in baited traps. In the dry season, it can burrow itself deep in the mud, and some people collect them with spears, and by digging them up. Swamp eels can therefore be seen on any fish market in the Mekong Basin any time of the year.



Spiny eels – Mastacembelidae

The spiny eels are the easiest, of the eels, to identify.

Like in the previous families, the gill openings are quite small and situated under the fish. Contrary to swamp eels and dwarf swamp eels, spiny eels do have scales, though they are very small.

Spiny eels have no pelvic fins, but they have long dorsal and anal fins, which in some species are continuous with the caudal fin. In front of the anal fin, there are three spines, and in front of the dorsal, there is a series of erectile spines, which normally are concealed in the skin. If large individuals of spiny eels are not handled carefully, the dorsal spines can inflict serious wounds to the hand of a fisher.

The mouth is small, and the spiny eels possess a long pointed snout that ends in a small trunk like fleshy tip, which is used for finding invertebrates on and in soft bottoms.

Of the eight species found in the Mekong Basin, five belong to the genus *Macrognathus* and three to *Mastacembelus*. The easiest way to separate the two genera is to count the number of dorsal spines. The *Macrognathus* species have up to 31 spines, while *Mastacembelus* possess between 33 and 40 dorsal spines. *Macrognathus* species, in spite of being relatively small (only one species occasionally reach 45 cm) are widely used in the fisheries. The fish are normally smoked or dried, but are sometimes sold fresh.

Mastacembelus species grow a lot larger (70-90 cm). These species are most common in the lowermost part of the basin, where they are often sold alive in the markets. They are popular food fish with few bones and firm meat, normally chopped up in pieces and put in soups.

The spiny eels are caught in rivers, streams, channels and ricefields with traps and hooks baited with worms.

