Family Pleuronectidae

Righteye flounders

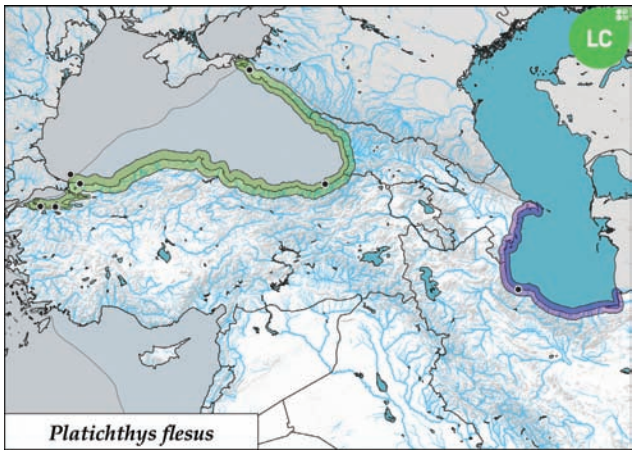
Flatfishes represent a distinctive group of primarily marine fishes that are readily distinguishable by their bilateral asymmetry, with both eyes on the same body side. They have been observed to have remained largely unchanged since the Eocene epoch (34–56 million years ago). The family Pleuronectidae is recognised to comprise 40 genera, and approximately 103 species distributed across all marine habitats worldwide. It should be noted that several other species (e.g., *Citharus* [family Citharidae], *Solea* [family Soleidae], *Scophthalmus* [family Scophthalmidae]) may occasionally be found in estuaries. **Further reading.** Whitehead et al. 1986 (identification of marine species); Cooper & Chapleau 1998 (phylogeny); Evseenko 2004 (checklist).

Platichthys flesus

Common name. Flounder.

Diagnosis. Only flatfish entering freshwater habitats in West Asia. Distinguished from other species of flatfishes occasionally entering freshwaters in Mediterranean and Black Sea basins by: ○ about 80 total lateral-line scales / ○ enlarged scales along dorsal and anal bases / ● bony tubercles along lateral line / ○ 51–66½ dorsal rays / ○ 35–45½ anal rays / ○ eyes on right side (but, in North Sea, up to 40 % of individuals may have eyes on left side). Size up to 500 mm SL.

Distribution. Black Sea, Mediterranean, eastern Atlantic northeast to White Sea. Introduced in Caspian Sea and Great Lakes of North America. Occasionally recorded up to 650 km upstream in Rhine, in western Asia only in estuarine habitats.



Platichthys flesus; Belbek, Ukraine; 106 mm SL. (side reversed).

https://doi.org/10.1515/9783111677811-043

Habitat. Shallow, marine, and estuarine mud and sand bottoms; rarely enter freshwaters in West Asia.
Biology. Males spawn first time at 2–3 years, females at 3–4 years. Migrates to sea in October–December. Spawns at sea in deep water, in January–June. Eggs and larvae pelagic and drift with current. At about 10 mm SL, left eye moves to right side, pigmentation develops, and juveniles become benthic. Pelagic larvae migrate to brackish and freshwater habitats with tidal currents, moving up water column during high tide and to bottom during low tide. First pelagic flounder is usually recorded in estuaries in March. Juveniles begin to migrate upstream into freshwater to feed by mid–April. Few individuals enter brackish or fresh water. Spawning adults do not return to brackish or freshwater but remain at sea. Feeds on small fish and benthic invertebrates.
Conservation status. LC.
Remarks. The taxonomy of founders needs a critical revision. Several species may be confused under the name *P. flesus*. *Platichthys luscus* is occasionally used as a valid name for flounders from the northeastern Mediterranean and Black Sea basin flounders. However, we could not find any data to support this view.
Further reading. Voronina 1999 (systematics).

Coastal lakes along the Mediterranean Sea, such as Lake Akgöl in Turkiye, are the habitats of various species of mullets and many others including flatfishes.

Family Channidae

Snakeheads

Snakeheads are mid-sized to large freshwater fishes that are characterised by an elongate, rounded body that becomes compressed posteriorly, long and spineless dorsal and anal fins, and by paired accessory organs or suprabranchial organs in the upper gill chamber (above and behind the gills) which enable these fishes to breathe air. There are approximately 50 species (plus many undescribed) in the Asian genus *Channa* and three species in the African genus *Parachanna*. The fossil record of snakeheads extends from the upper Eocene of Egypt to Central Europe and Asia. The smallest snakeheads reach approximately 100 mm, while the largest reported individual is 1800 mm long. All species are considered thrust predators, with most being piscivorous as adults. Snakeheads inhabit still waters, although some are found in larger rivers or along margins of fast-flowing streams. Most species construct a bubble nest in vegetation, with the eggs laid and fertilised below the nest so that they float up into the bubbles. Others are mouthbrooders, and some feed their young with unfertilised eggs. One or both adults guard the nest, and young attacking intruders with great ferocity, including humans. Several species are highly valued as food fish within parts of their native ranges, where they are an important part of capture fisheries and aquaculture. They can be transported alive, wrapped in wet clothes or vegetation, and introduced in areas outside their natural distribution. Several Asian species have been introduced outside of their native range. Four snakehead species are thought to have entered North America through the aquarium and live-food fish markets and are now spreading. *Channa maculata* and *C. striata* have already established a wide non-native range in the tropics, including Hawaii and Madagascar. **Further reading.** Walter et al. 2004 (invasion); Murray 2006 (fossil record); Conte-Grand et al. 2017 (molecular diversity).

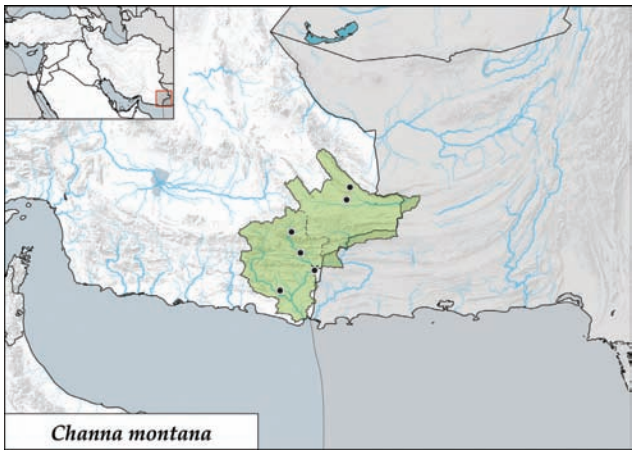
Channa montana; Kaju drainage, Iran; ~100 mm SL. © H. Mousavi-Sabet.

Channa montana

Common name. Baluchi snakehead.

Diagnosis. Distinguished from other freshwater fishes in West Asia by: ○ paired accessory organs or suprabranchial organs in upper gill chamber / ○ 33–35½ soft dorsal rays / ○ 20–22½ anal rays / ○ body roundish and elongate / ○ 41–44 lateral-line scales / ○ many teeth on jaws, vomer and palatines / ○ pelvic origin shortly behind pectoral base and below dorsal origin. Size up to 125 mm SL, likely to grow larger.

Distribution. Iran: Jazmurian (Bampur and Halil) and Mashkid (Rotak) basins shared by Iran and Pakistan. Also in rivers of Makran coast. Indus drainage in Afghanistan, Pakistan, and India, as well as rivers of western India,



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Habitat. A wide range of freshwater habitats often associated with dense submerged vegetation and standing water such as qanats, springs, and streams. Occasionally found in rocky streams without vegetation.

Biology. Forms pairs and guard larvae and small fry. Feeds free-swimming juveniles with eggs by spawning into cloud of juveniles. Single study of species' reproduction suggests that eggs are laid on bottom. Breathes air from surface. Feeds on invertebrates and small fish.

Conservation status. Not evaluated. Declining in Iran due to desiccation of habitats.

Remarks. In West Asia, snakeheads are restricted to Iran, usually identified as *Channa gachua*, a species described from Bengal in India. Recent molecular studies suggest that more than 20 species may be included in *C. gachua*. The Baluchi snakehead is very closely related to populations from the Indus and westernmost India. It is identified here as *C. montana*, a species described from the upper Indus drainage in Afghanistan.

Further reading. Coad 2016a (distribution, biology); Conte-Grand et al. 2017 (diversity of *C. gachua*).

Streams like this in Iranian Makran are the habitat of *Channa montana*.