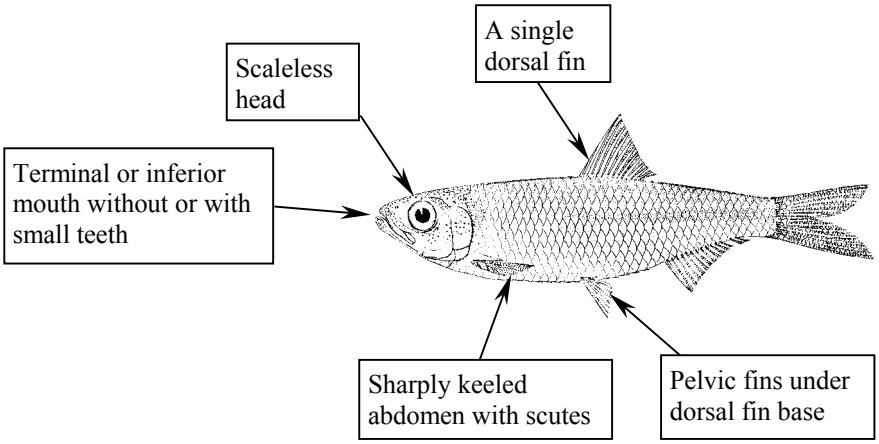
Herrings - Clupeidae

The herring family (Clupeidae) comprehends some of the worlds most important commercial fish species. The majority of the herrings are marine pelagic species, but some of them occasionally venture into rivers (sometimes for spawning), and a few species are exclusively found in freshwater.

Herrings are characterized by having a head without scales, a terminal or inferior mouth without or with only small teeth. Herrings have no adipose fin, and all the fins have soft rays. They possess a single dorsal fin, and the pelvic fins are situated under the dorsal fin base. The abdomen is sharply keeled and is serrated with a series of scutes (protruding bony structures) that are easily felt by passing a finger along the belly towards the head.

In herrings, the swimbladder can transfer sound waves directly to the ear through a connection to the hearing apparatus. This gives the herrings a sense of hearing, which is between the sharpest among fish. It is not known with certainty for what purpose they use their sensitive hearing, but it seems likely that they used it to detect predators. Herrings are small fish, and are in deed pursued by many predators, but the silvery sides, a dark back and the keeled abdomen, already mentioned, make an excellent camouflage from all angles in the open water, which is their preferred habitat. They also favor standing or slow flowing water, and they are locally abundant in sluggish parts of large and medium sized rivers.



Thai river sprat (*Clupeichthys aesarnensis*) a typical herring, and an important commercial species in reservoirs in the Mekong region

Herring species generally feed on plankton. In some species the gill apparatus is modified into a fine sieve consisting of hair-thin, densely sitting gill-rakers that filtrate all the water passing over the gills. Larvae and adults of small species normally pick out individual food items, and can show a surprising degree of food selectivity.

Most herrings are migratory with spawning areas clearly separated from the feeding areas. This behavior prevents the herrings from feeding on their own larvae, which in most species are planktonic.

Many clupeids also migrate vertically on a daily basis. They spend most of the daytime in deep water and come to the surface after sunset. Fishermen targeting these fish normally fish at night mainly with big scoop-nets fishing in the surface. In many cases the herrings are also attracted with a lamp, which is put on a stake and left alone for a while before the area under the lamp is scooped. Why the herrings are attracted to the light is not known.

It has often been observed that populations of herrings “explode” when reservoirs are constructed. This has also been observed in the Mekong countries with two small clupeid species: Bangkok river sprat (*Corica* sp.) and Thai river sprat (*Clupeichthys aesarnensis*), which in many cases quickly become the most important species when a reservoir is build.

There are several reasons for the success of these two species in artificially created lakes:

First of all: The construction of a reservoir often leads to a bloom in zoo-plankton productivity, and plankton is the most important food item for the herrings.

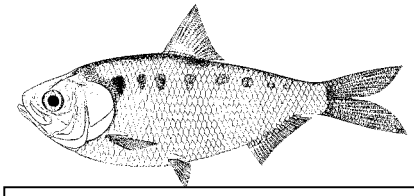
Second: Few other freshwater fishes are adapted to a pelagic life. The herrings therefore meet little competition for food and space and have few predators (the only important predators seem to be the two cyprinids *Hampala dispar* and *H. macrolepidota*).

Third: The two species have an opportunistic life-strategy: They are able to reproduce all the year, they lay a large number of eggs, and their lifecycle is short (the Thai river sprat for example completes it lifecycle in nine months, and reaches sexual maturity at 20 mm length).

In spite of their small size (none of them grow to more than 7 cm) Thai river sprat and Bangkok river sprat are popular food fish that are either eaten fresh, as fish paste or dried. Sometimes they are also used for feed in cage-culture of for example snakehead (*Channa* spp.). In the Nam Ngum reservoir, in the Lao PDR, Thai river sprat makes up 25% of the annual fish landings. There is no doubt that herrings will play an even more important role in the Mekong fisheries in the future if more reservoirs are constructed.

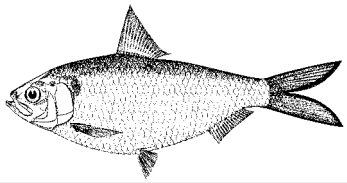
Another area where herrings are important in the fishery is in the Mekong Delta, where small clupeids are very abundant in the tidal zone. A specialized dai fishery for the small clupeids goes on in this area, and the majority of the catch here is processed to fish sauce.

Another clupeid is the Laotian shad (*Tenualosa thibaudeaui*), which is a species endemic to the Mekong. In previous times this was one of the most abundant fish in the Mekong River, and it was once a very important commercial species. This species undertakes long migrations between feeding and spawning areas, and there was a large fishery for it (for example in the Khone Falls area) during these migrations. The populations of this species, in most of its distribution range, have now declined substantially, although it is still locally abundant in some places (like for instance in the Songkhram River). The decline in the numbers of this species seems to be related to overfishing - possibly due to the introduction of monofilament gillnets.



Laotian shad (*Tenualosa thibaudeaui*) in former times a very common fish, but now rare in most places

A close relative of the Laotian shad is the Toli shad (*Tenualosa toli*), which is easily distinguished from the former because it lacks the series of black spots on the side, which characterizes that species. The Toli shad is an anadromous species living most of its life in estuaries, but it spawns in rivers.
The Toli shad is not a common fish in the Mekong, and it is not clear how far this species migrates upstream, but it is encountered at least up to the border area between Cambodia and Lao PDR.



The Toli shad (*Tenualosa toli*) an anadromous species

Clupeids would potentially be interesting objects for aquaculture, because they are able to exploit a niche left empty by most other species. The problem is, however, that their small size makes them difficult to breed artificially, and herrings also die very easy if they are handled.
Stocking in reservoirs, where they are not already found, is also an option. It must be carefully considered, however, whether they would compete with larvae and juveniles of other more valuable species, before it is decided to introduce them.