The archer fishes (Toxotidae) are conspicuous creatures due to their surface-oriented habits and unusual appearance. But what makes them unique in ichthyology is their extraordinary ability to hit little insects and spiders with drops of water which they spit out of their mouths with remarkable power and precision.

The archer fishes are characterised by dorsal and anal fins that are equipped with both soft rays and spines. The body is silvery or yellowish and the back is embellished with several black stripes or blotches, an appearance that has given it the name "tiger fish" in several Mekong countries. The dorsal fin is located far back on the body, The mouth is large and turned upwards and the sizeable eyes are located close to the mouth, giving them good binocular vision that allows them to determine distances precisely.

Archer fishes occur from India to the Philippines and northern Australia. Only six species are known and all belong to the Toxotes genus. Three have been recorded in the Mekong - the large-scale archer fish (T. chatareous), the small-scale archer fish (T. microlepis) and the banded archer fish (T. jaculatrix).

The banded archer fish is the largest and grows up to 30 centimetres. It can easily be distinguished as it has only four dorsal fin spines compared with five in the other two species. It is most common in the estuary, where it prefers mangrove habitats.

The large-scale archer fish grows to 27 centimetres. It has five rows of scales between the lateral line and the dorsal fin, and 33 or 34 lateral-line scales. It occurs in the estuary and upstream to Laos and Thailand.

The smallest species, the small-scale archer fish, is the most common. It grows to only 15 centimetres but has a deeper body than the other two species. It has at least six rows of scales and 34 or more lateral-line scales.

Archer fishes are active hunters, constantly swimming near the surface looking for prey in, on or above the water. The dorsal profile of the body is almost straight from the tip of the snout to the dorsal fin. The shape of the body and the location of the dorsal fin allows them to swim very close to the surface and look up without creating a disturbance.

When an archer fish locates a prey sitting on a leaf or flying low over the water, it may try to shoot it down with a drop of water by spitting at great speed. An adult can spit up to about three metres and hit a fly more than a metre away - quite impressive for a fish that rarely reaches 20 centimetres in length.

When news of a spitting Asian fish reached Europe about 250 years ago, the scientific community was incredulous, and it was not until the early 20th century that the extraordinary habits of the archer fishes were properly described and recognised. The mechanism behind its shooting ability is still in the early stages of discovery.

It appears that both the upper and lower jaws have two valves separated by a small notch, kept open by a membrane connected to the roof and the floor of the mouth. When spitting, water is squeezed out of a small hole that appears between the valves when they are closed. To maximise the power of the shot, the fish sticks its mouth out of the water. However, the eyes stay fully submerged - so the fish has to correct the deflection of the image by the water. This makes its ability to hit from various angles - and therefore different degrees of distortion - even more impressive. Contrary to what was believed until very recently, it seems that the archer fish is born with its shooting ability.

Despite its efficiency, such a method of hunting is not the favoured way of foraging. Archer fishes often feed on floating insects or shrimp, or jump out of the water to catch insects near the surface. Only when everything else fails do they resort to spitting. This is because they often swim in small schools, and the one that shoots down the prey is far from certain of being the one feasting on the meal.

Archer fishes can be caught with hook and line as well as various nets. They are an esteemed food and are sold fresh in markets. However, they have a much higher value when sold as aquarium fish because of their interesting behaviour.
Key references:


