

## Aquarium Fish Head Biology and Perception

**Bonus content from the November 2009 FAMA magazine column "Aquatic Maestro."**

*By Paul Speice*

We are familiar with the taste buds of the bottom-dwelling crowd, which are located on the whiskers. The first fishes to respond to flake food being fed to my 150-gallon tank at Camp Notre Dame are the clown loaches and the spotted Pimelodus catfishes despite their being on the bottom. The powerheads on the undergravel filters circulate the water and carry the taste right to their receptors.

The midwater fishes respond to visual signals, including my presence. Since I first introduced this mix, I precede each feeding by gently tapping on the cover glass. This alone causes a furious rush to the surface.

Most whiskers are fine, hairlike extensions. The upsidedown catfishes have branched, feathery whisker arrays. They are nocturnal and perhaps need the extra sites provided by multiple branches to find food in the dark. Not all extensions are of the fine, hairlike type.

### Predator Heads

The South American leaffish is a master of disguise. It is leaf colored and shaped even to the extent of having a stem, a short hairlike projection on the chin. Its Latin name is *Monocirrhus polyacanthus*. The syllable *cirrh* means "curl on hair." The whole name means "one hair, many spines." It is a secretive lurker with an extendable mouth that literally inhales prey. An interesting synonym of this fish is *M. mimophyllus*, which means "mimics a leaf."

Another South American fish, the arowana, is a large silvery fish that swims with an undulating snakelike motion. It is known as *Osteoglossum bicirrhosum*, meaning boney-tongue, two hairs or whiskers. Its whiskers jut out from the lower jaw. The arowana is a predator. Be careful with this fish as well as the leaffish. Know your fish.

The marine world has many fishes with head extensions, including dramatic examples such as those seen in swordfishes and sawfishes to a group of more aquarium appropriate fishes called anglers. In anglerfishes, the first ray of the dorsal (back) fin has migrated forward. It has become a lure mounted on the nose. The organ has a stem, the illicium and the esca, which are dangled over the mouth and moved to attract prey.

The nostrils are located in the head of fishes. Unlike ours, they do not connect with the throat. The gill covers, known as the operculum, are protection for one of the fish's most vital and delicate organs. The inner ear is also an organ of balance.

Fish recognize the direction "up" in two ways. One is with the bone hanging in a canal of the inner ear. If the fish tips, the bone touches fine hairs and sends a message to the fish's brain saying "straighten up." The other signal is simply that light has always come from above. I've seen angelfishes tip over in the strong rays of afternoon sun. Do not use side or bottom lighting in your aquarium because you'll have neurotic fishes.

Want to read the full story? Pick up the November 2009 issue of *Freshwater And Marine Aquarium*, or subscribe to get 12 months of articles just like this.