

## Cichlid Fish Information

### Complete information about cichlids.

*By Wayne Leibel*

As an aquarist of some long standing (many, many years), there have always been cichlids in my tanks. And, while I have a hard time explaining to non-fish people the fascination of fish, I have no problem telling already initiated fish people (hobbyists) why I enjoy keeping cichlids. In one word: behavior. Members of the family Cichlidae are among the most "intelligent" and behaviorally advanced of our freshwater aquarium fishes. They hold and defend territories, and they go through elaborate courtship rituals and then guard and rear their eggs and offspring.

The downside of cichlids is that some of their behavior is not particularly conducive to a peaceful community tank. It's not enough to claim and hold a territory — they must rearrange it to their liking. And, because other fish may have a difficult time escaping their territorial defense in the small closed system that is our aquarium glass box, mayhem and death are often the results.

Yet, as I hope to demonstrate, special cichlid-oriented community tanks are indeed possible with a little care as to their setup and tankmate choice. And, having accommodated their behavioral needs, cichlids present their owners with a rich repertory of behavior not available from most other aquarium fish. I view cichlids as the "thinking person's" tropical fish: aesthetics with a behavioral twist.

I'm here to say cichlids have taken a bad rap for all these many years. Yes, they are territorial and often aggressive, and yes, they can spell trouble in a community tank, but I like to think of them as wonderfully intelligent and interesting fish with "special needs." Once an aquarist is made aware of those needs and gives cichlids what they need, they will be rewarded with interesting and complex behaviors, particularly those related to breeding, the likes of which are unavailable with most other aquarium fish. As Braz Walker (1978) wrote in his beginner's book *All About Cichlids*: "Because Cichlids are generally larger than most tropicals, are often territorial or even aggressive and show more individualism than most other freshwater tropicals, it is not surprising that keeping and breeding them effectively requires certain techniques and considerations." I agree.

What I hope to do in the rest of this article is to suggest a strategy for maintaining cichlids in the home aquarium, particularly for beginners or non-cichlid specialists, so that everyone can enjoy and experience the "essence of cichlid." Along the way I hope to bash or at least temper a few of the unfair myths associated with these marvelous aquarium fish.

#### What is a Cichlid?

Most aquarists, even beginning aquarists with inexperienced eyes, can pick out generic cichlids (pronounced "sicklids") in their dealers tanks. They have a certain "look" about them, both in terms of shape and behavior. That is because all cichlids share a number of anatomical and behavioral traits that have placed them in the family Cichlidae of the order Perciformes, or "perchlike" fish. For starters, they are all freshwater fish, although they are rather tolerant of brackish water and have close saltwater relatives, in particular the damselfishes, the wrasses and the surfperches, which together with cichlids comprise the suborder Percoidei.

Cichlids also share several peculiarities of their anatomy, some easily visible and others not. These include several rather obscure specializations of the digestive system and of the inner ear that we aquarists can't easily see, and one key innovation, again not obvious to the casual observer, which has made them wildly successful in exploiting a variety of freshwater environments. This is the pharyngeal jaw, an anatomical specialization shared with the other Percoidei.

So then how, as aquarists, can we recognize cichlids? As their placement in the order Perciformes suggests they are typically "perchlike" in general shape. Think sunfish or bass (neither of which, however, are cichlids) in shape and general appearance.

They are also easy to identify on the basis of behavior. All cichlids are parental — that is, they care for their eggs and young, which sets them apart from the majority of fishes. The details of this parental behavior vary from species to species. Some are pair-bonding substrate spawners, others are mouthbrooders. However, there are other behaviors associated with reproduction — courtship, territoriality — that are uniquely "cichlid." Gill-flaring, lateral displays and jaw-locking are all part of the behavioral repertory. Additionally, cichlids seem highly intelligent and responsive to their environment in the aquarium, unlike tetras or minnows. In short, the complex behavior of cichlids is one of the principal

attractions for keeping them in the home aquarium.

#### The Diversity of Cichlids

The fact that all cichlids share these characters suggests something about their relatedness in a historical sense. That is, they most probably evolved from one or a few ancestral cichlids, relatives of the ancestral marine damselfishes or wrasses, which first invaded the continental freshwaters of the tropics. Most likely this occurred before the separation and drift of the South American and African continents, because cichlids are well represented in the rivers and lakes of both.

Cichlids have been quite successful in their invasion of tropical freshwaters. In all, some 1400 species have been recognized, formally described and named by ichthyologists. In fact, there may be nearly double the number of actual species, half as yet undescribed. Of the described cichlids, about 1100 are of African provenance, the bulk of them (around 1000 species) found in the six major African lakes. The remaining 100 species are found in the various river systems of that continent. With three or so species known from Asia (e.g., India and Sri Lanka) and about a dozen species from the island of Madagascar off the coast of Africa, that leaves about 300 species of American provenance. That's a lot of cichlids! And many of these are currently available to aquarium hobbyists.

How can we account for their tremendous success? Most probably it was the evolution of the pharyngeal mill — "throat jaws," bony plates with teeth positioned in the throat in addition to the regular jaws — mentioned above, which enabled cichlids to become so successful in exploiting a variety of ecological niches. Most cichlids can eat anything that is available, which is welcome in the aquarium. They are opportunistic feeders, but in the wild, when the competition for food gets tough, they can specialize on exotic food items because of their pharyngeal jaws. The result is that they have become diverse and adapted to most tropical freshwater habitats, and are third only to catfishes and characins (includes the tetras) in the sheer numbers of species.

They became diverse not only with regard to feeding specializations and overall shape and size, but also in terms of their reproductive behavior. Generally speaking, cichlids are parental — they take care of their eggs and newly hatched fry. The details of that care, however, differ from species to species. Some cichlids are monogamous, with both parents participating in the guarding and rearing of their offspring. Usually they choose a surface — a plant, rock or piece of wood — to hold their clutch of eggs, which becomes the focal point for territorial defense. Sometimes a single male will defend a larger territory and have a harem of several females, spawning with each in turn. Sometimes the egg-bearing substrate is movable — a leaf — and the parents tug the eggs to safety.

Other species are polygynous, with males holding territories and spawning with as many females as they can attract. Typically, these species are known as "immediate" mouthbrooders, with the female picking up the eggs as soon as they are fertilized and incubating them in her mouth until they are free-swimming. And there are species that form stable pairs and lay their eggs on a substrate and guard them for a few days, only to pick them up in their mouths for the final incubation (delayed mouthbrooding).

These variations on the theme of parental care have allowed cichlids to thrive and compete successfully with other fishes and to diversify rapidly. While the total number of eggs they produce may be small relative to other fishes (typically a few hundred — fewer in mouthbrooding species, more in larger non-mouthbrooding species), their investment in parental care ensures that a greater percentage of the offspring will actually have a chance to survive.

#### Cichlids in the Home Aquarium

It is diversity that has, in part, made cichlids so popular as aquarium residents. There are so many of them, and they come in all shapes, sizes and colors. And, of course, there is the fascination of cichlid behavior! Early in the history of the aquarium hobby (around 1900) there was a very short list of New World cichlids being kept. The chanchito ("Cichlasoma" facetum) was the first of these, along with the port cichlid (*Cichlasoma portalegrense*) and the Brazilian pearl eartheater (*Geophagus brasiliensis*).

Subsequently, a growing list of cichlids from western Africa and the Americas made their way into the tanks of fish fanciers. These included New World examples, like the convict cichlid, severum, angelfish and firemouth, and from Africa the jewelfish, *kribensis* and Egyptian mouthbrooder. All provided both color and interesting behaviors to aquarists of the early to mid-twentieth century.

Starting in the 1950s, but particularly the 1960s and '70s, there was a gradual infusion of fantastically colored cichlids from the great rift lakes in Africa. First Lake Malawi (then called Lake Nyasa) yielded great cichlid treasures whose colors were as vibrant as those of marine reef fish. The cichlid boom was on! Following Lake Malawi came cichlids from Lakes Tanganyika and Victoria. Today, African rift lake cichlids are the most popular cichlids — and perhaps fish — in the aquarium hobby.

As importations from Africa rose, the variety of cichlids being collected and exported from South America and Central America, particularly in the 1980s and now the '90s, also increased dramatically. "American" cichlids were more than just Oscars and convicts, and today we are in the "golden age" of cichlids! Hundreds of cichlids, both New World and Old World, are available — both wild-caught and commercially bred specimens. There are literally cichlids for any aquarium situation — hard water or soft water, big tanks or little tanks, planted communities or rockwork aquariums. Everyone can experience the joy of raising and observing cichlids.

#### What Do Cichlids Need?

We need to start with some basic guidelines for cichlid captive husbandry. Cichlids are among the hardiest of aquarium fishes, and their basic care is quite simple. Nevertheless, peculiarities of their natural behaviors make keeping them a bit more problematic, and we must tailor their husbandry to fit their particular needs. This includes selecting and furnishing their tanks, as well as certain approaches to maintaining water quality.

The average cichlids are moderate to large fish (between 4 to 12 inches in length, with exceptions above and below this) and fairly active. They have hearty appetites and are also messy feeders compared to, say, tetras. Although only rarely fish eaters, cichlids are opportunistic feeders and will take smaller fish if encountered. They — males in particular — defend territories both in the wild and in the aquarium, and can be quite aggressive in doing so. They often maintain these territories with established visual markers, and will dig pits, pull plants or move stones around to establish a focal point with good 360-degree visibility for that territory.

The male will hang in the center of that territory surveying the situation or displaying to females, or he will patrol its perimeter, foraging for food, maintaining the boundaries and defending it from intruders. Territory defense often consists of ritualized displays: gill and fin flaring to offer the largest, most threatening body "size" possible (frontal and lateral displays), and, if these don't work at intimidating the competition, cichlids will resort to out-and-out aggression. In the wild, subordinate fish, usually the intruder, will simply be chased from the territory.

Below are the behavioral traits — peculiarly cichlid — that we must cater to in the home aquarium, quite unlike those of tetras or gouramis, and these are the behavioral traits that have given cichlids such terrible reputation in the aquarium hobby literature. However, these are also the behavioral traits that endear cichlids to hobbyists. I'm going to suggest some simple strategies or approaches for dealing with each of these behavioral "shortcomings," because the rewards of keeping cichlids are many. And along the way I hope to dispel some of the myths associated with cichlid keeping.

#### Cichlids Need Big Tanks

Beginners typically start out with a 10-gallon tank. For most cichlids, this is a mistake! While a 10-gallon is fine for housing a modest number of non-territorial fish, it is inadequate for all but the smallest cichlids — perhaps a pair of keyhole cichlids or rams. What do I recommend? The biggest tank you can afford that will fit into your available space. More precisely, a tank with a large "footprint" (bottom surface area) that will allow for the establishment of multiple territories. A 20-gallon long is better than a 20-high and a 30-long is far superior to a 29-high.

Actually, none of these is optimal if you are keeping bigger cichlids. If you can afford it and if you have the room, I would consider a "breeder" 40- to 50-gallon tank (36 inches long by 18 inches wide) or a 60- to 80-gallon (48 inches long by 18 inches wide) as the best compromise between affordability, size and the space demands of maintaining several moderately sized cichlids. Of course, if your budget and space will permit, larger tanks (125, 135, 150 gallons and up) will allow you to keep larger communities of bigger cichlids. Nevertheless, if you don't have the room or the budget, dwarf cichlids can be kept in smaller aquariums and provide the exact same behavioral show in a smaller package.

While we're talking tanks, there is another aspect of cichlid husbandry that bears mention: where to put the tank. Cichlids are easily "spooked" and need an environment that is stable and secure. The first place to start creating that is by situating the tank appropriately. The generality of cichlids appreciate a tank placed in an area that does not receive heavy or constant traffic, or at least is not in the line of traffic.

The tank should have a background of some sort, black paint, cardboard or even decorative commercial backgrounds are fine, as long as there is something covering the back glass. Finally, always place the tank in a "high" place. It has been my experience that many cichlids do not like tanks placed near the floor (on the bottom shelf of a stand). If you want to see your fish, place the tank at least 30 inches off the floor.

#### Cichlids Dig and Uproot Plants

Well, frankly, many do — it's part of their territorial imperative to create a territory that is to their liking! So there are many considerations when "decorating" a tank for cichlids. Decisions on whether gravel and plants are possible or advisable

hinge on the nature of the species you choose and the intention of your husbandry. If the intent is a nicely planted community tank including cichlids, then the proper choice of fish and plants will make this possible. However, many of the larger species are prone to rearranging their environs and this must be taken into account when aquascaping the tank. You should accept it as part of normal cichlid behavior.

Do cichlids need a substrate in the first place? The answer, again, depends on the nature of the species you intend to keep. Many species, including dwarf cichlids, medium-size acaras and eartheaters prefer — even require — substrates. In the case of the former the substrate is to anchor the plants, and in the case of the latter, to encourage normal "sifting" activity. In African rift lake cichlids, carbonate-rich substrates, such as dolomite or crushed coral, help buffer the water and contribute to the elevated carbonate hardness these fish prefer. But, they can all be raised in bare tanks as well.

Given that most cichlids dig, are plants appropriate in the cichlid aquarium? Once again, that depends. There is no question that the generality of cichlids appreciate shelter of some sort. However, there is also no question that most cichlids are relatively intolerant of rooted plants given their predilection for digging and rearranging their "territories." Moreover, some of them are partially herbivorous in the wild and will eat aquarium plants if given the opportunity. A decision to plant or not depends on the type of cichlids you are keeping.

If your intent is to keep dwarf cichlids or certain medium-size cichlids in a community situation, then plants are certainly appropriate — even advised. These are typically shy, retiring fish that require the security of shelter, both planted and other. Moreover, smaller cichlids are usually not inclined to dig excessively and uproot the plants. Indeed, if you want to keep cichlids in planted community tanks, I recommend keeping dwarf cichlids. Even so, you should keep any large rooted plants you intend to use, such as Amazon swords, Aponogeton or Cryptocoryne, in clay or plastic flowerpots with some larger-size gravel. Then sink the potted plant into the aquarium substrate. This makes it easy to move the plant if necessary and keeps it from being uprooted, particularly with the larger pebbles on the surface.

Another solution is to use plants that do not require rooting, such as Java fern (*Microsorium pteropus*). Java fern has rhizoids, not roots (although they look like roots), and does not need to be planted to flourish. They can either be left floating or can be attached with a rubber band or nylon fishing line to driftwood, where they will eventually attach. Not only is this a beautiful plant, but apparently durable: most cichlids will not rip them up.

Another good choice is Java moss (*Vesicularia dubyana*), which will also attach to driftwood, and the old standby, water sprite (*Ceratopteris thalictroides*), which, although plantable, is better used as a floating plant. Water sprite grows fast and covers the surface, cutting down on the intense surface illumination — again, useful in making cichlids feel more secure.

For those with a black thumb or who want the appearance of a natural biotope while keeping large, plant-hating cichlids, there are always plastic plants. Modern plastic plants are quite realistic and obviously immune to destruction. Uprooting is another matter, but fastening them to stones with rubber bands will do the trick. In addition to aesthetics, plastic plants provide shelter, something that is essential for maintaining cichlids.