

## Goin' South: Cichlids of the Americas - Wild Discus in the Aquarium

**Selective inbreeding has robbed these fish of a lot of their natural disease resistance.**

*By Wayne Leibel*

I'm probably going to make a lot of fanatical discus keepers nuts with the following recommendations. Many breeders of man-made strains keep their fish in absolute cleanliness — bare-bottom aquariums with only a spawning slate or cone — and usually as pairs. This is to monitor uneaten foods and guard against the many and sundry diseases that discus aficionados are always worrying about (and treating).

But, remember, these are wild discus fish we are talking about here! I don't dispute the suggestions made by accomplished breeders of some of the more delicate strains of discus available in the hobby, but in my opinion, selective inbreeding has robbed these fish of a lot of their "cichlidness" and a lot of their natural disease resistance.

While admittedly not as tough as oscars (*Astronotus ocellatus*), wild discus that have arrived at your dealer in good shape are not as delicate as you might think. What follows is solely my own opinion based on some limited, though successful, experience keeping, but not yet breeding, wild discus.

In the aquarium, wild discus are best maintained as groups in the largest aquarium you can manage to either afford or accommodate. More important than gallonage, I believe, is front-to-rear depth.

For instance, a 55-gallon aquarium (48x12 inch bottom profile) is less satisfactory than a "breeder" 50-gallon aquarium (36x18 inch bottom profile). The additional depth provides for more psychological security — wild discus are smart and wary fish! And actually, more front-to-back room, which they would have in, say, an 80-gallon aquarium, would be even better. An aquarium with a 2½ or 3-foot front-to-back depth would probably be optimal (and would need to be custom made!).

Because these are deep-bodied fish, the aquarium should probably be "high" for best display (i.e., a 4-foot long, 80-gallon aquarium, rather than a 60-gallon aquarium). The nicest discus setup I've heard about is that of Jeff Cardwell from Kokomo, Indiana, whose custom 750-gallon aquarium (14 feet long, 3 feet wide, 2½ feet tall) houses a group of 15 wild discus he personally caught and transported back from Brazil.

The aquarium should be equipped with some shelter. I recommend well-cured driftwood or bogwood, with perhaps a large piece serving as the focal point for the aquarium. Aquatic plants? Yes, if you like, perhaps some floating water sprite (*Ceratopteris* sp.) to shade the aquarium, or possibly potted Amazon swords (*Echinodorus* sp.). However, choose species that can take the higher temperatures (around 84 to 92 degrees Fahrenheit) and the lower pH values (about 5.5 to 6.8) at which these wild fish should be maintained (see Schulze 1988, for some additional suggestions).

What about substrate? In the olden days, bare black slate bottoms would have sufficed, but if you're going for bare glass, I suggest you paint it black or tape some black cardboard/construction paper to it.

Again, these can be shy fish. But if you make them comfortable by cutting down on surface illumination, providing shelter and otherwise "darkening" the aquarium, they will reward you by spending most of their time out front and center.

I think substrate is fine for aesthetic reasons — either #0 gravel or well-washed sand, but just not big chunks. Remember, they will attempt to "blow" their food off the substrate. Moreover, large-size gravel traps uneaten food. Obviously, crushed glass is out of the question. Some of the epoxied gravels in darker colors and smaller sizes are excellent.

With respect to water, the primary considerations are cleanliness, chemistry and temperature. Whereas many highly inbred and artificially selected strains of discus can adapt to a wide range of water chemistries (and, indeed, they are often advertised in magazines by breeders as having been spawned in hard water), wild discus need soft, acid water to prosper. Schulze (1988) suggests that wild discus come from habitats with a pH of 5.5 to 6.8 and very low hardness. If you're burdened with very hard tap water, perhaps you should raise cichlid fish from Lake Tanganyika and not wild discus, or you could invest in a reverse osmosis (RO) unit.

Many serious breeders of cultivated discus suggest that RO water is essential for these fish in that this does allow for total

control of water chemistry. However, while needing soft acid water, the wild fish are adaptable and such a fine level of control is usually not needed. For most aquarists with water of moderate (and mostly carbonate) hardness, peat filtration will suffice to both acidify and soften the water.

We have covered peat filtration and its use for blackwater cichlids before in this series (i.e., the parrot cichlid, AFI, February 1996), and a more detailed discussion can be found there or in Leibel (1993 or 1995). In a nutshell, good-quality untreated peat moss (i.e., without fungicide) can be obtained cheaply from your local nursery.

I prefer to boil mine first, then squeeze out the water — this waterlogs the peat and leeches out any agricultural chemicals that might be in it — and then place the peat into a porous nylon filter bag (available from aquarium shops) or a boiled nylon stocking and then into the filter. The peat will remove undesirable compounds from the water, reduce the carbonate hardness and acidify your water all at once! It will also turn your water tea brown — which means not using activated granular carbon with the peat. The discus (and most blackwater species) seem to appreciate water treated in this way.

If all this seems too messy, you can use one of the proprietary "blackwater tonics" sold by several companies. I haven't used them myself, so I can't vouch for them. But I have used peat, and it's magic. Remember that you must replace the peat from time to time for it to be effective — it will be depleted by water changes. How often will be indicated by pH and hardness values, but I'd certainly do so every three to four months.

Water quality is certainly important in the correct husbandry of discus, either wild or cultivated. Filtration can be achieved in any number of ways, and each of us has our favorites.

But whatever your choice is, the fish shouldn't be blown around the aquarium by high turbulence. For instance, while I like outside power filters, a 600 gallon-per-hour (gph) model on a 29- or even 55-gallon aquarium may be too much water movement. I'd choose a smaller capacity model and couple it with an air-driven sponge filter and/or box filter (the latter with peat and floss).

Here's one place where canister filters are appropriate and can be useful in the cichlid aquarium. Because discus (and freshwater angelfish) produce relatively small amounts of waste, the canister filter is not easily swamped and in need of breakdown every week.

Biological filtration in the form of a sponge block in the external power or canister filter, or a sponge filter inside the aquarium, is exceedingly useful. I wouldn't, however, recommend undergravel filters — I don't for the majority of cichlid fish. These tend to draw uneaten foods down into the gravel and work against the level of hygiene necessary for discus. Whatever your choice, remember to do partial water changes regularly as you would for most cichlid fish! Siphoning uneaten foods is not a bad idea either.

The appropriate temperature for discus is not without debate, as I indicated above. I tend to keep them warm (above 86 degrees Fahrenheit) despite Bleher's (1996b) recent assertion that discus are never found in waters warmer than 82.5 degrees Fahrenheit (he claims 77 to 81 degrees Fahrenheit).

In fact, it had been recommended in the earlier literature that wild discus should be initially kept at temperatures of 90 to 92 degrees Fahrenheit for a few weeks, particularly Heckel discus (see Wattle in Axelrod 1980), while in quarantine. This was suggested for two reasons: higher temperatures mean higher metabolic rates and hungrier fish, and typical discus fish parasites cannot tolerate these high temperatures. Both are problems with newly imported wild fish.

Whether these temperatures actually do kill discus parasites is debatable — although Schulze (1988) asserts that the protozoan disease *Spironucleus*, the bane of discus keepers (see below), is often associated with "too low a temperature." He advises a maintenance temperature of 84.5 to 86 degrees Fahrenheit. I concur, based on my own experiences with wild fish.

Feeding is hardly a problem. However, while wild discus will eventually learn to eat prepared foods, their basic diets should be built around frozen and live foods. Frozen bloodworms, mosquito larvae or glass worms are all excellent choices when available. If you can get it, small freshwater or saltwater shrimp, sold as mysid shrimp, are also good. Often, discus have not been fed for several weeks because their capture, and their appetites need to be jump-started — tempting with live foods is not always enough.

Some discus fanciers swear by their own beef heart-based (frozen) paste fish foods. These, or their commercially available counterparts, can be used to advantage (see Schulze 1998 or other books for recipes).

For live foods, cultured dwarf red earthworms are hard to beat. These are often available at bait shops or can be cultured easily at home. Schulze (1988) recommends live brine shrimp, although acknowledging that they are mostly water and of questionable nutritive value. But, he believes these, and Daphnia, are useful purgatives and will "clean out" discus. You can also terrorize your neighbors by setting out a bucket (or larger volume) of standing water and collecting live mosquito larvae. One food to avoid is Tubifex worms. This was the standard fish food for wild-caught discus back in the 1930s (Innes 1948), but it is generally agreed that the risk of pollutants and disease associated with this otherwise attractive food is not worth the potential benefit.

Schulze (1988) recommends feeding discus small portions five or six times a day, but this may prove difficult for the real work schedules of most aquarists. It has sometimes been suggested that discus be fasted for a day or two every week to allow them to "clean" themselves out, but the usefulness of this approach is not apparent to me, at least.

Discus disease is one area where I begin to lose my patience with serious discus breeders. Clearly, there are several insidious "discus" diseases that seem specific to these fish, but I sometimes wonder if we have bred out the natural resistance of these cichlid fish with all the line-breeding and selection that has taken place in cultivated strains.

I remember attending a discus symposium a few years back, sitting in the back row with my long-time friend and ace breeder Rosario LaCorte. Rosario was one of the few pioneers and top aquarists who was breeding wild discus back in the 1950s and 1960s. The speaker began his talk by reviewing the apparently many diseases and treatments associated with the "proper" maintenance of discus, and I remember Rosario and I turned toward each other with quizzical looks. We were both used to treating discus as just slightly more finicky cichlid fish, but not in need of the extreme and constant medical intervention that the speaker seemed to be advocating. Between the recommended medications and the sterile environment of the hatchery, it must not be much fun to be a modern-day man-made variety of discus!

As Schulze (1988) writes: "Fortunately, discus fish do not seem to suffer from many diseases." He suggests that discus maladies can be easily approached as one of three types: "disease" induced by environmental conditions, stress-related diseases and those caused by parasitic infection.

The main problem associated with wild discus is the stress they have suffered as a result of the collecting/export and wholesale/retail experience. They have been bagged and shipped, bounced around in transit, subjected to pH/hardness shock with every water change, and usually not fed for several weeks.

As recommended earlier, initial high temperature quarantine coupled with optimal water quality will help immeasurably in reversing the cumulative effects of shipping. The stress is psychological, as well, and providing the right size aquarium and the correct shelter and lighting will help.

Usually wild discus come in with a variety of parasites. These may include gill and/or body flukes, intestinal worms and various protozoa, including Hexamita and/or Spironucleus. Unhappy discus are obvious: often they are dark or even black or have milky white "slime" on their bodies, they refuse to feed, they void white stringy feces, exhibit obvious "worms" protruding from the anus, and they "breathe" rapidly with widely opened gill covers. (Superficial wounds or shredded or truncated fins are not really a serious problem and usually correct themselves with improved water quality.)

These problems should be treated cautiously, using one medication at a time. Combining medications is usually harmful and often fatal. A detailed discussion of discus diseases and cures is the subject for an entire article (and symposium!), and frankly is beyond my expertise or interest. I direct you to any number of good discus texts from reputable authors (e.g., those I've already mentioned) for details on medication dosages and durations.

In a nutshell, however, flagellate parasites like Hexamita and Spironucleus, believed by some to be responsible (or at least accompany) hole-in-the-head disease (neuromast erosion), is often treated with the drug metronidazole, available in several proprietary medications available on the market. Intestinal worms are often treated with the anti-helminthic drug piperazine — the trick being to get the fish to ingest the drug. This is accomplished by dissolving the drug (at appropriate concentration) in water and then soaking thawing frozen foods in it, a trick used to add vitamins to the diet. Alternatively, at least one fish food company offers "deworming" flakes that can be helpful.

Flukes are usually dispatched by dips in one of several recommended chemicals, including the drug masoten. Again, I direct you to the appropriate texts for concentrations and treatment courses.

As you can see, I'm no expert at discus disease, nor do I necessarily wish to become one. (And I'm also not trying to minimize the seriousness of the problem to dedicated breeders of cultivated strains — I really have no experience with them.) As I said before, I think wild discus can be managed with a bare minimum of drug intervention.

One way to ensure potentially trouble-free fish is to select them with care! Observe the fish carefully in your dealer's aquarium. Are they colorful or dark? Do they display themselves with fins spread, and interact with others, or are they clamped and hiding.

For the price most dealers charge (wild discus sell wholesale for \$15 to \$30 or more depending on their size and coloration) they should be willing to demonstrate a feeding to you. If you're unsure, let the fish sit for a few weeks in the dealer's aquariums before you buy.

Being selective can make the difference between healthy fish and chronic problems. This is also why wild discus can be expensive — the dealer needs to recoup his/her losses.

If your once-healthy discus begin to darken, lose interest in food and begin breathing in a rapidly labored manner, they are obviously telling you that something is wrong. Have you kept up with those water changes and changed the filter media (or rinsed out your sponge filters)? Is the peat exhausted and in need of replacement? Have you added a nasty fish, or has one become super-dominant at the expense of the others? As Schulze (1988) has said, often the problem is simply environmental and not the result of some infectious agent, and can be corrected simply and without medication.

I know that in most case of "head-hole" (neuromast erosion, "pitting") in other South American cichlid fish like oscars and parrot cichlids (*Hoplarchus psittacus*), the main causal agent seems to be deteriorating water quality, and no amount of metronidazole (often recommended for discus head-hole) will help the situation. Massive water changes will! I don't doubt that Hexamita or Spiroonucleus accompany the problem in discus (and can be swabbed out of the craters), but I'm not so sure they are the causative agent. And, in any case, I'd try simple environmental manipulations (water change, new peat) first before throwing in a drug.

One tonic that I might use early in the game is a drug recommended to me by Doug Millard of Aquarium International in Union, New Jersey, who has been in the trade for several decades. He has had much luck (and me too, since his recommendation) turning "darkening" discus around with acriflavine, an aquarium dye sold in several proprietary formulations — often with formalin.

This seems to be a rather gentle treatment that has saved a lot of discus (and other South American cichlid fish) for both Doug and myself. On the downside, acriflavine's days as an available medication are numbered, as this chemical and a number of other routinely used veterinary (fish) drugs will be controlled by the FDA and removed from the general market.

To sum up, pick healthy wild discus and quarantine them before adding them to existing populations. This should include at least a week at higher temperatures. Schulze (1988) recommends 88 degrees Fahrenheit, but I'd go higher still (90 to 92 degrees). But please remember to aerate heavily — dissolved oxygen decreases significantly at higher water temperatures!

If your discus begin to look sick, take a good hard look at their aquarium environment first before medicating. If you have to medicate, use only one medication at a time and follow exactly the dosage and treatment recommendations that are on the label.

Choose a reliable discus text (and not this brief article!) for guidance. Your dealer may or may know how to care for discus, and the blurb on the medication container is usually not sufficient in directing you to the appropriate product.

Remember, wild discus are cichlids — relatively hardy fish. Assuming proper shipping and good initial care, they should prove relatively healthy in your aquarium.