

## The Cichlids of Madagascar

**Bonus content from the February 2009 FAMA magazine article "Cichlids of Madagascar."**

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### The Cichlids of Madagascar: The Genus *Paretroplus*

The *Paretroplus* of Madagascar can be divided into three clades (a clade is a taxonomic group descending from a single common ancestor) or groupings within the genus *Paretroplus*. First are the comparatively elongate, primarily riverine and rheophilic (preferring to live in fast-moving water) species *Paretroplus nourissati*, *P. tsimoly* and *P. damii*. As of this writing, only *P. nourissati* is available in North America, while both *P. tsimoly* and *P. damii* are available in Europe. The *Paretroplus* are commonly referred to as *Damba*, the name given to species from this genus by Malagasy fishers.

The second clade consists of the deep-bodied, primarily lacustrine (residing in lakes or rivers) species *P. menarambo*, *P. maculates*, *P. dambabe* and *P. maromandia*. All but *P. maromandia* are available in the North American hobby.

Lastly is the shallow-bodied and highly mottled species *Paretroplus kieneri*. *Paretroplus kieneri* is an interesting species as it can be found in a variety of habitats and often with other *Damba*. There is currently some debate as to whether the various forms of *P. kieneri* are one species or a species complex. This dilemma will hopefully be clarified by an upcoming paper by John Sparks, Ph.D., the assistant curator of the department of ichthyology for the American Museum of Natural History.

Of the three cichlid genera available to fish enthusiasts, the *Damba* are the most commonly available in the hobby. The genus *Paretroplus* also contains the species I'd recommend first to budding Madagascan enthusiasts: *P. keeneri*. *Paretroplus kieneri*, or *Kotsavato* as it is known in Malagasy, stays relatively small and is less aggressive in groups than other Malagasy cichlids. A pair of *Kotsavato* can be kept and bred in a 50-gallon aquarium with little difficulty.

The adult size range in the genus *Paretroplus* stretches from the smaller *P. kieneri* at around 6 inches to the monstrous *Paretroplus damii* at 16 inches total length. The majority of the *Damba* are in the 8- to 10-inch range when fully grown, and even these would be exceptionally large-sized individuals in captivity.

In the wild, *Damba* have been observed eating everything from aquatic insects to the bulbs of water lilies and *Aponogeton* species (Loiselle, pers. comm.). Their incisorlike front teeth allow them to nip food out of small crevices, make short work of snails, and provide a nasty warning bite to aquarists trying to recover eggs for artificial incubation. Because of this diet, I don't recommend *Damba* for mixed species displays and heavily planted aquaria.

The deeper-bodied *Paretroplus* species display an interesting feeding behavior: When searching for food on the aquarium substrate they'll often shake their head side-to-side to stir up gravel. I've not observed this behavior in the wild, but I'm sure it serves to uncover burrowing aquatic invertebrates or small snails for snack time.

I've kept *Dambas* over sand and small to medium sized gravel substrates and haven't noticed a strong preference for a particular type of substrate. Natural foraging behavior will be easiest over sand or small gravel, and both of these substrates provide easy digging for pit formation by parents.

Another thing those incisorlike teeth can be used for is to tear a chunk out of tank mates, and this behavior is what makes the *Paretroplus* spp. so difficult in a home aquarium setting. These fish get big, and are inclined to hold large territories once they become adults and begin to take an interest in reproduction. Sub-adults are tolerant of conspecifics and will display schooling behavior if kept in sufficient numbers with enough space. Reproductive adults, however, can become completely rabid when other fish enter their territory, or look at them sideways for that matter. The only experience I have with the complete divider method of cichlid reproduction came during my efforts to spawn *Paretroplus dambabe* in a 120-gallon aquarium. I did manage to get 10 viable young from this attempt, but my female soon broke through the egg-crate divider and killed my adult male.

Sexing *Paretroplus* species is difficult as secondary sexual characteristics are only noticeable in the rheophilic species, and even then the differences are subtle. *Lamena* (*Paretroplus nourissati*) females will display a swollen belly when spawning nears, and it seems that this "signal" is also observable in *Paretroplus tsimoly*, the blue-lipped *Lamena* (Guinane, 2001). In the deep-bodied *Paretroplus* species, including *P. keeneri*, it is much more difficult to determine the sex of specimens. The spawning tubes in all *Paretroplus* species are identical and the non-rheophilic species do not show

the swollen belly that Lamenas do.

Aquarium decoration can consist of bogwood, terracotta pots and saucers, and slate or rock. Lamena seem to prefer spawning in a cavelike setting, so lay some pots on their sides, or break out a window for them to enter an overturned pot to promote spawning success. The other Damba are typical horizontal substrate spawners and I've had them spawn on smooth river rock, terracotta pots and lava rock. Décor can help to delineate territories in home aquaria, but in anything smaller than a pond this may be a moot point. Full-sized adult Damba often have territories stretching 5 feet in either direction when breeding, and even when supplied with this amount of room in captivity things can become hectic.

A large tank is the first step to keeping *Paretroplus* species at home. While a 75-gallon aquarium may be enough to house four to six adult *Paretroplus kieneri* and allow them to reproduce, it will be too small for the other Damba species. Damba will shoal if given enough space, and for a group of six to feel comfortable, a 110- to 150-gallon aquarium is necessary, especially if you wish to breed them. The Lamena (*Paretroplus nourissati*) is another story; being exceptionally aggressive to conspecifics, they are best limited to four specimens in systems of 100 gallons or less, with plenty of hiding spaces.

*Paretroplus* species display typical bi-parental spawning behavior. Site preparation is done primarily by the female, with some assistance by the male, especially in pit excavation. The female also takes on the role of fanning the clutch and picking out dead eggs or eggs with fungus growing on them while the male defends the territory.

#### The Genus *Ptychochromis*

*Ptychochromis oligacanthus*, also known as Juba (JOO-ba) or Tsipoy (Ts-pu-EE) depending on where it is caught, was one of the first cichlids described from Madagascar by Pieter Bleeker, a Dutch ichthyologist who served as a medical officer in the Dutch East Indian Army, in 1868. *Ptychochromis oligacanthus* is found on the island of Nosy Be and on the mainland in the northwest. Although many melanophore patterns exist, these are solely indicative of their collection locale and have not been shown to indicate separate species within this geographic region (Stiassny and Sparks, 2006). *Ptychochromis oligacanthus* has been available in the hobby since the mid 1990s.

*Ptychochromis grandidieri* is found along the east coast of Madagascar from the Masoala peninsula (excluding the Mananara River) south to Vagaindrano. Available in the hobby in Europe since 1991 and since the mid 1990s in North America, this species is often referred to as east coast gray or east coast gold, with the name Saroy (SA-ruy) used in its native country.

Recently, six more species have been added to the genus *Ptychochromis* (Stiassny and Sparks, 2006), with the possibility of two more species yet to be described. Aside from *P. oligacanthus* and the east coast gold, only *P. insolitus*, the Mangarahara river *Ptychochromis* sp. from the northwest, and *P. sp. nov.* "Ft. Dauphin," from the far south, are available in the hobby.

In the wild, *Ptychochromis* spp. can reach an adult length of 10 inches, while in captivity a total length of 7 or 8 inches is usually the maximum, with successful breeding beginning at around 4 inches. In physical appearance these cichlids look somewhat similar to the *Thorichthys* species of Mexico and Central America (de Rham and Nourissat, 2004). *Ptychochromis* species are found in rivers and lakes in the northwest and along the east coast of Madagascar, most often in lower elevations. *Ptychochromis grandidieri* can survive in brackish water conditions, but this is certainly not necessary for captive husbandry or reproduction.

*Ptychochromis* spp. are considered omnivorous in regards to their diet in the wild, with aquatic insects, arthropods and plant material being consumed at various life stages (Sparks, 2002). As mentioned earlier, a maintenance diet of good quality flake or pelleted food with additions of live or fresh-frozen food items will be enough to induce spawning in these species. Because of this varied diet in the wild, *Ptychochromis* species are also the best candidates for a mixed species display of the fish from Madagascar. I've successfully kept both *Bedotia* and *Pachypanchax* species with *Ptychochromis* species for extended periods of time with only the occasional "accident."

As with other genera, aggression is challenging for the home aquarist to manage. In my experience its intensity and result varies wildly from species to species, and even from group to group. Currently I have a group of 33 east coast golds doing fine and reproducing regularly in a 400-gallon aquarium with only the occasional low-grade tussle. Both my groups of *P. insolitus* and *P. sp. nov.* "Ft. Dauphin" are near their territorial limits with four fish in 120 gallons, with disputes being near fatal in most cases.

Of all the Madagascan cichlids, *Ptychochromis* spp. are easiest to sex. Vent sexing clearly shows genital papilla, which taper to a point in males while female papilla are blunt and wider in diameter. This difference becomes especially obvious once specimens have grown to around 2 inches in length and have become sexually precocious. Unpaired fins also show

secondary sexual characteristics, with males having filamentous extensions on both the dorsal and anal fins.

Found over sandy river bottoms and in basaltic pools in the wild, *Ptychochromis* species are best kept over a substrate of fine gravel (one fourth of an inch in diameter) in captivity. Some species will aggressively hunt along the aquarium bottom, diving eye-deep in the substrate in search of food. To avoid inadvertent choking incidents, and to allow spawning pairs to prepare pits for their wrigglers, avoid the medium and larger sizes of gravel.

Choose aquarium décor carefully as it is important from both the standpoint of aggression management and reproductive success. Due to the somewhat unpredictable level of violence you may witness while caring for these species, it pays to give your sub-dominant specimens adequate hiding spots in the form of bogwood tangles and terra-cotta pots and saucers. With enough space and enough hiding spots most aggression can be kept under control.

*Ptychochromis* species are fairly straightforward substrate spawners who appear to prefer a horizontal surface on which to deposit eggs, either out in the open or in a cavelike setting. Bi-parental care of the eggs is the norm, with the male defending the outer perimeter of the territory while the female fans and mouths at the eggs. Interestingly there has also been a report of subdominant males assisting with egg guarding (Williams, 2007).

#### The Cichlids of Madagascar: Captive Reproduction

In regards to captive reproduction, the cichlids of Madagascar present some challenges. Pair bonds can be difficult to establish given the territoriality and aggression of some species. Even in very large aquaria with a volume greater than 250 gallons, you may need to employ incomplete or complete divider methods to allow reproduction to occur without the loss of one of the pair.

The cichlids of Madagascar are also notorious egg eaters, and this is often one of the greatest stumbling blocks to overcome when breeding these endangered species. The reasons for this behavior are not black and white, but a host of factors contribute to each case in one way or another. One of the most agreed upon reasons for this behavior is that the spawning pair does not feel secure. Keeping your spawning tank out of an area of heavy traffic, not peeking at them every 20 minutes while they are spawning or guarding eggs, and ensuring that the aquarium is heavily stocked with décor are all methods to help alleviate egg eating behavior.

If push comes to shove, removing the eggs to be artificially incubated is certainly an option. Cross your fingers and hope that the eggs are on something removable, or are easily removed from the spawning substrate. A preventative treatment with methylene blue to deter fungus and a good flow of water over the eggs will give you a head start. Eggs typically hatch in 48 to 72 hours depending on water temperature, and I have had my best results close to 84 degrees Fahrenheit. Low hatching and rearing temperatures are often to blame for poor survivorship among young *Paretroplus* fry.

If you choose to artificially rear the fry, another challenge awaits you. There have been many reports of fry performing a “death-spiral” soon after they become free-swimming. In these cases, the majority of which deal with *Paretroplus* species, free-swimming fry begin to tumble over and over in the rearing tank. These fry ignore all food, regardless of how numerous the food items are, and slowly starve to death.

The cause of this behavior may be a protozoan infection, sensitivity to phosphates, low flow in the rearing aquarium, or a combination of these factors. To hedge your bets, rear your cichlid fry at a constant temperature of 84 degrees, treat prophylactically with a protozoan medication, utilize a phosphate sponge, and provide clean flowing water when fry become free-swimming.

I hope I've whetted your appetite for keeping cichlids from Madagascar. There is a lot more information out there on proper care and reproduction which can be found by searching the web (I recommend the “Cichlid Room Companion” and my own website “Madagascar's Endangered Fishes Home Page”). I'll also recommend the book *The Endemic Cichlids of Madagascar* by Jean-Claude Nourissat and Patrick deRham.

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