Book excerpt

WILD 75

Freshwater Tropical Fish of the World

by Flick Ford with a foreword by Mo Devlin

Super Red Asian Arowana, *Scleropages formosus*

FOREWORD — I think robot fish will be pretty cool. I say "will" instead of "would" because I do believe it's going to happen, and probably sooner than anyone would expect. A team of people from FILOSE (Robotic FIsh LOcomotion and SEnsing) are making major headway into one of the most important elements, the lateral line. From their website: "FILOSE is a research project financed by the Seventh Framework Programme [FP7]. We investigate how fish sense the flow around them and react to the changes in the flow pattern. Then we want to build robots that act in the same way."

It won't be long before all this is perfected and miniaturized for the fish tank. Imagine being able to not only look at your fish in the tank, but also, maybe, direct their movement, change their color, and never have them get sick or die.

Not for you? Other than just the novelty of seeing it, me either. But it does bring to mind a bigger question: What is this hobby all about? What's in its future?

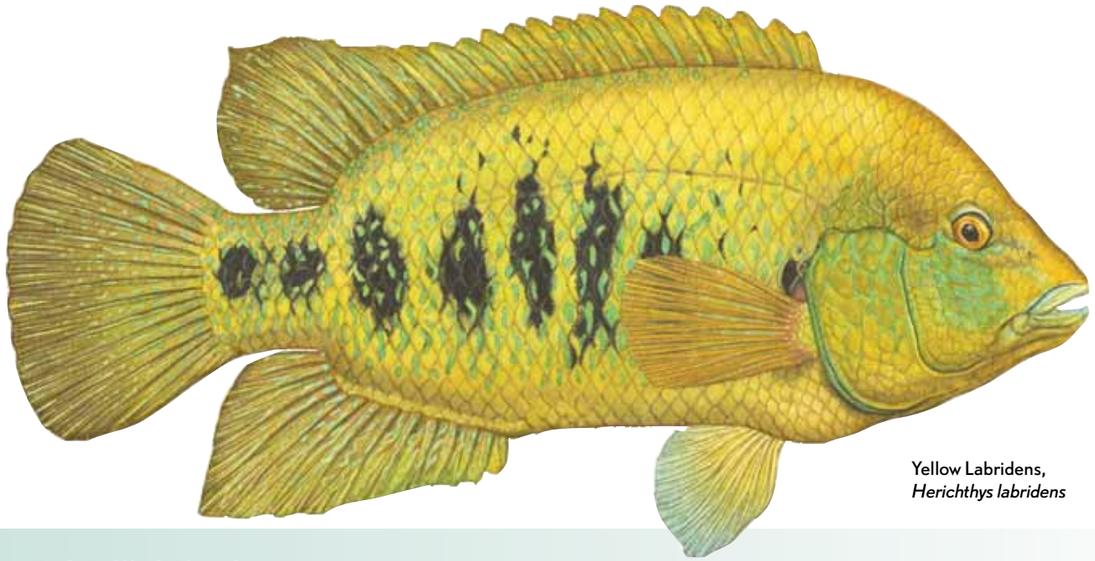
—Continued on page 60

Arowana

The Asian Arowana is native to Vietnam, Cambodia, Thailand, Myanmar, Borneo and Sumatra. It is found in ever-decreasing numbers in blackwater lakes, swamps, flooded forests and rivers with slow currents and overhanging vegetation. There are several regional variants found in nature; pictured is the popular Super Red morph known only from a few locations in Western Borneo. All Asian Arowanas are very difficult to sex.

In the wild the Asian Arowana is a surface-feeding hunter that consumes insects as juveniles. Adults are primarily piscivorous but also consume frogs, insects, lizards, birds, bats and small mammals. A wide variety of foods should be offered in captivity to ensure good health. The Asian Arowana is not prolific. Slow to reach maturity, this paternal mouth brooder engages in a two-month courtship and spawns once per year to produce between thirty and eighty fry. The male provides extended brood care. While the Asian Arowana's wild habitat is often full of "jungle décor," in the confines of an aquarium soft, silky plants can provide security without the risk of injury.

Asian Arowanas are listed as Endangered on the IUCN Red List. Threats include illegal exploitation for the black market and ongoing habitat loss and degradation.



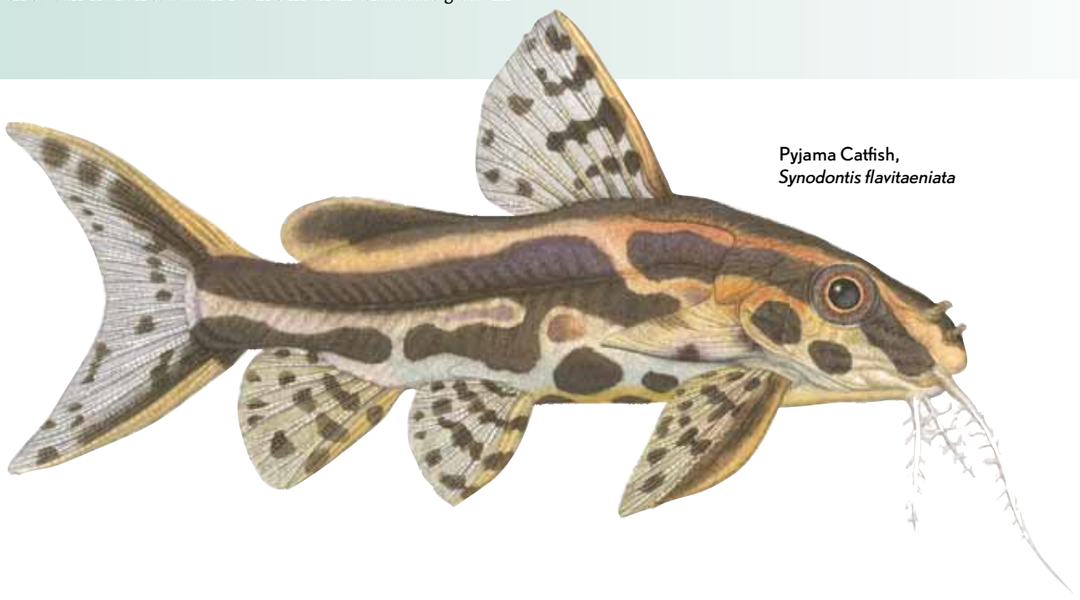
Yellow Labridens,
Herichthys labridens

Red-Bellied Piranha

Red-Bellied Piranhas are widespread and numerous throughout their range in South America. They are found east of the Andes in the Amazon River, Rio Paraguay, Rio Paraná and Rio Essequibo Basins and numerous lesser drainages, typically in whitewater. Red-Bellied Piranhas exhibit varied morphology even within geographic locations, as well as with age; however, the sexes are indistinguishable. The portrayal here is of a specimen with red/orange coloration and many gold iridescent scales that sometimes earn the fish the name "Gold-Dust Piranha."

Red-Bellied Piranhas shoal in year-class schools with smaller fish foraging during daylight hours and the larger fish searching for food at dawn, dusk and early evening. They employ ambush predation, chasing down prey and scavenging dead organisms. Reptiles, seeds, plant matter and even fruit have been found in their dissected guts. In the wild they form hierarchal groups of twenty to thirty individuals. In captivity they are shy and spooked, traits which require a lot of open swimming space and plenty of cover in order for them to settle into a stable social order. They spawn during the rainy season. Males dig out nests; females lay clutches of up to 1,000 eggs that are then fertilized by the male. Upon hatching, both parents guard the brood.

Twenty-six states in the U.S., as well as at least nine countries worldwide, prohibit the possession of piranhas. Illegal introduction into U.S. waters by irresponsible aquarists has added to myths and undeserved hysteria about this species. Like discus, piranhas are widely consumed by humans as a food fish in South America. The fish is currently not threatened in its native range.



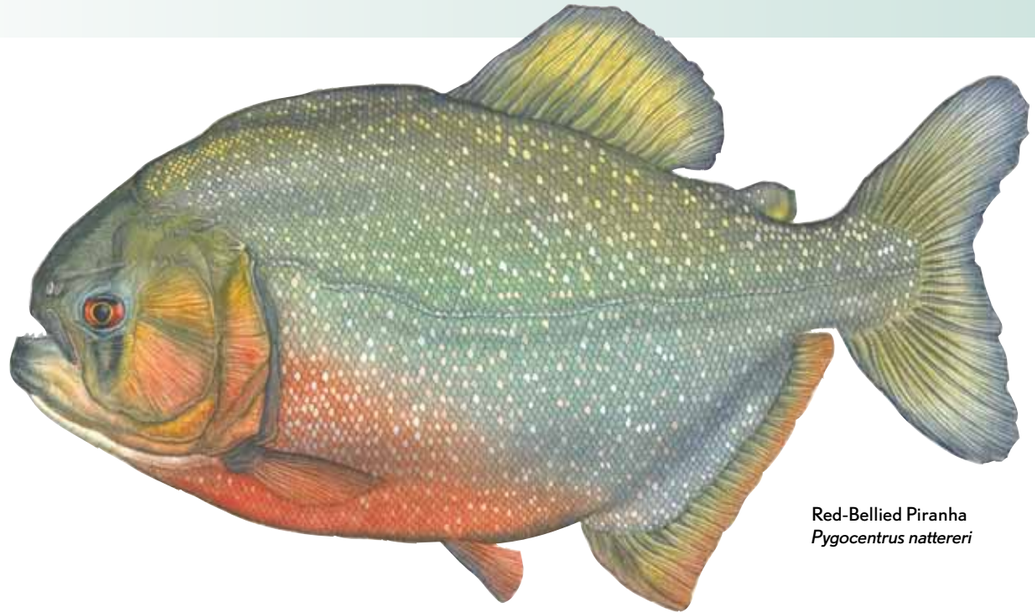
Pyjama Catfish,
Synodontis flavitaeniata

Yellow Labridens

The Yellow Labridens is indigenous to Mexico, inhabiting clear water, deep thermal springs in the Rio Verde Valley and sections of the Santa Maria River apart from the main channel. Lacustrine populations breed year round, and riverine populations in May and June. The two forms are indistinguishable in morphology. In the painting opposite, a large male is depicted in non-breeding colors, a spectacular yellow with black spots and cyan markings.

In the wild, the Yellow Labridens feeds on mollusks, crustaceans, insects, plants, seeds and detritus. In captivity they are not fussy eaters but require high protein foods with carotene to display their best colors during breeding. They excavate breeding caves in nature but will spawn in artificial caves and flowerpots in captivity. Labridens provide excellent biparental care for the fry for up to five weeks and stir up the debris on the substrate to feed them. In their natural habitat they are often associated with lily pads; however, in captivity housing them with large plastic plants, along with driftwood and rockwork for shelter and hiding, is recommended. The species is considered to be aggressive yet full of character, intelligence and interesting behavior.

The Yellow Labridens is listed as being in danger of extinction and is listed under the CARES Preservation Program as CVU (vulnerable, species facing a high risk of extinction in the wild in the medium term future).



Red-Bellied Piranha
Pygocentrus nattereri

Pyjama Catfish

The known native range of the Pyjama Catfish is the lower Congo River, the Stanley Pool in the Democratic Republic of the Congo and throughout the Congo River Basin. Their preferred habitat is the slower flows on the bottoms of rivers and streams as well as the bottoms of ponds and lakes. The species does not exhibit noticeable sexual dimorphism. The image shows a typical specimen known for its iridescent violet, orange and yellow hues and attractive patterning.

Pyjama Cats are members of the squeaker catfish clan. A study by Lechter et al., published in *BMC Biology* 2010, revealed that "the catfish use the squeaking sound to warn of predators and during competition between members of the species…catfish of all ages can communicate with one another…hearing sensitivities increase with growth, but even the youngest fish are capable of communicating over short distances." In the wild, Pyjama Cats are benthic feeders consuming mollusks, insect larvae, worms and organic detritus. In captivity, it has been reported that they relish some vegetable matter. They breed in flooded areas during the wet season and form pair bonds but provide no parental care for the brood.

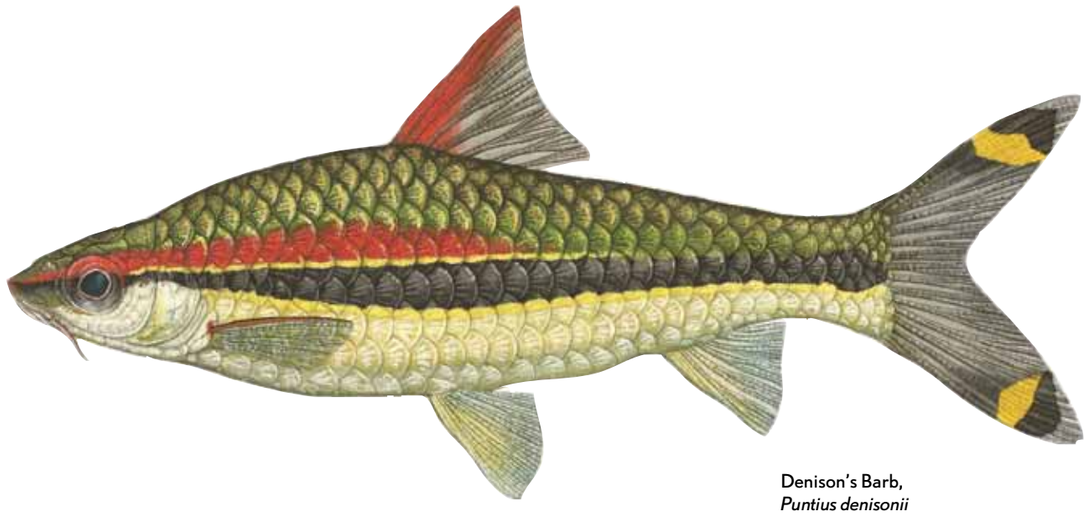
Pyjama Cats are listed on the IUCN Red List as Least Concern. They are widespread throughout their range and there are no major threats to the species. They are commercially captured and exported for the aquarium trade. Captive breeding of the species is rare and commercial farming is not being practiced on a large scale at this time.

Denison's Barb

Denison's Barb is one of India's most celebrated aquarium fish, yet seventy percent of the species' endemic population has been decimated by indiscriminate collection for the trade. Remnant populations of unknown number survive and the trends of decline are expected to continue. One can see from the bold coloration and torpedo shape what makes this species so attractive. Over a recent two-year period, Denison's Barb comprised sixty-five percent of India's freshwater tropical fish export worth $1.5 million.

Denison's Barb inhabits fast-flowing streams with high oxygen content and substantial stream bank vegetative cover. It is also found in pools with boulders and rocks with a gravel substrate. They find prey with the barbels on their lower lips, which are equipped with taste organs that help them forage for worms, insects, crustaceans, plant matter and organic debris. In the wild, spawning has been compromised by over-collection. Denison's Barb can be bred successfully in captivity. It is a typical non-demanding egg layer, a trait that gives some hope that the trade could depend on commercially bred fish. Still, conservation measures are paramount.

Denison's Barb is listed on the IUCN Red List as Endangered. Its range in Western Ghats is restricted and declining in habitat quality. Conservation efforts for the Western Ghats are under way with The World Wildlife Fund (http://worldwildlife.org) and the Wildlife Conservation Society (http://www.wcs.org). Plans for no-take zones and other regulations are in development along with the introduction of catch limits and allowable fishing gear.



Denison's Barb,
Puntius denisonii

Lemon Tetra,
Hyphessobrycon pulchripinnis

Lemon Tetra

The Lemon Tetra is native to the lower Tapajós River Basin, its extant range. It is a benthopelagic riverine species found in shallow, moderate to slow-flowing, heavily vegetated areas of rivers and streams. It is one of the deep-bodied tetras; pictured is a male with a wide black border on the back of the anal fin.

Lemon Tetras congregate in large shoals of up to several thousand individuals that adopt rapid swimming strategies to evade predators and also spawn in these large congregations in vegetative cover. They are primarily carnivorous omnivores in the wild, consuming small invertebrates, worms, crustaceans and plant matter. In captivity they can create a spectacular display in an Amazonian River biotope aquarium, the larger the group and tank, the better. Start with a sand substrate and add branchy driftwood, dried leaf litter and dense plantings with plenty of open swimming space. The water flow can be moderate. Males will select locations to display and the species can be spawned in a group, although eggs and adults should be separated for best results.

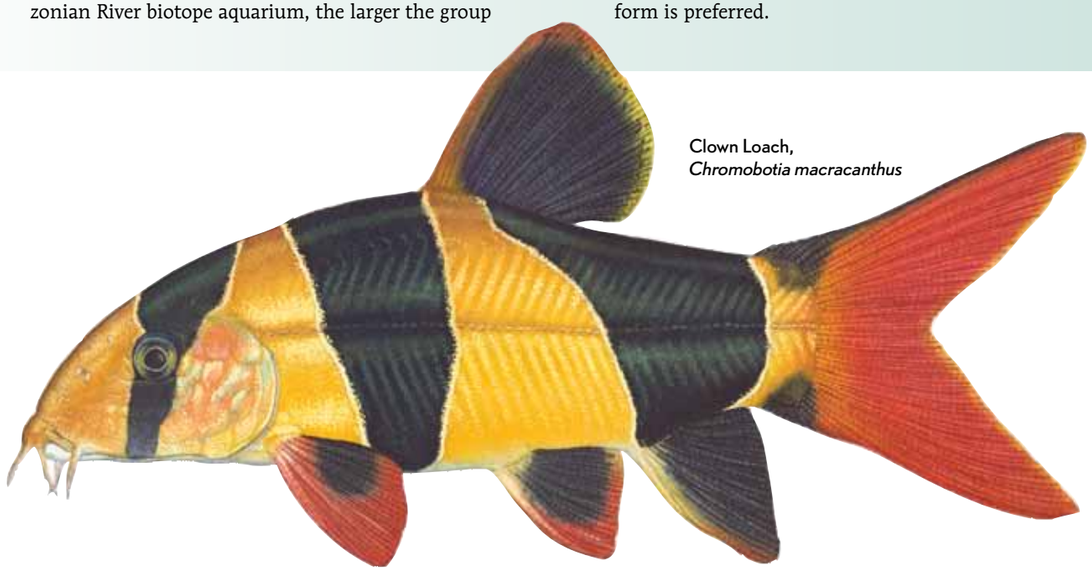
The Lemon Tetra is listed on the IUCN Red List as Least Concern. It is widespread and population trends are stable at present. Though harvested for the trade, overfishing poses no threat to the species. Populations have a minimum doubling time in the wild of fifteen months. Most Lemon Tetras come from commercial breeders. An albino form is available, but the attractive natural yellow form is preferred.

Clown Loach

The Clown Loach is native to the inland waters of the islands of Borneo and Sumatra. The two populations are known to exhibit some differences in morphology. Females are generally more full-bodied. Pictured is a typical Bornean fish with some black in the pectoral fins.

Clown Loaches in the wild are potamodromous, moving from the main channels of streams and rivers into flooded habitat to breed in the rainy season. They are primarily carnivorous, feeding upon aquatic mollusks, insects, worms, small invertebrates, plant matter and algae. In captivity, provide a group of eight to ten fish a large enough home to grow. They can grow up to fifteen inches and live for twenty years, so keeping them is a substantial commitment. Enthusiasts of the species say the Clown Loach's fascinating and often clownish behavior make it well worth the expense and time. Hobbyist breeding of this species is unreported at this time.

Though Clown Loaches are not listed on the IUCN Red List, floodplain swamp forests where they spawn are undergoing reclamation for land use, so much of their habitat has been degraded. It is now illegal in Indonesia to harvest large, mature Clown Loaches, since catch sizes have declined in recent years. Thousands of wild-collected fish are still sold, but in recent years farmers in Asia and Eastern Europe have been breeding them successfully. There is some concern that commercial breeders are selling hybrid *Botia* species (Indian Loaches) as Clown Loaches with different markings.



Clown Loach,
Chromobotia macracanthus

I've been an active member of the American Cichlid Association for many years. Recently we became embroiled in a discussion regarding the topic of hybrid cichlids and how they relate to the club. The overall stance of the club, and rightfully so, is that we very much believe in the conservation of the wild species of cichlid fish.

The reality is that many "aquarists" are finding interest in the hybrid, or, with regard to cichlids, the "flowerhorns." Flowerhorns, in the truest sense of the word, are easily identified by their large, bulbous nuchal humps and radical, sometimes outrageous color. And from a marketing perspective I understand how a fish called "Red Mammon King Kong Parrot" might have a little more verbal sex appeal than the actual names, *Amphilophus citrinellum* plus, well...whatever else was mixed into the genetic soup.

The real challenge is identifying some of the not-so-obvious hybrid cichlids. Many of these are among the favorite wet pets in aquariums, like the "Red Devil," most often a mix of *Amphilophus citrinellus* and *A. labiatus*. And then there are the unintentional hybrids, fish that for years were all part of one species but now, due to the doings of the "lumpers and splitters," are members of multiple species. Take the "Convict Cichlid," once *Archocentrus nigrofasciatus* but now split into thinner slices alongside *siquia* and *kanna*. So yesterday it was a pure species, but today...maybe it's considered to be a hybrid.

This conversation about hybrid cichlids evolved into a bigger discussion—and really the heart of the matter—is it the end result we don't like or the means to the end? And there will likely never be a clear consensus.

Line breeding is a very long process where individual lines of fish with specific traits, for example, outstanding color or fin length, are isolated and bred to enhance those traits in the next and future generations of fish. It is no doubt not an easy way of creating a new fish, but certainly the end result is a fish that is not like its wild ancestor. The classic example, the Discus, is a fish that has been bred to display various colors and patterns. And there are many more examples, from the Super Red Severum to the long fin Albino Tiger Oscar.

In the end, the only difference between line breeding and simply crossing species to create "new" fish is the time it takes to get the job done. In both cases the fish are farther away from the wild phenotype due simply to the intervention of man.

Ongoing conservation projects like CARES (Conservation Awareness Recognition Encouragement Support) strive to ensure a future for species at risk. CARES was built on the principle of allowing everyone, whether a beginner or an advanced hobbyist, to be given a chance to play a role in, be a part of, and feel as if they are making a difference in the positive future of at-risk fish.

According to Claudia Dickinson, program founder, "In recent years, conservationists and scientists have come to realize that captive maintenance and procreation of species at risk, both within the country of origin and outside the country of origin, has become the quintessential answer for both short-term and long-term preservation goals. This has been successfully undertaken by aquariums and zoos. However, these facilities lack the necessary space and staff to come to the aid of all of the species in need of immediate help. It became apparent that this is a role in which we as hobbyists, with our combined total of thousands of tanks and shared experiences, can make a significant difference."

Sadly, some of the fish in this book have fallen off the map in the wild and now can only be seen in photographs and beautiful paintings like these. Robot fish and manmade specimens may remain part of the hobby mix, but only through conservation efforts inspired by shared knowledge like that found in Flick Ford's book *WILD*, and through our combined experience as hobbyists, can we contribute to preserving these species on the brink.

Enjoy the hobby.

—Mo Devlin

Flick Ford *is a fine art natural history painter who frequently does portraits of fish. He maintains a 55-gallon aquarium containing native fish and plants in his Rensselaer County, New York, home.*

Morrell "Mo" Devlin *is an avid aquarist and photographer whose work appears in the regular* AMAZONAS *feature, Underwater Eye. He lives in Dallas, Pennsylvania.*