



THE ELUSIVE TROPICAL GAR

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with photographs by the author except as noted

A juvenile tropical gar
Atractosteus tropicus shows
off its characteristic
elongate toothy jaws.

With characteristic elongate jaws filled with needle-sharp teeth and large cylindrical bodies clad in near-impenetrable ganoid scales, gars are fascinating living fossils that date even further back in time than *Tyrannosaurus rex*. Stalwart among the predatory fishes, most of these primitive monsters grow far too large for the average home aquarium, although there are a few species that can be successfully housed by the private hobbyist. Recently, one of these species, the elusive tropical gar *Atractosteus tropicus*, has been imported and made available to aquarists in the United States.

The tropical gar is the southernmost species of gar, inhabiting multiple river systems from Mexico down to Costa Rica. There are special concerns about their diminishing wild populations, local importance as a food fish, and ongoing farming efforts in their native ranges. Because of successful aquaculture, this species is available to us without major detriment to wild populations, in contrast to many other predatory fishes in the hobby. Although they are virtually available at our doorstep in Mexico, acquiring this rare gar took a substantial amount of time and effort.

Garnering the Seventh Species

My fascination with this ancient group of fishes began at age 11. I was leafing through an old *Ranger Rick* magazine when I came across a two-page article about a giant fish that essentially looked like an alligator with fins instead of legs. This fish was the enormous alligator gar, one of the largest freshwater fishes in the world, growing up to 10 feet in length! I learned that gars coexisted with, and even pre-dated, many of the dinosaurs, and they definitely looked the part. My interest in these fishes was further spurred on when I saw that some were available at my local fish store. I only kept a 10-gallon community tank at the time, so acquiring a gar would have to wait...for many years.

Fast-forward to my years as a graduate student studying fish ecology at the University of Michigan. I was able to perform much more in-depth research on gars and was finally able to keep some juveniles in my own aquarium (definitely not in a 10-gallon). I learned more about gar phylogeny, natural history, ecology, and of course, the seven extant species. Over the years I was able to acquire six of the seven species. But that was not good enough, the

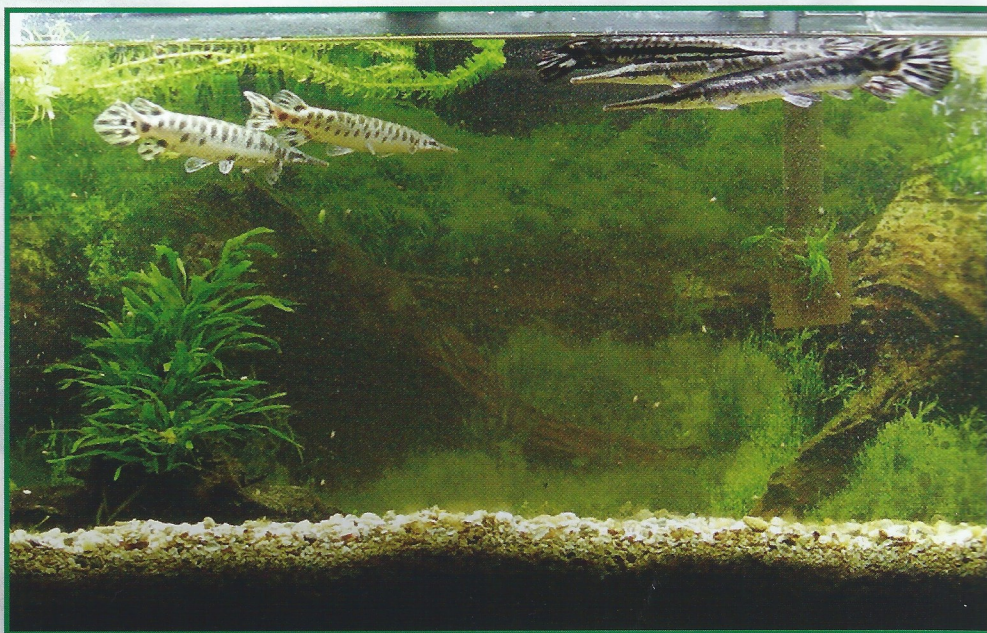
collection had to be completed. The seventh species, however, consistently eluded me in all my efforts to acquire it. The obstacles seemed endless; most specimens went to Japan, nebulous regulations delayed their importation to the United States, or there wasn't enough interest in the fish to justify an order. Although I never gave up hope, I was starting to believe my interaction with the tropical gar would be relegated to the images in *Jurassic Fishes* (T.F.H. Publications, Inc.) and other literature.

Finally, with the assistance of fellow hobbyists scouring all available fish sources, a supplier from Mexico was found. With the help and generosity of George Fear of Shark Aquarium (in Hillside, NJ), we were able to import a small number of *A. tropicus* to the U.S. It should be noted that George took a business risk by importing a rare and relatively unknown fish, but I am very grateful that he did! Thanks to the efforts of George and some fellow hobbyists, my personal gar collection is now complete, and this rare fish is finally available in the U.S. Those that take on the challenge of keeping this fish will be treated to a unique experience in keeping one of the most ancient species available to the hobby.

Biology & Ecology

Gars are ancestral ray-finned fishes that make up the monophyletic (having a single common ancestor) group Ginglymodi, and belong to the family Lepisosteidae, which consists of two genera and seven extant species. Although gars were once found in Europe, South America, Africa, and India, they are now restricted to North America, Central America, and Cuba. Of the extant species, four belong to the genus *Lepisosteus*: the shortnose gar *L. platostomus*, spotted gar *L. oculatus*, Florida gar *L. platyrhincus*, and longnose gar *L. osseus*; and three species make up the genus *Atractosteus*: the tropical gar *A. tropicus*, alligator gar *A. spatula*, and Cuban gar *A. tristoechus*.

The name "gar" is derived from the old Anglo-Saxon word for spear, and one look at these fishes explains it all. General gar morphology consists of elongate jaws with numerous sharp conical teeth, a cylindrical body with dorsal and anal fins set far posterior, and diamond-shaped ganoid scales (named after their characteristic enamel-like composition). Although their appearance is definitely unique, Gars are closely related to the bowfins, sturgeons, and bichirs (all of which are also ancient fishes).



Above: Small gars can be temporarily housed in a standard 50-gallon aquarium; good filtration is required, and floating plants help provide cover.

Below: A young tropical gar displaying the characteristic "trident" pattern on the forehead.

Gars have the ability and requirement of breathing atmospheric air by means of a highly vascularized gas bladder that acts as a lung. This allows them to survive in the often oxygen-depleted backwaters of rivers, lakes, and swamps. They are also very long-lived predators, with some individuals reaching well over 50 years of age. Gars are primarily piscivorous (fish-eating), but many will also consume crustaceans, amphibians, and even waterfowl. Although they will stalk prey, gars prefer an ambush attack and will move with a lightning-fast, side-swiping motion to grasp prey with their jaws and swallow it whole.

The smallest species is the shortnose gar, with an approximate wild maximum length of 33 inches, and the largest is the alligator gar, which can grow up to 10 feet in the wild. *A. tropicus* is at the smaller end of the gar spectrum, with the largest wild individuals reaching approximately 4 feet.

It is virtually impossible to sex gars externally, as there is no prominent sexual dimorphism. Female gars usually grow larger than males, and therefore size could be an indicator, provided you had an adult individual and knew the approximate maximum size of the species. Gars also take a relatively long time to reach maturity, as males take about three to four years, and

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Comparison of the two sizes of tropical gars recently imported; smaller 6-inch specimen above, larger 9-inch specimen below. Note the variation in their pattern.

females four to six years. The difficulty in sex determination, high age of maturity, and large size all contribute to gars having very rarely been spawned in captivity outside large aquaculture operations.

In the wild, tropical gars mate during the rainy season, primarily from March through May. As with other gar species, several males will attend to one female, and the expelled eggs attach to the substrate and vegetation. The eggs hatch in six to eight days, and the fry use an adhesive disc on the tip of their snouts to attach to plants. Once the yolk is consumed, they prey on mosquito larvae and other insects, and as they grow they will eventually move on to larger prey, including their siblings!

As a member of the genus *Atractosteus*, the tropical gar shares the diagnostic traits of a relatively short, broad snout and two prominent rows of teeth in the upper jaw. This contrasts with *Lepisosteus* genus gars, which have narrower snouts and a single prominent row of teeth in the upper jaw. Tropical gars are highly variable in color and pattern, but most have a grayish-brown body with irregular dark copper-brown blotches primarily on the posterior half of the fish. While young, they have a prominent lateral stripe and a dark trident pattern on top of the head. Most gars will lose this pattern to some extent with age.

The tropical gar is considered a delicacy in Southern Mexico, similar to salmon in the United States. Due to its popular food status, fishing pressure has contributed

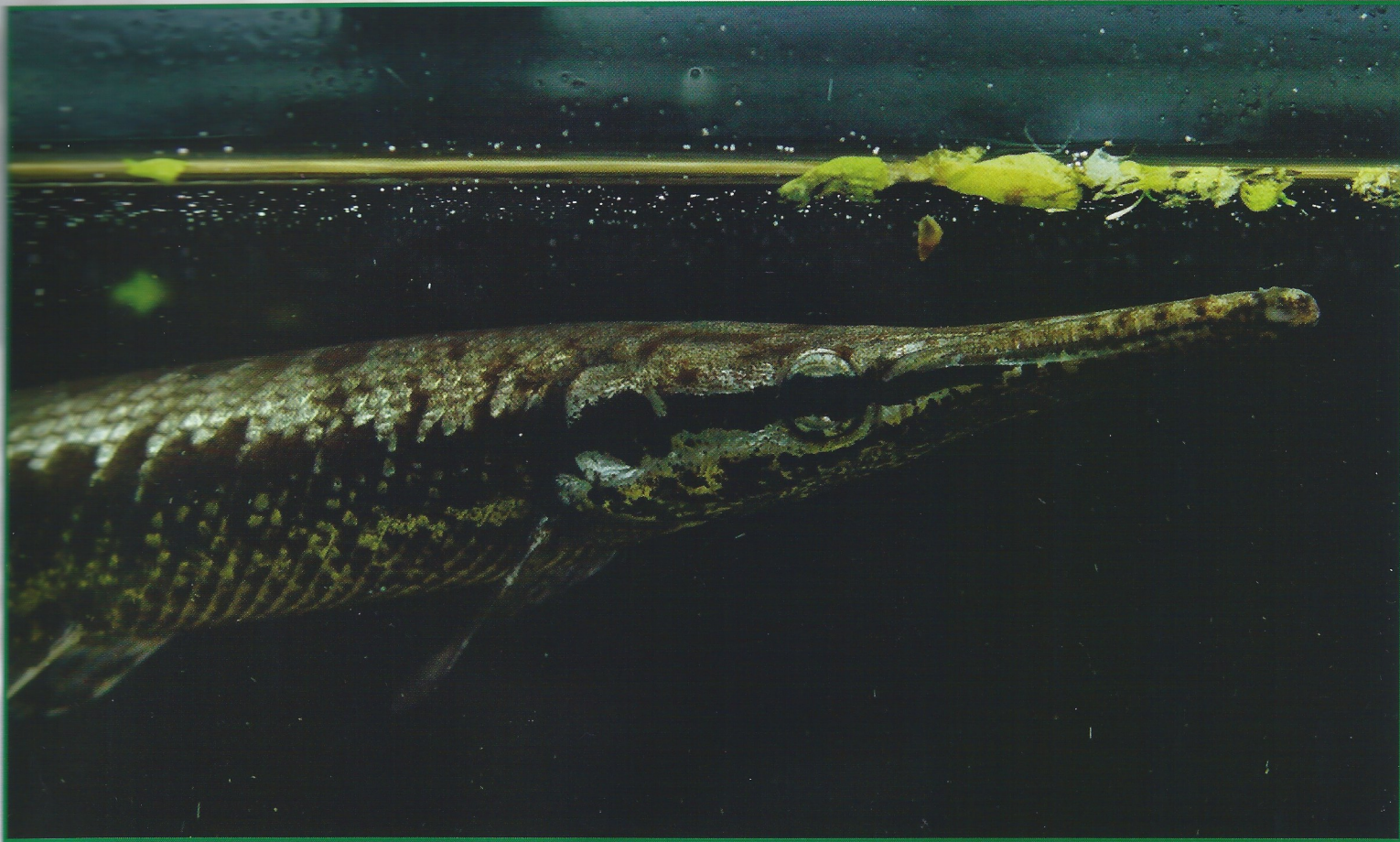
to decreasing wild populations. However, tropical gar farming operations have been successful, and wild re-stocking efforts have been underway in Mexico for the past several years. In 2001, the first gar farm in Mexico successfully released 10,000 juvenile tropical gars into surrounding habitats and 5000 juveniles were cultured in artificial ponds for food production. Small numbers were also introduced into the tropical fish industry at the time, although those specimens went to Japan. It is from these successful aquaculture operations that the tropical gar is now available in the United States.

Captive Care

Although the tropical gar is unique, most of its captive care is the same as other gar species. With this in mind, I will discuss their captive care, which can be applied to all gar species, along with some information specific to *A. tropicus*.

TANK SETUP: CREATING A GAR-DEN

As with any gar species, you will eventually need a very large tank or a pond to house an adult specimen, even though *A. tropicus* will grow to a smaller maximum size than most other species. Gars have relatively rigid bodies and therefore need a lot of space for swimming and turning. The key to an appropriate gar enclosure is not so much water depth as it is spacious tank length and width. The tank should be as wide as possible to allow appropriate turning room



Profile of a 9-inch juvenile tropical gar.



A wild-caught tropical gar from El Salvador; adults commonly grow over 2 feet in length.

Ivania Solis

as well as decrease the chances of the gar hitting the glass or décor when startled (gars can be quite skittish).

If you acquire your tropical gar at a small size, such as the 6-inch specimens that have recently been imported, it can be kept in smaller aquaria and progressively moved up to larger enclosures as it grows. A 6-inch tropical gar should be housed in at least a 50-gallon tank, which would

provide appropriate length (48 inches) and width (12 inches) for the fish as it grows; a 50-gallon breeder would be even better because of greater width (18 inches).

Once the fish reaches a size of around 10 inches, it must be moved to a larger tank. This larger tank should be as wide as possible, a 24-inch-wide tank may suffice for approximately two years, but eventually a wider tank, of at least 36 inches, will be

needed. A good rule of thumb is to make sure the tank is always wider than the length of the gar by at least several inches. This should provide appropriate turning room, which is essential to successfully and responsibly keeping this fish. The tank length to house a sub-adult tropical gar should be at least 72 inches, but longer is even better. Water depth is less important, and a minimum of 24 inches will suit the gar well. Because of their dependence on atmospheric air, make sure to leave a few inches of space between the water level and the top of the tank, or else the gar could drown.

All gars are strong jumpers, so tank lids should be weighted down and all gaps sealed off to prevent the gar from escaping. You would be surprised at what a 13-inch gar can push open with a good burst of speed. If your gar does manage to jump out of the tank, do not give up hope! Their air-breathing abilities will give them a better chance at survival outside the tank for much longer periods than most other fishes.

In terms of tank setup, the less furniture in the aquarium the better. Gars need a lot of unobstructed swimming room as they will inhabit all levels of the tank, primarily hovering in place, casually traversing



Wild-caught tropical gars from El Salvador; note the characteristic interlocking ganoid scales, as well as the variation in pattern between the two adults pictured.

Ivania Solis



Gars of various species, like these two tropical gars and two spotted gars, can be housed together provided they are of similar size and the tank is large enough.

the aquarium, or frequently resting on the bottom. As indicated by its name, the tropical gar will do best in tropical conditions; a temperature of 78° to 82°F is preferable, although all gars can withstand moderate temperature fluctuations. These fish have no specific pH requirement, although extremes should be avoided. All gars do very well with low current and some floating plants for cover, as this seems to reduce their somewhat skittish behavior. You will find that they are very relaxing to observe given the proper accommodations.

FEEDING & NUTRITION: SATIATING THE MONSTER

Tropical gars are generally piscivorous in the wild, consuming indigenous cichlids

and livebearers, but will take a variety of meaty foods in captivity. Gars should not be fed feeder fishes except as an occasional treat, as feeders can harbor various parasites and diseases. If feeders are to be given to gars, they should be quarantined and gut-loaded first. The tropical gars now available to the hobby are aquacultured fish raised on non-live food; this makes for a very easy-to-feed fish, as they do not need to be weaned off live feeder fishes as most other gars do. Offer a variety of foods, such as raw frozen shrimp and fish, freeze-dried krill, and any variety of pellet food for carnivores. This variety will promote good color pattern and healthy growth.

A small tropical gar will display very rapid growth in its first year, easily attaining a

length of 12 inches. This is the case with all gar species, and some will grow even larger and faster during this period; longnose gars can reach over 18 inches their first year!

Small gars (up to 10 inches) should be fed every day on pellet foods or every other day on large pieces of fish or shrimp. Feed the gar until you see a slight bulge in the stomach. It's best to feed in moderation, although they will probably welcome more food. As the tropical gar reaches 12 inches, the feeding frequency can be decreased to two days of fasting in between one larger feeding.

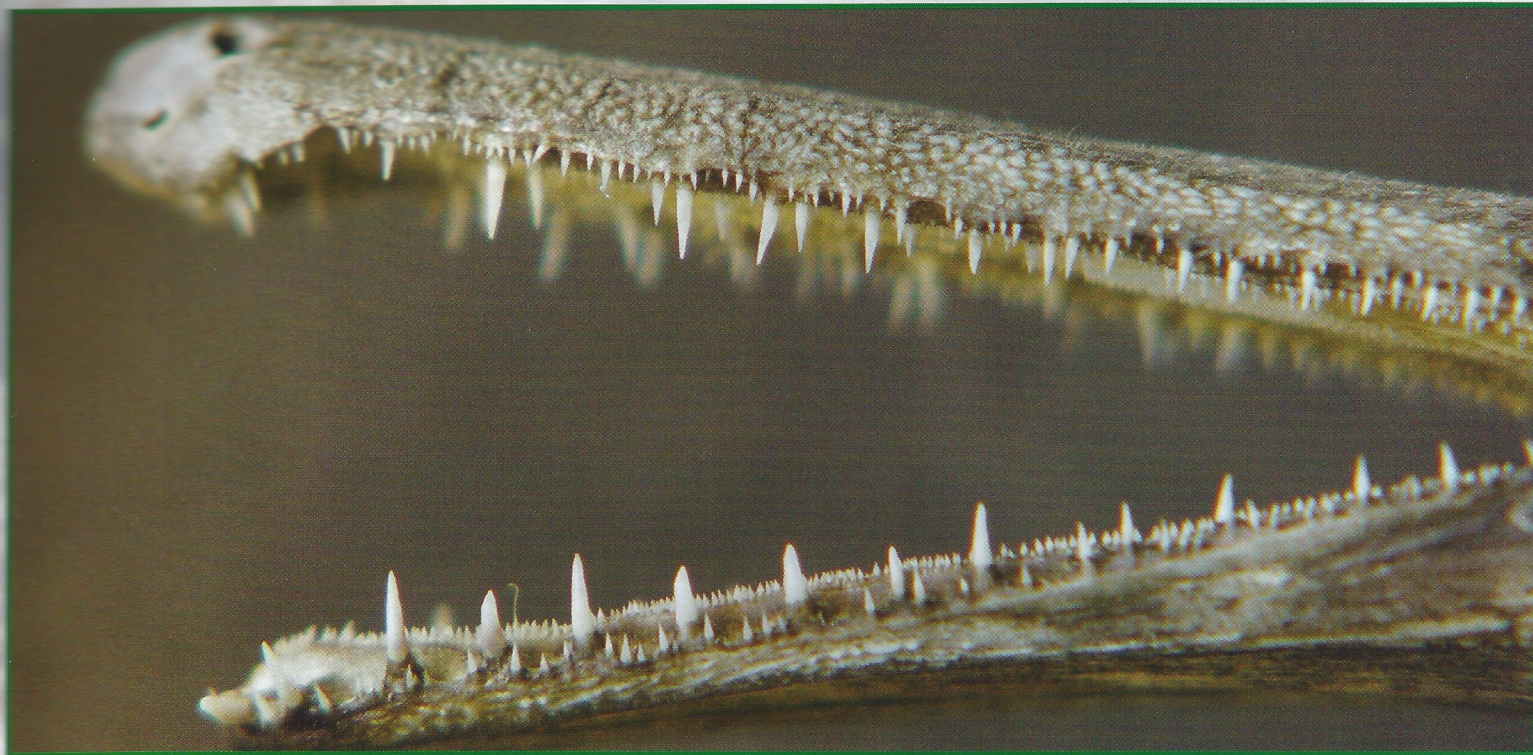
BEHAVIOR & TANKMATES: GREGARIOUS GARS?

Gars are generally peaceful, usually keeping to themselves and not disturbing tankmates. There are exceptions, however, and the peaceful demeanor can quickly change. Gars of the genus *Atractosteus* are typically more aggressive than those of the genus *Lepisosteus*; and the tropical gar is no exception. These fish are aggressive feeders, so enough food should be put into the tank that all fishes, gars or otherwise, can get a portion quickly. It is not uncommon to have a gar snatch food away from a tankmate, possibly injuring another fish or itself in the process.

A general misconception about gars is that they will not attack another fish that cannot be swallowed. I have seen several exceptions to this "rule" over the years, witnessing the aftermath of these seemingly Jekyll-and-Hyde predators attacking similarly sized tankmates, including other gars. Gars can often misjudge the size of a fish and try to take on large tankmates if they are hungry enough, or if the fish just somehow disturbs them.

With this in mind, it is best to treat each gar as an individual with its own personality, and use broad generalizations as guidelines, not rules. When introducing your gar to a predatory community tank, or when adding a new fish to your gar's tank, keep a careful watch on how the fishes interact and closely monitor activity over several weeks. You should get some early warning signs, such as frayed fins or teeth marks, if things are not working out among tankmates.

Conversely, you should make sure that tankmates will not bother the gar. Tropical gars are peaceful predators, and overly aggressive or fast-swimming tankmates can bring out their skittish nature and



A close-up of the business end of a gar; note the numerous conical teeth used for grasping and holding prey. Large gars are capable of inflicting a painful wound.

cause critical injury as the gar darts full speed across the tank or into the glass. Because of their slime-sucking tendencies when not adequately fed, pleco species should not be kept with any gars. Other peaceful predators of similar size make good tankmates, such as bichirs, large catfishes, arowanas, datnoides, and other gars. Again, keep careful watch on any combination of predatory fishes for signs of aggression or injury.

HEALTH & DISEASE

Tropical gars, like all members of Lepisosteidae, are highly resistant to disease and parasites. However, they can be very sensitive to medications. Should your gar become parasitized or infected by common bacterial diseases, it is best to treat first with increased temperature (82° to 84°F) and added salt, than to immediately move to broad-spectrum antibiotics, most of which might do more harm than good. Formalin-based medications work well on parasites such as ich and anchor worms, whereas frayed fins and other minor injuries will heal quickly on their own. A common injury among gars is damage to their snouts, and special care must be taken to make sure injuries of this nature do not become infected and spread to the rest of the body. Therefore, prevention or early diagnosis is key. A spacious tank with

carefully chosen tankmates will reduce this type of injury, and increased water changes, temperature, and salt addition will expedite recovery.

MAINTENANCE

Aside from massive tank space, gars are very undemanding fishes, and only a few simple steps are necessary to successfully maintain them in captivity. As with any large predatory fish, the best way to keep the fish healthy is frequent water changes. Gars are able to tolerate poor water quality, but they should not be subjected to such conditions in the home aquarium. A 50-percent water change every two weeks will go a long way to maintaining a healthy gar. More frequent water changes at a lower percentage will also work just fine. Keep track of how much your gar is growing and be sure to increase the tank size accordingly in the early months. Adequate tank space, frequent water changes, and a varied diet are the simple maintenance requirements for keeping a healthy gar in the home aquarium.

In Closing

It has been an exciting journey with the gars. Even with the acquisition of *A. tropicus* and its present availability in the hobby, I feel the experience has only just begun for those of us interested in these

primitive predatory fishes. Captive breeding in the home aquaria is still very rare, wild populations of certain species are in decline, and the specific life histories of these ancient creatures is still not clearly known. There is much more to be learned and documented about this relatively unknown species and the overall magnificent group of fishes known as the gars.

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