

MY EXPERIENCE WITH PLATINUM ALLIGATOR GAR, THE MOST VALUABLE NATIVE AMERICAN FISH?



Peter Perschbacher

Wilmington, North Carolina

Alligator Gar (*Atractosteus spatula*) have perhaps a unique history among native fishes, being both the most hated and the most desired fish. Having once been considered wolves in water and later seen as an important missing piece of the ecosystem, Alligator Gar have had an amazing public relations history. Their extirpation from Arkansas' White River was due in part to unregulated sport fishing for one of the largest US freshwater fishes—larger even than most North American sturgeon species. The current Alligator Gar record is 8 feet 5¼ inches, and 327 pounds from a Mississippi River oxbow. “Whitey,” the White River Monster, was undoubtedly a large Alligator Gar, not an errant seal as speculated. The Arkansas legislature actually voted to protect it.

The blitzkrieg by Asian carps in the Mississippi drainage is another element in the changed image. Any biological measure that may control the spread and dominance of these planktivorous carp is desired. Alligator Gar, and gar in general, primarily consume the numerous planktivorous clupeids (i.e., shad and herring).

But perhaps the most fascinating upgrade for Alligator Gar is the prices wealthy Asians will pay for the leucistic, or white, form. Marketed as “platinum gar,” a recent price for a several foot specimen was reported to be \$23,500. Leucistic forms only have white pigment, whereas albinos lack black pigment. Also, the eyes of albinos are pink.

Photos by the author unless otherwise indicated.

Peter Perschbacher retired in 2013 as Associate Professor in the Aquaculture and Fisheries Department of the University of Arkansas at Pine Bluff after almost 20 years. He co-edited *Tilapia in Intensive Co-culture* (Wiley, 2017) with Robert Stickney. His research focused on tilapias, Gulf Killifish (*Fundulus grandis*), Channel Catfish (*Ictalurus punctatus*), Alligator Gar culture and environmental interactions, off-flavor causing cyanobacteria control, and herbicide drift effects on phytoplankton. Currently, other than occasional fish forays with Fritz Rohde, Peter is committed to an historic church, his wife Virginia, and their dog Travis (not in that order), in Wilmington, NC.

In 2009 I had the chance to observe and raise these, along with several hundred normally colored fingerlings, at the University of Arkansas at Pine Bluff (UAPB) Aquaculture Research Station. The research was part of the effort to investigate hatchery production practices of interest to the Arkansas Game and Fish Commission. Current efforts are working towards increasing the original distribution and densities of Alligator Gar in Arkansas, where spawning is occurring and several locations have naturally occurring populations in backwaters and slow moving streams and rivers connected to the Arkansas River and Red River systems.

Obviously, in nature leucistic individuals would stand out and be quickly eliminated. I lost several when stocking before deciding to separate them from normal-colored congeners. Five-day post-hatch fry, attached by the head gland in shipping containers, were obtained from the National Fish Hatchery at Tupelo, Mississippi, the primary hatchery spawning Alligator Gar. Gravid fish had been netted from the wild in Mississippi backwaters and induced to spawn in large tanks. The actual spawning act is undoubtedly the most awesome of American fishes; adults often over fifty pounds



Figure 1. Research pools for Alligator Gar at the Aquaculture Research Station, UAPB.



Figure 2. Stocked fingerling Alligator Gar, showing camouflaged coloring that makes them difficult to find.



Figure 3. Harvested foot-long gar, warily eyeing the camera but surprisingly quite docile.



Figure 4a. A platinum (leucistic) Alligator Gar. Donated to local public aquaria.



Figure 4b. Typical (top) and platinum (bottom) fingerlings cultured at the Kinni River Fish Farm, WI, for the aquarium trade. October 1995. (Photo by Konrad Schmidt)

pair up at the surface and with much thrashing around the adhesive eggs are flung in all directions. The Chickasaw tribe has a hard fish (their name for Alligator Gar) dance involving couples, the only such one, that must reflect the fertility these spawnings would inspire.

My research looked at two densities of gar, 12 and 6 fingerling per 32-cubic foot pool, with and without structure (Figure 1). The 50-day-old fingerlings (Figure 2) were fed floating steelhead pellets, Goldfish (*Carassius auratus*), and Fathead Minnows (*Pimephales promelas*); pellets at 10% body weight/day at 5-hour intervals and forage at prey-predator length ratio of 1:4 with forage density maintained of 3–4 forage per juvenile gar. High densities and forage of this ratio was recommended for Northern Pike (*Esox lucius*) culture (Westers 1986). Structure was recommended by a state hatchery director with some experience with Alligator Gar. Not letting them see each other was the intent. Actually, the absence of structure (better feeding opportunities) and high density (breakdown in territoriality and successful cannibalism) resulted in the best average survival of 72% (with up to 100% in one replication). Certainly, constant availability

of desirable forage was another key, as survival in controls fed only pellets was the second lowest (mean of 33%, and up to 50% in a replication). The lowest mean survival was 28%, with up to 50% in a replication, in the structure with forage treatment (Perschbacher 2011). Structure, as indicated, may have negatively impacted forage efficiency. Perhaps most surprising was the growth rate: from 3 g to 200 g, or almost a pound, and length averaging 350 mm or 12 inches in the 42-day trial (Figure 3). This is a good stocking size for state use.

The several leucistic juveniles also grew well with this protocol in separate tanks (Figure 4a). They were donated to local public aquaria run by the state. Figure 4b shows another example of platinum gar, with more pigment.

Literature Cited

- Perschbacher, P.W. 2011. Effects of structure, forage, and stocking density on juvenile production of alligator gars in outdoor pools. *North American Journal of Aquaculture* 73:21–23.
- Westers, H. 1986. Northern pike and muskellunge. Pages 91–102. in R.R. Stickney, editor. *Culture of Non-salmonid Freshwater Fishes*. CRC Press, Boca Raton, Florida.