

What I Know About Flame Chubs and Who I Told

Bruce Stallsmith

8200 Hickory Hill Lane, Huntsville, AL 35802
fundulus@hotmail.com

I'd guess that everyone reading this article is concerned about the conservation status of North America's native fishes. That's largely what NANFA's about, along with the captive maintenance and propagation of these species. Most everyone reading this also has another characteristic that we often take for granted: we actually know something about native species, like where and when to find them, knowledge usually lacking among the general public and government officials. I would like to share my experience testifying to the Alabama Environmental Management Commission (AEMC) about my findings on the status of the flame chub, *Hemitremia flammea*, in northeast Alabama.

The flame chub is a minnow now endemic to the Tennessee Valley, where it's always found in spring-fed streams. It's been considered to be in decline but with little hard data to back this up, although it has disappeared from peripheral areas of its range in Kentucky and from some streams in the Coosa River drainage near Anniston, Alabama. I became interested in the fish's status and, over the summer of 2005, carried out a series of stream surveys mostly in Jackson and Madison counties. Streams of primary interest were chosen from a list of 151 historic flame chub collections in the state based on the records of the University of Alabama Ichthyology Collection.

What I found was that of the 17 historic collection sites that my team visited, flame chubs were located in only five of them. We sampled these sites using seine nets of various sizes (depending on the stream), and, depending on stream size, seined for about 100 meters for 1-2 hours. At one site, a large spring system that produced 29 flame chubs in 1966, only a single flame chub was found.

I feel that I have at least the beginnings of a data set

demonstrating that flame chubs are in decline in north Alabama. My explanation for this decline is habitat degradation of the spring water sources needed by this species. Many of the sites now lacking flame chubs show clear signs of suburban expansion, poor agricultural practices and road widening. The species is disappearing one small population at a time.

Okay, now what? If the flame chub is in decline, whom can you tell in an effort at least to slow down this decline? This took me to Montgomery, the capital of Alabama. The AEMC supervises the work of the Alabama Department of Environmental Management (ADEM), the state's version of the EPA. Seven commissioners are appointed by the governor and function as the steering committee for ADEM's operation. They make decisions about land and water management in the state on a case-by-case basis. They hold an open meeting every two months and, after the formal business session (about two hours), allow public comment by prior application. I signed up for the November 4, 2005, meeting, and was the first of four speakers. The AEMC meets in a small auditorium that holds about 100 people, mostly ADEM employees, lawyers, reporters and environmental activists.


I prepared a short PowerPoint presentation to support a planned seven minute presentation. That's the challenge: How do you explain all of this in seven minutes to a group who know nothing about it?

My presentation went well. It was formal testimony speaking directly to the four commissioners who were present. I immediately noticed that two of the commissioners were listening to me, and two were studiously ignoring me. This reflected who appointed a given commissioner—the former or current governor—and how “pro-business” they are. One of the attentive commissioners asked me **cont. on page 24**

Stallsmith, "Flame Chub," cont. from page 19

two questions about what this means, allowing me to reinforce some of my points before I was allowed to step down from the microphone.

I spent an entire day driving 375 miles around the state for not quite 10 minutes of presentation. What do I expect from this? My hope is that I've introduced the declining status of the flame chubs as a "canary in the mine" indicator of broader environmental problems in the Tennessee Valley of north Alabama. The AEMC has the power to affect and control many factors causing habitat degradation in the state. It will take both state and federal level actions to mitigate factors negatively affecting species like the flame chub. There are other local aquatic species, fishes and mollusks, facing similar declines, so I have a feeling I'll be back before the AEMC and maybe other agencies.

My thanks to Bernie Kuhajda of the University of Alabama Ichthyology Collection for providing the historic collection records, and to Emily Fitz and Carlos Soto for assisting in the field. 

Flame chubs (*Hemitemia flammea*), photographed by William Roston, are found in springs and spring runs in central and eastern Tennessee and northern Alabama, with historical records in northwestern Georgia and southeastern Kentucky. The "flame" in its name comes from males during the breeding season, which "flame up" with a conspicuous red-orange spot at the base of the dorsal fin and an overall golden sheen that lights the chub up like a goldfish. Information about its reproductive behavior first came from the aquariums of masternative fish aquarist Ray Katula, who reported that the chub spawned over gravel without nest building or egg care.

According to Katula, flame chub prefer temperatures between 18-23°C, and a pH of 7.8-8.0. To spawn the fish, place at least three males and three females in a 40-gallon aquarium with fine-grain gravel (<11.3 mm). Place a plastic tray (30.5 x 40.6 x 7.6 cm) lined with the same gravel over one part of the substrate to facilitate harvesting of eggs. To induce spawning, create an artificial "winter" by lowering the temperature to 7.2°C with 6-8 hours of fluorescent light per day. Over the course of 6-7 weeks, gradually increase the light to 16 hours per day, while increasing the water temperature to 18.3°C. Condition the chubs with heavy feedings of frozen bloodworms, freeze-dried daphnia, live glassworms, and a flake food containing a vegetable base. When the females get heavy with eggs and the males display breeding tubercles and their most brilliant red, watch for spawning



flame chub

Hemitemia flammea (Jordan & Gilbert 1878)

Family: Cyprinidae

behavior to commence. Remove the plastic tray to a hatching aquarium, where the eggs will hatch 3-4 days later at 20°C. In another 3-4 days the fry will accept newly hatched brine shrimp. Keep an eye on the adults, as they may spawn again in captivity.

Flame chubs are protected in Tennessee and Georgia and may not be collected without a special permit. Flame chub are legally collected in Alabama, but even here the responsible native fish enthusiast will exercise restraint and good sense. As noted by Bruce Stallsmith in this issue (page 19), flame chub habitat is fragile and disappearing, and flame chub populations are low. Any careless or overzealous removal of flame chub from the wild could have a negative impact on the species as a whole. Please do not collect flame chub unless you are serious about propagating them.