

FLEUR DE LIS FISHERIES

US Fish and Wildlife Service



Alligator Gar are one of the fastest growing fish species known. Continue reading to learn more about these amazing fish.

Rockefeller Refuge Alligator Gar at Natchitoches NFH

By: Jan Dean

Production of alligator gar *Atractosteus spatula* juveniles for release at Rockefeller Wildlife Refuge in Grand Chenier, Louisiana, is a collaborative effort among several state and federal entities. Broodstock alligator gar from Rockefeller Wildlife Refuge were used to produce young that will be reared at various places, including Natchitoches National Fish Hatchery, that will be released at Rockefeller Refuge. The released fish will be PIT tagged and possibly fitted with radio and ultrasonic telemetry tags (dependent upon funding). Attempts will be made to recapture the aquaculture produced juveniles to assess growth and survival of the released fish. If funding for telemetry tags is secured, then the released fish will be tracked to assess habitat use. This collaborative effort will generate critical data for use in reintroduction efforts in areas where alligator gar have been extirpated or where populations have declined and are in need of supplemental stocking.

Sixteen broodstock alligator gar (mean TL = 1332 mm) from Rockefeller Wildlife Refuge were collected on 9 January 2012, by Rockefeller Wildlife Refuge and Nicholls State University (NSU) personnel using air-boats and gill nets. On 26 April 2012, personnel from LSU AgCenter and NSU administered intramuscular injections of LHRHa (100 µg/kg) to the Rockefeller broodstock to induce spawning. Spawning occurred overnight and into the following day. The adhesive embryos were allowed to hatch and reattach to substrate. Once yolk sacs were depleted and the alligator gar larvae had developed jaws, zooplankton and *Artemia nauplii* were provided as live prey. At about 8-9 days of age, approximately 5000 alligator gar larvae were transported to the Natchitoches National Fish Hatchery in Natchitoches, Louisiana for rearing to sizes that can be PIT tagged and possibly fitted with telemetry tags for eventual release at Rockefeller Wildlife Refuge.

After initial care and feeding by Assistant Hatchery Manager Jan Dean, Biologist Tony Brady has taken over most of the gar care and feeding at Natchitoches.

The fingerlings are being reared indoors in a tank system using recirculating water but with frequent water exchanges. Most of the water has been exchanged every other day, but we are moving to a regime of perhaps a daily water exchange to ensure quality water for the voracious and fast-growing gar. Without frequent water exchanges, the system biofilter likely cannot oxidize all of the ammonia into nitrate quickly enough to maintain good water quality. We were feeding them a high-protein extruded feed at about 15 percent of their body weight per day, but that has been reduced to about 10 percent per day now as they are getting larger.

The key to gar culture at this stage is to grade them often into various size classes and then feed them adequately to prevent cannibalism. On May 30, they



Volunteer Mischele Maglothin and biologist Tony Brady measuring gar lengths with the "gar bong" they devised.

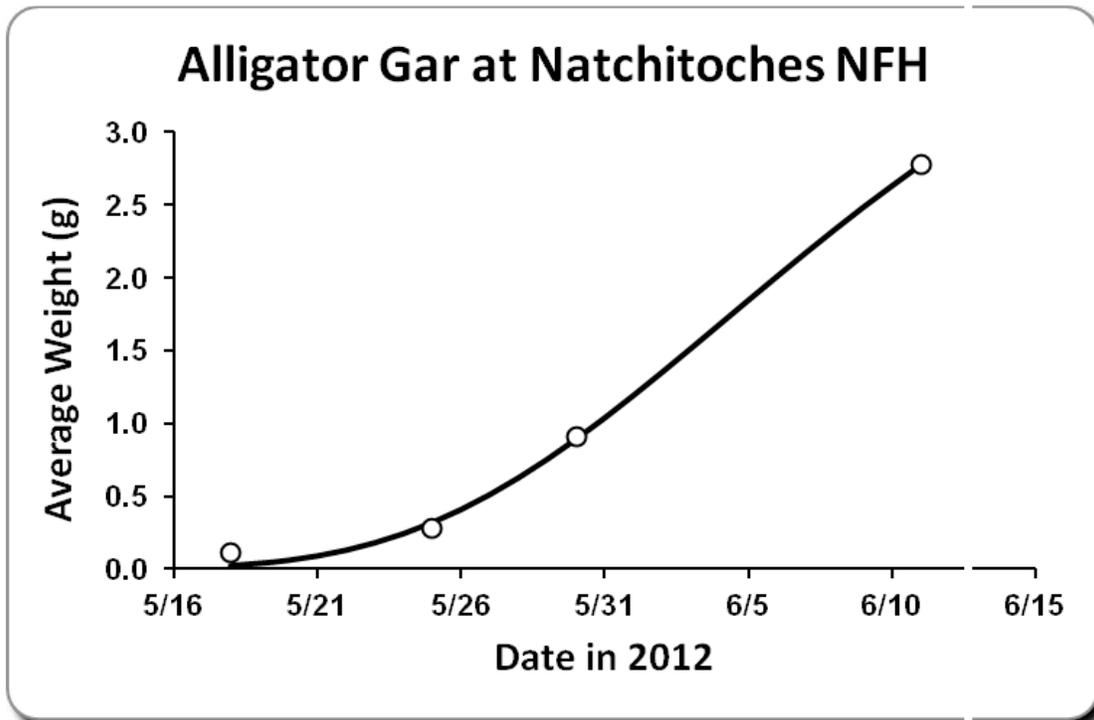


Close up of a small gar being measured and sorted with the "gar bong" device.



Alligator gar inspected and measured from a digital photo.

were divided into six size classes ranging from 0.44 to 2.61 grams, on average. By June 11, the seven size classes averaged 1.18 to 9.59 grams. In those 12 days, total weight increased 2.8 times (8.9% per day), average weight tripled (9.8% per day increase) and mortality was 9% (0.8% per day). We will keep them indoors as long as the water quality can be maintained. After that, the larger ones may be moved to an outdoor, in-pond raceway for growout to tagging size. More on the gar in later newsletters.



Average weight of all alligator gar groups at Natchitoches NFH.

Region 4 SCUBA Divers Conduct Mussel Work on the Saline River in May

By: Tony Brady

The Saline River in southeast Arkansas is home to several endangered freshwater mussel that are currently being monitored and propagated as part of their recovery efforts. Dive team members from the Arkansas Ecological Services Field Office and Natchitoches National Fish Hatchery spent two days in May working on two projects concerning the endangered Winged mapleleaf mussel. The first day of diving required divers to use search patters, learned during annual regional dive training, to locate a three feet by eight feet rack of cages located in 11 feet of zero visibility water. These cages are part of a propagation program for the Winged mapleleaf. In March of this year, four

life Resource Agency, Missouri State University, and Natchitoches National Fish Hatchery, Winged mapleleaf mussels from this effort will be introduced into the Duck River in Tennessee.

The second day of diving was part of the ongoing monitoring of the Saline River mussel beds to determine if record flooding in 2009 and 2010 had altered mussel population dynamics or locations of the mussel beds themselves. The mussel bed was mapped to determine its size and location. Random points within the bed were chosen, and quantitative samples were taken at these points using 1 m² frame. All the mussels were removed by hand from the frame and taken to the boat for processing. On the boat, the mussels were sorted by species, counted then returned to the river. Any endangered mussels collected were measured before being placed back into the river. Additional mussel beds on the Saline River will be sampled later this year, so stay tuned to see what exciting things are found.



Region 4 Divers from Arkansas and Louisiana search for mussel culture cages in the Saline River.

cages loaded with channel catfish that were inoculated with larval Winged mapleleaf mussels were placed in this rack. The bottoms of the cages were filled with sand and gravel to provide the newly metamorphosed mussels a place to settle and grow. In May, when river conditions were favorable for diving, the rack was located and the top part of the cages (containing fish) were separated from the bottoms and removed from the river. The bottoms of these cages will be completely inspected this fall for baby Winged mapleleaf mussels. Through cooperation between the Arkansas and Tennessee Ecological Services Field Offices, Arkansas Game and Fish Commission, Tennessee Wild-



A Winged mapleleaf collected from the Saline River.

Fish Passage Survey Conducted on the Buttahatchee River, Mississippi

By Tony Brady

Flowing out of western Alabama into eastern Mississippi is a quiet river called the Buttahatchee. The Buttahatchee River is home to the Gulf strain walleye and 37 freshwater mussel species, of which five are listed as either threatened or endangered under the federal Endangered Species Act. In recent years, efforts have been made by a private conservation group called Wildlife Mississippi to buy land adjacent to the Buttahatchee River in order to restore, protect and enhance the area to native bottom and hardwood forest. Many of the tracts of land have been clear cut prior to purchase, resulting in some habitat degradation and numerous trees being lost into the river as the banks have become destabilized by the increased precipitation runoff. Worried that too many downed trees create dams that would hinder fish passage along the Buttahatchee River, the U. S. Fish and Wildlife Service and Wildlife Mississippi conducted a Fish Passage Survey along 30 miles of the Buttahatchee River. In November 2011, staff from the Mississippi Ecological Service Field Office, Natchitoches National Fish Hatchery and Wildlife Mississippi conducted spot checks along three small sections of the Buttahatchee River to determine the best course of action for the full survey. During the first week of May 2012, staff members from Natchitoches National Fish



There were many log jams on the Buttahatchee River, but none posed a problem for fish passage.

Hatchery and Wildlife Mississippi used kayaks to paddle 27 miles of the Buttahatchee River looking for any fish passage issues. The final three miles of river were surveyed last in November. While the downed trees prevent fishermen from moving up and down river very far, this survey did not find any areas that would hinder fish from migrating the Buttahatchee River. The issue of fish passage on the Buttahatchee River is important because the all the mussels in the river require fish to help complete their life cycle. Mussels are distributed in a river by these larval stages called glochidia which attach to the gills and fins of the fish while they undergo a metamorphosis. When the transformation is complete, the mussel breaks free from the fish and settles down to the river bottom wherever the fish is at the time. It is this movement of fish that helps maintain gene flow between mussel beds and prevents genetic bottlenecks from occurring in a river system.



Tony Brady paddling down the Buttahatchee River in search for fish passage issues.