

Species Profile: Bowfin (*Amia calva*)

These ancient fish have been around so long, and changed so little, that they are considered “living fossils.” The bowfin has many nicknames (dogfish, grinnel, spot tail, to name a few) but is known to many Louisianans as choupique (pronounced shoe-pick), a Choctaw word meaning “mudfish.”

Bowfin are the only extant fish in the family Amiidae. They, along with gar (*Lepisosteids*), make up the last of the living Holostean fishes and haven’t changed much in morphology since the late Paleozoic period. Though Amiid fossils have been found on all continents besides Australia, bowfin are located only in North America. They inhabit northern waters from Quebec, Canada, to Minnesota, southern waters from Florida to Texas, and most water bodies in between. Bowfin are found in the shallow, slow-moving backwaters of Louisiana, which are typically warm, well vegetated and low in oxygen.

At first glance, bowfin look similar to gar -- a long arrow-shaped body with mottled patterns on the sides, thick scales, and rounded pectoral and tail fins. Bowfin, however, have several unique characteristics that set them apart from other fishes. First, the dorsal fin of bowfin runs more than half the length of its back, almost connecting with the caudal fin. Fish can make this fin undulate, allowing them to slowly move forward and backward in the water. Second, bowfin have a gular plate -- a bony structure below the bottom jaw. The gular plate can be noticed when tapping underneath the chin. In addition, these fish have the ability to breathe atmospheric oxygen, an adaptation necessary for living in degraded water quality. Bowfin have a row of small, sharp teeth, and are usually a drab green/brown in color. During the breeding season (February to May, depending on geography), males become quite distinguishable: An orange halo will appear around their tail spot, and their fins and jaw will turn bright green or turquoise.

Bowfin are predators that feed primarily on fish, although crayfish, frogs and shrimp are eaten when given the opportunity. Freshwater fishermen in Louisiana can attest to their diet preferences, as bowfin will take almost any bait or lure used for catfish or bass. People who recreationally fish for bowfin find them to be strong fighters, especially the larger fish. The Louisiana record for bowfin was caught by Brian Fant in 1976, weighing 20.5 pounds.



Bowfin. Photo credit: Duane Raver/USFWS

Bowfin are considered a “trash fish” by many, but are treasured table fare to some, who find them quite palatable if cleaned promptly. Preparation can be fried, blackened, used in courtbouillion, or in fishballs or cakes. Be aware that in some waters bowfin have higher mercury levels than most sought-after game fish, so the FDA has advised limiting consumption.

Commercially, bowfin are harvested primarily for their eggs as caviar, though the meat is also sold. Bowfin roe has become an alternative for sturgeon and paddlefish roe, since commercial harvest of the latter two is banned in Louisiana and has become closely monitored across the United States. Louisiana commercial landings for bowfin in 2003 totaled more than \$128,000.

Recreational regulations for the harvest of bowfin in Louisiana only require that the fish be at least 16 inches in length. Commercial harvest in Louisiana is more stringent: 22 inch minimum length, eggs cannot be removed from the fish while on the water, and fishing with nets is prohibited in January, February and March in certain areas of the state.

- William Sheftall IV

Sources:

Davis, J. G. 2006. Reproductive biology, life history and population structure of a bowfin *Amia calva* population in Southeastern Louisiana. Nicholls State University. M.S. Thesis.

Fishbase.org. 2009. Search: bowfin. <http://www.fishbase.org/Summary/SpeciesSummary.php?id=2600>

Louisiana Department of Wildlife and Fisheries. Freshwater Recreational Regulations. <http://www.wlf.louisiana.gov/fishing/recreational/freshwater/regulations/>

Louisiana Department of Wildlife and Fisheries. Freshwater Commercial Regulations. <http://www.wlf.louisiana.gov/fishing/commercial/freshwater/regulations/>

Louisiana Outdoor Writers Association. Official Louisiana fish records for bowfin. http://laoutdoorwriters.com/index.asp?pg=fr_list&div=3&wt=Freshwater&FishID=15

United States Environmental Protection Agency. 2004. Mercury advisory. <http://epa.gov/waterscience/fish/advice/1-meal-per-week.pdf>

Official Louisiana Fish Records for Bowfin (Rod & Reel - Freshwater Division) Documented and kept by the Louisiana Outdoor Writers Association

Bowfin(aka Choupique) <i>Amia calva</i>			
Weight(Lbs.)	Angler's Name	Location Caught	Date Caught
20.50	Brian Fant	Toledo Bend	April 1976
18.94	Hollis E. Moore	Unknown	April 1976
17.50	Julius E. Aaron	Unknown	February 1973
17.00	K.R. McCullough	Unknown	May 1976
16.50	Ike Dunlap	Unknown	May 1974
16.50	Mark King	Unknown	August 1976

16.06	Francis J. Gautreau	Unknown	November 1975
15.00	Don O	Unknown	May 1988
14.75	Mary T. Boose	Unknown	April 1975
14.25	Perry Dixon	Unknown	June 1980

An asterisks(*) by the weight indicates verification by a state biologist or fisheries professional

Sheepshead on the Menu?

This black-barred saltwater fish undoubtedly got the name *sheepshead* because it has a downward-sloping snout and grazing/nipping teeth that look like a sheep's. Along the way, it has also acquired numerous additional common names, including *rondeau mouton* (French), *tete de mouton* (Louisiana French), *sargo chopá*, *pargo*, *rondeau mouton sargo* (Spanish), *kubinsky morskoi*, *karaś* (Russian), *sargo-choupa* (Portuguese), *sparus owczarz* (Polish), *sheepshead bream*, *bay snapper*, *sheepshead porgy*, *convict fish*, *striped bandit*, *rondeau seabream*, *jailhouse snapper*, *silver snapper* and *goat*.



Sheepshead. Photo credit: Diane Rome Peebles/ Fla. FWCC-DMFM

Newly-hatched larval sheepshead are carnivorous, feeding on zooplankton. Small juveniles continue to feed on zooplankton and add some bottom-dwelling organisms such as polychaetes, chironomid larvae, mysids and small mollusks. Large juveniles and smaller adults eat mollusks, crabs, other crustaceans, and small fish. As adults, sheepshead eat a large variety of organisms, from 114 to 125 different species, according to different researchers. Almost any organic material that can be grazed from the bottom or from vertical substrates will be consumed, including plants. Diet changes with the season, as availability changes. Small fishes are commonly preyed on in spring; plants and detritus are fed on most commonly in the summer, and polychaete worms occur more frequently in the diet during the spring, fall and winter. Mollusks and crustaceans are consumed year round. Because sheepshead feed heavily on live bottom, sessile invertebrates, they are probably important in controlling fouling communities and altering the diversity of live bottom fauna.

In the fall, sexually mature adults from inshore areas move offshore and congregate around reefs and other hard substrates in depths up to 120 feet. Nearly all adults remain offshore until spawning is over in late spring when most of the adult population returns to inshore habitats.

Sheepshead are delicious table fare, but are a bit tough to clean. Some anglers keep them but many throw them back. Two Louisiana creel studies documented them as the sixth and tenth most commonly retained marine species. Annual landings peaked in 2004 at 3.3 million pounds (Figure

Lagniappe Fisheries Newsletter

Editor: Glenn Thomas

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Copy editor: Roy Kron

Layout/design: Jessica Schexnayder

1), but averages closer to a million pounds per year. The Louisiana state angling record (21.25 lbs) is also the world record, but recent web postings indicate that heavier sheepshead may have been taken here.

Commercial harvest of sheepshead climbed steadily between 1981 and 1993, when 3.8 million pounds were taken in the state (Figure 2). Traditionally, most sheepshead have been taken as incidental catch in various nets (Table 1), but commercial hook-and-line and trotline fishermen have landed a significant proportion in recent years. Nearly all commercially caught sheepshead is sold to restaurants or markets in-state. Dockside value has never exceeded \$0.40/lb whole-fish. Louisiana restaurateurs find that a fillet of “bay snapper” or “rondeau seabream” makes an excellent platform for a featured sauce or topping, but availability is not consistent.

- Glenn Thomas

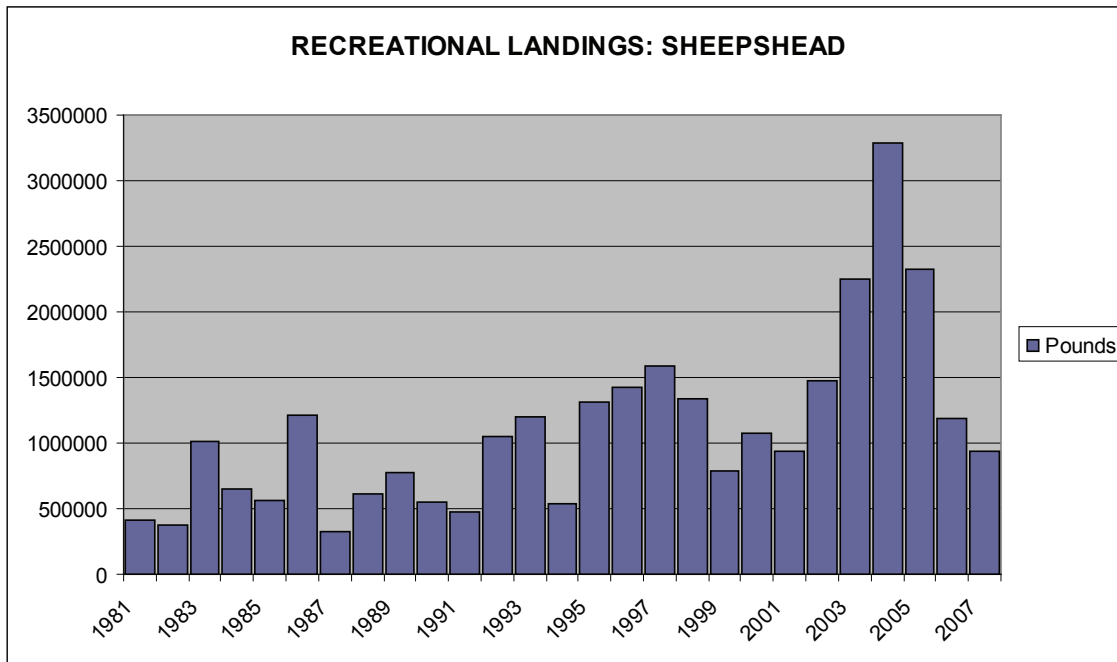


Figure 1

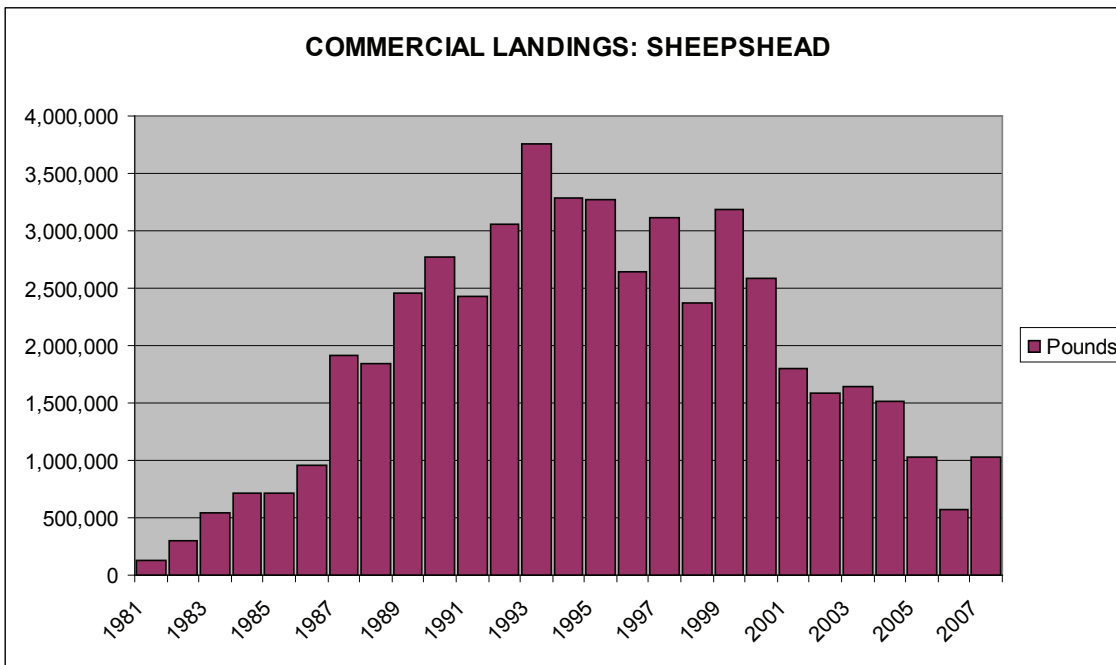


Figure 2

Louisiana Commercial Sheepshead Landings by Gear Type

Year	Gear	Pounds
1981	Shrimp Trawl	27,201
1981	Gill Nets	24,521
1981	Trammel Nets	73,237
1982	Haul Seines	41,984
1982	Shrimp Trawl	43,942
1982	Gill Nets	83,959
1982	Trammel Nets	116,873
2007	Skimmer Nets	229,145
2007	Butterfly Nets	1,735
2007	Fish Trawl	196,355
2007	Shrimp Trawl	239,625
2007	Hook-and-Line	256,312
2007	Trot Lines	96,588

Table 1

**Official Louisiana Fish Records for Sheepshead (Rod & Reel - Saltwater Division)
Documented and kept by the Louisiana Outdoor Writers Association**

Sheepshead <i>Archosargus probatocephalus</i>			
Weight(Lbs.)	Angler's Name	Location Caught	Date Caught
21.25	Wayne J. Desselle	Unknown	April 1982
14.75	John N. Bourg	Unknown	May 1970
14.25	Eugene Lefort, Jr.	Unknown	March 1971
12.81*	Randy Catchot	Irish Bayou	August 1998
12.56*	Jeremy M. Amato	MRGO @ Gulf of Mexico	March 2000
12.25*	J. Summerrill, Jr.	Unknown	July 1972
12.13	Dudley J. Bourg	Unknown	October 1970
11.88	Mrs. B. Matherne	Unknown	February 1974
11.81	George P. Bourg	Unknown	August 1972
11.50	Mrs. Aubrey Bares	Unknown	1955

An asterisks(*) by the weight indicates verification by a state biologist or fisheries professional

Sources:

VanderKooy, S.J. October 2006. The Sheepshead Fishery of the Gulf of Mexico, United States: A Fisheries Profile. GSMFC. Ocean Springs, MS. <http://www.gsmfc.org/publications/GSMFC%20Number%20143.pdf>

Fishery Landings: <http://www.st.nmfs.noaa.gov/st1/commercial/>

Fishery Landings: <http://www.st.nmfs.noaa.gov/st1/recreational/index.html>

Louisiana Fish Records: http://www.laoutdoorwriters.com/index.asp?pg=fr_species&div=3&wt=Saltwater

New Trawl Gear Reduces Fuel Costs, Improves Catch Selectivity

Replacing traditional wood trawl doors and nylon nets with steel cambered doors and lighter sapphire nets on shrimp trawl vessels can reduce fuel consumption by up to 39 percent, according to research conducted by the Texas A&M Sea Grant Program.

Shrimp boats using these new doors and nets decrease drag and in turn produce fewer RPMs to reach desired towing speed. In trial runs during actual fishing conditions in both Texas and Louisiana waters, the amount of fuel savings ranged from 20 to 39 percent. In economic terms, total fuel savings are significant, with the average vessel saving 6,000 gallons of diesel, or \$28,000 in fuel on an annual basis. With this level of fuel saving potential, the new doors and nets pay for themselves before the first full fishing year; over the five-year life of the gears the net benefit to vessel owner is \$104,000.

Texas A&M researchers have found that because steel cambered trawl doors improve engine efficiency oil changes and major overhauls are not needed as frequently. The potential environmental benefits of steel cambered doors offer another reason for their use. Because of the way they move through the water, these doors generate less friction with the ocean floor so the gear's direct physical

impacts on benthic organisms and habitats are thought to be less severe than traditional wood doors, although more research is needed to confirm this effect. Louisiana fisheries managers and advisors are currently developing incentive programs to encourage use of higher-efficiency trawling gears.



Fuel-saving steel cambered trawl doors

Another new development that can contribute to fishing efficiency and profitability is the recently published National Marine Fisheries Service rule for bycatch reduction devices (BRDs). Newly certified BRDs, that must be in use as of May 18 for trawling in federal waters, improve catch selectivity, conserving non-target fish species they aim to exclude and help fishermen by reducing sorting times. Reducing non-target animals from the codend has been linked to less shrimp damage, suggesting BRDs

and turtle excluder devices could increase product quality and market value (Brewer et. al, 2006). The use of higher performing BRDs that help reduce damage to shrimp could create business opportunities for Gulf fishermen by taking advantage of niche markets for sustainable seafood.

Moreover, an economic impacts analysis conducted by the National Marine Fisheries Service suggests that some fishermen may see financial gains by upgrading to BRDs associated with lower shrimp loss. For instance, small and large vessels replacing the traditional fisheye with the extended funnel BRD can expect to see an annual net revenue increase of \$200 and \$2,000, respectively, for the life of the BRD.

– **Chris Robbins** crobbins@oceanconservancy.org

Sources:

A Cost-Benefit Analysis of Gear Replacement for Gulf Shrimp Fishermen. NERA Economic Consulting. December 4, 2008. <http://www.oceanconservancy.org/site/News2?page=NewsArticle&id=12149>

The impact of turtle excluder devices and bycatch reduction devices on diverse tropical marine communities in Australia's northern prawn fishery. David Brewer, Don Heales, David Milton, Quinton Dell, Gary Fry, Bill Venables and Peter Jones. Fisheries Research. Volume 81. Number 2-3. Pages 176-188. 2006.



Modified Jones-Davis bycatch reduction device, one of five BRDs approved by NMFS for vessels trawling in federal waters.

Performance and Cost of Bycatch Reduction Devices Approved for use in the Gulf of Mexico as of May 19, 2009*

BRD Type	Percent reduction in total finfish bycatch (average weight)	Shrimp loss percent (average weight)	Cost per BRD
Fisheye < 9' from tie-off	37.0	10.4	\$45
Jones-Davis	58.0	4.0	\$425
Modified Jones Davis	33.1	3.2	\$300
Extended Funnel	26.6	2.2	\$300
Composite Panel	25.1	5.4	\$250

*Derived from a January 2008 Regulatory Impact Review conducted by NOAA.

Florida Boating Accident Prompts Safety Reminders

The recent tragic accident out of Tampa Bay in which three football players were lost should remind Gulf fishers of critical safety procedures. The BoatU.S. Foundation offers these tips:

File a float plan and make sure you adhere to it. By filing a float plan with a reliable family member or friend, they will be your first life-line to safety by letting the authorities know when you are overdue, where you had planned to go and what time you were supposed to return.

Have a Digital Selective Calling (DSC) VHF radio and ensure it's connected to your GPS receiver. With the U.S. Coast Guard's modern coastal "Rescue 21" system now operational in many parts of the country, including the Gulf Coast, anyone aboard a boat can simply press the mayday button on the radio that automatically gives rescuers precise location information. DSC VHF radios are also now available in hand-held models.

Consider the purchase or rent of an Emergency Position Indicating Radio Beacon (EPIRB). These satellite beacons are used for passages 20 miles or more from shore, beyond VHF radio range, and can be automatically activated to summon help. The foundation rents these lifesaving beacons to anglers, racers and other coastal passage makers who have a temporary need for this safety device. To date, the rental beacons have saved 62 lives.

For more information on boating safety, go to BoatUS.com/foundation.

Oyster Season to close Early in Selected Portions of Public Seed Grounds

Louisiana Department of Wildlife and Fisheries (LDWF) issued an emergency order to close the 2008-09 oyster season in selected portions of the public oyster seed grounds at one-half hour after sunset on Saturday, March 14, 2009. The public oyster areas to close on March 14 include all public oyster seed grounds east of the Mississippi River, the Hackberry Bay Public Oyster Seed Reservation and the Little Lake Public Oyster Seed Ground.

The season was previously set by the Louisiana Wildlife and Fisheries Commission to remain open until April 30, 2009, but the commission gave authority for an early closure to the LDWF secretary in order to protect and conserve the public oyster resource. The LDWF Marine Fisheries Division has monitored the health of the public oyster resource throughout the oyster season, which opened in September 2008, through biological sampling and harvest tracking. LDWF monitoring activities have determined that the public oyster resources, especially those east of the Mississippi River in Plaquemines Parish, have sustained heavy harvest pressure and continued harvest may threaten the long-term sustainability of the remaining oyster resources.

Underwater Obstructions

In accordance with the provisions of R.S. 56:700.1 et. seq., notice is given that 9 claims in the amount of \$27,846.67 were received for payment during the period Jan. 1, 2009-Jan. 31, 2009.

There were 9 claims paid and 0 claims denied.

Latitude/Longitude Coordinates of reported underwater obstructions are:

29 01.020	89 13.919	PLAQUEMINES
29 10.871	90 28.092	TERREBONNE
29 15.426	90 12.782	LAFOURCHE
29 18.159	89 31.684	PLAQUEMINES
29 20.607	89 55.854	PLAQUEMINES
29 36.844	91 15.036	ST. MARY
29 37.660	90 07.353	JEFFERSON
29 40.183	90 16.445	LAFOURCHE
29 40.935	90 10.713	JEFFERSON

A list of claimants and amounts paid can be obtained from Gwendolyn Thomas, administrator, Fishermen's Gear Compensation Fund, P.O. Box 44277, Baton Rouge, LA 70804, or call (225)342-0122.

THE GUMBO POT

Bay Snapper Stuffed Crabs

Since sheepshead have a mild, very firm white flesh, folks have used them for a crabmeat substitute. Use fillets that have been trimmed of all red meat.

2 lbs sheepshead fillets
1 cup Each: minced celery, onion, bell pepper
3 cloves minced garlic
1 lb stale French bread
1/4 lb butter
1/2 cup chopped parsley
1/2 cup minced green onion
Creole seasoning, lemon, bay leaf

Poach fillets with some creole seasoning, lemon, and bay leaf and/or a little seafood boil. Shred the fish and set aside, and use some of the poaching liquid to moisten the bread. Saute celery, onion, bell pepper and garlic in butter and thoroughly mix in all the other ingredients. Mixture can be shaped into crab shells or as individual patties. Top with a bit of butter and paprika; bake at 375 for 30 minutes.



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