

Lagniappe



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EARLY CLOSURE OF THE RED SNAPPER RECREATIONAL FISHERY

(Editor's Note: This is the full text of the late-breaking NMFS news release on March 25. This document includes significant information on the recent history of the regulatory process and the rapidly changing situation with state-federal cooperation. Anyone who has a stake in Louisiana red snapper fisheries will want to examine it thoroughly.)

New Regulatory Action:

NOAA's National Marine Fisheries Service (NOAA Fisheries Service) announces the recreational fishery for red snapper in federal waters of the Gulf of Mexico will close effective 12:01 a.m. local time Aug. 5, 2008, through Dec. 31, 2008, the end of the current fishing year. The recreational fishery in federal waters will reopen on June 1, 2009, the beginning of the 2009 federal recreational fishing season. NOAA Fisheries Service has determined this action is necessary to prevent overfishing and to keep the recreational fishery from exceeding its quota during the 2008 fishing year.

Closure of the recreational red snapper fishery in federal waters complies with regulations implemented under the Fishery Management Plan for Reef Fish Resources of the Gulf of Mexico (Reef Fish FMP), and in accordance with requirements specified in the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Fisheries Service is required to close a fishery or fishery sector in federal waters when the quota is met or projected to be met.

Background:

Constraining harvest to the quota is crucial to meeting the legal requirements to prevent and end overfishing and rebuild the red snapper resource of the Gulf of Mexico. A court ruling in 2007 required NOAA Fisheries Service and the Gulf of Mexico Fishery Management Council (council) to revise the red snapper rebuilding plan with a goal of having a 50-percent probability, or greater, of ending overfishing for red snapper between 2009 and 2010 and rebuilding the stock by 2032. Subsequently, NOAA Fisheries Service implemented temporary regulations in 2007 for federal waters to reduce harvest and fishing mortality for red snapper. These regulations included a recreational quota of 3.185 million pounds (MP) and a commercial quota of 3.315 MP. The recreational bag limit was reduced to two fish, with a zero-fish bag limit for captains or crews of for-hire vessels. The minimum size limit for the recreational fishery remained at 16 inches total length (TL) and the federal fishing season remained April 21 through Oct. 31. These harvesting restrictions were intended to constrain the recreational fishery to the quota for the fishing year. However, Texas kept its state waters open year-round and anglers were allowed a daily bag limit of four fish. Similarly, Florida maintained a fishing season of April 15 through Oct. 31 during 2007 in its state waters, and a four-fish recreational bag limit. These incompatible regulations in state waters contributed to a recreational



harvest that exceeded the recreational red snapper quota by approximately 1.0 MP in 2007. The commercial fishery landed 3.22 MP, or 97 percent of the 2007 commercial quota.

2008 Regulations:

In January 2008, NOAA Fisheries Service published a final rule implementing actions in the council's joint Amendment 27 to the Reef Fish FMP and Amendment 14 to the Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico. These regulations further reduced the 2008 recreational quota for red snapper to 2.45 MP, and the commercial quota to 2.55 MP. To keep the recreational fishery's harvest within the quota, the recreational red snapper fishing season in federal waters was reduced to June 1 through Sept. 30. No changes were made to the established bag limits and minimum size limits.

To ensure the 2008 recreational red snapper quota would not be exceeded during the fishing year, NOAA Fisheries Service and the council requested the five Gulf of Mexico states adopt compatible regulations for 2008. Louisiana and Mississippi implemented regulations compatible with federal regulations, and Alabama is undecided. Florida implemented a two-fish bag limit, compatible with federal regulations, but maintained its recreational fishing season of April 15 through Oct. 31; 78 days longer than the federal fishing season. Texas maintained its existing year-round fishing season and a four-fish bag limit in state waters, thus not complying with federal regulations.

Analysis Summary:

The June 1 through September 30 federal recreational fishing season was based on the assumption of compatible recreational red snapper regulations in state waters. NOAA Fisheries Service's analyses indicate the longer fishing seasons and less restrictive bag limits in state waters will result in a recreational quota overage for the 2008 fishing year.

Substantial quantities of red snapper are harvested by the recreational fishery from state waters.

For example, reported recreational red snapper landings from state waters off the west coast of Florida in 2007 represented more than 25 percent of the total Gulf of Mexico recreational red snapper landings, and more than 50 percent of the total reported recreational landings of red snapper for the state. Similarly, landings from Texas state waters constitute more than 30 percent of the state's total recreational red snapper landings.

With this concern in mind, NOAA Fisheries Service conducted an analysis to project 2008 red snapper recreational landings in accordance with the established federal and state recreational fishing seasons and harvesting restrictions. Recent and historical landings were used to project both landings and season length for each state by recreational sector (charter, private, and headboat). Where necessary, landings were adjusted for changes in regulations (e.g., lower bag limit, shorter season length). The full analytical report can be found on the Southeast Regional Office Web site: <http://www.sero.nfms.noaa.gov>. In summary, NOAA Fisheries Service projects the recreational red snapper landings for Jan. 1 through Dec. 31, 2008, will be approximately 2.78 MP; a 13.5-percent overage in the 2008 recreational quota.

These projections likely represent an underestimate of the landings because they do not account for shifts in fishing effort or non-compliance that are likely to occur as a result of incompatible state and federal regulations. NOAA Fisheries Service is increasingly concerned there will be substantial overages, and a concomitant failure to maintain the established rebuilding targets. Quota overages severely impact the ability of NOAA Fisheries Service and the council to attain required reductions in fishing mortality and comply with the legal requirements to end overfishing of red snapper. NOAA Fisheries Service estimates there is a 75 percent probability the 2.45 MP recreational quota will not be exceeded during the 2008 fishing year if the federal fishery is closed on Aug. 5, 2008.

NOAA Fisheries Service believes the timing of the closure is necessary to adequately account for anticipated but unquantifiable shifts in effort into state waters once the federal fishery closes.

GULF COUNCIL MEETS IN BATON ROUGE APRIL 4-11

The Gulf of Mexico Fishery Management Council will meet April 4 - 11, 2008, at the Embassy Suites Hotel, 4919 Constitution Ave., in Baton Rouge. Committee and council agendas are available at www.gulfcouncil.org. Some highlights include discussions and possible action on: Reef Fish Amendment 30B - Gag and red grouper; Reef Fish Amendment 29 - Effort Management Program from Grouper/Tilefish; and the Generic Aquaculture Amendment.

Please note that Wednesday from 5:30 – 6:30 p.m., the council and NOAA Fisheries will hold an informal question and answer session on Gulf reef fish. In addition, the following public comment sessions will take place Thursday afternoon: 1:20 p.m. – 5:30 p.m. Exempted Fishing Permits (if any); Final Action on Reef Fish Amendment 30B; and the Generic Aquaculture Amendment. Immediately following Public Testimony (for one hour) will be open public comment, where the public is invited to comment on fishery issues of concern. Registration cards must be filled out prior to the start of testimony.

PROPOSED STATE LEGISLATION – FISHERIES TOPICS

A number of bills have been filed for the 2008 Regular Session that may be of interest to Lagniappe readers. Legislators have until April 22 to introduce legislation, so the following list is only preliminary. The Louisiana Wildlife Federation maintains an up-to-date digest of legislation affecting natural resources (http://www.lawildlifefed.org/whatwedo_legreport.cfm), and the Louisiana State Legislature site (<http://www.legis.state.la.us/>) has an easy-to-use bill search engine. Contact the sponsoring legislators for more information about a bill, and let them – and your representatives – know what you think.

HOUSE BILL NO. 475. BY REP. ST. GERMAIN

FISHING/CRABS: Creates out-of-state wholesale and retail crab shipping licenses <http://www.legis.state.la.us/billdata/streamdocument.asp?did=467735>.

HOUSE BILL NO. 488. BY REP. GISCLAIR

AQUACULTURE: Requires review and cooperation with LSU biologists prior to establishment of offshore fish farming in Louisiana waters <http://www.legis.state.la.us/billdata/streamdocument.asp?did=468006>.

HOUSE BILL NO. 501. BY REP. MILLS

AGRICULTURE: Transfers management and regulation of wild-caught crawfish for commercial purposes from Department of Wildlife and Fisheries to Department of Agriculture and Forestry <http://www.legis.state.la.us/billdata/streamdocument.asp?did=468053>.

HOUSE BILL NO. 700. BY REPS ST. GERMAIN AND DOVE AND SEN. DUPRE

AQUACULTURE: Moves management of aquaculture programs from the Department of Agriculture and Forestry to the Department of Wildlife and Fisheries <http://www.legis.state.la.us/billdata/streamdocument.asp?did=469928>.

HOUSE BILL NO. 701. BY REP. ST. GERMAIN AND SEN. DUPRE

FISHING: Defines game fish, recreational fish, commercial fish throughout the statutes <http://www.legis.state.la.us/billdata/streamdocument.asp?did=469930>.

HOUSE BILL NO. 702. BY REPS. ST. GERMAIN AND DOVE AND SEN. DUPRE
FISHING/COMMERCIAL: Removes the closed season and the prohibition on nighttime taking of commercial shad and skipjack with bait seines <http://www.legis.state.la.us/billdata/streamdocument.asp?did=469935>.

HOUSE BILL NO. 798. BY REP. HUTTER
FISHING/OYSTERS: Provides for a phased lifting of the moratorium on leasing state waterbottoms for oyster production <http://www.legis.state.la.us/billdata/streamdocument.asp?did=470525>.

HOUSE BILL NO. 848. BY REP. HUTTER
FISHING/OYSTERS: Amends law on taking of seed and sack oysters from public grounds <http://www.legis.state.la.us/billdata/streamdocument.asp?did=471392>.

HOUSE BILL NO. 1025. BY REP. ST. GERMAIN
WILDLIFE & FISHERIES DEP: Establishes fee rates and repeals multi-day non-resident trip licenses for hunting and fishing <http://www.legis.state.la.us/billdata/streamdocument.asp?did=472300>.

HOUSE BILL NO. 1038. BY REP. SAM JONES
FISHING: Authorizes commercial harvest of bait species with seines near the mouth of the Atchafalaya River <http://www.legis.state.la.us/billdata/streamdocument.asp?did=472327>.

SENATE BILL NO. 13. BY SEN. DUPRE
FISH/FISHING: Allows up to five hoop nets with a recreational gear license <http://www.legis.state.la.us/billdata/streamdocument.asp?did=462427>.

SENATE BILL NO. 20. BY SEN. DUPRE
FISH/FISHING: Allows larger trawl doors in inside waters <http://www.legis.state.la.us/billdata/streamdocument.asp?did=462543>.

SENATE BILL NO. 22. BY SEN. DUPRE AND REP. ST. GERMAIN
FISH/FISHING: Changes frequency of required black drum, sheepshead, and flounder stock assessment reports to biennially <http://www.legis.state.la.us/billdata/streamdocument.asp?did=462550>.

SENATE BILL NO. 67. BY SEN. DUPRE AND REPS. ST. GERMAIN AND DOVE
WILDLIFE/FISHERIES DEPT: Re-creates the Department of Wildlife and Fisheries <http://www.legis.state.la.us/billdata/streamdocument.asp?did=465530>.

SENATE BILL NO. 292. BY SEN. MCPHERSON
FISH/FISHING: Allows access to the ordinary high stage of navigable waters for recreational hook and line fishing <http://www.legis.state.la.us/billdata/streamdocument.asp?did=470567>.

SENATE BILL NO. 293. BY SEN. MCPHERSON
WATER/WATERWAYS: Provides that the banks of navigable rivers or streams are private things that are subject to public use, including fishing <http://www.legis.state.la.us/billdata/streamdocument.asp?did=470579>.

THE (LATEST) INVASION OF NEW ORLEANS

The Rio Grande cichlid (*Herichthys cyanoguttatus*) is a non-native fish that has invaded the canals and bayous of the Greater New Orleans Metropolitan Area (GNOMA). Since the first confirmed specimen was collected in 1996, populations of cichlids have become more numerous and have dispersed far beyond the localities of these initial collections. Unfortunately this pattern of discovery, dispersal and subsequent density increases is an all too common scenario around the world as invasive fishes spread and displace native fishes.



Photo credit: Tom Lorenz, University of New Orleans

After the first cichlid discoveries in the GNOMA in the mid-1990s, Dr. Bob Cashner at the University of New Orleans recognized that these scattered occurrences could be mere inklings of a potentially bigger situation. To get a better understanding of the cichlid numbers actually in the canals, Cashner had his graduate student, Gus Fuentes, survey portions of Orleans and Jefferson parishes in 1998. Fuentes found cichlids in more than 20 canals in Jefferson Parish while densities were much lower in Orleans Parish. The researchers wondered about the source of this species and how had it spread so quickly, especially in Jefferson Parish. As word of the UNO findings spread, some pet store owners and private citizens admitted to regularly dumping Rio Grande cichlids into canals since the 1980s. These cichlids are commonly sold in the aquarium trade as “Texas blues,” but their aggression and ability to spawn easily often means that owners regularly need to get rid of excess individuals. Unfortunately one of the easiest methods for these over-burdened pet owners is to release extra cichlids in any nearby waterbody. It is obvious now that instead of quietly dying off or being eaten by other fishes in the canals, these released aquarium fishes not only survived but went on to reproduce successfully over multiple generations.

To better understand the dynamics of these expanding populations, we created a dispersal model which generated hypothetical scenarios of how the cichlids could be spreading throughout the GNOMA. As we worked on this computer-based approach, it became obvious that back in the real world cichlids were increasing in Orleans Parish, especially since the year 2000. According to the model scenarios, the most likely explanation for the rapid colonization of Orleans Parish from Jefferson Parish was that cichlids were moving along the south shore of Lake Pontchartrain through estuarine habitats. In their native habitats of Texas and Mexico, Rio Grande cichlids are considered freshwater fishes and we had assumed the saltier water of Lake Pontchartrain would serve as a barrier to their dispersion. We decided to test the model by conducting monthly sampling near the mouth of London Avenue Canal along the south shore’s artificial seawall in 2003. The model predictions were verified when we collected numerous cichlids in seawall traps at salinities ranging from 3 – 7 ppt. The fact that cichlids could survive the waters of Lake Pontchartrain was also confirmed earlier in 2003 when local diver Jerry Carroll, Jr. brought some underwater photographs of fishes to UNO fish biologist Jeff Van Vrancken who confirmed that the fish in question was a Rio Grande cichlid and that the pictures had been taken off of a rock jetty at Pontchartrain Beach alongside more typical estuarine fishes like sheepshead (*Archosargus probatocephalus*) and gray snapper (*Lutjanus griseus*). The dispersion model’s predictions about an estuarine corridor were proved correct, and the ability of the species to spread very rapidly in south Louisiana was further confirmed.

When word about cichlids began to spread, some biologists predicted that cold weather would correct the problem. Since the cichlids evolved in the warm Rio Grande Basin and originated from tropical ancestors, it seemed that they might eventually succumb to the colder temperatures of Louisiana. Dr. Clark Hubbs worked extensively on fish research in Texas over the last half-century and is recognized

as one of the great fish biologists of our time. When asked if he thought the cichlids could be wiped-out by cold weather, he laughed briefly and said, “Not likely...I’ve seen them swimming around in a pond under an inch of ice!” Another problem in hoping for a future cold snap to control Rio Grande cichlids is that climate change may preclude such an event from happening again. There have been no hard freezes in the GNOMA for at least the last eight years and, in the meantime, the cichlids continue to thrive and expand.

It is also possible that the artificial and mostly concreted GNOMA canals are providing thermal refuges for the cichlids. That is, during colder months the cichlids may benefit from staying in deep, concrete canals which hold heat from the sun more efficiently than natural, shallow bayous outside of the urban habitats. This is one of many questions about cichlids that UNO graduate student Tom Lorenz has been trying to answer over the last few years. Remote temperature gauges have been deployed in both types of habitats to compare the conditions. Preliminary results suggest that the urban habitats are warmer with less variation in temperatures than the bayous outside of the GNOMA. This information may lead to ways of better controlling the cichlids such as targeting them in the winter as they congregate in urban thermal refuges or altering the canal habitats such that these winter refuges are less available.

Lorenz is also looking into how the cichlids interact with native fishes such as bluegill (*Lepomis macrochirus*), a common resident of GNOMA freshwater habitats. In a recent paper he explains that under laboratory testing, both cichlids and bluegill aggressively defend their territories against invaders, but only the cichlids remain aggressive as invaders. This behavior may partially explain the continued expansion of the cichlids. In another laboratory study, Lorenz found that juvenile cichlids grew equally well in freshwater (0 ppt) and two different levels of salinity (8 and 16 ppt). These results further corroborate the ability of cichlids to survive in estuarine habitats. Lorenz’s most telling laboratory study may have been the one that was inadvertently created by the levee failures after Hurricane Katrina. The off-campus



Photo credit: Tom Lorenz, University of New Orleans

laboratory where he was conducting experiments was inundated and destroyed. When he went back weeks later to salvage equipment, he was amazed to find that most of the cichlids had survived for weeks without oxygenation, filtration, lighting and air conditioning. This is further evidence that, as with many other successful aquatic invaders, the Rio Grande cichlid is a hardy species which will not give up without a fight. You can read more about Lorenz’s work in an online interview he gave to “Tropical Fish Hobbyist” at http://www.tropicalresources.net/interview_pages/tom_lorenz/tom_lorenz.html.

This type of information will help to better manage and control this potentially destructive fish. The UNO group has been working closely with the Louisiana Department of Wildlife and Fisheries (LDWF), the LSU AgCenter and City Park in restoring the historic urban fishery of Bayou St. John in the heart of New Orleans. Restoration efforts include re-establishing water circulation in the system and recovering native fish populations decimated by levee failures and inundation. The cichlids pose an impediment to these restoration efforts in that they compete with native bluegill and largemouth bass (*Micropterus salmoides*) for shallow water spawning sites. The invaders not only survived the inundation but have been rapidly expanding since Hurricane Katrina. Isolated ponds and lagoons in City Park which were cichlid-free just after 2005, now have significant numbers of the invaders. But steps are being taken to reduce cichlid populations in this fishery so that restoring native fishes and habitats can proceed. LDWF is spearheading efforts to restore native fishes that could feed on

cichlids and perhaps tip the balance against the invaders. The New Orleans Annual City Park Big Bass Fishing Rodeo and Fishtival will also include a team event where anglers will compete to see who can remove the most cichlids from the system. Additionally, we are promoting catching cichlids and bringing them home to use as “fertilizer fish.” Anecdotal (and historical) evidence demonstrates that tomatoes, cucumbers and other backyard crops do better when fertilized with fish.

As we conduct our monthly fishery sampling in Bayou St. John and City Park, we like to tell the anglers, boaters and dog walkers about these invading organisms. Folks usually understand the problem of non-native species and fully support efforts to rid the system of them. We hope that through communication at this level that the word can be spread about controlling cichlid populations. The invasion of New Orleans by Rio Grande cichlids continues but perhaps the tide can be turned. Although it would be very difficult to completely remove this species from the GNOMA and southeastern Louisiana, by pursuing multiple management efforts to control cichlid populations we can minimize the negative impacts on native fishes. Catching and removing cichlids, whether for fun or for fertilizer, will help the fishery in general and free more spawning space for largemouth bass and bluegill. If we can limit the success of cichlids within the GNOMA, then we can reduce the chances that this species will spread further into more valuable natural habitats of coastal Louisiana.

- **Martin O’Connell**

Sources:

Fuentes, G.N. and Cashner, R.C. 2002. A report of the Rio Grande cichlid's (*Cichlasoma cyanoguttatum*) establishment in the Lake Pontchartrain estuary in southeastern Louisiana. *Southwestern Naturalist*, 47(3): 456-459.

O’Connell, M.T. with R.C. Cashner and G.N. Fuentes. 2002. Application of a diffusion model to describe a recent invasion; observations and insights concerning early stages of expansion for the introduced Rio Grande cichlid, *Cichlasoma cyanoguttatum*, in southeastern Louisiana. *Aquatic Invaders* 13 (4): 13-21.

SHRIMP FLAVOR DEFINED

Approximately 90 percent of all shrimp consumed in the United States are imported, the majority which are farm raised. While many U.S. consumers are oblivious to the differences in shrimp flavors, true shrimp connoisseurs can identify distinct taste differences. What causes these taste differences was the focus of a research paper by members of the Texas Sea Grant Extension Program.

Flavor is a combination of taste, smell and texture. Taste is normally classified as sweet, sour, salty, bitter, etc. The senses of taste and smell can be quite keen and has led to the investigation of what tastes are preferred by consumers. In shrimp, flavors have been described as “shrimp like”, “ocean like”, “crab like” or “slightly iodine.” It is incorrectly assumed by many consumers that seafood products are high in salt. In fact, fish and shellfish harvested from ocean waters are actually low sodium foods. For example, a 3.5 oz serving of shrimp contains approximately 148 mg sodium, while two frankfurters contain 980 mg sodium.

So, what gives wild shrimp its distinct flavors? The answer is a group of chemical compounds known as bromophenols which occur in small amounts in the muscle tissue of wild sea foods. The absence of bromophenols in aquaculture produced and freshwater fish and shell fish is described as mild-flavored, bland and even earthy. An attempt by shrimp aquaculture operations to mimic the unique flavors of wild shrimp led to the addition of bromophenol compounds to the diet of farm raised shrimp. However, repeated trials have not been able to replicate the flavors of wild shrimp.

Freshwater simply does not have phenols or bromine to impart into the flesh of its inhabitants, while seawater has an average concentration of 65 parts per billion (ppb) bromine. The source of

bromophenols in wild caught shrimp is derived through their natural diet. The benthic (or bottom dwelling) organisms which are fed on by shrimp are particularly high in bromophenol concentrations. The highest concentrations have been found in polychaete worms. Polychaetes from muddy sea bottoms have the highest concentrations of bromophenols, while those from sandy or shell bottom areas had significantly less.

Research has found that the average concentration in seafood is about 3 ppb and that bromophenol does not accumulate in muscle tissue, but leaches out over time causing varying degrees of the flavor depending on the organism's recent feeding habits. At around 30 ppb bromophenol, shrimp are described as having a strong iodine flavor, which is considered by some as a tainted flavor. Remember, our sense of taste is quite sensitive, and the difference in optimum and tainted flavor (20ppb) is miniscule. In fact, the strongest bromophenol flavor probably indicates only that that particular shrimp had been recently feeding on higher-concentration natural foods.

- Kevin Savoie

Source: *Naturally-occurring Compounds which Create Unique Flavors in Wild-harvested shrimp.* Russell Miget and Michael Haby. May 31, 2007.

FAMILY PROFILE: CENTRARCHIDAE – SUNFISHES – Part 4 – The Crappies

(This is the fourth of four articles on sunfishes and crappies. See <http://www.seagrantfish.lsu.edu/pdfs/lagniappe/2007/12-01-2007.pdf> and <http://www.seagrantfish.lsu.edu/pdfs/lagniappe/2008/01-04-2008.pdf> and <http://www.seagrantfish.lsu.edu/pdfs/lagniappe/2008/02-01-2008.pdf> for the stories on warmouth, green sunfish, bluegill, longear, and redear.)

The family Centrarchidae is comprised of 32 species, including the black basses (*Micropterus spp.*), bream (*Lepomis spp.*) and crappies (*Pomoxis spp.*). These important sportfish are native to North America, with all but one species naturally occurring east of the Rocky Mountains.

Centrarchids build nests for spawning, and the developing eggs and young are generally defended by the male. Centrarchids exhibit a diversity of food habits. Differences in food habits correspond to mouth size, the shape and length of the gill rakers and whether mandibular jaws or the pharyngeal jaws (inside the throat) predominate in the feeding mechanism. Mandibular jaws are dominant in piscivorous or insectivorous fishes such as bass or bluegill. Snail eaters have enlargement of the pharyngeal jaws and associated musculature (for crushing shells).



Photo credit: Duane Raver, U.S. Fish and Wildlife Service

White Crappie – (*Pomoxis annularis*): Often known in Louisiana as sac-a-lait, this is a moderately deep-bodied, silvery, strongly compressed sunfish with a large mouth, protruding lower jaw and a small head. The dorsal profile of the head is concave. The back is gray-green with bluish to greenish reflections. The upper sides have 6-10 dusky, chain-like bars overlaying a background color of silver or white; the bands become indistinct lower on the sides. The United States angling

record is a 2.36 kg (5.2 lb) fish caught in Mississippi in 1957. The Louisiana angling record is a 3.38 lb fish caught by B.R. Shepherd in Grand Bayou Reservoir on April 28, 2002. White crappie are a popular sportfish, especially in the spring when the fish congregate in shallow water for spawning. Less fishing effort generally occurs in the summer

when crappie move to deep water resting areas, often located over steep slopes. The harvest of white crappie increases again in late summer and fall when fish congregate in deep water around structure.

Crappie populations are cyclic, having strong year classes every three to five years. White crappie are prolific spawners, and if stocked in small ponds and lakes they tend to overpopulate to the point that few fish are able to attain harvestable size. Spawning occurs from March to May with variations in timing largely dependent upon water temperature. Males establish and vigorously defend territories of about one square meter around their nests. Nests are constructed in shallow water (usually less than 1.5 m deep) by the male who sweeps out sediment from the area by fin and body movements; occasionally the female also shows nest-sweeping behavior. The nests are somewhat irregular in shape, and are often shallow and ill-defined. During spawning, the male and female orient parallel over the nests with their abdomens touching. Eggs are released and fertilized in spawning bouts that last two to five seconds. The male guards the nest area against egg predators, and may court and spawn with several females.

Growth of young white crappie may be rapid, with fish reaching sexual maturity in one or (at most) two years. Larval white crappie first begin feeding on copepods and cladocerans, while juveniles feed primarily on zooplankton, aquatic insect larvae and water boatmen. Adults feed on a large percentage of fishes as well as planktonic prey. Most feeding of young white crappie takes place during the day, with greatest activity from dawn to midday. However, in some lakes feeding activity may peak in the late afternoon. When feeding on planktonic organisms, white crappie remain stationary as they search for prey and then feed as they move. If no prey is found, they move a short distance, stop, and then repeat the search. Large white crappie, which feed predominately on fishes, show increased feeding and movement rates at dusk and during the night.

The white crappie is most similar to the black crappie, from which it differs in having five to six rather than seven to eight dorsal spines, and more distinct bands on the sides. Crappies differ from all other sunfishes in having less than 10 dorsal spines. In the summer, white crappie seek out cool water and are located near or below the thermocline in lakes. However, because water below the thermocline is often devoid of oxygen, they tend to be forced into a narrow zone around the thermocline where there is still enough oxygen but temperatures are lower. Organized crappie clubs and tournaments have become popular starting in the 1990s. Anglers often use electronic fish finders to locate deep-water white crappie, or they may troll through open water areas with several poles.

Black Crappie – (*Pomoxis nigromaculatus*): Many anglers don't differentiate between the two species of crappie: they are both sac-a-lait and they are extremely popular because of their excellent, mild flavor and abundance. The black crappie is a deep-bodied, laterally-compressed sunfish with a large mouth, protruding lower jaw, small head and numerous dark spots along the sides. The back is gray to bluish green. The sides are silvery with irregular horizontal lines but not vertical bands. The undersides are silvery to white. Black reticulations surround clear spots on the dorsal, anal and caudal fins. In some waters, the "blackstripe" or "blacknose" form occurs in a small percentage of the population. This form has a dark brown to black stripe running along the middorsal line from the dorsal fin over the mouth and down between the lower jaw. Some anglers claim that these crappie are the hardest fighters. The U.S. angling record is 2.73 kg (6 lb). The Louisiana angling record is a 3.55 lb fish caught by Jodie E. Crouch Jr. in Toledo Bend on March



Photo credit: Duane Raver, U.S. Fish and Wildlife Service

18, 2003. The black crappie is usually more abundant in clear, weedy waters than the white crappie. They seem to relate more closely to cover, such as weed beds or brush piles, so that a smaller percentage of the available black crappie tend to be harvested compared to white crappie. Black crappie are most active at night or early in the morning, and tend to move from open water areas during the day to closer to shore at night. Movement also increases during periods of rising barometric pressure. Spawning takes place in early spring (February-March) when fish move into shallow water. Preferred nesting areas seem to be near cover of some kind, especially emergent or floating vegetation. Males will feed while guarding their nest, usually on food items that are close at hand such as insects associated with vegetation. Black crappie show a change in food habits with growth, starting with microcrustaceans (copepods and cladocerans) and insect larvae (midges), then moving towards fishes (minnows and sunfishes) as adults. In turbid water, black crappie are less efficient at capturing fishes than white crappie, resulting in increased mortality of larger fish. Because crappie spawn early, about the same time as largemouth bass, they tend to be less controlled by bass predation; therefore overpopulation and stunting is sometimes a problem, particularly in small impoundments. In an effort to produce crappie suitable for ponds, G. Parsons (1996) crossed female white crappie with male "blackstripe" crappies and then pressurized the eggs to produce sterile, triploid hybrids, which have promise for pond fisheries.

- Craig Gothreaux

Sources:

(The vast majority of information in these articles comes directly from *Inland Fishes of Mississippi* by Stephen T. Ross, and printed by the University Press of Mississippi <http://www.upress.state.ms.us/books/398>. Louisiana does not have a recent book of its own that focuses on the inland fishes (Dr. Douglas' *Freshwater Fishes of Louisiana* is very useful but was written in 1974), but one is supposedly in the making. Additionally, *The Fishes of Tennessee* by David A. Etnier and Wayne C. Starnes, and printed by the University of Tennessee Press, offers an equally impressive account of many of the same species (<http://utpress.org/a/searchdetails.php?jobno=T00420>).

Louisiana Outdoor Writers Association - http://www.laoutdoorwriters.com/index.asp?pg=fr_choose

SHRIMP FISHING SAFETY MEETINGS IN ABBEVILLE

Thông Báo Về Cuộc Họp Quan Trọng Cho Chủ Tàu, Thuyền Trưởng và Bạn

Mark Shirley and Thu Bui, with the LSU AgCenter and Louisiana Sea Grant, will help host an important meeting for shrimp fishermen on April 7, 2008, at 9 a.m. and again at 1 p.m. Meetings will be held at the VN Hall in Abbeville, 1201 Lafitte Road. Meeting participants will obtain hands-on navigation, communication and flooding training in English and in Vietnamese, and receive a worker's health check. Shrimpers will have opportunities to ask questions about important issues for shrimp fishermen. Participation is free and refreshments will be provided throughout the day. For more information, contact Mark Shirley at 337/898-4335 or Thu Bui at 337/828-4100 Ext. 300.

UNDERWATER OBSTRUCTIONS

In accordance with the provisions of R.S. 56:700.1 et. seq., notice is given that 18 claims in the amount of \$64,714.63 were received for payment during the period Dec. 1, 2007 - Feb. 29, 2008.

There were 18 claims paid and 0 claims denied.

Latitude/Longitude Coordinates of reported underwater obstructions are:

29 06.999
29 10.967

90 09.746
90 56.045

LAFOURCHE
TERREBONNE

29 14.165	90 01.579	JEFFERSON
29 15.120	89 37.202	JEFFERSON
29 23.910	89 43.700	PLAQUEMINES
29 27.405	89 17.278	TERREBONNE
29 28.999	90 07.242	JEFFERSON
29 30.780	89 54.640	PLAQUEMINES
29 36.527	89 21.112	PLAQUEMINES
29 38.598	90 05.397	JEFFERSON
29 53.321	89 45.294	ST. BERNARD
29 04.028	90 14.904	LAFOURCHE
29 05.973	89 26.918	PLAQUEMINES
29 13.451	89 31.419	PLAQUEMINES
29 19.856	89 58.629	JEFFERSON
29 35.073	89 47.510	PLAQUEMINES
29 45.966	90 23.179	ST. CHARLES
30 06.195	89 49.215	ORLEANS

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 you can call (225)342-0122.

THE GUMBO POT

Herbed Shrimp and Feta Cheese Casserole

Recipe from LSU AgCenter's *Serving Louisiana Cookbook*

8 ounces feta cheese, crumbled
 5 1/3 ounces reduced-fat Swiss cheese, shredded
 1 cup evaporated skim milk
 1 cup plain nonfat yogurt
 2 eggs, 1 beaten
 1/3 cup fresh parsley
 1 teaspoon basil
 1 teaspoon oregano
 4 garlic cloves, minced
 8 ounces angel hair pasta, cooked, drained
 1 (16-ounce) jar mild chunky salsa
 1 pound medium shrimp, peeled, deveined
 8 ounces part-skim mozzarella cheese, shredded

Combine the feta cheese, Swiss cheese, evaporated skim milk, yogurt, eggs, parsley, basil, oregano, and garlic in a bowl and mix well. Line the bottom of a 9x13-inch baking dish sprayed with nonstick cooking spray with half of the pasta. Spread with the salsa. Top with half the shrimp. Layer with the remaining pasta. Repeat layers. Pour the cheese and egg mixture over the prepared layers. Sprinkle with the mozzarella cheese. Bake at 350 degrees for 30 minutes. Let stand for 10 minutes before serving. Garnish with additional chopped fresh parsley. The equivalent amount of egg substitute may be used as a substitute for the fresh eggs. Serves 12.

Reprinted from *Serving Louisiana*, available from the LSU AgCenter. For more information or to order online, visit <http://www.lsuagcenter.com/cookbook>

For more information, contact your local extension agent:

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