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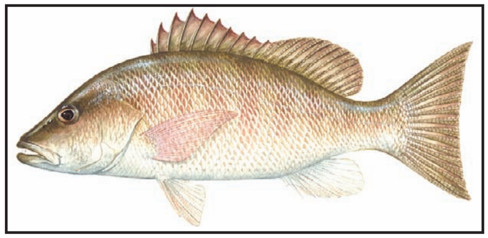
Gray Snapper Moving Up the List



Gray Snapper
Photo credit: Diane Peebles, courtesy Florida Wildlife Conservation Commision; Marine Fisheries Management

The gray or mangrove snapper (*Lutjanus griseus*) is getting a lot of interest from coastal anglers who would have fished for red snapper but came up against closed seasons and short bag limits.

The mangrove is a fine fish; a game fighter and excellent table fare. Generally more finicky than the red snapper, anglers often find the need for lighter line and live baits or chum to fool this species. But once the anglers on your boat figure out what these fish will take, the action can be fast and furious.

Some mangroves can be found in shallower water than red snapper, so that smaller craft can readily exploit this fish on calm days. And limits are much more liberal: 12 inch minimum length, ten fish per day (alone or in combination with queen, blackfin, silk, wenchman, mutton, schoolmaster, cubera, yellowtail, dog and mahogany snappers). Add it all up and we have a fish that is destined to be popular, and the gray snapper is getting more popular by the day. Louisiana recreational landings have been increasing dramatically:

Year	Pounds: Recreational	Pounds: Commercial	$ Value: Commercial
1996	14,436	47,291	67,737
1997	24,667	52,848	73,404
1998	74,471	40,292	62,606
1999	160,625	22,303	34,198
2000	155,268	16,864	30,236
2001	158,674	25,543	43,061
2002	385,615	35,903	64,449
2003	425,084	43,033	79,631
2004	646,367	51,051	100,268
2005	725,715	47,262	88,626
2006	1,048,204	29,837	61,752

A recent LSU study found that the population structure has been healthy, but raised issues to watch. Between 1998 and 2002, researchers aged 718 gray snapper taken by recreational anglers and found fish ranging from 1 to 28 years. The youngest legal-sized fish were three years old, and all fish

had passed the minimum legal size by age four. The majority of fish being brought in were between ages 3 and 12. The heaviest fish in the study weighed 12.8 lbs; the state record is 14.3 lbs.
The researchers also used radiocarbon dating to verify the ages calculated from sectioned otoliths. Fallout from the 1958-65 atmospheric testing of nuclear weapons gives a standard against which carbon-containing hard parts of marine animals can be tested. Rates of incorporation of carbon-14 have been established in many Gulf species.

The calculated mortality rate in Louisiana gray snapper was relatively low, and fishing mortality appeared to be much lower than it was for this species on the southeast coast of Florida. The researchers believed that this species could handle existing fishing pressure without significant impacts to the population. However, in the few years since this study was completed, yearly landings for the recreational fishery have increased by nearly 663,000 pounds. As in most fisheries, regulatory limits on one species usually shift pressure to the next best candidate.

If you want more information, download “Unlocking Gray Snapper Secrets” at www.seagrantfish.lsu.edu/pdfs/lagniappe/2006/04-03-2006.pdf.

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NOAA Fisheries Finalizes New Red Snapper Regulations

As expected, NOAA’s National Marine Fisheries Service has published a final rule implementing the approved regulatory actions in Joint Amendment 27 to the Fishery Management Plan (FMP) for the Reef Fish Fishery of the Gulf of Mexico, and Amendment 14 to the FMP for the Shrimp Fishery of the Gulf of Mexico (Amendment 27/14). The rule reduces red snapper catch, bycatch and discard mortality in commercial and recreational fisheries, as well as in the shrimp fishery. These regulations are designed to ensure a reasonable probability of ending red snapper overfishing by 2010 and rebuild the stock by 2032.

These actions become effective Feb. 28, 2008, except for the requirement to use non-stainless steel circle hooks, venting tools and dehooking devices, which becomes effective June 1, 2008.

- Fishing mortality on red snapper will be restricted to a commercial quota of 2.55 million pounds and a recreational quota of 2.45 million pounds.
- Discard mortality in the directed fisheries will be reduced by:
  - Reducing the commercial minimum size limit to 13 inches total length.
  - Requiring the use of venting tools, dehooking devices and non-stainless steel circle hooks (when using natural baits) for all reef fish fishery sectors.
- Shrimp effort, and the associated bycatch discard mortality of juvenile red snapper, will be controlled, as needed, through time-area closures to ensure shrimp trawl bycatch mortality of red snapper is reduced 74 percent below the 2001-2003 time period. This reduction can be modified in the future as red snapper rebuild.
- The recreational harvest will be constrained to the new quota by reducing the recreational bag limit from four fish to two fish, setting the bag limit for captains and crews of for-hire vessels at

zero, and shortening the recreational fishing season to June 1-Sept. 30. The 16-inch total length minimum size limit for recreational fishermen will stay the same.

Copies of the final rule are available by contacting NOAA Fisheries Service's Southeast Regional Office at 263 13th Avenue South, St. Petersburg, Florida 33701. The final rule can be obtained in electronic form from the Federal Register Web site: http://www.gpoaccess.gov/fr/index.html (use advanced search for final rules using "AT87" as a keyword).

FAMILY PROFILE: CENTRARCHIDAE – SUNFISHES
Part 3 – *The Longear and the Redear*

(This is the third 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 for the stories on warmouth, green sunfish and bluegill.)

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).

Hybridization is common among many sunfish species, so a fish that looks "kind-of-like' two different species could well be a cross. Identification of sunfishes can also be complicated by the increase in relative body depth with increasing body size.

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

Longear (long ear) Sunfish – (*Lepomis megalotis*):
Often mistakenly known as pumpkinseed sunfish (true pumpkinseed sunfish, *Lepomis gibbosus*, have a northern range and are not actually found in Louisiana), these are deep-bodied, brightly colored sunfish with an extremely long opercular flap in adults. The back is brown to olive green. Scales on the sides have brownish spots that result in a brown background overlain with bright blue spots. Colors become much more intense in breeding males, which also have blue to charcoal-colored pelvic fins and bright orange to red sides and belly. The head in breeding males is orange or red with bright blue stripes; the stripes extend onto the body in back of the head, but not onto the throat region. The U.S. angling record of 0.8 kg (1.75 lb) was caught in New Mexico in 1985. The longear sunfish is a popular sportfish of stream anglers, although it is generally smaller than bluegill. It is caught on a variety of baits and will readily rise to small poppers (white or yellow imitations are often effective).

Populations of longear sunfish show considerable change in abundance from year to year. Such changes are likely due to variations in spawning success, because longear sunfish generally show little movement in streams. Spawning occurs during the late spring and early summer. In preparation for spawning, male longears fan out a depression in shallow water over areas with a gravel bottom and slow current flow, using vigorous motion of the caudal fin (tail-wagging). The nest diameter is about twice the length of the fish. Nests are often constructed close together so that there are large aggregations of territorial, nesting males.

The males actively court females by rushing out toward them and then returning rapidly to their respective nests, all while producing a series of distinctive grunts. Females apparently favor large males that nest early and have more centrally located nests in the spawning area. During spawning, the pair swims in circles around the nest, with the female always nearer the center. The male chases the female from the nest once spawning is complete and then guards the eggs from potential predators, such as hog suckers and other sunfishes. The male also aerates the eggs by fanning the water with his pectoral and caudal fins.

In contrast to the normal (parental) males, longear sunfish also show the alternative mating tactic of “sneaker males.” In this pattern, males do not develop bright breeding coloration, but are instead cryptically colored and have considerably larger testes than parental males. Sneaker males attempt to “steal” fertilizations from a normal, nesting male by darting into the nest and fertilizing the eggs when the resident male is spawning with a female. Sneaker males have slower body growth than parental males after their first year, in part because they put more of their available energy into gonadal growth. In addition, some nesting males may opportunistically engage in sneaker behavior with neighboring males that are perhaps more successful in attracting females to the nest.

Small longear sunfish feed mainly on aquatic insects and on small crustaceans. As they grow, aquatic insects continue to contribute to the diet, but larger fish also feed on eggs, terrestrial insects, and bryozoans (moss animals).

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

Redear (red ear) Sunfish – (*Lepomis microlophus*): Also known as chinquapin (chink-a-pin) or shell-crackers, these are relatively robust, somewhat elongate sunfish with a pointed snout and small mouth. The back is iridescent olive green to brown, and the sides below the lateral line are silvery to greenish brown with pale brown spots. The breast is white to yellow, and the opercular spot is black with a bright red-orange margin. The U.S. angling record for a redear sunfish is 2.21 kg (4.86 lb), caught in Florida in 1986. The Louisiana record for redear sunfish is 2.87 lb, caught in Caney Lake in August of 1998 by Jerry Smelley. This record fish was awarded the 1998 Fish of the Year.

The redear sunfish is a popular sportfish, and is often stocked in ponds in combination with bluegill and largemouth bass. Due to their feeding habits, redears are less likely to be caught on artificial lures than are bluegill. Worms and other natural baits fished near the bottom are more effective, and fishing is particularly successful while they are concentrated over spawning beds.

Spawning takes place during the spring and early summer. There is some evidence that peaks in spawning activity may correspond to times of full or new moons. Redear sunfish are community spawners, and nests may be located very close together. Nests are constructed over a variety of bottom types ranging from sand to soft mud, and are often constructed in areas containing aquatic plants. Males actively court females and make a popping noise (by snapping their jaws together) around the head and sides of the female. Males usually do not feed during the period that they are courting and defending the nest area.

Redear sunfish populations tend to decline in abundance in some lakes and ponds over time, perhaps due to competition for food and space with other sunfishes. For example, bluegill have multiple spawns during the summer while redear may spawn only once, which puts them at a disadvantage, especially in bass-crowded situations.

Redear sunfish feed primarily on bottom-inhabiting organisms. Common foods include mollusks (primarily snails), midge larvae (chironomids), amphipods, and mayfly and dragonfly larvae. When feeding on bottom-inhabiting prey such as mayflies or snails, redear sunfish may actually swim head-down into the bottom, raising a cloud of sand or mud. Along with the pumpkinseed sunfish, which only occurs in northern areas, redear sunfish are unique among sunfishes in their habit of crushing and consuming large numbers of snails. To accommodate this feeding strategy, both the bones of the pharyngeal jaws (bony plates located at the back of the throat) are enlarged, as are the muscles responsible for the crushing movement.

In addition, redear sunfish show a specialized pattern of muscle contraction that is not found in other, non-mollusk-feeding sunfishes. The feeding sequence involves picking up a snail with the jaws, then transferring the snail to the pharyngeal area for crushing. After the shell has been crushed, the soft tissues are held between the upper chewing pad and the pharyngeal teeth, and the remnants of the shell are ejected. About 85 percent of the shell material is expelled. This ability to feed on mollusks also allows them to feed on other heavy-bodied benthic animals, such as mud crabs and other crustaceans.

- 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).

Ross, Stephen T. 2001. Inland Fishes of Mississippi. University Press of Mississippi.
Douglas, N.H. 1974. FreshwaterFishes of Louisiana. Claitor Publishing.

Louisiana Outdoor Writers Association - http://www.laoutdoorwriters.com/

LDWF PLANS NEW CRAB TRAP CLEANUP FOR TERREBONNE

The latest derelict crab trap cleanup effort will take place within a portion of the upper Terrebonne Bay Estuary between Bayou Pointe au Chenes and Bayou Little Caillou just south of the Pointe au Chenes Wildlife Management Area from Feb. 23 through March 2, 2008.

- Traps may be removed only from within the closure area from one-half hour before sunrise to one-half hour after sunset.
- Crabs and bycatch in the derelict crab traps must be released.
- Traps may not be brought outside of the closure area and must be brought to designated disposal sites. Disposal sites will be the Pointe au Chenes Marina (at end of LA Hwy. 665) and Sea Breeze Marina (at end of LA Hwy. 55).
- Most of the cleanup area is privately owned. Access to private property has been granted by Louisiana Land and Exploration Company and Apache Minerals.

The volunteer day will be on Saturday, Feb. 23, although derelict traps may be collected anytime during the cleanup period. LDWF personnel will be present at each disposal site on the designated volunteer day beginning at 8:30 a.m. and remaining until approximately 3:30 p.m. to distribute instructions, maps, and supplies (tarps, grappling hooks, garbage bags and gloves) to the volunteers and to assist with the unloading of derelict traps.

Volunteers are needed to retrieve traps and to work at the disposal sites. Volunteers should wear appropriate protective clothing because removing abandoned crab traps is a wet and dirty job. Volunteers collecting crab traps when LDWF personnel are not present are asked to place the traps and buoys in a storage receptacle at the disposal site and to submit the following information (name; address; date; number of traps retrieved; number) to Vince Guillory (see below). The data collection form is available at www.derelictcrabtrap.net/form.html.

Additional information may be obtained from the Derelict Crab Trap Removal Program Web site (www.derelictcrabtrap.net) or from Vince Guillory, LDWF program coordinator, at (985)594-4139 or vguillory@wlf.louisiana.gov.

Dock Talk

Connecting the Dots: Global Warming and Ocean Acidification

By Bruce Steele with D.B. Pleschner

(The following article is reprinted by permission from *National Fisherman* magazine, March 2008; noteworthy when the country's No. 1 commercial fishing magazine picks this topic.)

Seawater pH is a critical variable in the marine environment. Today's surface ocean is slightly alkaline, and it is saturated with calcium carbonate, an essential organic molecule for organisms, such as corals, echinoderms, mollusks and crustaceans, that make shells: calcifiers span the food chain. Calcium carbonate and silica leave the ocean largely as skeletons settling on the bottom.
In the past 200 years the oceans have absorbed about 525 billion tons of carbon dioxide, almost half of the amount produced by human activities. As C02 dissolves in seawater, it acts to make the ocean more acidic. The pH of global oceans has already dropped 0.1, on average. This is equivalent to an increase in concentration of hydrogen ions by around 30 percent, increasing surface ocean acidity. Ocean acidification amplifies the negative impacts caused by climate change - one condition exacerbates the other.

As C02 reacts with seawater, it lowers the pH and releases hydrogen ions. These ions bind strongly with carbonate, preventing it from forming calcium carbonate molecules. If the pH of global oceans drops 0.4 by the year 2100, as predicted, the levels of calcium carbonate available for use by shellfish could decrease by some 45 to 50 percent, jeopardizing the survival of an essential part of the food web and sharply reducing the ocean's ability to act as a carbon sink. To put this in historical perspective, surface ocean pH would decrease to a level not seen for more than 20 million years.
The ocean has mechanisms to buffer surface acidification. In fact, physical mixing of ocean water and the biological process that transports calcite shells of surface dwelling animals to the ocean depths as they die have been responsible for balancing the acidifying effects of C02 for the last 750-plus million years.

The world's oceans have experienced pH changes over the millennia as the result of cyclical increases in C02. "Since the beginning of the Industrial Revolution, carbon dioxide levels in the

atmosphere and surface ocean have been rising, and they may he rising too fast for some skeleton-formers to adapt,"' states Andrew H. Knoll, PhD, Fisher Professor of Natural History at Harvard University. "The physiological cost of carbonate precipitation may once again become prohibitively high, especially for poorly buffered organisms like benthic algae and cnidarians [anemones, jellyfish] - the same animals that suffered disproportionately at the end of the Permian Period [250 million years ago]. As they shed light on Earth's evolutionary past, then, experimental studies of growth in skeleton-forming organisms may illuminate the biological future that our grandchildren will inherit."
Over the next 100 years, the predicted pH change will accelerate rapidly: the effects will be most severe in the polar and subpolar seas. The changes in seawater chemistry that will occur will likely negatively affect numerous species, including pteropods, sea urchins, mussels and oysters, corals and others.

Pteropods comprise the dominant form of zooplankton in the Ross Sea and account for the majority of the export to deep waters of both carbonate and organic carbon. Experimental evidence suggests even the shells of live pteropods dissolve rapidly once surface waters have become undersaturated with respect to aragonite. The waters of the Ross Sea are expected to become uninhabitable for pteropods within 100 years. Because these organisms perform the vital function of carbon sequestration and its deep-sea disposal, their extinction will have negative effects on the ocean's ability to absorb atmospheric C02. Pteropods also are a major food source for juvenile salmon and other species in the Arctic oceans. The decline of species in the Arctic will take longer than in the Antarctic, but they will still go missing.

The pronounced deleterious effect on the biological pump and the concurrent snowball effect caused by the loss of carbon transport in the polar and subpolar seas are likely to exacerbate problems extending 100 to 300 years from now. Connecting the dots: global warming to increased C02 ... to increased ocean acidification ... the consequences are truly life threatening for our planet — at least to life as we know it. If one accepts these profound changes to begin in the next 100 years, everyone on this planet needs to wake up to the threat that humanity poses if we continue on our current course. It behooves us to consider the impact these changes will have on the oceans — both in the ocean's declining ability to absorb C02 and the cascading effects of that failure as entire ecosystems begin to collapse arid cease to function as carbon sinks. This issue should not he relegated to the back burner for more scientific debate first, before taking direct and immediate action to change our habits. This is not just a debate about sea-level rise or the extinction of polar hears, this is a debate about life itself.

Bruce Steele, a commercial sea urchin diver since 1973, has dived the waters of southern and northern California, Oregon, Prince William Sound, Alaska, and Maine. He has also fished for salmon and albacore off the Pacific coast.

D.B. Pleschner, former contributing editor for Pacific Fishing magazine, has published a variety of articles on fisheries and marine issues in trade and general interest magazines. Currently she is executive director of the California Wetfish Producers Association.

THE GUMBO POT

File Gumbo D'Ecrevisse

Charles Friedman

20 lbs live crawfish
1 cup oil
1 cup flour
2 cups onion, chopped
1 cup celery, chopped
1/2 cup bell pepper, chopped
4 garlic cloves, minced
1 gallon warm water
salt and cayenne pepper to taste
1/2 cup green onion tops and parsley, chopped
2 t gumbo file

Scald and peel crawfish. Set tails and far aside separately. Make a roux with oil and flour. Mix chopped onions, celery, bell pepper and garlic into roux and cook over medium heat until onions are wilted. Add water and fat, stirring until roux comes to a boil. Boil slowly in an uncovered pot for 1 hour. Season to taste with cayenne and salt. Then add crawfish tails and cook 30 minutes. Add onion tops, parsley and two teaspoons of gumbo file when ready to serve. Serve in soup plates with cooked rice. Serves 6.

Reprinted from *A Louisiana Seafood Cookbook*, available for $6 from Louisiana Sea Grant. Make checks payable to Louisiana Sea Grant College Program, 105 Sea Grant Building, LSU, Baton Rouge, LA 70803.

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