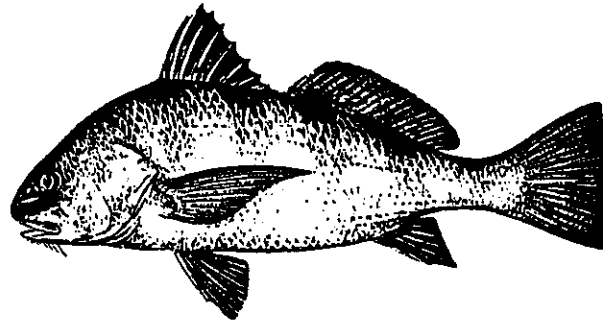




March 1, 1999
Volume 23, No. 3

SEA GRANT PROGRAM



LAGNIAPPE

LOUISIANA FINFISH STOCK ASSESSMENTS

Act 1316 of the 1995 Louisiana Legislature requires that the Louisiana Wildlife and Fisheries Commission shall deliver to the legislature each year, a peer-reviewed report on the biological condition of mullet, black drum, sheepshead, and flounder stocks.

The act further requires that if the spawning potential ratio (SPR) of any of these fish is below 30%, that the Department of Wildlife and Fisheries must close the season for that fish for one year. SPR is the ratio of the egg-producing ability of all the mature fish in a fished stock of fish as compared to the egg producing ability that would exist if the stock was unfished. SPRs are often used as targets for managing stocks of fish. Listed below are the 1998 assessment results:

Striped Mullet	31% - 61% SPR
Black Drum	42% - 67% SPR
Sheepshead	40% - 71% SPR
Flounder	27% - 52% SPR

The 1998 striped mullet assessment produced a slightly lower SPR range than previous years, not because the fishery is fished harder, but because only biological data from the eastern part of the state was used in this assessment. This is where the majority of the fishery is located.

Black drum, sheepshead and flounder assessments are based on the fishery through 1997. Major management changes were made in 1995, but not enough time has

passed to see what the biological impacts of the new regulations has been. For flounders, it is expected that the changes will move the minimum SPR above 30%.

DOORMATS

That's what big flounders are called. While Louisiana has many species of flounder, the fishery is centered around the southern flounder, *Paralichthyes lethostigma*. Concern over the biological health of the stock of this fish has led to both recreational and commercial harvest restrictions. Unfortunately, flounder are a poorly-researched fish in Louisiana.

One recent study done by Louisiana State University scientists does give more information on the biology of this popular fish. The researchers obtained 1259 southern flounders from recreational fishermen and commercial fish dealers. Each fish was weighed and measured, the spawning condition noted, and they were aged by counting the rings in their otoliths (ear bones).



The results were interesting. First, male and female flounders were quite different, biologically. Males only live to a maximum of 4 years old, compared to 8 years for females. In spite of the fact that males grew faster than females, the shorter life span of males meant that females grew much larger than males. The most frequently found size for females in the study was just under 16 inches long, compared to 11 inches for males. Females grew to a maximum size of over 30 inches (a real doormat) compared to under 17 inches for males.

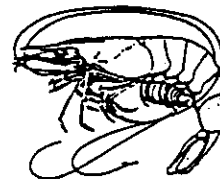
The research also indicated that males are much more likely to be found in offshore waters than females, except during spawning season when both sexes are present. Female flounders begin moving from bays and estuaries in the fall out to offshore waters, where spawning takes place in December and January.

Females were sampled during the spawning season. Nine of 11 one year old and 123 of 128 two year old females were mature, which indicates that 50% of the females may reach maturity before their first birthday. (It should be noted that the researcher cautioned that more research is needed in this area.) At 20 inches and 2½ pounds, all females are mature. During the two month spawning season, females were found to spawn every 3.6 to 6.4 days producing an average of 44,225 to 62,473 eggs per spawn.

Source: *The Life History of Southern Flounder Paralichthyes lethostigma in Louisiana Waters*. Andrew J. Fischer and Bruce A. Thompson. Louisiana Chapter of The American Fisheries Society, 20th Annual Meeting. 1999.

SHRIMP UPDATE

The near-final figures for the commercial shrimp industry in 1998 are becoming available and there was a lot more news than low prices per pound to the fishermen.



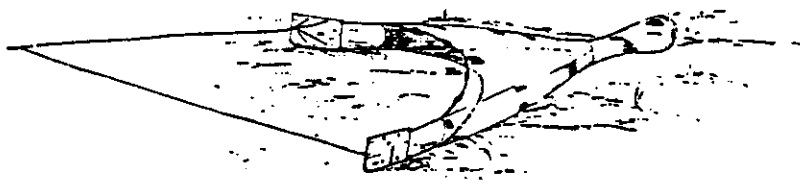
- U. S. Gulf of Mexico shrimp production in 1998 was 155 million pounds, compared to 128 million pounds in 1997, a 21% increase in supply.
- Louisiana shrimp landings were almost 71 million pounds, the highest landed since 1990.
- Shrimp imports (January-November) were 624 million pounds in 1998, compared to 559 million pounds in 1997, almost a 12% increase in supply.
- Of these 1998 imports, 238 million pounds were peeled shrimp, compared to 197 million pounds in 1997, a 21 % increase.
- Demand for shrimp in Japan, the world's other large shrimp importer, remained low, with their imports declining from 542 million pounds to 478 million pounds, a 12 % decline (January-November).
- Ecuador, the second leading supplier of shrimp to the U. S., has begun to learn how to control the taura shrimp virus on their farms, partially by harvesting shrimp earlier, at smaller sizes.

All of these factors play a role in determining shrimp prices. Shrimp are indeed a world commodity on a world market.

Source: *Shrimp Notes*. Shrimp World Incorporated. Volume 22, Number 2. February, 1999.

THE CHALLENGE

Louisiana's shrimp trawling industry, as well as all U. S. fisheries that use trawls and other gear that works near the seabottom, is likely to be challenged in the coming years by a strong international



coalition of environmental groups. The use of trawls (and other similar gear such as skimmers) has been blamed for bottom damage, overfishing, high bycatch, and destruction of biodiversity.

The challenge to the commercial shrimp industry is to use good research-based science to design a fishery that is both economically profitable for shrimpers, but acceptable to the public and the environmental community.

This issue bears many similarities to the TED sea turtle conflict, only larger, and involving more organizations on a national and international scale. I recently read a series of papers from a scientific workshop on mobile (moving) fishing gear held by the Marine Conservational Biology Institute at the University of Maine Darling Marine Center. Below are some quotations from the papers. Please note that these are not the views of the Louisiana Cooperative Extension Service. I present them here to give you some perspective on what is happening on the big picture.

- *Nearly two decades after the world began learning that tropical forests and their biological diversity are being devastated, it is difficult to imagine that another severe human disturbance of even greater extent could occur almost unnoticed by scientists, the media, and political leaders. But there is one: fishing on the seabed with towed gear such as trawls and dredges.*
- *Use of mobile fishing gear is on a par with agriculture as humankind's most important physical disturbance of the biosphere.*
- *Bottom trawling is one of the most disruptive and widespread human-induced physical disturbances to seabed communities and has become a global environmental concern.*
- *Bottom trawling and use of other mobile fishing gear have effects on the seabed that resemble forest clear cutting, a terrestrial disturbance recognized as a major threat to biological diversity and economic sustainability.*
- *Use of mobile fishing gear crushes, buries, and exposes marine animals and structures on and in the substratum, sharply reducing structural diversity.*
- *The frequency of trawling (in percentage of the continental shelf trawled per year) is orders of magnitude higher than other severe seabed disturbances, annually covering an area equivalent to perhaps half of the world's continental shelf, or 150 times the land area that is clearcut yearly.*
- *Mobile fishing gear can have large and long-lasting effects on benthic communities, including young stages of commercially important fishes, although some species*

benefit when structural complexity is reduced. These findings are crucial for implementation of "Essential Fish Habitat" provisions of the U. S. Magnuson-Stevens Fishery Conservation and Management Act which aim to protect nursery and feeding habitat for commercial fishes.

- *Using a precautionary approach to management, modifying fishing methods and creating refuges free of mobile fishing gear are ways to reduce effects on biological diversity and commercial fish habitat.*
- *Elsewhere, trawling kills seabed organisms by crushing them, by burying them under sediment, and by exposing infauna and under-rock cryptofauna to predators.*
- *Thus, mobile fishing gear reduces the structural complexity of bottom communities.*
- *Overall, we rate the severity of mobile fishing gear as high.*
- *Assuming that shrimpers constituted two-thirds of the world's trawlers, the number of trawlers of all kinds was 88,939 worldwide. Assuming that two-thirds of those were active and that they towed nets 25 m wide at 5 km/hour for 10 hours a day for 200 days per year, then the area they swept annually was 14.8 million km², or 53% of the world's continental shelf area.*
- *Resuspension of buried organic material by trawlers increases oxygen demand in the water column; in areas where dissolved oxygen is already limiting, this increase could significantly affect plankton and nekton species composition even contributing to the growth of anoxic areas such as "the dead zone" in the Gulf of Mexico.*
- *Now, with growing understanding that marine biodiversity is imperiled, we have shown that the sea is experiencing physical alteration from bottom trawling and other towed fishing gear on a scale that was not previously appreciated.*
- *With the possible exception of agriculture, we doubt that any other human activity physically disturbs the biosphere to this degree.*
- *The lack of scrutiny of bottom trawling until now is indicative of the mismatch between humankind's environmental impacts and priorities.*
- *At present, people trawl almost anywhere they want, and the sea's equivalents of ancient forests are becoming cattle pastures by default, not by design.*
- *To serve the public interest, meaningful input on managing the seabed has to involve people with interests broader than fisheries alone.*

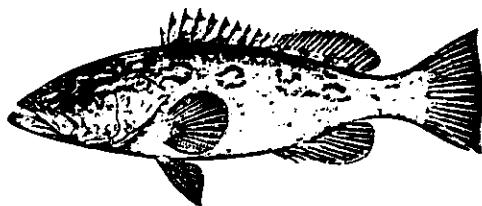
- *The recently reauthorized Magnuson-Stevens Fishery Conservation and Management Act (National Marine Fisheries Service 1997) contains provisions for the first time that require regional Fishery Management Councils to identify essential fish habitat (EFH), which is "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." This law requires the National Marine Fisheries Service and the Fishery Management Councils to identify "activities with known or potential adverse effects on EFH," and it allows them to impose fishing-gear restrictions or to close areas to fishing.*
- *The potential effects of trawling require serious examination and quantification to accurately determine the impact of such anthropogenic activity on the benthic ecosystems of continental margin environments.*
- *The amount of terrestrial protection achieved for biodiversity through designation of no-take public wilderness areas in the United States is much greater than no-take protection in the nation's National Marine Sanctuary System.*
- *A recent national poll has shown that public support does exist for conservation of the marine environment and protection of marine biodiversity.*
- *A comparison of protected-area coverage on land and sea in the United States shows that there is approximately 1500 times more designated protection for no-take wilderness on U. S. lands than for non-take protection in U. S. waters.*
- *A national poll conducted in 1996 for the Pew Charitable Trust's SeaWeb Program showed that 84% of the public believed ocean protection was part of society's responsibility to future generations.*
- *Unlike terrestrial wildlife, most commonly known marine species in New England are usually considered food. Most people rarely venture into the underwater marine environment, and they tend to see marine species only in the seafood case at the supermarket. Recognizing this inherent human detachment from marine life as an impediment to support for marine conservation, the National Audubon Society's Living Oceans Program has chosen to address the public's terrestrial wildlife bias as part of its program, adopting the motto that "fish are wildlife too."*
- *Industry utilization of previously unexploited species affects their associated marine communities in ways that would not be acceptable to the public or even legal in the terrestrial environment.*
- *People who would be outraged to find blue herons or raccoons in the meat section at the supermarket are willing to accept the hunting and marketing of previously unexploited species of marine life.*

- *The situation in New England suggests that support for establishing a marine reserve system in an area with a strong tradition of commercial marine resource exploitation is likely to require an attractive, popular presentation of the concept of marine wilderness. This concept would need to compete successfully with the nearly exclusive emphasis on commercial fishing that currently characterizes marine environmental politics in such regions.*
- *Designating parts of the territorial sea as a national marine wilderness preservation system would enable the protection of marine biodiversity to occur in its own right, rather than allocating the whole marine environment to the commercial fishing industry for use as a source of products.*
- *Effective protection of marine biodiversity may thus warrant its own legislative mandate, a National Marine Wilderness Preservation Act, much as the terrestrial Wilderness Protection Act in the United States created the National Wilderness Preservation System....*
- *New England's example suggests that, in this region and others like it, protection of marine biodiversity should be a separate, primary goal rather than a by-product of fisheries management.*

Source: *Conservation Biology*. Volume 12, No. 6. December, 1998.

MORE ON GAG GROUPERS

Last month's newsletter had several articles on grouper biology and management, focusing on the gag grouper. At issue are several proposals to reduce gag grouper harvest by increasing the minimum size from 20 to 24 inches, decreasing the daily recreational limit, and increasing charter boat and commercial harvest restrictions.



Gag are found in the south Atlantic as well as the Gulf of Mexico. In the south Atlantic, gag are also identified as a stressed species. Research done in South Carolina showed a decrease in the average size of gag landed from 38 inches in 1976 to 27 inches in 1993. Also, only 5.5% of the gag collected

along the southeast coast of the United States were male, compared to 19% in the early days of the fishery.

Harm can come to gag populations when fishermen focus on the largest fish, which are almost all males, and are more aggressive and often get to the bait before the smaller females. Taking the largest fish can remove those able to spawn and pass on their ability

to grow large and fast to future generations. This along with the fact that east coast gag will travel to form large spawning groups where they can be targeted by fishermen, may result in such a drastic reduction in male gag that there may not be enough of them left to fertilize the females' eggs.

On the southeast Atlantic coast, gag spawn from December to May with a peak in March and early April. After hatching, the tiny baby grouper are swept into bays and estuaries by tides and currents.

There they spend their first summer on oyster reefs, feeding on grass shrimp and other small creatures. After 4 months, the survivors have grown to 5 inches long and have switched to a fish diet, which is their preferred food for the rest of their lives. All of these fish are females.

With the cooler water temperatures in the fall, the small gag move from oyster reefs to deeper channels in preparation for migration to offshore reefs. By October, they are 12 inches long and are still all females.

After moving to offshore reefs, gag grouper stake out a territory that they seldom leave until old enough to spawn. Research shows that half of these fish are able to spawn by 24 inches long. This is the basis for the proposal to increase the minimum harvest size from 20 to 24 inches.

Normally, either alone or in small groups, gag in the southeast Atlantic will travel to form larger spawning groups. Spawning takes place on the full moons of February through April. Only after spawning do the largest female fish change sex to become males.

The Gulf of Mexico Fishery Management Council is expected to vote on harvest restrictions for gag this month. The proposals will then move to the National Marine Fisheries Service for approval before being put into effect.

Source: *Gag Grouper: A Roving Resource*. George Sedberry and Jack McGovern. South Carolina Wildlife, January-February, 1999.

LOOKIN' FOR A GRAVEYARD

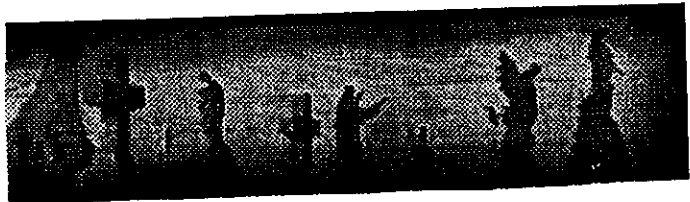
In 1998, the Jefferson Parish Marine Fisheries Advisory Board was approached about developing a solution to the problem of abandoned fishing vessels in bayous and other waterways. Apparently, a whole generation of wooden fishing vessels built 30-40 years ago is nearing the end of its life-span. Besides being an eyesore, some of these vessels present a safety hazard.

The Marine Advisory Board working with Peter Chocheles, newly appointed Port Manager for Jefferson Parish, and Rodney Adams, Louisiana Sea Grant Administrative Coordinator, explored several options. The first was forcing the owner to remove the vessel. Unfortunately, very few of the vessels still have identifying numbers on them. Of those that do, many of the owners are deceased or bankrupt. It was pointed out to the board that "you can't get blood out of a turnip."

A report submitted by Adams to the board examined other possibilities. It pointed out that the abandoned vessel problem is common to all coastal parishes in the state and that a state-funded removal program was needed. This was the approach in the state of Florida. This is very expensive, as the vessels would have to be moved to a removal point and lifted from the water. The problem then becomes what to do with the hulk.

Also explored was the possibility of concentrating oil and wood-eating microbes to attack and breakdown the material the vessels are made of. Unfortunately, abandoned vessels are widely scattered, rather than concentrated in one area where the salinities are right for the microbes.

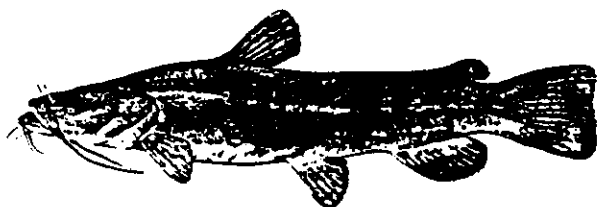
What seems to hold the most promise is the development of a "boat graveyard", as has been done by the Lafourche Parish Port Commission.



This effort was done with the cooperation of a landowner, Louisiana Land & Exploration Company (now Burlington Resources), and the area leaseholder, Texaco Corporation. Existing abandoned vessels were cleaned up, and since then vessel owners have moved derelict vessels to the graveyard for deposit.

Port Manager Chocheles is interested in the possibility of developing such a graveyard in Jefferson Parish. He especially is interested in hearing from landowners that have a dead-end canal or an eroded land area that they are interested in filling. Chocheles points out that such material may possibly prevent further erosion, much like the Christmas tree/marsh restoration projects have done. Donating the use of a site may also offer tax benefits, but this will have to be further explored. Chocheles may be reached in Metairie at (504) 833-1881, extension 344.

FLATHEADS



The flathead catfish or as it is more commonly known in Louisiana, the yellow catfish or goujon, is one of the largest predator fish in North American freshwaters. They are native to the Mississippi River and

the rivers that drain into it, and the Rio Grande River on the Texas-Mexico border.

The flathead is an unusual fish. It's a loner. Rarely are more than one or two adult fish found by one piece of cover because it is aggressive to its own kind. It stakes out a sunken stump or tree, preferably in a deep hole, and rarely moves far from it.

Very small flatheads eat insects, river shrimp, worms, and other small animals, but as soon as they get large enough, they begin to eat nothing but live fish. The flathead catfish is not a scavenger.

On a steady fish diet they grow rapidly, reaching 33 pounds before age 10, and 77 pounds by age 13. They have a life expectancy of about 20 years and commonly grow to over 100 pounds. Spawning begins at 3 to 5 years old at 16 to 30 inches long.

Its diet of live fish probably accounts for the excellent, delicate flavor of its flesh. Unlike other fish which taste better when smaller, flathead catfish taste just as good or better when larger.

Source: *Flathead Catfish: Biology, Fisheries and Management Orientations*. Donald C. Jackson. 1st International Ictalurid Symposium. 1998.

OYSTER LEASE DAMAGE EVALUATION BOARD

The Oyster Lease Damage Evaluation Board was formed by act of the Louisiana Legislature to work out conflicts by arbitration between mineral owners and oyster leaseholders. The goal is to produce fair solutions and treatment for the oil and gas industry while assuring the oyster fishermen actual compensation for damages to their oyster beds due to mineral activities.

The board is composed of 5 members, including one nominated member each from the Louisiana Oyster Growers and Dealers Association and the Louisiana Oyster Task Force, and two members nominated jointly by the Louisiana Independent Oil and Gas Association, the Louisiana Mid-Continent Oil and Gas Association, and the Louisiana Landowners Association. The fifth member is selected by the other four members and is a practicing administrative law judge. Administration of the board entails certifying biologists to conduct oyster lease surveys on leases pending arbitration. Compensation for damages to oyster leases will be determined by the board using uniform evaluation criteria based on the biological survey data both before and after project completion.

By law, the arbitration process may begin with a preliminary request for arbitration submitted by either the mineral owner or leaseholder, and in no case shall the process extend beyond 90 days once the mineral project is completed and a final request for arbitration has been received by the board. Submitting a case into arbitration does not

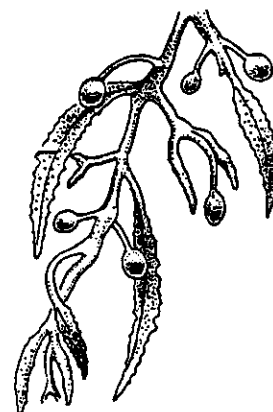
forfeit either party's right to seek a judicial resolution; however, the existence and purpose of the board is to expedite the claims process for the common benefit of both industries.

For more information about the Oyster Lease Damage Evaluation Board and the arbitration process, contact Mr. John Waitz, Department of Natural Resources Legal Division, P.O. Box 94396, Baton Rouge, La 70804-9396. (225) 342-2614.

NO TO SARGASSUM HARVEST

People that don't believe that the use of marine resources is tightening up should pay attention to a recent vote of the South Atlantic Fishery Management Council to shut down the harvest of sargassum seaweeds in the south Atlantic.

Sargassum are free-floating algal plants that accumulate in sometimes dense mats over a 2 million square mile area of the Atlantic Ocean. They are very common in the Caribbean and the Gulf of Mexico, where at times their abundance is high enough to foul turtle excluder devices (TEDs) in shrimp trawls.



Typically healthy sargassum is a bright golden brown color and floats near the surface of the water. When it is driven into low salinity waters nearshore, it often turns dark brown and sinks to near the waterbottom.

Currently one company from Beaufort, North Carolina is harvesting sargassum to produce fertilizer and supplements for animal diets. In spite of the company spokesman's testimony that his operation had very little impact on seaweed decline and bycatch of marine life, the council voted to phase out all harvest in two years.

Much of the decision to do so, was driven by the fact that sargassum was identified as "Essential Fish Habitat" in September, 1998. Essential Fish Habitat provisions put in place in the last reauthorization of the Magnuson (200-mile) Act will likely play an increasing important role in fisheries management.

SCIENTISTS AGAINST ALIENS

The introduction of non-native fisheries species has long been viewed by many fisheries scientists with some concern. In early February, President Clinton signed the Invasive Alien Species Executive Order. According to Louisiana State University fisheries scientist Don Baltz (who is also president of the Introduced Fish Section of the American Fisheries Society), the order is "a major breakthrough in solving a massive environmental problem."

The order launches a counterattack by federal and state agencies on biological invaders such as zebra mussels by creating a new Invasive Species Council, and directing the development of an Invasive Species Management Plan.

More than 500 fish have been introduced into U. S. waters that they are not native to. Of these, 317 are native to one part of the country, but have been introduced into other waters, and 85 are fishes introduced from foreign countries.

Many of these have become aquatic nuisance species causing major ecological and economic problems. These problems include competing for food and habitat with native fish, changing water and habitat quality, and reducing fishing opportunities.

According to Baltz "For many endangered fishes, mussels and crayfish, invading aliens are the major factor pushing them toward extinction. Invasive alien species have devastated aquatic habitats nationwide, from small ponds to the Great Lakes to San Francisco Bay."

The states with the most non-native species are California, Florida, Texas, and Colorado. The states with the least are Alaska, Vermont and Rhode Island. The most widely introduced foreign fishes are common carp (49 states), goldfish (49 states), brown trout (47 states), and grass carp (44 states).

HANG BOOK AVAILABLE

Bruce Ballard, director of the Louisiana Department of Natural Resources Underwater Obstruction Removal Program has announced the availability of a hang book listing the location of many underwater obstructions in Louisiana waters. Development of this book was one of the requirements of the removal program.

The book contains sites reported by shrimpers and sites that damage claims have been made on with the Fishermen's Gear Compensation Fund. The book can be requested by the following means.

Telephone: 225/342-6293
FAX: 225/342-5529
E-Mail: bruceb@dnr.state.la.us
Mail: Office of Conservation
Underwater Obstructions Removal Program
PO Box 94275
Baton Rouge, LA 70804-9275

The book is free. Also, all of this information including maps, reports of projects completed and new projects coming up can be found on the Internet at www.dnr.state.la.us/CONS/CONSERPI/OURP/index.html.

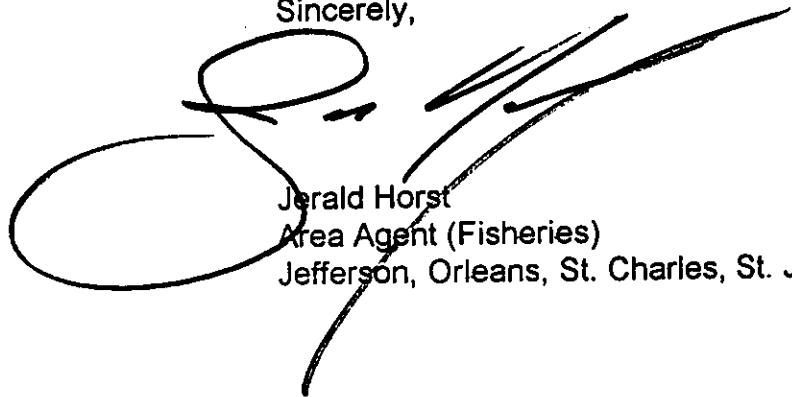
THE GUMBO POT Louisiana Blue Crab Cakes

Crab cakes are usually thought of as a Chesapeake Bay creation, but we can do them just as well here. If you like crabmeat, you'll like this dish.

4	stalks celery, chopped fine	½	tsp salt
6	green onions, chopped fine	1	cup dry bread crumbs
	cooking oil	1	cup beef broth
¼	tsp nutmeg	1	lb lump crabmeat
¼	tsp thyme	2	boiled eggs, chopped
¼	tsp hot sauce	1	tbsp cornstarch
⅛	tsp ground allspice		flour
¼	tsp black pepper		

Saute green onions and celery in 3 tbsp cooking oil over medium heat until tender. Add nutmeg, thyme, hot sauce, allspice, black pepper, and salt. Moisten bread crumbs with beef broth to the texture of a pie crust. Add to vegetables. Lower the heat and add crabmeat, chopped eggs, and corn starch. Stir well. Remove mixture from pot and make crab cakes about 2 inches thick. Coat each cake with flour and fry until browned and crisp. Drain and serve. Serves 4.

Sincerely,



Jerald Horst
Area Agent (Fisheries)
Jefferson, Orleans, St. Charles, St. John