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Natural Resources

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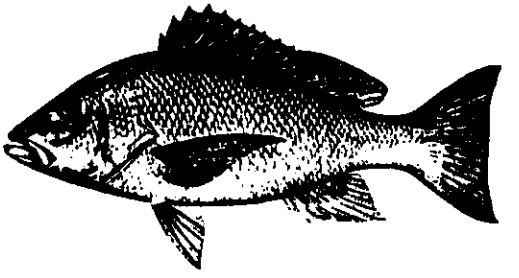
RECORD BOOKS AND TAX EXEMPT FORMS

Over the years many of you have used the LSU AgCenter's *Commercial Fisherman's and Trappers Record Books* to keep a record of your expenses and earnings. With the new year upon us, now is a good time to get your new record book. Also, available are sales tax exemption certificates for commercial fishermen. If you would like a record book or sales tax exemption application, call, write, or drop by your local marine extension agent's office.

RED SNAPPER REPRODUCTIVE BIOLOGY

Fishermen have become increasingly aware of the reproductive biology of fish because so many fishing regulations are, at least partly, based on it. Many fishermen know that the minimum recreational size on speckled trout is 12 inches because most female trout have not had a chance to spawn until they are that large. The maximum size on redfish is set at 27 inches because the fishery is based on catching young fish that haven't spawned yet, so we protect the mature spawners.

Knowledge about the reproductive biology of red snappers is important because a minimum spawning potential ratio (SPR) is used as the measuring stick for the biological health of red snapper stocks. Accurate estimation of SPR requires knowledge of the reproductive biology of the fish.



Scientists with the Panama City Laboratory of the National Marine Fisheries Service recently conducted detailed reproductive research on red snappers landed by fishermen (mostly charter boats) in Panama City, Florida. The researchers weighed, measured and removed the reproductive organs from 1,475 snappers over a 3 year period. Otoliths (ear bones) were also removed, which the biologists used to age the fish by counting the rings in them.

The analysis produced some interesting results. They found that red snapper spawn repeatedly from late May into early October, with a peak in June, July, and August. In fact, each female spawned from 21 to 35 times per year, at 4 to 6 day intervals.

They counted the ready-to-lay eggs from 66 females ranging in size from 14 to 33 inches long (1.3 to 20.0 pounds) that were 3 to 12 years old. From this, they calculated a range of eggs laid per spawn of 458 to 1,704,736. As one would expect, the larger and older the fish was, the more eggs it laid per spawn.

Using all of this information, they estimated that in the course of a year, female red snappers lay 11,613 to 59,665,760 eggs per fish, again depending on the size and age of the fish. Previous research indicated that red snapper spawn at night. This research pointed to spawning occurring in the early evening, at least off of northwest Florida.

More of this type of research is needed on older, larger fish which are not common off of the Florida coast but are common off Louisiana.

Source: *Spawning and Annual Fecundity of the Red Snapper (Lutjanus campechanus) from the Northeastern Gulf of Mexico.* L. A. Collins, A. G. Johnson and C. P. Keim. Biology, Fisheries and Culture of Tropical Groupers and Snappers. ICLARM Conference Proceedings. 1996

OYSTER PRICES & PUBLICITY

Seafood production is an important part of the economy of south Louisiana. Anything that affects the demand or supply for seafood affects harvesters, processors, marketers and ultimately all citizens, because reduced sales produce lower sales tax collections.

Louisiana is easily the biggest oyster producer in the United States. Between 1993 and 1997, average annual production of oysters from the Atlantic and Gulf was about 28 million pounds of shucked oyster meat. West Coast states produced another 9 million pounds of Pacific oysters, a different species. In 1997, Gulf states production was 21 million pounds, with Louisiana supplying 60% of that amount.

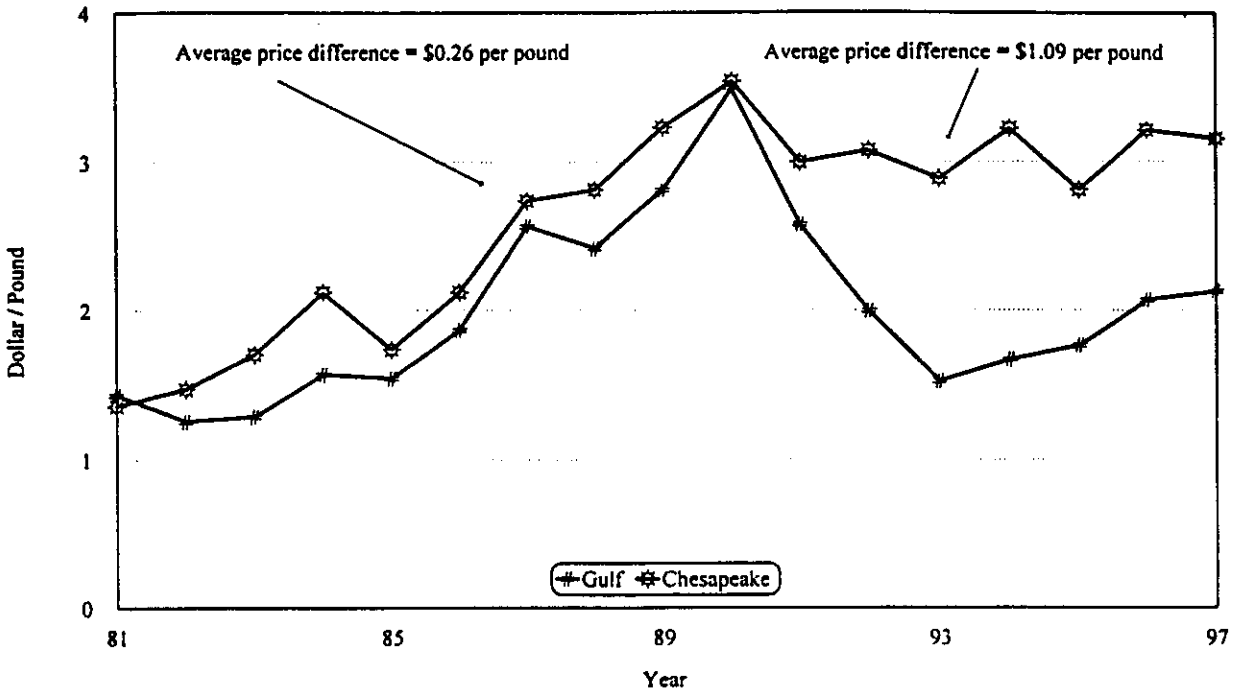
Oysters may be the most sensitive of all seafoods to reduced demand caused by negative publicity. Even though most oysters are eaten cooked, enough are consumed raw to draw public attention to any human health issue concerning oysters.

Most recent negative publicity has been about the presence of *Vibrio vulnificus*, a naturally occurring marine bacterium found in warm Gulf waters. While it is not a pollutant,

for a small percentage of the human population with liver disease, chronic illness or weakened immune systems it can cause serious illness or even death.

In response to the health threat and the publicity, the state of California put a rule in place requiring anyone selling Gulf region oysters to notify customers that the consumption of raw oysters can cause illness and death among people with liver disease, chronic illnesses, or weakened immune systems. The California action received a lot of attention from the news media throughout the U.S. This was followed by a national warning label requirement for Gulf oysters by the U.S. Food and Drug Administration.

In an attempt to determine if the negative publicity has hurt sales or prices for Gulf oysters, two LSU fisheries economists compared dockside prices received for Gulf oysters to those for Atlantic Coast oysters between 1981 and 1997.



The figure above shows that while before 1991, Atlantic Coast oysters have usually received a higher price than Gulf oysters, the two prices tended to "mirror" each other by going up and down together. The average price spread was $0.26 per pound of shucked meat. After 1991, things changed, with Atlantic and Gulf oyster prices moving independently of each other. The price spread also increased, to an average of $1.09 per pound.

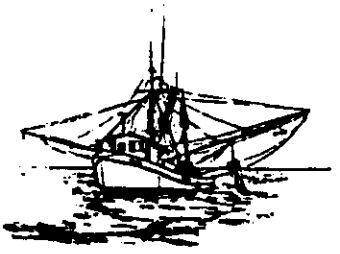
The researchers concluded that the price decline for Gulf oysters was not due to a change in available supply. Generally speaking, oyster prices decrease when harvest

supply is up and increase when supply is down. The volume of Gulf states oyster harvests averaged eight percent more before 1991 than after, so the lower prices after 1991 were not due to oversupply.

Their conclusion was that the impact of the negative publicity on prices was significant, especially in the summer months. In general, the summer season price was reduced by about 50% or to half of what they should have been. Winter season prices were reduced by about 30%.

Source: *The Demand for Gulf of Mexico Oysters in the Presence of Vibrio vulnificus*. Walter R. Keithly, Jr. and Hamady Diop. Coastal Fisheries Institute, Louisiana State University.

HANG FUND REVIEWED



In 1978, the United States Congress created the Fishermen's Contingency Fund, often called the "Federal Hang Fund." Its purpose was to pay commercial fishermen for damage to gear and vessels and also for lost earnings caused by debris from offshore oil and gas exploration and production. The justification was that since oil and gas production was the for the economic benefit of the entire country, commercial fishermen should receive some assistance due to its impacts on them. No private insurance program existed, and fishermen had little legal chance in court against large oil companies.

The federal program was followed in 1979 by creation of the Louisiana Gear Compensation Fund. This fund, also called the "State Hang Fund", is similar to the federal fund, but applies to state waters. While similar, there are differences. The federal program places no dollar limit on damage and loss claims, but provides that once a claim is paid on an obstruction, no other claims will be paid for a quarter of a mile in any direction from the site. The state fund, on the other hand, has no such rule, but limits commercial fishermen to $5000 per claim and two claims per year. The state fund also does not compensate fishermen for lost earnings due to down time. Both programs are funded by assessments on oil and gas leases and/or rights-of-way.

A June, 1999 U.S. Inspector General's report suggested that National Marine Fisheries Service (NMFS) should examine whether the federal Contingency Fund Program should be ended because of a declining number of claims. The fund had been paying out an average of $700,000 per year in the early 1990s. By the end of the 1990s, payments were in the $300,000 range annually.

In response, NMFS requested National Academy of Public Administration to review the program and recommend whether it should be ended. The academy produced a very positive report. "The Fishermen's Contingency Fund, as noted throughout the report, enjoys an excellent reputation for integrity, fairness, and responsiveness by the industries it serves. In an era when many government programs and institutions are often subjected to criticism and disdain, it is refreshing to find one that receives wide acclaim and respect. The Department of Commerce and NMFS deserve commendation for their success."

A key point in the report was that claims were declining not because of a lack of need for the program, but primarily because the fund doesn't allow claims within a quarter of a mile from a previous claim. Even though the obstructions are still present, less and less area is available for fishermen to make claims in.

The report states that "The most common complaint of the fishing industry about the operation of the Fishermen's Contingency Fund is that the oil industry de facto 'buys' ocean floor rights in perpetuity within a quarter mile radius of each claim." The report also notes that the number of commercial trawlers presently working in offshore waters is somewhat lower than it was when claims were higher.

The academy report concluded that the reasons for the creation of the Contingency Fund still exist today and that fishermen still have no other options. Therefore the academy recommended that the Fishermen's Contingency Fund should not be discontinued.

The report noted several times that the State of Louisiana has created an Underwater Obstructions Removal Program for state waters. Due to the success of this program, and the fact that obstructions in federal waters will be present but fishermen won't be able to claim damage from them, the academy recommended that the offshore oil and fishing industries along with government agencies should increasingly focus their future activities on removal of existing obstructions, and prevention of future obstructions.

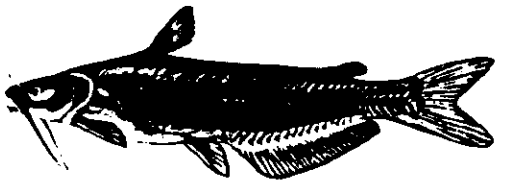
A complete copy of this report may be obtained by calling the LSU AgCenter at 504/349-8853.

Source: *Assessing the Need for the Fishermen's Contingency Fund.* National Academy of Public Administration. March, 2000.

CATFISH MOVEMENT

Channel and blue catfish are important commercial and recreational fish. At some times of the year they are very abundant and at other times they seem to disappear. Many fishermen refuse to believe that the fish are there and just can't be caught. They often state that the fish have "moved out". Catfish movement studies which have been

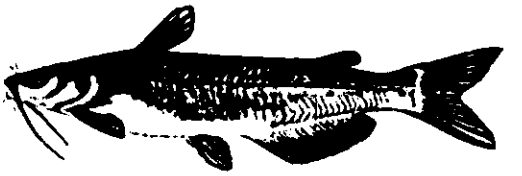
conducted in Missouri, Kentucky/Tennessee, and Mississippi may shed some light on the subject.



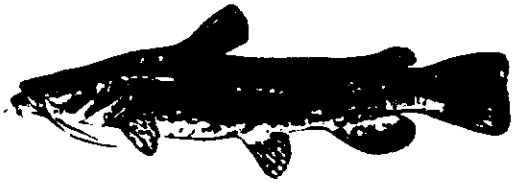
In the Missouri study, both blue and channel catfish in a small lake were tagged with radio transmitters and followed for one year. Channel catfish spread out over the whole lake in the spring, used shallow waters in one part of the lake in the summer, and moved to the middle of the lake in the fall and winter.

Blue catfish also spread out over the entire lake in the spring. They used the middle of the lake in the summer, moved to deeper areas in the fall, and spent the winter in the deepest waters of the lake near the dam. Overall, blue catfish used open water areas rather than shallower coves twice as much as channel cats. All seasons combined, both species were most active at sunset and sunrise and least active during mid-day.

The Kentucky/Tennessee study was done over an 8 year period on a large river-lake. Here catfish were tagged with plastic tags which fishermen returned to biologists when they caught the fish. Both blue and channel catfish were tagged.



Fish moved both up-river and down-river in just about equal numbers. During the 8 year study, the average distance moved by channel catfish was 14.6 miles, with a maximum distance of 47.4 miles. For blue catfish, the average distance traveled was 6.4 miles and the longest movement was 34.8 miles.



In the Mississippi study, 222 blue catfish, 187 channel catfish and 260 flathead (yellow) catfish were tagged and released back into the Mississippi River during a 2 year period. Three blue catfish were recaptured 363 to 635 days after tagging. The shortest movement was 3 miles and the longest was 7.2 miles.

Three channel catfish were captured 391 miles from where they were tagged after being free 242 to 662 days. Flathead catfish showed the least movement, with 17 of the 18 fish that were recaptured moving a half of a mile or less after 1 to 730 days after tagging. The other flathead was recaptured 3.6 miles from where it was tagged.

Sources: *Catfish Movements and Habitat Use in a Small Missouri Impoundment.* S.A. Fischer, S. Eder, E., D. Aragon. *Movement of Harvested Blue Catfish and Channel Catfish in Kentucky Lake, Kentucky-Tennessee.* T. J. Timmons. *Movement of Tagged Catfish in the Lower Mississippi River.* L. L. Pugh and H. L. Schramm, Jr. 1st International Ictalurid Symposium. 1988

NATIONAL ESTUARY ASSESSMENT

Estuaries, the areas where freshwater drainage from land mixes with the waters of the sea are the most fisheries productive of all marine and coastal waters. They are also fragile. Human population growth in the U.S. is greatest near its estuaries.

Water running off from these heavily settled drainages (watersheds) ends up, along with whatever it carries, in these productive estuaries. Many of the pollutants produced by man are not actually poisonous, but rather are chemicals that serve as fertilizers that can increase plant growth. Nitrogen and phosphorus are the two most important of such nutrients. While plants in estuaries need some nutrients to grow, a supply that is too large can be very negative. This over-enrichment of water with nutrients is called eutrophication.

Excess nutrients come from four main sources besides the ones produced by nature. Nitrogen and phosphorus can come from agriculture due to rainwater runoff from fertilized crop lands or from livestock operations. The same two nutrients enter estuaries as discharges from sewage treatment plants as well as runoff from city streets, yards and lawns. Some of this comes from pet waste, some from lawn and home garden fertilization, and some from other human activities. Finally, substantial amounts of nitrogen are produced by automobile and power plant emissions into the air. These, of course, end up being brought to earth by rainfall and other weather.

Three things happen when a body of water becomes eutrophied. Dense growths of algae may block sunlight and smother native water plants which serve as fish habitat. These heavy algae growths (blooms) eventually die off and sink to the bottom. There, as they decay, they deplete oxygen needed for fish life. Also, some forms of algae that do well in eutrophic waters are toxic. The toxins they produce can kill fish in the water or contaminate oysters and clams. Winds can blow these toxins from wave spray inland where they may cause breathing problems for humans. Eutrophication can affect commercial and recreational fishing, boating, swimming, and tourism.

Recently, a report was printed from a National Assessment Workshop and the National Estuarine Eutrophication Survey. The work covered 138 estuaries in the United States and was to produce an assessment of how eutrophied U.S. estuaries currently are or likely to become. Of the 138 estuaries assessed, 44 showed high signs of eutrophication and another 40 showed moderate levels. This is 65% of the total surface

area in all U.S. estuaries. Conditions are expected to worsen in 86 estuaries, stay the same in 44, and improve in only eight estuaries during the next 20 years.

Ten estuaries from Louisiana were included in the assessment. Also included was the Mississippi River plume, the offshore waters where the dead (hypoxic) zone occurs. The estuaries were grouped by their level of eutrophication.

High Eutrophication
Mississippi River Plume
Lake Pontchartrain
Calcasieu Lake

Moderate Eutrophication
Barataria Bay
Terrebonne/Timbalier Bays
Atchafalaya/Vermilion Bays
Sabine Lake

Low Eutrophication
Breton/Chandeleur Sounds
Mississippi River (Delta)
Mermentau Estuary

Unknown Condition
Lake Borgne

Most of the estuaries in the Gulf states are predicted to get worse in the next 20 years, six of them to a high degree. Two of these six are in Louisiana, Lake Ponchartrain and the Mississippi River plume. Nationally, only eight of the 138 estuaries assessed are expected to improve in the next 20 years. Two of those, Breton/Chandeleur Sounds and Mermentau estuary are in Louisiana.

The report states that eutrophication-causing nutrients must be managed over the entire watershed not just in an estuary. It also points out that there is not an overall national plan to deal with the problems of marine eutrophication, and that one is very much needed.

Source: *National Estuarine Eutrophication Assessment: Effects of Nutrient Enrichment in the Nation's Estuaries.* S.B. Bricker, C. G. Clement, D. E. Pirhalla, S.P. Orlando, and D.R.G. Farrow. National Ocean Service, National Ocreanic and Atmospheric Administration. 1999.

DO MARINE PROTECTED AREAS WORK?

One of the most controversial fisheries management approaches today is the establishment of marine reserves or marine protected areas. Environmental groups and increasing numbers of fisheries scientists are lining up in support of these areas. On the other hand, many fishermen are skeptical and some are openly opposed, saying that there is no proof that they work.

Unfortunately, there are very few true "no-take" fish sanctuaries or reserves in the U.S. to study. One area which comes close are the waters of Merritt Island National Wildlife Refuge in the Kennedy Space Center in Florida. These waters have been closed to public access since 1962.

Biologists conducted a four year study in these and in nearby waters that are open to fishing. They made 653 random trammel net sets. They identified, counted, weighed, measured, and aged the fish that they caught. The results showed some clear differences in the fish population between the areas. The table below shows the catch numbers for the most numerous species.

Species	Fished Areas	Unfished Areas
Yellowfin menhaden	3,145	631
Atlantic menhaden	305	7
Pinfish	1,849	929
Spot	1,010	313
Southern puffer	123	121
Hardhead catfish	1,824	3,074
Common snook	5	155
Jack crevalle	72	116
Sheepshead	20	75
Speckled trout	170	531
Black drum	6	262
Redfish	65	357
Striped mullet	2614	4,543
White mullet	59	98

It becomes immediately obvious that species that are more likely to be targeted with hook-and-line or nets are more common in the unfished areas. This was not due alone to more sampling in the unfished areas. The overall catch per net was 50% higher in the unfished areas. The catch per net set tells the real tale. For speckled trout the catch per net was 2.4 times higher in the unfished areas than the fished areas. For redfish it was 6.3 times higher, black drum was 12.8 times higher, snook was 5.3 times higher, and striped mullet was 2.6 times higher.

Speckled trout, redfish, black drum and mullet (but not snook) were also significantly larger in the unfished areas. Sixteen percent of the speckled trout and 27% of the redfish from the unfished area were considered large enough to be spawning size, as compared to 8% of the specks and 19% of the reds in the fished area.

Another part of the study involved tagging and releasing 12,949 fish caught in the unfished areas. Recaptures of tagged fish did show that some redfish, speckled trout, black drum, striped mullet, snook, and sheepshead moved off of the reserve and into fished areas. The researchers concluded that no-take reserves are effective at protecting harvestable species from depletion and providing fish to surrounding areas.

Source: *No-Take Fish Sanctuary Within The Kennedy Space Center, Florida.* Darlene R. Johnson, Nicholas A. Funicelli & James A. Bohnsack. North American Journal of Fisheries Management. Vol. 19, No. 2, May, 1999.

DEALING WITH F.D.A. INSPECTIONS

As anyone in the food business knows, dealing with a U.S. Food and Drug Administration plant inspection can be scary, even if one is confident that everything is right. In order to assist seafood processors with FDA inspections, the firm of Hyman, Phelps & McNamara, P.C. has prepared a 15-page educational manual called **HOW TO HANDLE AN FDA INSPECTION: What Your Company Needs to Know About Inspection of Seafood Processing Establishments by the U.S. Food and Drug Administration (FDA).**

The publication discusses in detail what to do before, during, and after an inspection. It was prepared at the request of the Sea Grant Program at Virginia Tech University with additional support from North Carolina State University, the University of Rhode Island and the National Fisheries Institute. The manual costs $2.00. Checks should be made out to "Treasurer, VA Tech." It may be ordered from Sea Grant, Food Science & Technology Bldg., Virginia Tech-0418, Blacksburg, VA 24061. 540/231-6805.

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THE GUMBO POT

Trout with Crabmeat Butter Sauce

I often hesitate to print recipes with a lot of ingredients or ones that demand tending several pans at one time. But I'm a sucker for a sauced fish fillet, especially one with crabmeat. This recipe provides plenty of crabmeat for topping the fillets, so be generous.

1 egg
½ cup milk
½ cup water
1½ lb trout fillets
½ cup oil
2 cups flour
salt and pepper to taste

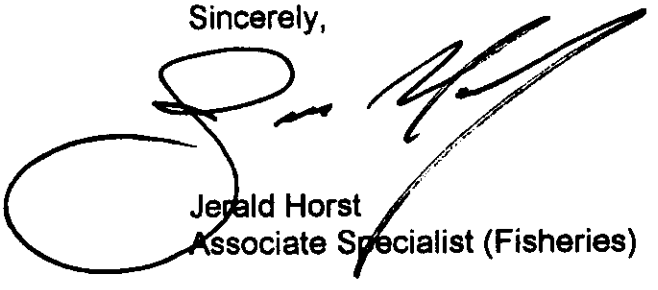
Beat the egg, milk, and water together while heating oil in a saute pan. Season flour with salt and pepper. When oil is warm, dip fillets in egg wash and then flour. Saute in hot oil until golden brown on each side. Remove and keep warm.

Sauce

¼ cup butter
¼ cup andouille, chopped
2 tsp garlic, minced
¼ cup green onion, chopped
¼ cup mushrooms, sliced
¼ cup white wine
¼ cup heavy cream
1 lb crabmeat
½ lb butter, chipped
salt and pepper to taste

Melt ¼ cup butter in 10-inch saucepan over medium high heat. Add andouille, garlic, green onions, and mushrooms and saute until vegetables are wilted. Deglaze with white wine and reduce to one half volume. Add cream, bring to a boil and reduce to one half volume. Add crabmeat and blend. Add chipped butter a little at a time as it melts. Add salt and pepper to taste. Top fish fillets with crabmeat and serve. Serves 4

Sincerely,



Jerald Horst
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