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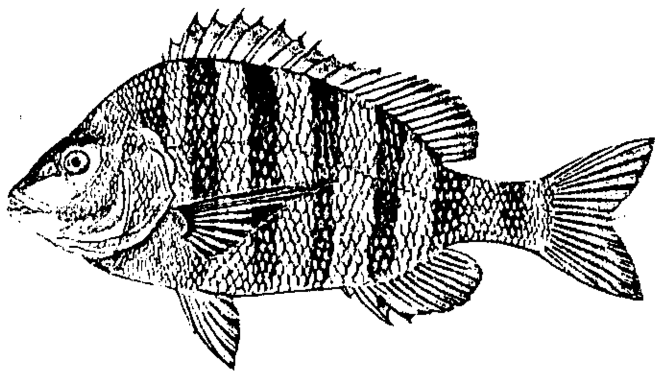
SEA GRANT PROGRAM



LAGNIAPPE

SHEEPSHEAD BIOLOGY

The sheepshead is a very common member of the Sparidae family also known as porgies. Most porgies are offshore fish, and often are found near and on reefs and other hard structure. Other members of the family found in Louisiana's offshore waters are the jolthead porgy, the knobbed porgy and the red porgy. Some of these are referred to by fishermen as "white snappers."

They are not, of course, snappers, but like snappers they have a delicious white flesh. The sheepshead is no exception, in spite of being caught in inshore or nearshore waters.

Even though the current world's record for sheepshead was caught in Louisiana, at 21 pounds 4 ounces, the fish has never been as popular with sportsfishermen as it deserves to be. In a survey of recreational fishermen published in 1990, only 4% of the catch by saltwater sports fishermen was sheepshead and fishermen only kept 60% of the ones they caught.

On the other hand, sheepshead have become quite important in the commercial fishery. Commercial landings remained moderately low until 1983 when they began to grow. In 1987, the year that redfish were declared gamefish, sheepshead landings made a big jump and landings have remained at over 3 million pounds since 1992. During the last year that the landings were separated by gear type, 1989, gill nets accounted for 58% and trawls for 40% of the production.

Department of Wildlife and Fisheries stock assessments this year estimate the spawning potential ratio (SPR) for sheepshead to be between 42-72%, well above the 30% conservation standard. SPR is the yardstick by which the health of a fish population is often measured. It is simply the ratio of the egg-producing ability of all the mature fish in a fished stock as compared to the egg-producing ability that would exist if the stock was unfished.

Sheepshead spawn in Louisiana between February and May. This occurs at about the time that they group into schools in waters outside the beaches. They spawn at about 2 years old and weigh from 1/2 to 1-3/4 pounds. The young fish make their way into marshland estuaries after hatching and seem to prefer hard bottoms like oyster reefs.

Sheepshead have been recorded as old as 20 years. Females grow more rapidly than males. At 20 years old, males average a little over 4 pounds and females about 5 1/2 pounds. Growth is rapid until 6 to 8 years of age after which growth slows dramatically, especially for males.

The most interesting thing about sheepshead biology is their food habits. In a nutshell, they eat everything. A study in Texas showed them eating mostly plants and algae and a few crabs. In the Florida Everglades, fish over 3 inches long ate mostly mollusks (mussels, clams, etc.) and barnacles. In Mississippi, researchers found that fish 6 to 14 inches long ate mollusks and plants. Larger sheepshead ate mollusks, crustaceans (crabs, etc), bottom worms and quite a bit of fish, mostly anchovies. They did note that when sea grasses or algae were plentiful that sheepshead will occasionally feed heavily on them.

A Lake Ponchartrain, Louisiana study showed that by volume, 54% of their diet was plants, 19% mussels, 10% sponges, 8% clams, 3% croakers and other fish, and almost 2 % mud crabs. Barnacles and blue crabs made up less than 1% each of their diet.

Source: A Biological and Fisheries Profile of Sheepshead, *Archosargus probatocephalus* in Louisiana (Draft). Mark Schexnayder, Jeff Render, Randall Pausina and Brian McManus. Louisiana Department of Wildlife and Fisheries. Fisheries Management Plan Series. No.7, Part 1. 1996.

LOUISIANA SHRIMPER STUDY

Shrimp is Louisiana's most valuable commercial fishery. In a recently released study, an LSU researcher surveyed several hundred shrimpers in order to get a picture of who is shrimping and what their current situation is. The surveys were conducted with detailed telephone interviews lasting up to 45 minutes. The survey was carefully designed so that the percentage of shrimpers interviewed by parish was the same as percentage of licenses sold by parish. All boat sizes were surveyed: 27.5% were small boat (35-49 ft) shrimpers, 36.5% were medium boat (50-59 ft) shrimpers, and 36% were large boat (60-98 ft) shrimpers.

The average age of shrimpers was almost 47 years. There was very little difference based on boat size. Slightly less than 43% had a high school diploma. This is much less than the average of 68% for adults in Louisiana. Interestly though, almost 11% had some college. Large boat shrimpers were most likely to have attended college. Almost 70% of the shrimpers considered themselves as Cajun French. Vietnamese fishermen were underrepresented in the sample at less than 5% and all of them except one were large boat fishermen. Almost 3% were American Indian and less than 1% were Black.

At 91%, shrimpers were much more likely to be married than the average American (55%). Nearly all (95%) of them captained their own vessels. About 25% owed money on their vessels. The larger the boat, the more likely they were to have a mortgage. The largest percentage of boats in each category were built between 1980-1989, although over 23% were built before 1960. The average captain had over 21 years of experience, although 27% had more than 35 years of experience. Only 3 to 4 % of the captains entered shrimping in the last 5 years.

Although shrimping is the main source of income for the surveyed people, many of them, especially on small boats had other sources of income. With small boat shrimpers, 45% earned more than half of their income from other sources. The medium boat response was 16% and for large boats was over 23%. It is important to note, however, that a large percentage of these earnings for each group came from other types of commercial fishing. Very few shrimpers held oil-field related jobs.

An important part of the survey is what shrimp fishermen would do if they could no longer harvest shrimp. Nearly 55% said they would not seek employment or didn't know what they would do. For the rest of the shrimpers, the most frequently mentioned types of work they would look for were other types of commercial fishing or marine vessel operation. Only 49% of the shrimpers felt that they could find other work near the area they live in. When asked if they had plans to leave shrimp fishing, 17% of small boat, 17% of the medium boat, and 20% of the large boat shrimpers said yes. The most frequent of the reasons stated for leaving was that they couldn't make enough money.

Over 74% of the shrimpers surveyed were satisfied with shrimping as a way of life and a job. Larger boat captains showed slightly more satisfaction than small boat captains. Overall, almost 70% said they would choose shrimping as a job if they had to do it all over again, but only 23% would recommend shrimping to their children. This shows that most shrimpers have a very gloomy outlook about the future of shrimp fishing.

The level of stress in shrimping is quite high. Over 63% of the large boat shrimpers reported job stress, part or lot of the time. The figures were lower for medium boat and small boat shrimpers at about 49%. A very high percentage of shrimpers (94%) were satisfied with the communities they live in and 89% said they would be displeased if they had to move to another community more than 100 miles away, even if it was similar to the one they now live in.

Financial stress also existed. Overall, 47% of the shrimpers felt overburdened by their debts. This was highest with large boat shrimpers at 52%. When asked if they did not have enough money to meet their needs a lot or some of the time, 69% of the small boat shrimpers, 60% of the medium boat shrimpers and 55% of the large boat shrimpers said they didn't.

When asked if they trusted local government to do what is right, only 10% of the shrimpers said "just about always" and 29% said "almost never". Large boat operators showed more trust in government than small and medium boat operators.

Finally, when asked what their major problems were, the number one answer was too many government regulations; small boats 46%, medium boats 60%, and large boats 68%. The most commonly mentioned regulation was the requirement for the use of TEDs.

The second most common answer was that there were too few or not good enough regulations; small boats 19%, medium and large boats 13%. Examples of responses in this category were too little regulation of skimmers and night fishing, and not enough regulations for offshore shrimping.

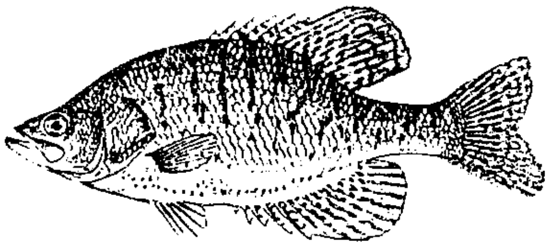
Slightly over 10% said too many boats was a problem, 8% said costs and markets were a problem, and 7% said that environmental conditions were a problem. Small boat shrimpers felt that the environment was a problem at a higher rate (13%) than medium boat shrimpers (8%) and large boat shrimpers (2%).

The researchers concluded that shrimpers have strong attachment both to shrimping and to their community. They also suggest that other job opportunities are severely limited for a large number of shrimpers and that what the future holds for the Louisiana shrimp fishery is uncertain.

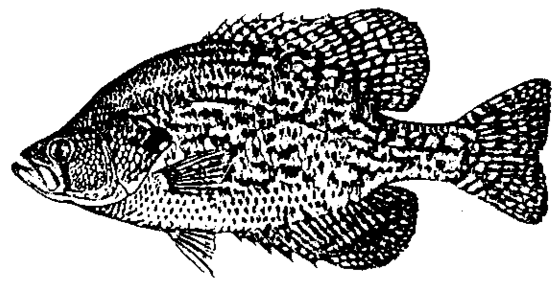
Source: Louisiana Shrimp Fishermen and Local Economies: A Survey, by Forrest A. Deseran. Department of Sociology and Rural Sociology, LSU. 1997

LOUISIANA SAC-AU-LAIT

Recently, the Louisiana Wildlife and Fisheries Commission passed a rule creating a 10-inch minimum size for crappie in Toledo Bend Reservoir. This is the first-ever size limit placed on this popular freshwater gamefish in Louisiana and it raises the question of why minimum sizes are not placed on the fish statewide.



White Crappie



Black Crappie

Crappie, also known as sac-au-lait in south Louisiana and white perch in north Louisiana, is not one species of fish but two, the white crappie and the black crappie. White crappie have a longer "nose" than black crappie and **usually** have 6 spines in the dorsal (back) fin as compared to 7 or more for black crappie. Although their color is quite variable, depending on the water they came from, the black specks on the side of the white crappie are more arranged in vertical bars than on the black crappie, where they tend to be scattered at random.

According to Gary Tilyou, Biologist Program Manager for the Inland Fisheries Division of the Department of Wildlife and Fisheries, the minimum size was placed on crappie in Toledo Bend more to keep regulations uniform with Texas than for any other reason. According to Tilyou, most states that use a minimum size for crappie management, do so in an attempt to even out the large cyclic "swings" in crappie populations.

The theory explaining these population cycles is that under the right conditions, crappie will have a very successful spawn. This produces what is known as a dominant year class. Usually, spawns in the years following this one are not as successful, probably due to competition, crowding and poor reproduction. As the dominant year class gets older, fishing and natural mortality take their toll, until uncrowded conditions favor the production of another dominant year class. This seems to work on about a four year cycle.

The crappie cycle is more pronounced in small lakes and ponds as compared to larger reservoirs. It is also more noticeable in lakes and reservoirs than in rivers and back- swamp overflow waters. The flooding effects of rivers into these areas produces, for reasons not clearly understood, more stable and quite a bit larger populations of crappies.

So far, the attempts of some states to use minimum sizes to even out this cycle has produced mixed results, with some successes and some failures.

A minimum size may also help increase the yield from the fishery. Increasing the size at harvest from 8 inches to 10 inches will almost double in one year the weight of the individual fish harvested.

Tilyou stated that the Department of Wildlife and Fisheries is undertaking a more intensive crappie sampling program in the state's reservoirs. Until recently, the demand from freshwater fishermen has been for largemouth bass management. In the 1991 survey of recreational anglers in Louisiana, 51% of the fishermen listed bass as their first choice target when fishing. Crappie came in at 19%, bluegill at 11%, and catfish at 8%.

MARSH RESTORATION OPTIONS

Restoring Louisiana's coastal marshes, if possible, will require one of the world's largest efforts in creation and maintenance of habitat. Doing nothing will mean more wetland loss. On the other hand, there is limited scientific technical and management experience by which to judge the possible effectiveness of proposed marsh restoration strategies.

A panel of 9 experts was convened from across the US in 1993 to discuss this subject. The panel listened to 32 expert witnesses and produced a list of 18 possible restoration strategies. They are listed below, starting with the simplest and moving to the largest and most difficult.

1) Planting vegetation to offset shoreline erosion along lakes, channels, or barrier islands. Only localized restoration can be carried out with this option.
2) Fences or barriers made of biodegradable materials such as Christmas trees can reduce wave impact and trap sediment. The effects are quite localized.
3) Weirs (fixed and adjustable) as well as rock lips or sills can control water levels to promote the growth of certain vegetation, reduce tidal currents or reduce saltwater intrusion. They may also affect sediment movement.
4) Building small levees or ridges in open water to make the areas smaller which reduces the height of wind-created waves. This allows fine sediment to settle out in these areas.
5) Impoundment (damming off) of marshes with levees and water control structures such as weirs or flap gates. These may be done to reduce erosion or saltwater intrusion or to grow more desirable food to attract ducks and geese. Impoundments are often called "marsh-management projects."

6) Plugging man-made canals that have taken over natural water flow or breaking or leveling spoil banks that interfere with natural overbank water flows. These efforts can be very local or moderately large.
7) Beneficial use can be made of dredge material from maintenance dredging of navigation channels to restore or rebuild eroded marshes. These are usually local in effect but can be moderate under some conditions.
8) Shorelines can be strengthened at rapidly eroding or certain important points by using rock riprap or dredged material. Vegetation planting can be used along with this process to make it more effective.
9) Control of marsh-grass eating animals such as nutria. This can have significant impacts, but can be a hard program to keep up.
10) Abandoned pipelines may be used to carry water and sediment from the Mississippi and Atchafalaya Rivers to eroded areas. This approach may offer promise, but is not yet a proven option.
11) Siphons made up of groups of pipes, may be used to siphon water with its sediments from the Mississippi River across levees into nearby areas.
12) Gated control structures can be used to divert river water through levees during high river stages into eroded areas.
13) Large channels can be dug to create artificial crevasses from the river into the wetlands. These could have major restoration effects.
14) New navigation channels may be dredged to replace navigation channels that are negative to wetland development, such as the one for merchant shipping at the current Mississippi Delta.
15) Building or strengthing of "land bridges" such as levees along the Intracoastal Waterway and some bayous may create a line of defense against more tidal water intrusion. They may also serve to guide or hold fresh water and sediments from diversions.
16) Using old channels, such as Bayou Lafourche to carry water and sediments into degraded areas that are far away from the Mississippi River.
17) Shifting water flow from the Mississippi to the Atchafalaya River to build more delta land in Atchafalaya Bay.
18) Restoring and maintaining eroded barrier islands could influence the large areas of bays and marshes behind them.

The experts that appeared in front of the panel stressed that the breakdown of old river deltas is normal and expected, but that human-related factors have increased their losses.

No panel witnesses expected that restoration efforts could return Louisiana to its pre-1930's coastline. Some witnesses felt that even an aggressive program of protection and restoration may be able at best to slow overall wetland losses, while maintaining the stability of wetlands above a certain "hold-fast line."

The panel gathered that only major sediment diversion projects such as increasing flow down the Atchafalaya River or possible major diversions along the Mississippi River may lead to larger wetland areas.

Source: Scientific Assessment of Coastal Wetland Loss, Restoration and Management in Louisiana by Donald Boesch and others. In Journal of Coastal Research, Special Issue 20. 1994

LIVEWELL BIOLOGY

Increasing numbers of recreational fishermen, whether they fish in tournaments or not, practice some live release of fish, especially largemouth bass. Live release of fish is only useful if the released fish survives to become an effective predator in the ecosystem again. Often fish held in boat livewells look OK during culling or at weigh-in, but are stressed and die a week or later after release.

Research on live release tournaments held throughout a year on Florida lakes has shown that 74% of bass on average, survived after release. When surface water is cool, boats have well-designed and properly-used livewells, tournaments are well-organized, and fishermen are penalized for dead fish, that more than 90% of the bass survive. If the above conditions are not the case, almost half the fish will die.

The livewell management principles outlined here are for bass but may be applied to any fish. The key factors are water temperature, dissolved oxygen, ammonia, and salt use.

Water temperature - Except when near freezing, cold water temperatures are not stressful to bass, but high temperatures or sudden changes are. The highest water temperature that allows long-term survival of bass is 98 F degrees. On a very hot sunny day, surface water temperatures can rise to near this level, so pumping lake water into the livewell will do little to lower temperatures. Instead, ice blocks (<u>not</u> crushed or cubed ice) can be added. A half-gallon block will lower the temperature of 10 gallons of water about 8 F degrees. When fishing in water 80-90 F degrees keep livewell temperatures about 5 degrees cooler than lake water. When lake water is warmer than 90 F degrees, keep livewell water at 86 degrees. On a hot summer day, 8 to 10 half-gallon blocks may be needed for the whole day. Ice can be made at home in half-gallon plastic jugs.

Temperature shock can also occur when fish are taken from cooler water and plunged into a hot livewell, or fish can be taken from a livewell of hot water and released into cooler water. Based on research, a sudden increase of 5 F degrees is stressful and 8 F degrees can cause death. Sudden decreases are also bad, so only cool livewell waters enough to reach desired temperature, oxygen, and ammonia conditions.

Dissolved oxygen - The maximum amount of oxygen that water can hold decreases as water temperature rises. At the same time, because fish are cold-blooded, as water temperature rises so does the need for oxygen by the fish. At 86 F degrees, bass use twice as much oxygen as at 68 F. Oxygen should be kept above 5 ppm (parts per million). Even at cool temperatures, it takes 15 to 20 minutes of aeration of the livewell to reach 80-90% of maximum levels of oxygen the water can carry. Water cannot be over- aerated. In fact, continuous operation is needed with only 7 pounds of bass in an 15 gallon livewell if the water is 86 F degrees.

Ammonia - Ammonia is a waste product of fish, given off through a fish's gills. Their production of ammonia increases as temperature rises. In acid waters, ammonia almost never is a problem, but in alkaline waters ammonia levels can rise to stressful levels in several hours. As a rule of thumb, for a livewell for containing one-half pound of fish per gallon of water, remove about 10 gallons of water and refill with fresh water every two hours when the water is below 80 F degrees and every hour if above 80 F degrees. Remember when changing water, that you may need to add ice.

Salt - Adding a bit of salt to the water in the livewell is a trick that greatly reduces stress. Sea salt, rock salt or uniodized table salt will all work. Dose rates are 0.5% which works out to 1 cup of salt per 15 gallons of water. Dosing is easier if you put marks on the inside wall of the livewell for each 5 gallons of water capacity. Several brands of commercial water additives do exist. However US Food and Drug Administration guidelines prohibit the treatment of fish for human consumption with some of the chemicals in these additives. Therefore some experts do not recommend the use of the additives.

Source: Live Release of Bass, A Guide for Anglers and Tournament Organizers. H. L. Schramm Jr. and R. C. Heidinger. Bass Research Foundation.

HIGH-TECH FISH FARMING

In recent years, many experts have stated that the development of saltwater fish farming (mariculture) will be necessary to supply the growing demand for seafood products. A 1995 report by the Food and Agriculture Organization of the United Nations stated that fish farming production in the world will have to double just to supply the same amount of seafood per person as the earth's population grows.

Mariculture will not take the place of wild fisheries production any time in the near figure. Mariculture is expensive. The only costs for wild fish production are healthy ecosystems and good management. Many fish have complex life histories making them difficult to farm and for others the cost of farm production is too high to be profitable.

Mariculture opportunities do exist, however so do some tremendous roadblocks. Mariculture on land is often limited by scarce coastal land and access to good seawater supplies. Mariculture in floating cages may be one solution. Because of the frequency of storms at sea, most of these cage-culture systems have been put in shallow protected bays and estuaries.

Environmentalists warn that this practice may seriously damage ecosystems. Fish wastes and unused feeds can build up on the water bottom, causing oxygen shortages and endangering wild fisheries and plant life. They may also wash to shore, polluting beach fronts and harming tourism. There is also fear that the dense concentrations of fish in a mariculture system can promote the spread of fish diseases and parasites into wild fish and that the medications used to prevent these problems will affect natural ecosystems.

In the Gulf of Mexico, offshore mariculture with use of abandoned oil and gas platforms has often been discussed. However the legal considerations of using these platforms and the high cost of their maintenance have prevented their development. Also, the operations would still be endangered by the area's frequent hurricanes.

A group of investors in Israel has recently developed a method of offshore mariculture which may solve many of these problems. The system consists of floating net cages anchored to the sea floor and controlled by a sinking buoy.

When a storm approaches, the entire system is lowered to 165 feet below the sea's surface, but still 80 feet above the bottom. When the storm passes, the cages are raised to the surface again. The system is managed by a four-man crew that lives on a trawler that has been converted to a work station.

The Israeli investors raised $2 million to develop and test the technology over a three year period. After three stormy winters in the Mediterranean Sea, not a cage was lost or damaged. Less than one percent of their fish died, as compared to 17-25% losses in other mariculture systems. Their cost of production is about $2.50 per pound. While this is still not cheap, it is about the same as production costs in protected inshore waters and less than production costs for other offshore mariculture systems.

In the open sea, the enormous volume of water, strong currents and high oxygen levels lessen the impacts of the wastes from the operation.

Source: Israel Agritechnology Focus. January, 1997.

TEXAS FISH TAGGING STUDY

Between 1975 and 1993, the Texas Parks and Wildlife and Department tagged and released 107,717 saltwater fish. Most of the fish were caught with gill nets, trammel nets, and rods and reels. Fish were tagged in 8 major saltwater lakes and bays, 3 rivers and the Gulf of Mexico. The study focused on redfish, speckled trout, black drum, sheepshead, southern flounder and striped bass. The results are presented below by species.

Redfish

Redfish had the highest rate of tag returns from fishermen, with almost 12% of all tags being returned. Most (86%) redfish were caught in the same bay in which they were tagged, 5% were recaptured in other bays, and 4% of bay tagged fish were recaptured in the gulf. Only a small number of redfish tagged in the gulf were recaptured in bays.

Over 82% of the tagged redfish were recaptured within 12 miles of where they were tagged and the average distance traveled was 7 miles. The longest that any one redfish traveled was 283 miles, from Galveston Bay, Texas to Grand Isle, Louisiana. Another redfish tagged in Galveston Bay was recaptured 36 miles southeast of Calcasieu pass, 147 miles from the bay. The longest that a redfish was free before being recaptured was over 11 years. The fish grew almost 18 inches in this time.

Speckled Trout

Speckled trout did not have as high of a recapture rate as redfish, with only 6.5% of the tags being returned. Similar to redfish, 84% of the speckled trout were caught in the same bay system, 8% were recovered in another bay system, and 5% of the fish tagged in bays were recaptured in the gulf. Only 2 fish tagged in the gulf were recovered in bays and 8 gulf-tagged specks were recovered in the gulf.

Almost 73% of the speckled trout were recaptured within 12 miles of release and the average distance traveled was less than 10 miles. The longest distance traveled was 64 miles. The longest that a speckled trout was free between tagging and recapture was 5 years, 3 months. This fish was recaptured in the same bay it was tagged in, 22 miles from its release site. Four fish were free between 4 and 5 years. Three of them were recaptured in the same bay and none were more than 16 miles from where they were tagged and released.

Black Drum

Fewer tagged black drum were recaptured, with less than 4% of the tagged fish being returned. Of those recaptured, 78% were caught in the same bay where they were tagged, 2% were recaptured in different bays and 3% were tagged in bays and recaptured in the gulf. One black drum was tagged in the gulf and recaptured in a bay. Seven black drum were recaptured in the gulf that were originally tagged in the gulf. Two black drum were recaptured in Mexican waters.

Most were recovered within 12 miles of where they were tagged, although 4 drum traveled over 180 miles, with one traveling 198 miles. The longest that a black drum was free after tagging was 11-1/2 years. Most (80%) were recaptured within a year of being tagged.

Sheepshead

Sheepshead migrated more than any other species of fish tagged. Only 62% of the fish tagged were caught in the same bay as their release; 18% were caught in another bay, and 19% were recaptured in the gulf.

The average distance traveled by tagged sheepshead was almost 17 miles and the longest distance traveled was 189 miles. Only three sheepshead were free over 2 years after tagging and none were free over 3 years.

Southern Flounder

Most flounder (82%) were recaptured in the same bay system as they were tagged in, 10% were recaptured in another bay system and 2% were recaptured in the gulf. One flounder released in the gulf was recaptured in the gulf.

Southern flounder traveled an average distance of 8-1/2 miles from their release site. The longest distance moved was 109 miles. One flounder traveled 100 miles from Galveston Bay to Big Lake near Hackberry, Louisiana.

Striped Bass

Unlike the other fish tagged which were wild fish, 85% of the striped bass tagged and released were produced in hatcheries. The recapture rate was less than 1%, which is very low. All stripers were recaptured in the same bay system as their release. The longest any striped bass was free was slightly over 3 years.

Source: A Summary of Fish Tagging on the Texas Coast: November 1975 - December 1993. B. G. Bowling. Management Data Series, No. 126. Texas Parks and Wildlife Department. 1996

DON'T MESS WITH PORPOISES

The National Marine Fisheries Service (NMFS) has announced a policy of enforcement of rules against feeding or harassing porpoises. Even swimming with porpoises is considered harassment. Porpoises, or dolphins as they are also known, are marine mammals, and as such protected by the U. S. Marine Mammals Act. Feeding porpoises has been against the law since 1991. This prohibition was upheld by the Fifth Circuit for the United States Court of Appeals, in 1993.

NMFS has established guidelines on porpoise-human interaction. These guidelines recommend that boaters stay at least 50 yards away from porpoises. In 1998, NMFS will commit $600,000 to fund six enforcement officers who will concentrate on protected species issues including porpoise feeding and harassment.

Feeding these wild animals changes their behavior. Instead of hunting for live fish, they become beggars looking for food handouts from boaters. When the food fed to them is not natural or is contaminated, it can be a serious health risk or even cause death to the animals. They can also be injured by boat propellers.

Violation of this regulation carries civil and criminal penalties with fines up to $20,000.

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THE GUMBO POT
Shrimp and Eggplant Casserole

This recipe is good with either shrimp or rock shrimp if you are lucky enough to find them. I hope that you enjoy it as much as I did.

1-1/2	lb peeled and deveined shrimp tails	1	16-oz can tomatoes
1/2	cup chopped onion	2	bay leaves
1/2	cup chopped parsley	1	tsp salt
1/4	cup chopped green pepper	1/2	tsp pepper
2	cloves chopped garlic	1/2	tsp thyme
1/3	cup oil	2/3	cup water
1-1/2	medium eggplants	3	tbsp melted butter
		3/4	cup bread crumbs

Boil shrimp tails if uncooked. Saute onion, parsley, green onion and garlic in oil until tender, but not brown. Peel and chop eggplants. Drain tomatoes. Add eggplant and tomatoes, seasonings and water to mixture. Cover and simmer until eggplant is tender. Stir in shrimp. Place mixture in casserole dish. Combine butter and bread crumbs. Sprinkle evenly on top of mixture. Bake in oven at 400 degrees for 35 to 40 minutes, uncovered. Serves 6,

Sincerely,

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