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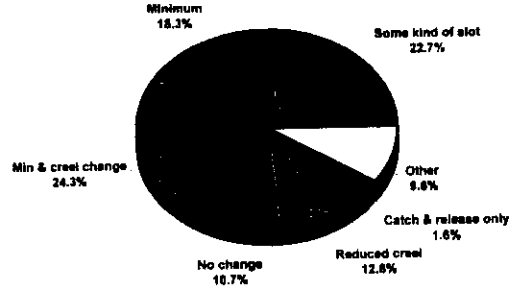
BASS MANAGEMENT AT CAERNARVON

Since the opening of the Caernarvon Freshwater Diversion near the St. Bernard/Plaquemines Parish line, the fishery for largemouth bass in the area near the diversion outfall has boomed. Both numbers of fish and average size increased dramatically, until tailing off in the last few years. The quality of the fishery has attracted large numbers of fishermen. The increased numbers of fishermen, combined with poorer catches in recent years, has led many bass anglers to believe that the fishery of the area was receiving too much harvest pressure and that some sort of restrictive management was needed.

Basic largemouth bass regulations in Louisiana are a 10 fish creel limit with no minimum size. The Louisiana Department of Wildlife and Fisheries has created special regulations for 7 "quality" lakes/reservoirs. These lakes in have a 14-17 inch slot limit and 6 of them have an 8 fish creel limit. In addition to these lakes, Louisiana has one "trophy" lake, Caney Creek Reservoir with a 15-19 inch slot limit and a 8 fish creel limit, and one "super trophy" lake, Spanish Lake, with a 16-21 inch slot limit and a creel limit of 8 fish. Three areas, False River, the Atchafalaya Basin, and Toledo Bend Reservoir are managed with a 14-inch minimum size, for different reasons.

CAERNARVON OPINION SURVEY 2000



Many Caernarvon bass anglers view the special management measures in other parts of the state as desirable for this area. LDWF biologists conducted an opinion survey of Caernarvon bass anglers. As the pie chart on the left illustrates, almost 90% of the anglers favored a change in regulations. Most popular, at 65%, was the creation of some sort of a size limit, with or without a reduction in the creel limit. A reduction in the creel limit with or without a size limit change, was favored by 37% of the anglers.

Department biologists then went in the field in 2000 and 2001 to check what bass fishermen in the area were catching and to study the biology of Caernarvon bass to see if special management rules could improve the fishery. The results were surprising. They found that 47% of the anglers harvested no bass, 87% took 3 or less fish, and 98% took 6 or less bass. Even a 5-fish creel limit, which is much more severe than the 8 fish limit of trophy and super trophy lakes, would only affect less than 7% of the angler trips. An 8-fish limit would affect less than 2% of the angler trips. From this information, LDWF biologists concluded that to have an impact, limits would have to be reduced to unacceptable levels.

The biologists also looked at the size of the bass that the anglers were catching. For the two years combined, less than 6% of the bass kept by anglers were under 12 inches long, so the problem wasn't fishermen catching and keeping tiny bass. A little over 59% of the bass caught were between 12 and 14 inches long, so a 14-inch minimum size would protect a large number of fish from harvest. However, in waters that do not have a spawning success problem, minimum size limits often produce a population with a large number of fish just below the size limit and few above it. Underharvest actually becomes a problem. The biologists decided that a minimum size limit was not an answer either and recommended that bass management be continued as it is now.

The biologists did find that Caernarvon bass had a slightly higher than average growth rate at ages 3-5, but grew near the state average when younger. This area has received substantial stockings of hatchery-produced Florida bass.

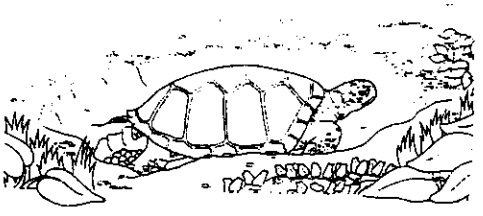
1994	2,000 fingerlings, 100 adults
1996	50,000 fingerlings
1997	40,000 fingerlings
1998	240,000 fingerlings, 43 adults
1999	300,000 fry, 260,956 fingerlings
2000	119,900 fry, 120,208 fingerlings
2001	31,500 6-7 inch fingerlings

Although some pure strain Florida bass will be caught by anglers, the intent of the stocking program is largely for these fish to interbreed with native largemouth bass and to transfer some of their tendencies to grow larger into the population. The LDWF biologists' samples in 2001 showed that over 17% of the fish in the area were Florida/native largemouth bass hybrids.

Source: *Largemouth Bass Management and the Effect of Freshwater Diversions on Bass.* Presented by Gary Tilyou, Louisiana Department of Wildlife and Fisheries at the seminar, Fisheries Management for Fishermen. Rummel Alumni Association Fishing Rodeo Committee. February, 2002.

TURTLE TALK

Japanese scientists analyzed the stomach and gut contents of 36 green sea turtles caught near the Ogasawara Islands during an annual controlled spring harvest. They found that 25 of the animals had eaten garbage, most of it plastics like polyethylene bags. Styrene foam and rubber bands were also found. One turtle had its intestine completely block with a 10x30-inch plastic bag. The average volume of garbage found in the turtles' digestive organs was 2.7%. It is believed that the plant-eating turtles ate the garbage because of its resemblance to some seaweeds.



On another note, a coalition of conservation groups has asked Pope John Paul II to ban turtle meat, which many Mexicans and Mexican-Americans eat during "Semana Santa" or Holy Week. A letter from the Sea Turtle Conservation Network of the Californias said "Many of the consumers consider sea turtle to be a 'fish' because it swims. We humbly request that your holiness officially clarify that sea turtle flesh is meat and inappropriate for consumption during Lent." According to Serge Dedina, director of Wildcoast, a California conservation group, as many as 35,000 sea turtles are slaughtered by poachers annually along the Baja California coast to feed the black market. Dedina says "The tradition has to stop."

Sources: *The WorldCatch Wave.* March 4, 2002, and March 14, 2002. News@worldcatch.com.

MERCURY IN MARINE FISH

In July of 2001, the *Mobile Register* newspaper in Alabama released results from testing that found high mercury levels in individual samples of cobia, redfish and amberjack. In September, the newspaper released results of analyses of hair samples taken from 18 people who eat a lot of fish. Eight of those samples were high in mercury. The newspaper cited alarming studies about the effects of mercury on humans. Since then, newspaper and television reports have ratcheted up public interest, not only in Alabama, but in other Gulf states including Louisiana, about mercury levels in fish and the safety of eating fish.

Mercury is an element, not a manufactured pollutant. In its pure state, it is a liquid, the only metal that is liquid at average air temperatures on Earth. It belongs to a group of metals, known as "heavy metals" that includes lead, zinc and cadmium. All of these can be poisonous to humans if consumed in high enough doses in the right form. Mercury must be in the form of methylmercury which only occurs at low pH (acid) conditions. Under

high pH (alkaline) conditions, such as for example those in the Mississippi River, mercury cannot enter the food chain easily.

Since it is a natural element, some mercury naturally exists in almost all waters, as it is eroded from the earth by water. More mercury is added by pollution, the vast majority of which occurs from emissions from coal-fired power plants and to a smaller degree, the burning of garbage and medical wastes. This mercury vapor may circulate in the Earth's atmosphere for up to one year and be carried thousands of miles from where it was emitted. Eventually, it is returned to the Earth by rainfall or dry deposit. Under the right conditions, mercury accumulates in the tissues of animals low in the food chain. Mercury levels in animals increase as the mercury moves up the food chain when predators eat prey. This process is especially likely to occur with aquatic creatures such as marine fish. Mercury from other sources is less likely now than before to enter the ecosystem. Industrial demand for mercury declined by 75% between 1988 and 1996, mostly because it was no longer used in paints and pesticides and its use in batteries has been reduced. It has been estimated that the amount of mercury in the Earth's atmosphere is 2 to 5 times larger than before industrialization.

The level at which methylmercury becomes a human health problem is open to debate. Mercury poisoning grabbed peoples' attention in the 1960s when over 100 people died, became ill, or suffered birth defects in Minimata and Nigata, Japan from the regular consumption of contaminated fish over a long period of time. In both of those cases, industries discharged large amounts of waste mercury directly into bays where local people fished. Average concentrations of mercury in fish flesh there ranged from 9 to 24 parts per million (ppm), with some fish being as high as 40 ppm.

By comparison, the highest <u>average</u> concentration found so far in Louisiana is less than 1 ppm, at 0.984 ppm in king mackerel, and the highest amount found in a single fish was 4.04 ppm found in a largemouth bass. The lowest average concentration found in Japan was over 9 times higher than the highest average concentration in Louisiana today. For individual fish, the highest concentration in Japan was over 10 times higher than the highest recorded in Louisiana.

The U.S. Food and Drug Administration (FDA) sets its action level at 1.0 ppm, prohibiting sales of fish averaging above that level. The Louisiana Department of Environmental Quality (LDEQ) and a report by the U.S. Environmental Protection Agency Gulf of Mexico Program note that this number is 10 times lower than the lowest level found to have any effect on humans. On the other hand, the National Academy of Sciences says that the level is too high, perhaps much too high. If the action level is set lower, many finfish will be removed from the diets of Americans.

Three major long-term population studies have been conducted on the effects of mercury on pregnant women and their children. The two largest stories were conducted in the Faroe Islands and Seychelles Island. The Faroe Islands study showed a link between exposure to mercury in the womb and later nerve development problems in these children. The National Academy of Sciences recommended the Faroe Islands study as the critical study to use for determining reference to safe levels of mercury exposure. The Seychelles study showed no such link. The results of the smaller, but still well-designed. New Zealand more or less agreed with the Faroe Islands study.

In the Republic of Seychelles, 85% of the population eats fish daily and levels of methylmercury are 10 to 20 times higher than in the United States. The researchers studied 711 children from mothers who consumed fish high in mercury by testing them with 6 nerve development tests until they were 66 months old. The researchers concluded that the Seychelles Island children were not affected by the high levels of mercury in their diets. They stated that "it would be inadvisable to forgo the health benefits of fish consumption to protect against a small risk of adverse effect at the levels of methylmercury found in ocean fish on the U.S. market."

The National Academy of Sciences agreed with beneficial effects of fish consumption. However, they took the position that while current standards for action levels and advisories may be fine for the general public, they provide no cushion of safety to protect children of women who consume high, rather than average, amounts of fish and seafood during pregnancy. They estimated that "over 60,000 children are born each year at risk for adverse neurodevelopmental effects due to in-utero exposure to methylmercury." While the number was for children <u>at risk,</u> not children born with problems, the academy states that this means "an increase in the number of children who have to struggle to keep up in school and who might require remedial classes or special education."

Advisories are issued by FDA and the Louisiana Department of Health and Hospitals (LDHH) for consumption levels of fish with mercury. Typically LDHH issues two types of consumption advisories. A low-level one would recommend limiting consumption of some fish to one or several meals a month for young children and pregnant women or women nursing children, with no advisory for the rest of the population. A higher-level advisory would recommend no consumption of the fish listed in the advisory by young children, and pregnant or nursing women, and a limit on the number meals by the rest of the public. FDA states that at present, consumption advice is unnecessary for the top 10 seafood species, making up about 80 percent of the seafood market, because these species — canned tuna, shrimp, pollock, salmon, cod, catfish, clams, flatfish, crabs, and scallops — all contain less than 0.2 ppm methylmercury and few people eat more than the suggested weekly limit of fish (2.2 pounds) for this level of methylmercury contamination.

The most comprehensive report on mercury in Gulf states fish is *A Survey of the Occurrence of Mercury in the Fisheries Resources of the Gulf of Mexico* released by the EPA Gulf of Mexico Program in 2000, The report combines the results of mercury testing from many sources. The report cautions that not all species were tested in every Gulf state, in fact most weren't, however it does contain useful information to put the issue in perspective. The table below from the report categorizes fish species by the average level of mercury in their flesh. None of the species had an average concentration over 1.0 ppm.

Gulfwide Average Mercury Concentration (ppm)	Number of Species	Species (Common Name)
Over 1.0	0 (0%)	none
0.81 - 1.0	3 (12%)	Blacktip Shark, Bluefish, King Mackerel greater than 39"
0.61 - 0.80	2 (8%)	Jack Crevalle, King Mackerel from 33" to 39"
0.51 - 0.60	4 (15%)	Bonnethead Shark, King Mackerel less than 33", Sand Seatrout, Spanish Mackerel
0.41 - 0.50	3 (12%)	Common Snook, Largemouth Bass, *Mycteroperca* (Gag, Scamp and Black) Groupers
0.31 - 0.40	3 (12%)	Gafftopsail Catfish, Red Drum, Spotted Seatrout
0.21 - 0.30	5 (19%)	Black Drum, Blue Crab, *Epinephelus* (Red, Snowy and Yellowedge) Groupers, Flounder, Sheepshead
0.05 - 0.20	6 (23%)	American Oyster, Atlantic Croaker, Blue Catfish, Gray Snapper, Hardhead Catfish, Striped Mullet

More detail by species, by sampling site, is in the table below.

Species	No. Sites Sampled	Average Mercury (ppm)	Maximum Mercury (ppm)	Species	No. Sites Sampled	Average Mercury (ppm)	Maximum Mercury (ppm)
Blacktip Shark	18	0.86	2.0	Atlantic Croaker	165	0.06	0.59
Bonnethead Shark	37	0.51	1.4	Black Drum	97	0.22	1.9
Blue Catfish	108	0.16	0.88	Red Drum	364	0.31	2.7
Gafftopsail Catfish	83	0.34	1.4	Largemouth Bass	723	0.46	1.6
Hardhead Catfish	184	0.16	1.6	Striped Mullet	51	0.07	0.78

Epinephelus Groupers	7	0.27	0.33	King Mackerel>39"	58	0.96	1.7
Mycteroperca Groupers	18	0.43	1.4	King Mackerel 33-39"	89	0.69	1.1
Bluefish	21	1.0	2.0	King Mackerel<33"	77	0.60	1.7
Jack Crevalle	34	0.63	3.1	Spanish Mackerel	179	0.57	1.7
Gray Snapper	62	0.19	0.54	Flounder	155	0.26	1.2
Sheepshead	66	0.22	0.82	Common Snook	190	0.50	1.5
Spotted Seatrout	171	0.36	1.7	Blue Crab	50	0.21	0.83
Sand Seatrout	30	0.57	0.92	American Oyster	924	0.08	0.48

The report notes that very little sampling has been done in the Gulf on dolphin, red snapper, greater amberjack, yellowfin tuna, and white grunt. It makes 3 observations.

1) King mackerel show high mercury concentrations and the larger the fish, the higher the average mercury concentration is.
2) Some areas seem to be "hot spots" for mercury, with many species showing higher than average mercury concentrations. The two areas identified in the report were Lavaca Bay in Texas and upper Florida Bay in Florida. The Lavaca Bay situation seems to be due to contaminated sediments.
3) Some samples of red drum collected just offshore of Tampa Bay have high mercury concentrations compared to the same species sampled inside the bay. This is thought to be due to different water chemistry in the two areas and the fact that the larger red drum offshore are older and further up the food chain.

The report cautions that it is not intended to be used to determine if mercury concentrations in fish are increasing or decreasing over time, but it does cite a study that indicates that mercury concentrations in marine fish seem to be unchanged for at least 20 years.

Ben Raines, the Mobile Register newspaper reporter who authored the series of mercury articles maintains that "...the data in the publication is flawed because it doesn't have the size of the fish tested. Larger fish" he says "have higher mercury levels and some of the fish tested weren't even of legal size to catch." Raines concluded that everything points to a mercury problem in the Gulf. The fish that he had tested were higher in mercury than those in the report and the hair samples of people that ate a lot of Gulf of Mexico fish that

he had tested, showed elevated mercury levels. "The government has the responsibility to let people know if there is a problem; whether they listen or not is up to them."

Regularly updated data on average and maximum mercury concentrations in both freshwater and saltwater fish in Louisiana is available at the Louisiana Department of Environment Quality Website http://www.deq.state.la.us/surveillance/mercury/mercsspe.htm.

Sources: *Seafood Riddled with Mercury*. Ben Raines. Mobile Register Newspaper. July 22. 2001. *No FDA Ban on Fish High in Mercury*. Ben Raines. Mobile Register Newspaper. August 19, 2001. *Hair Tests Indicate High Mercury Levels*. Ben Raines. Mobile Register Newspaper, September 19, 2001. *Effects of Prenatal and Postnatal Methylmercury Exposure From Fish Consumption on Neurodevelopment*. P. Davidson, G. Meyers, C. Cox, C. Axtell, C. Shamlaye, J. Sloane-Reeves, E. Cernichiari, L. Needham, A. Chioi, Y. Wang, M. Berlin, T. Clarkson. Journal of the American Medical Association. Volume 280, No. 8 August 26, 1998. *Mercury Contaminant Levels in Louisiana Biota, Sediments and Surface Waters 1994-2000*. Louisiana Department of Environmental Quality. *A Survey of the Occurrence of Mercury in Fishery Resources of the Gulf of Mexico*. U.S. Environmental Protection Agency Gulf of Mexico Program. January, 2000. *Marine Pollution in the United States*. Donald F. Boesch, Richard H. Burroughs, Joel E. Baker, Robert P. Mason, Christopher L. Rowe, and Ronald L. Siefert. Pew Oceans Commission. 2001. *Toxocological Effects of Methylmercury*. Robert A. Goder & Others. National Academy of Sciences. 2000.

SEAFOOD PROCESSOR TRAINING MEETINGS

The Louisiana Sea Grant College Program with the LSU Department of Food Science, LSU AgCenter will offer two Association of Food and Drug Official (AFDO) training courses:

(1) **Sanitation Control Procedures (SCP) for Fish and Fishery Products Training** will be held at Lod Cook Conference Center Hotel, Louisiana State University, Baton Rouge, LA. on Tuesday, May 7. Participants will receive a manual for SCP training and both AFDO and LSU Sea Grant Certificates of Completion.

(2) **Basic Seafood HACCP Training** will be held at the Lod Cook Conference Center Hotel, Louisiana State University, Baton Rouge, LA. on Wednesday, May 8 through Friday, May 10. Participants will receive a manual and FDA guide book for fish and fishery products for HACCP training and both AFDO

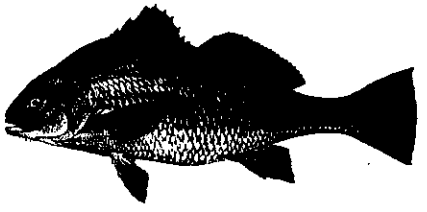
and LSU Sea Grant Certificates of Completion of the FDA Seafood HACCP Curriculum. AFDO Certificates will be mailed directly to participants by AFDO.

Both program schedules and registration forms can be obtained by calling (225) 578-5206 or on the Web at http://www.agctr.lsu.edu/seafood/event_calendar.htm. Double click on Program Schedule and Registration Form for each course.

Registration can be made by mail, fax, or e-mail to Department of Food Science (Attn: Basic Seafood SCP/HACCP in May 2002), 111 Food Science Bldg., Louisiana State University, Baton Rouge, LA 70803-4200. Phone: (225) 578-5206, FAX: (225) 578-5300, e-mail: tgilmer@agctr.lsu.edu. Registration Fees are $90.00 for SCP and $160.00 for HACCP, which can be mailed along with the registration forms or can be paid up front at the registration desk. They will not accept cash or credit cards. Please make the CHECK OR MONEY ORDER payable to LSU AgCenter! Hotel rooms may be reserved at the Lod Cook Conference Center Hotel. Phone: (225) 383-2665, Toll Free: 1-866-610-2665, Fax: (225) 383-4200. Use the reservation code Seafood to get the special rates for this training only!

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 (LDWF) 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 2002 assessment results.

Striped Mullet	31% - 73% SPR
Black Drum	42% - 67% SPR
Sheepshead	54% - 94% SPR
Flounder	28% - 54% SPR

Striped mullet commercial landings for 2000 were 7.2 million pounds, well below the landings of 8.9 million pounds in 1999. The decline in harvest partially accounts for the

increased SPR. Total black drum harvest in 2000 was 5,554,218 pounds, the highest since 1989. More recreational take accounted for most of the increase. Sheepshead landings were slightly below 1999 and about on par with 1998. About two-thirds of the harvest of 3,636,978 pounds was commercial. Landings of southern flounder in 2000 were the highest since 1995, at 767,958 pounds, but still only about half the landings of the early 1990s. Recreational harvest accounts for over three-fourths of the total.

According to Randy Pausina, Finfish Program Manager for LDWF, department biologists hope to be converted to using virtual population analyses (VPAs) by next year's report. A VPA is a type of analysis that uses numbers of fish caught by size or age and an estimate of the natural death rate to calculate harvest and the number of fish in a cohort (one year's spawn). VPA analyses should improve the accuracy of the analysis.

Although the conservative SPR estimates for flounder are below the target 30% figure and the conservative estimate for striped mullet is near that figure, both fisheries are considered healthy. On another note, Pausina also predicted that department biologists hope to complete new stock assessments for speckled trout and redfish within a year.

REDUCING CRABBER - SHRIMPER CONFLICTS

With shrimp season opening next month, a certain amount of conflict between shrimpers and crabbers will come up again. Shrimpers complain about not being able to trawl or skim due to crab traps, and crabbers will complain about their loss of traps to trawls.

The Louisiana Crab Task Force has asked us to remind shrimpers and crabbers about a law passed by the 1999 Louisiana Legislature to help ease this problem. The law defines a "serviceable crab trap" as one of legal construction and condition maintained in such a manner with the potential to harvest crabs. This includes being legally tagged, legally marked with a solid float and a non-floating line attached, and with two escapement rings.

The law provides that a shrimper who catches an unserviceable crab trap shall keep it on board his vessel and dispose of it. A shrimper who catches an otherwise serviceable trap without a float shall return it to the water with a common float. A common float is defined as a white one-gallon plastic bleach bottle.

Any licensed crab fisherman may raise and check any trap with a common float to determine ownership. The owner of the trap shall return the common float to any shrimper for reuse.

The law also requires that unserviceable crab traps shall be properly disposed of and crab traps not in use shall be stored by the owner. The law also makes it a violation

to intentionally discard an unserviceable trap in navigable waters.

LICENSE REQUIRED FOR TEXAS SEAFOOD SHIPMENTS

The Texas Parks and Wildlife Department has announced that anyone shipping seafood or fisheries products, including bait, into Texas must now purchase a non-resident wholesale dealer license. Before this ruling, individuals and businesses shipping into Texas did not need a license if the shipment was made by common carrier. Non-resident wholesale licenses cost $425-$625, depending on the type of license. More information on purchasing a license is available by calling the Texas Parks and Wildlife Department License Section at (512) 389-4822.

TEXAS LICENSE BUYBACK PROGRAM REPORT

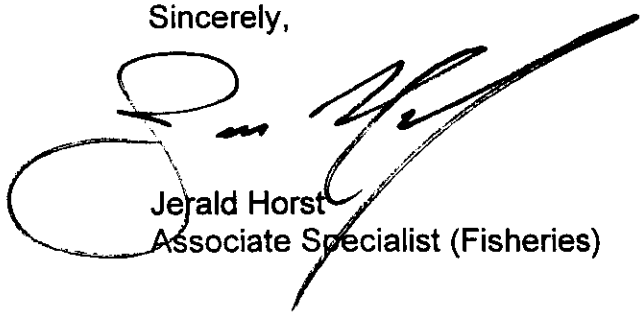
The Texas Parks and Wildlife Department (TPW) has now completed its ninth round of bay and bait shrimp license buybacks, its second round of commercial crab license buybacks, and its first commercial finfish license buyback. All of the licenses that TPW is buying back are under limited entry, and after the buyback they are retired to reduce fishing pressure.

A total of 142 bay and bait shrimp licenses were purchased in this round with an average price of $6,250. Since the program started, TPW has purchased about 700 licenses for $3.6 million. This is 22% of the licenses that were issued in 1995. This buyback program is funded by a $3 surcharge on recreational saltwater stamps. Eight commercial crab licenses were purchased at an average price of $4,250. TPW also bought back 13 commercial finfish licenses averaging $4,150 each.

The Texas license buyback program is voluntary. Commercial fishermen may annually renew and keep their license, sell it to another person, or go through the buyback program. If they participate in the buyback program, they enter bids and TPW purchases the lowest bids first until they run out of money.

Source: *Anchor Line*. Volume 2, Issue 2. Texas Parks and Wildlife Department.

Sincerely,



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