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Lagniappe

Sea Grant LOUISIANA

November 3, 2003 Volume 27, No. 11

NEW FISHERIES WEBSITE

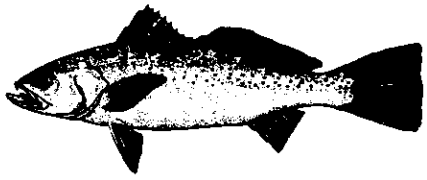
The Louisiana Sea Grant College Program has created a detailed new fisheries website for commercial and recreational fisheries. The site, www.seagrantfish.lsu.edu, has a current news section, contact information for LSU Sea Grant staff, short biographical sketches on selected fish and shellfish species, habitat information, legal and socioeconomic issue information, and resources/publications.

The website contains all 27 years of this newsletter (*Lagniappe),* as well as five years of the *Louisiana Wetland News* and *Louisiana Coastal Law* newsletters. Also available are the complete Fisheries and Fisheries Habitat Fact Sheet series, and subscription information for Louisiana Sea Grant's beautiful magazine, *Coast & Sea.*

A large variety of publications and semi-technical publications can also be found at the site, with topics ranging from fisheries development, to coastal restoration, to aquaculture, to fish identification guides. Finally, the site has links to 29 other sites that have information on fisheries and fisheries habitat.

This web site is designed as a resource for Louisiana and Gulf Coast commercial and recreational fishermen, sports and outdoors writers, and all others with related interests. The creators welcome suggestions for additions that can improve the site. Contact them by e-mail at moleary@lsu.edu.

SPECKLED TROUT SPAWNING AND SALINITY



Speckled trout are the most popular estuarine fish in Louisiana. As a fish of the estuaries, it is adapted to exist in a wide range of salinities, because most estuaries show a wide range of salinity changes. There are limits however; speckled trout are found less often in very low salinities, especially during the summer spawning months. Speckled trout eggs are seldom found at salinities lower than 15 parts per thousand (ppt) or higher than 50 ppt. For comparison, full strength seawater is 32-35 ppt.

Years of very high rainfall and river discharges are known to negatively affect speckled trout spawning success. In eastern Louisiana, diversions of freshwater are increasingly being used, both to lower salinities in marshes and to prevent further marsh loss. The effects that these diversions will have on speckled trout is not known, but often speculated about.

A chapter in a recently published book on speckled trout biology was devoted to the effects of salinity on speckled trout spawning success. The biologists were particularly interested in how speckled trout from very high salinities, such as the Laguna Madre in Texas, which has salinities of 40-50 ppt because of high evaporation and very little freshwater input, and from low-salinity areas such as Louisiana, with a lot of river input, adjusted to different salinities. To no great surprise, they found that specks from high-salinity areas spawned at 18-36 ppt and were tolerant of salinities of up to 45 ppt. Trout from low-salinity areas spawned most successfully at 15-27 ppt and didn't spawn at all at higher salinities. In both areas, however, speckled trout seemed to avoid low-salinity, brackish water areas as spawning sites.

Speckled trout eggs need to float in the water to survive. If they sink to the bottom immediately after being laid, they will die. To get this flotation, speckled trout eggs hydrate, or swell with water. Typically, the eggs to be laid hydrate in the female fish 4-6 hours before spawning. Research has shown that speckled trout eggs spawned in lower-salinity waters are larger — swollen with more water — than speckled trout eggs laid in high-salinity waters. The added water provides buoyancy for the eggs, to prevent them from sinking to the bottom in less-dense, low-salinity waters.

Because of the difficulty in identifying speckled trout eggs in the wild from the eggs of other members of the drum family, scientists have conducted several laboratory studies on the effects of salinity on speckled trout spawning and egg survival. They found that in general, the successful early development of eggs is limited to salinities near those in which they were spawned. After 12 hours, the eggs could better survive in a wider range of salinities, but would still sink to the bottom in salinities lower than those they were spawned at. Larval fish from low salinities hatched from larger eggs and tolerated lower salinity than did those from higher salinities. They speculated that speckled trout from different areas of the Gulf might be genetically different enough to be adapted to the salinities of their bay system.

To study this further, scientists took adult trout from different bay systems, exposed them to different salinities and spawned them in labs. Specks taken from the 30 ppt waters of Aransas Bay, Texas were spawned in lab waters that had been gradually lowered to 20 ppt. At first, the egg hatch rate was low and many larvae were deformed. But, after several months, the percentage of hatch increased and the deformities disappeared. Then the adult fish were acclimated over a one year period to salinities of about 40 ppt. Highest survival of larvae occurred at 35-40 ppt, and less than half of the larvae survived at 30 ppt, the original salinity from which the fish came. This indicated the possibility that the fish were able to adapt to changed salinities.

Since genetics may also play a role in spawning salinity tolerance, scientists took speckled trout into the lab from two Texas areas that have very different salinities. Matagorda Bay averages 18-24 ppt and Upper Laguna Madre averages 34-45 ppt. Fish from each area were held for 4 months at salinities of 20, 30 or 40 ppt and then spawned.

Fish from both areas spawned successfully in all salinities, but the trout from high-salinity Laguna Madre did not produce eggs that floated at 20 ppt. Another researcher studying speckled trout from the same two areas found that larvae from fish from lower-salinity Matagorda Bay tolerated sudden drops in salinity better than fish from higher-salinity Upper Laguna Madre, regardless of the salinity they were spawned in. Overall, however, larvae spawned in 40 ppt salinity were less tolerant of low salinities than larvae spawned at 20 ppt or 30 ppt, regardless of parental origin.

In summary, while there does seem to be some inheritable basis for salinity tolerance, with fish from high-salinities areas being better adapted to high salinities and vice versa, individual speckled trout show some ability to adjust, over time, to at least some salinity change. The most important factor for egg survival seems to be salinity remaining at or above the salinity they were spawned at.

Source: *Effects of Variable Salinity on Reproduction and Early Life Stages of Spotted Seatrout.* G. Joan Holt and Scott A. Holt. Biology of the Spotted Seatrout., pp 135-145. CRC Press. 2003.

MERCURY MYSTERIES

The subject of mercury, fish consumption, and human health has strongly caught the public's attention in the last year. Unfortunately, the more the subject is studied, the less we find that we really know. High dietary mercury has been linked to development problems in children, nerve damage, including sensory loss, tremors, loss of muscular coordination, speech, hearing, and vision problems and an increased risk of heart attack. Mercury is toxic, at least above a certain level.

Beyond this, the science gets tough. Two major, long-term, landmark studies have been done on the effects of mercury in pregnant women's diets on the development of children. The study done in the Seychelles Islands showed that the more mercury from fish that was in a woman's diet, the better their children performed on various tests. The effect may be connected to other beneficial nutrients in fish that overshadow the effects of mercury.

However, in another study done in the Faroe Islands, the opposite was true; the more mercury in the women's diet while pregnant, the poorer their children performed. The different results from the two studies are difficult to explain, although the Faroes women got some of their mercury from eating whale meat and blubber. Whales are known to be contaminated with PCB's, which may work independently or together with the mercury to injure developing children. At present, fish consumption advories in the United States are based on the Faroes study.

To add confusion, scientists recently announced in the journal *Science* that the form of mercury found in fish may not be as toxic as has been thought. In the past, the compound methylmercury chloride was used to estimate the toxicity of mercury in fish, largely because researchers didn't know exactly what form the mercury was in the fish. Using x-ray absorption spectroscopy, they discovered that the mercury in fish was tied with both a carbon atom and a sulfur atom and is from a class of compounds called methylmercury cystinates. These are less likely than methylmercury chloride to cross cell membranes and are more easily dissolved in water.

Finally, mercury in the environment does not always behave the way expected. In spite of large amounts of mercury being added to the environment, scientists have found that the level of mercury in some Pacific Ocean tuna was no higher in 1998 than it was in 1971.

Several explanations have been offered for this: 1) In the deep ocean floor bacteria do not play a big role in converting mercury from airborne pollution into methylmercury, 2) the mercury in ocean fish is coming mostly from natural sources, such as the earth's crust, 3) the conversion mercury from man-made pollution to methylmercury takes a long time, or 4) the mercury in the ocean comes from sediments in shallow coastal waters, where it was deposited before strong anti-pollution measures were put into effect. If the last one is true, it means that mercury in fish will not decline much for a long time, even if current mercury discharges are reduced.

Sources: *The Chemical Form of Mercury in Fish.* Hugh H. Harris Ingrid J. Pickering and Graham N. George. Science. Vol. 301. 29 August, 2003. *Report: 'The Mercury in fish May Not Be as Toxic as Many People Think.'* The Wave News Network, www.thewaveonline.com/article/Default.asp?cat=1&id=15783. E*nvironmental Villain Remains a Mystery.* Tom Avril. The Philadelphia Inquirer. August 18, 2003.

UNDERWATER OBSTRUCTION LOCATIONS

The Louisiana Fishermen's Gear Compensation Fund has asked that we print the coordinates of sites for which damage has been claimed in the last two months. The coordinates are listed below:

Loran Sites

27923	46857	TERREBONNE

Lat. & Long. Sites

27 88.100	89 26.874	ST BERNARD
29 08.230	88 58.620	PLAQUEMINES
29 14.031	89 55.000	JEFFERSON
29 27.375	89 41.521	PLAQUEMINES
29 55.240	89 20.321	ST BERNARD
29 57.513	89 28.155	ST BERNARD
29 15.886	89 56.425	JEFFERSON

Lat. & Long. Sites

29 07.362	90 56.533	TERREBONNE
29 07.442	90 34.388	TERREBONNE
29 12.916	90 56.963	TERREBONNE
29 27.548	90 03.335	LAFOURCHE
29 35.220	89 32.324	ST BERNARD
29 39.037	90 02.592	JEFFERSON
29 42.561	89 53.088	PLAQUEMINES
29 44.222	89 23.624	ST BERNARD
29 44.929	93 14.894	CAMERON
29 46.000	90 23.930	CAMERON
30 03.149	89 14.269	ST BERNARD

CIRCLE HOOKS & BILLFISH

Atlantic sailfish, blue marlin and white marlin have been considered fully fished or overfished for over 20 years. Recreational anglers have dramatically increased the number of sailfish and marlin they release, however injured released fish of any species can and do die. Hook injury can occur from released fish being deep-hooked in the stomach, throat or gill area or by being foul-hooked in a sensitive area like an eye.

Marlin and sailfish are large fish that do not necessarily die when deep-hooked. Rusty hooks have been found in the stomachs of what appear to be healthy billfish. It is common for billfish turn their stomachs inside out (out of their mouths) when hooked. This seems to be how they get rid of bones and other indigestible things that they eat. Still any practice that can possibly reduce mortality (deaths) in billfish is worth considering.

Circle hooks have been used by commercial longliners and both recreational and commercial reef fish fishermen for many years. They are not often used by recreational billfish anglers, however in recent years, changes in rigging techniques for natural bait have made use of circle hooks effective for trolling/pitch baiting or live bait drifting for billfish.

Noting that circle hook use reduced deep hooking in other fish species, National Marine Fisheries Service scientists conducted a two-part study on the use of circle hooks for billfish angling. In the first part, they compared circle hook and J-hook use on billfish in Iztapa, Guatemala. In the second part, they compared the effectiveness of severely offset, slightly offset and non-offset circle hooks to each other in the south Florida live bait fishery for sailfish.

Guatemala was chosen because of area's high seasonal billfish catch rates and the cooperation of the charter fishing fleet. Ballyhoo was used as bait and both J-hooks (6/0) and circle hooks (7/0) were rigged with the hooks on the foreheads of the ballyhoo. Traditional jerking was used to set the hook with J-hooks. With circle hooks, the line was simply reeled tight as the fish swam away from the boat. All fish were examined as to where they were hooked and how much bleeding was occurring.

From March through May 1999, 590 sailfish bites were recorded, 461 fish were hooked and 360 were caught. On average, circle hooks were 1.83 times more likely to hook a sailfish than J-hooks, although once hooked, the catch percentage was the same for both types of hooks. More important was where the fish were hooked. Deep-hooked fish made up 56% of the sailfish catch with J-hooks, but only 2% of the catch with circle hooks. Eighty-five percent of the circle-hooked fish were hooked in the corner of the mouth, compared to 27% of the J-hooked fish.

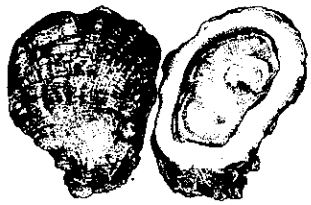
Bleeding was more severe in J-hooked fish. A sailfish caught on a J-hook was 20.75 times more likely to bleed than one caught on a circle hook. Severe bleeding was noted in 26% of J-hooked fish compared to less than 3% in those circle-hooked.

In the part of study done in south Florida, three charter captains who specialize in live bait fishing for sailfish participated in the study. They used 7/0 circle hooks with no offset point, offset points of 4 degrees (minor), and offset points of 15 degrees (severe). A total of 75 sailfish were caught in the summer of 1999.

Severe offset circle hooks had a deep-hooking percentage that was 2 to 3 times higher than that for minor offset or no offset circle hooks. Interestingly, there was no significant difference found in bleeding between the three hooks. Similar research done with striped bass and summer flounder has shown almost the same results.

Source: *A Comparison of Circle Hook and "J" Hook Performance in Recreational Catch-and-Release Fisheries for Billfish.* Eric D. Prince, Mauricio Ortiz and Arietta Venizelos. American Fisheries Society Symposium XX: 2002.

OYSTER LEASE REPORTING CHANGE



Under legislation passed in 2001, oyster leaseholders were required, beginning in 2003, to submit to the Louisiana Department of Wildlife and Fisheries (LDWF) an annual report by harvest area grid, giving the amount of cultch and seed oysters placed, the source of seed oysters, the amount of seed oysters harvested, and also the amount of marketable oysters harvested. However, Act 449 of the 2003 Louisiana Legislature has removed the requirement that the amount of harvestable oysters be reported. The 2003 reporting forms were developed and sent out by LDWF before Act 449 was passed, so the form contains space for reporting marketable oysters harvested. Oyster leaseholders are not required to fill in this space. All other information must be submitted to LDWF by March 31, 2004.

QUESTIONING M.P.A. RESTOCKING POWER

Marine protected areas (MPAs) are most effective for managing fish that stake out territories, like snappers, groupers and other reef fish. These species are less likely to wander out of an MPA and get caught before they can become big egg-producers. One of the strong arguments often made in favor of the creation of MPAs where no fishing is allowed, is that the fish protected in an MPA will spawn and effectively "restock" nearby areas that are open to fishing.

For MPAs to be planned to be effective at restocking reef fish to other reefs, some knowledge is needed on how far water currents are likely to carry the larval (baby) fish before they settle out to the bottom. Reef habitat in the Caribbean and especially the Gulf of Mexico is scattered and patchy. Models by scientists based on currents have

predicted the transport of fish larvae over 100 miles. These models did not take into account any swimming ability of the larvae, however weak it is.

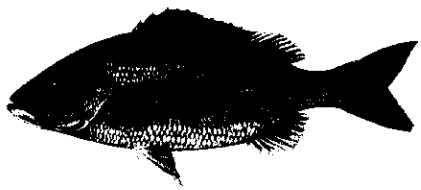
Biologists in Florida recently did construct a model on larval fish transport in the Caribbean that included the behavior of the larvae. Much of the swimming behavior of fish larvae is downward. As a result, this model, compared to previous models, showed that fish larvae are 4 times more likely to settle out locally rather than be carried to another area. It also showed that fish larvae are more likely to be carried tens of miles rather than over 100 miles.

This research indicates that for MPAs to be effective at providing larval fish for other areas, they will have to be placed closer together than previously thought. The further away an area is from the source of larval fish "seed", the more rapidly the importance of the area goes down.

MPA creation is still on the front burner with many organizations and in some scientific circles. At the recent World Parks Congress, delegates approved a recommendation for the creation of at least five high seas MPAs by 2008. More importantly, delegates to the Congress's marine workshop call for MPA networks to include 20-30% of each marine and coastal habitat in "strictly protected areas".

Sources: *The Role of Long Distance Dispersal Versus Local Retention in Replenishing Marine Populations.* Robert K. Cowen, Claire B. Paris, Donald B. Olson, and John Fortuna. Gulf and Caribbean Research, Vol. 14 (2), 129-137, 2003. *At World Parks Congress, Target is set for High-Seas MPAs: Five to be Designated by 2008.* MPA News, Vol. 5, No. 4. October 2003. University of Washington School of Marine Affairs.

BEE-LINER BIOLOGY



The vermilion snapper, or as it is often called, the bee-liner or mingo, is a small, but very common snapper of the northern Gulf of Mexico. Compared to the red snapper, it has a more streamlined body shape. It also has a redder color, as compared to the pink-orange color of red snappers. The largest Recreationally caught vermilion snapper on record in Louisiana is 6.19 pounds, but larger fish have certainly been caught. Vermilion snappers prefer deeper water than red snappers, one reason they are caught much less frequently then red snappers. Louisiana recreational catches of bee-liners are most common off the Mississippi River delta. Commercial catches are heaviest off the central and western Louisiana coast.

Commercial landings, Gulfwide, grew gradually from 1962 to 1984, then took a major jump. Before 1983, commercial landings were recorded only from Florida. By 1985, vermilion snappers were landed in all five Gulf States. Landings continued to increase until 1993, and then declined. Part of the decline is related to increasing regulations. Commercial fishermen take the majority of the total catch. Landings in the

recreational fishery peaked in the early 1990s between 1 and 1.4 million fish, and then dropped to about half of that after 1995.

Vermilion snappers can live to 21 years old and grow to over 22 inches in length and 5 pounds, although most are much smaller. Some fish grow to the 10-inch minimum legal size in 3 years and all reach that size by age 5. A great deal of variation in size at each age occurs. Curiously, at any given age, fish taken commercially are generally larger than recreationally caught fish. Overall, bee-liners caught in the western Gulf tend to be larger than those caught in the eastern Gulf. Florida and Alabama anglers account for most of the Gulf of Mexico recreational harvest, followed by Texas, with Louisiana and Mississippi fishermen producing smaller landings.

Bee-liners are very prolific fish. They are usually able to spawn by age 1 and at 7 inches in length. They spawn from mid-April through September in the Gulf and each female is estimated to spawn a phenomenal 23-93 times each season. The number of eggs laid each spawn varies with the size of the fish, from about 20,000 for a 7-inch fish to 350,000 for a 15-inch fish.

Vermilion snapper are currently classified as overfished in the Gulf of Mexico by the National Marine Fisheries Service. The minimum size was increased from 8 to 10 inches in 1997. Besides the minimum size limit, recreational fishermen have a bag limit of 20 in aggregate with lane snappers, gray triggerfish, almaco jacks and tilefishes, and commercial fishermen are limited by a cap on the number of commercial reef fish permits.

Sources: *Status of the Vermilion Snapper Fishery in the Gulf of Mexico.* Clay E. Porch and Shannon L. Cass-Calay. NMFS Southeast Fisheries Science Center. 2001. *Report of Vermilion Snapper Otolith Aging; 1994-2000 Data Summary.* R.J. Allman, G.R. Fitzhugh, and W.A. Fable. NMFS Southeast Fisheries Science Center. 2001.

FISHING TOURNAMENT FISH CARE GUIDELINES

Fishing tournaments, especially for bass, are very popular and worth big bucks in economic activity. The most important need for bass tournaments are healthy bass populations. With this aim, bass tournaments have adopted requirements for release of fish caught in competition. While the intentions of these rules are good, the results often are not. A body of research exists that indicates that delayed release mortality (death) can be high, especially for fish not handled extremely carefully.

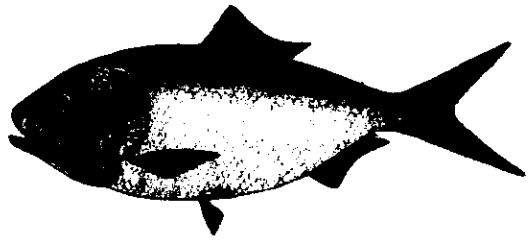
Research also indicates that using the best handling and release techniques can result in higher survival of released fish. Will Courtney, State Conservation Director for the Louisiana B.A.S.S. Federation urges all tournament organizers to use the best fish care guidelines possible. These, he believes, have been developed by the Oklahoma Department of Wildlife Conservation.

These printed guidelines lay out a weigh-in line and provide detailed information on bagging, fish handling, weigh-in, dipping, use of a hospital tank, fish transportation, and fish release. Illustrated instructions are also provided for deflating air bladders. A copy of **Fish Care Guidelines For Tournament Anglers: Keeping Bass Healthy Through the Weigh-in** can be obtained by calling your local LSU AgCenter Sea Grant agent.

POGIE BIOLOGY

Three species of menhaden are found in the Gulf of Mexico, the gulf menhaden, *Brevoortia patronus* in the northern Gulf, the finescale menhaden, B. *gunteri* in the western Gulf and the yellowfin menhaden, B. *smithi* in the eastern Gulf. All are called pogies and all have a silver body color and a large black spot on each side behind the head. The gulf menhaden also has a series of smaller spots behind the larger one that the other two species don't have.

Pogies are extremely common, forming the basis for the largest volume commercial fishery in the Gulf and serving as a food source for virtually every predatory species of fish in their range. While they are too bony and oily for humans to eat, they are an excellent bait species for many fisheries, from crabs to snappers to speckled trout.



No matter where they end up, all gulf menhaden begin their lives between December and February in offshore waters. An average of 23,000 eggs are produced by each female. The eggs drift with water currents until they hatch, usually within 48 hours. The larvae, after hatching, are also helpless, drifting with the current. At their very early stages they feed on large phytoplankton (microscopic floating plants). As they grow larger and become able to swim, they shift their diet to zooplankters (microscopic floating animals). Finally, they lose their teeth and develop long, complex, forward-pointing projections on each gill, called gill rakers, to strain their adult diet of plankton from the water. At this time also, the stomach develops into a gizzard.

While still in their planktonic stage, gulf menhaden larvae make their way into low salinity estuaries for early growth. Whether this movement occurs only due to currents or whether some active swimming is involved is not known, but entry into estuaries is critical to their survival. Once in an estuary and large enough to swim well, they frequently move into fresh water, often over 30 miles up rivers, In estuaries they grow rapidly and by summer they move to higher-salinity waters. Migration offshore occurs later in the summer and in the fall.

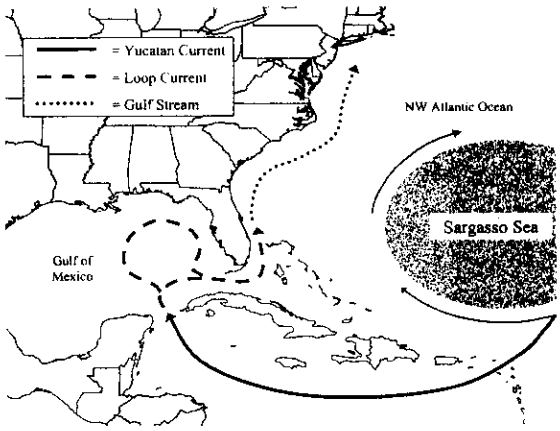
Once offshore, they seldom venture into waters over 300 feet deep. Few, if any, gulf menhaden spawn their first winter, but almost all fish are mature their second

winter, when they are considered 1 year old. Average size at the age is slightly over 5 inches long. Gulf menhaden will live to 5 and perhaps 6 years old, although the majority of fish in the population are ages 1 and 2. A 5-year old fish will average nearly 10 inches long.

Sources: *The Menhaden Fishery of the Gulf of Mexico, United States: A Regional Management Plan. 2002 Revision.* Edited by Steven J. VanderKooy and Joseph W. Smith. Gulf States Marine Fisheries Commission. March 2002.

SARGASSUM

Sargassum is two species of free-floating brown algae, which at times, become very common in the Gulf of Mexico. Both species of sargassum use round gas-filled pods to keep them afloat. It is so heavily used by fish, invertebrates (animals without backbones), and sea turtles, that the National Marine Fisheries Service has designated it as "essential fish habitat". Fish larvae and young fish use the sargassum for shelter. The many small animals in the sargassum also provide food for both young and adult fishes. Finally, it is used by some species of fish as spawning habitat.



Sargassum originates in the Sargasso Sea in the western Atlantic Ocean. It is carried into the southern Gulf of Mexico by the Yucatan Current. Sargassum is carried further into the northern Gulf by variations in the Loop Current, which changes frequently. Beginning in 2000, Scientists at the Gulf Coast Research Laboratory in Ocean Springs, Mississippi began studying sargassum and the fish that use it. Some fish, such as dolphin, tripletail and billfish use sargassum at all stages of their life (larval, juvenile and adult). Others, such as bluefin tuna and greater amberjack only use it as larvae or juveniles.

The researchers found that sargassum can be found in 3 primary forms in the northern Gulf. When it is found on the edge of a water change, often called "weed line" or a "blue-water rip", it is in the form of a windrow, 6 to 30 feet wide and up to several miles long. This form of sargassum has the largest abundance of all life stages of many species of fishes. The second form is large mats, from a few square yard to football-field size. Here, much fewer larval fish are found, but many juvenile fish, especially jacks, use mats. The final form, scattered clumps, are simply the scattered remains of a window or mat that has been broken up by wind and wave action. Scattered clumps hold a few of the species that depend on sargassum most heavily, such as sargassum fish, but they don't hold the numbers and variety of fishes that windrows and mats do.

Since the research began in 2000, the scientists have identified over 90 different fish species associated with the sargassum. Most common have been fish from the flyingfish, jack and triggerfish/filefish families.

Source: *Fishes Associated with Pelagic Sargassum.* Center for Fisheries Research & Development. Gulf Coast Research Laboratory. 2001.

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THE GUMBO POT

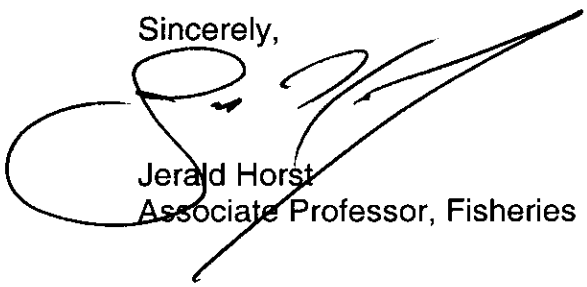
Crab Stuffed Mushrooms

Nothing beats mushrooms stuffed with crabmeat. Be sure not to buy mushroom caps. Buy whole mushrooms because you will need the stems for the stuffing. This dish is so good that I eat it for an entrée instead of an appetizer.

24	large fresh mushrooms
¼	lb melted butter or margarine
½	cup finely diced green onions
¼	cup finely chopped parsley
1	tbsp finely diced garlic
¼	cup diced red bell pepper
½	lb crabmeat
½	oz sherry
1	tsp fresh lemon juice
	salt, white & red pepper to taste
½	cup seasoned Italian bread crumbs
⅓	lb melted butter or margarine (for sauce)
5	oz sherry wine (for sauce)
2	oz dry white wine (for sauce)
	Romano cheese

Preheat oven to 450°F. Wash mushrooms well in cold water and remove stems. Finely chop and save 1½ cups of the stems. Melt the butter in a pan over medium heat and add the chopped mushroom stems, green onions, parsley, garlic, and red bell pepper. Sauté for about 5 or 6 minutes. Add the crabmeat, sherry, and lemon juice. Cook 2 or 3 more minutes. Season using salt and pepper. Add Italian bread crumbs a little at a time until the stuffing is the right texture for placing in the mushrooms, but not too dry. Place a generous amount of stuffing in each mushroom. Place the stuffed mushrooms on a platter and top with the sauce mixture of melted butter, sherry and white wine. Bake in oven 10 to 15 minutes or until the mushrooms are golden brown. After you take them out of the oven, sprinkle them very, very lightly with Romano cheese. Makes 8-10 appetizer portions.

Sincerely,



Jerald Horst
Associate Professor, Fisheries