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May 1, 2008 Volume 32, No. 5

The Red Snapper Issue

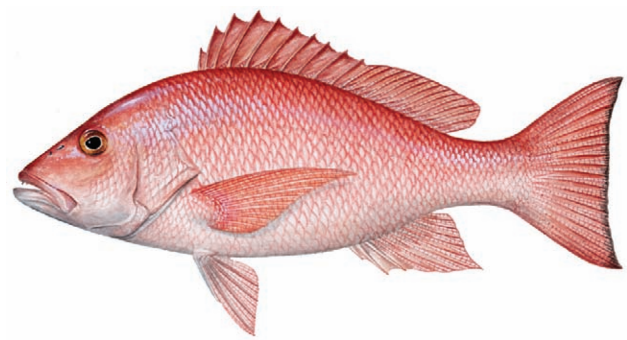

Photo credit: Diane Rome Peebles. Courtesy Florida Fish and Wildlife Commission and the artist.

Recent developments in the management of red snapper in the Gulf of Mexico (particularly recreational fishing; see last month's issue for background *www.seagrantfish.lsu.edu/pdfs/lagniappe/2008/04-01-2008.pdf*) have produced escalating levels of controversy. In order to provide readers with a sound base of information, most of this issue will be devoted to this topic, and a couple of renowned experts have been asked to contribute. The larger questions addressed now (briefly) will be:

Who regulates red snapper (and other Gulf fisheries)?
How much is known about the biology of red snapper?
How are red Snapper stock assessments performed?

Who Regulates Red Snapper and other Gulf fisheries?

In Louisiana, marine fisheries are regulated by the state (out to 3 nautical miles, nm) and by the federal government within the exclusive economic zone (EEZ: from 3 to 200 nm). Since red snapper are a relatively deep-water fish, nearly all come from federal waters off Louisiana. In nearly every instance, Louisiana state regulations mirror the federal ones, as they have historically, to make enforcement simpler and fairer. The recent actions in Texas and Florida to establish more liberal red snapper regulations within their sate waters has generated a firestorm of controversy – in particular, because of those states' 9-nm boundaries. However troubling these actions are, it should be noted that the 9-nm boundaries in Texas and the Gulf waters of Florida were created under the conditions that existed when those states were admitted to the Union.

The Magnuson-Stevens Act

The principle law governing fisheries in federal waters is the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1976. The original intent was to establish authority over the EEZ to eliminate harvests by foreign fishing fleets. While conservation of fish stocks was another goal, the MSFCMA also provided for significant expansion of U.S. offshore fishing capability. The result was, within 10 years, an over-capacity in the domestic fleet similar to that previously occurring from the foreign fleets.

The MSFCMA also created a management structure based on regional fishery management councils, with voting members that include the state marine fisheries directors, individuals from each state who are knowledgeable about fishing or conservation and the regional NOAA Fisheries director. The councils receive advice from their appointed advisory panels and stock assessment panels, and from scientific, statistical and management committees. The councils are tasked with the production of fishery management plans (FMPs) that must protect resources while maintaining opportunities for commercial and recreational harvests. Plan implementation is the responsibility of the Secretary of Commerce, primarily via NOAA Fisheries Service. Thus, the Fisheries Service is faced with the unenviable task of applying the legal mandates of Congress (the MSFCMA) and the Gulf Council (the FMPs).

In 1996, the MSFCMA was reauthorized by Congress as the Sustainable Fisheries Act (SFA), with the addition of new, specific mandates. FMPs must conform to 10 national standards, including these that are most significant in red snapper management:

Standard 1: Conservation and management measures must prevent overfishing while producing ongoing optimum yield from each fishery,
Standard 2: Conservation and management measures must be based on the best scientific information available,
Standard 3: Individual stocks must be managed as a unit throughout their range to the extent practicable; interrelated stocks must be managed as a unit or in close coordination,
Standard 4: Management measures cannot discriminate between residents of different states; allocations of privileges must be fair and equitable,
Standard 8: Measures must be consistent with conservation requirements and must include consideration of the importance of fishing resources to fishing communities to provide for sustained participation and minimize adverse economic impacts,
Standard 9: Management must minimize bycatch or mortality from bycatch.

The SFA further established requirements that each FMP include a definition of overfishing and a plan for rebuilding overfished stocks (overfishing must be stopped within two years and a plan must be developed to rebuild overfished fisheries within 10 years). The SFA defines overfishing as excess removal of fish and overfished as a biomass level that has declined below the established threshold.

The latest reauthorization of the MSFCMA in January 2007 included major new mandates, including that FMPs must establish a mechanism for setting annual catch limits that prevent overfishing. Catch limits also must be in place by 2010 for every stock currently overfished.

Beginning Red Snapper Regulations

The first Gulf reef fish (including red snapper) FMP was completed in 1981, and described a declining fishery for red snapper. A 13-inch minimum size limit was the first Gulf regulation, in 1984. Since then, there have been more than 35 federal management measures on red snapper in the Gulf.

In 1988, the first red snapper stock assessment showed that the species was both overfished and undergoing overfishing. That designation required action from the Gulf Council and NOAA Fisheries to recover the stock. The assessment concluded that fishing mortality needed to be cut by 75 percent in order to recover the species by 2000. The Gulf Council believed that the impacts to fishers from a 75 percent cut would be too severe, and opted for measures that would reduce harvest by 20 percent, postponing additional restrictions for the future.

At least one early action established a criterion that remains. FMP Amendment 1 in 1990 set the recreational/commercial catch allocation at 49 percent/51 percent based on 1979-1987 landings data. This allocation ratio has not changed, although the directed fishery has changed significantly over the subsequent years.

The 1988 assessment also described the significant contribution to total fishing mortality that comes from shrimp trawling bycatch mortality of young red snapper. The first bycatch reduction device (BRD) mandate for Gulf shrimp trawls came in 1998; the hope was that about three-quarters of juvenile red snapper would escape each net. Since then, trials have demonstrated low efficacy (about 15 percent) in releasing juvenile red snapper via previously permitted designs. Temporary closures of certain juvenile habitat to trawling has been under consideration, but the recent reductions in trawling effort and implementation of new BRD designs have allowed postponement of closure considerations, at least temporarily.

Much more information on these topics can be found in:

Hood, P. B., A. J. Strelcheck, and P. Steele. 2007. A history of Red Snapper Management in the Gulf of Mexico. Pages 267-284 in W. F. Patterson, III, J. H. Cowan, Jr., G. R. Fitzhugh, and D. L. Nieland, editors. Red snapper ecology and fisheries in the U.S. Gulf of Mexico. American Fisheries Society, Symposium 60, Bethesda, Maryland.

The Magnuson-Stevens Fishery Conservation and Management Act: Reauthorization Issues. Congressional Research Service, February 7, 2005. E. H. Buck. *http://digital.library.unt.edu/govdocs/crs/permalink/meta-crs-10098:1*

The Magnuson-Stevens Fishery Management and Conservation Act of 1996 *http://www.nmfs.noaa.gov/sfa/magact/*

The Magnuson-Stevens Fishery Management and Conservation Act of 2007 *http://www.gulfcouncil.org/Beta/GMFMCWeb/downloads/MSA07.pdf*

How much is Known about the Biology of Red Snapper?

Age and Growth

Age of most marine fishes (except sharks and rays) is estimated from examinations of the otoliths (earbones) that are located beneath the brain and function much like the human inner ear (balance and detection of vibrations). After cutting a thin cross-section from the center of the otolith, inspection under a microscope reveals concentric dark growth rings that are akin to the growth rings seen in trees. One ring equals one year of life.

As little as 20 years ago, red snapper from the Gulf of Mexico (GOM) were thought to live only about 10-15 years; we now know them to be significantly long-lived compared to many familiar marine fishes. Spotted seatrout (specks) in Louisiana seldom survive past age 5, tunas are old at age 12, and redfish may live about 40 years at the maximum. The oldest red snapper reported in the scientific literature is an individual sampled in February 1991. This specimen, a female 53.6 years of age at time of capture, was actually hatched before World War II and survived to “see” the dawn of the atomic age, the first man on the moon and the technological boom of the late 20th century. However, an even older specimen, almost 59 years of age, was sampled from the commercial harvest by LSU biologists some years later. Such old individuals have been rarely encountered in the various research projects that have sampled either the commercial harvest or the recreational harvest; they have become even increasingly more uncommon in the last decade or so. The vast majority of the red snapper harvested by the two fisheries are in the range of 2-6 years of age.

Young Zachary Aucoin caught this 30-lb snapper in 2004. The fish was 19-years-old, and was spawned during the year of the fisrt Gulf red snapper fishery management plan.

Red snapper grow in length relatively fast during their first 10 years or so of life and reach, on average, a length of about 30 inches. Growth rate decreases drastically thereafter as they shift more energy into reproduction and less energy into growth. This growth strategy also allows them to get big quickly, an advantage in both avoiding and deterring predators. However, there is great variety in individual growth rates among red snapper; size is little indication of age. For instance, a 5 year old red snapper may range in length from as little as 13 inches to as many as 32 inches, and a 32-inch-long specimen may range from 5 to 50-plus years of age. Interestingly, old individuals are seldom very large and large individuals are seldom very old. The 53.6 year old female referenced above was a mere 33.5 inches long and weighed only 17.5 pounds. Conversely, the world angling record red snapper (caught in the GOM off Louisiana by Doc Kennedy of Grand Isle on June 23, 1996) was 41 inches long and weighed 50.25 pounds, yet was only 20 years old!

Spawning and fecundity

The red snapper spawning season in the northern Gulf of Mexico begins in May and ends in late September (about 120 days); peak spawning months appear to be May, June and July. Almost all female red snappers in the GOM off Alabama become spawning-capable (reproductively mature) at age 2 and at a total length of about 13 inches. In the GOM off Louisiana, however, while many females become spawning capable at age 2, some female red snappers do not start spawning until they are age 5 and almost 27 inches in length. This is likely due to differences in population sizes between the two areas (fewer red snapper off Alabama).

Red snappers, like many other marine fish species, are batch (or serial) spawners. This means they are capable of repeatedly spawning batches of eggs every few days over the course of the entire spawning season, a strategy that allows them to produce and spawn many times more eggs than if they only spawned a single time per season. The number of eggs spawned in each batch varies with the size of the individual and can be as few as a 1,000 for a small female to as many as 2.5 million for a large, healthy female. Given that the average time between successive spawning is four days, female red snappers will spawn about 30 times (some more, some fewer) during the spawning season. This means that even a small red snapper will produce a seemingly respectable 30,000 eggs in a season while a large female might spawn an incredible 75 million or more eggs! And if it should survive to the known maximum of its longevity, a female could potentially spawn nearly 4 billion eggs in her lifetime. Naturally, with all these red snapper eggs being spawned, it must be incredibly difficult to survive from egg to spawning adult or the GOM would be wall to wall red snappers!

Habitat

Red snapper are pelagic spawners, that is, the males and females simultaneously release their eggs and sperm up in the water column and allow the fertilization of the eggs to the whims of the ocean. The eggs hatch after about a day and the larvae are dispersed by the currents and tides of the GOM. After a month or two of feeding, growing, and being carried by the currents, the young red snapper take up residence on low-relief, inshore or offshore, sand or mud habitats where they will spend the next year or two. It is while inhabiting these areas that they are most susceptible to being caught in shrimp trawls.

Shortly before they reach 2 years of age, most red snappers move to areas of cover and high relief such as natural and artificial reefs, shipwrecks and especially oil platforms, where these structures afford both food and protection from predators. Surprisingly, little of their food comes directly from the structure itself; rather they forage at night for shrimps, worms and crabs that live on the seabed as much as several hundred yards away from the structure. While resident on these structures, red snapper are quite safe from the shrimp nets, but they become vulnerable to both commercial and recreational fishermen. It is thought by some that, after several (5-10) years of residency on either reefs or rigs, red snapper migrate away from these structures to remote, more isolated habitats in the deeper waters of the GOM.

Movements and population structure

The red snapper in the GOM is currently managed under the “unit stock hypothesis;” this generally implies that there is both a great deal of long-distance movement by individuals and little genetic difference among individuals and populations throughout the GOM. Management of red snapper under the unit stock hypothesis also has the advantage of simplicity in both the application and enforcement of regulations. Tagging studies (in which fish are caught, tagged, released and hopefully re-caught at a later time) have shown that red snapper are indeed capable of movements as much as 350 miles, especially when motivated to do so by tropical storms and hurricanes. However, in these same studies, the vast majority of tagged red snappers are recaptured within a few miles of their initial tagging sites even after several years of post-tagging freedom. Genetic studies analyzing both nuclear DNA and mitochondrial DNA have generally been unable to refute the unit stock theory; however, they have shown that there are minor, yet very consistent, differences in the genetic makeup of red snapper populations across the GOM. Also certain demographic differences, such as the variations in ages/lengths at maturity in Alabama and Louisiana red snappers, indicate that local populations of red snapper are largely isolated from neighboring populations.

All of the above suggest that red snapper in the GOM may indeed have become structured into a series of semi-isolated, largely independent populations that perhaps should be managed as its own unit stock. Application of region-specific regulations (quotas, minimum sizes, daily bag limits, etc.) in different areas of the GOM may be a more appropriate approach to management of the species, if not more complicated for management and enforcement personnel.

Release mortality

Minimum size regulations have been applied to both the recreational and the commercial red snapper fisheries since 1984. The purpose of minimum sizes was to increase the yield of the fisheries and to enhance the likelihood of female red snapper spawning at least once before being harvested. Both fisheries started with a 13 inch minimum, but over the years the minimum allowable length for harvest increased to 15 inches in the commercial fishery and 16 inches in the recreational fishery. Just recently the minimum size for the commercial fishery has reverted to 13 inches.

For years there have been anecdotal reports of great numbers of dead, discarded, undersized red snappers floating off from behind fishing boats, both commercial and recreational. The ascent from depth to the water’s surface often produces injury to hooked red snappers due to hydrostatically-induced barotrauma (eyes bulging, intestine protruding from anus, air bladder distended and stomach protruding from mouth, etc.). What are the probabilities of an undersized red snapper surviving catch and release?

Two studies, one off Texas and one off Louisiana, simulating techniques used in the red snapper recreational fishery have estimated mortality of regulatory discards to range between 1 percent and 44 percent and increasing with depth of capture. In the relatively shallow waters off Alabama, another study calculated a discard mortality of 13 percent for red snapper caught with recreational gear. Among red snapper less than 18 inches released from headboats in Texas waters, 15.2 percent floated off and 1.4 percent were discarded dead.

Given the gamut of life-threatening circumstances that a red snapper regulatory discard must face, it may not be unreasonable to expect a near 100 percent mortality of discards in the commercial fishery. In a study conducted on commercial fishing boats off Louisiana, 69 percent of undersized red snappers returned to the water were either near death (as evidenced by their failure to resubmerge) or dead. Additional mortality due to either fish or mammalian predators may occur on specimens that are trying, perhaps struggling, to return to depth. Should an individual survive the catch and release experience and should it avoid the various predators as it swims down, there is also the possibility of long-term mortality due to barotrauma-induced internal injuries. Additional studies are needed to determine the level of, as well as spatial and temporal patterns in, both short-term and long-term mortality of discarded red snapper.

- David Nieland

Sources:

Patterson, W. F., III, J. H. Cowan, Jr., G. R. Fitzhugh, and D. L. Nieland, editors. 2007. Red snapper ecology and fisheries in the U.S. Gulf of Mexico. American Fisheries Society, Symposium 60, Bethesda, Maryland. See particularly:

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Wilson, C. A., and D. L. Nieland. 2001. Age and growth of red snapper Lutjanus campechanus from the northern Gulf of Mexico off Louisiana. Fishery Bulletin 99:653–664.

Woods, M. K. 2003. Demographic differences in reproductive biology of female red snapper (Lutjanus campechanus) in the northern Gulf of Mexico. Master’s thesis. University of South Alabama, Mobile, Alabama.

How are Red Snapper Stock Assessments Performed?

Red snapper recreational and commercial landings data are accumulated each year. Because red snapper are managed as one large population in the Gulf of Mexico (GOM), these data are independent of where the fish were caught. Most fisheries scientists agree that NMFS does a thorough job of accounting for how regulations can affect catch rates and measures of catch-per-unit-effort are given a lot of weight in the assessment. Fishery independent (FI, not caught by the directed commercial and recreational fisheries) indices of abundance are used to “tune” the assessment so that the computer models provide the best fit to the landings data and do not produce trends in time that are inconsistent with the FI data. The FI indices are quite varied and include trawl surveys of juvenile red snappers, estimates of the abundances of red snapper larvae through time, etc, as indicators of trends in abundance. The effects of climate and market forces on red snapper populations are more difficult to deal with and are not significant components in the assessment models.

However, even the things scientists know well can generate uncertainties in assessment outcomes. For example, the assessment models are very sensitive to catch at age even though individual red snapper can be aged with great accurately. The problem is that once red snappers reach about 10-12 years old, their growth rates slow and more and more of their energy is devoted to spawning products (eggs and sperms), especially by females. So a fair sized red snapper may be between 10 and 50 years old and the biggest fishes are never the oldest.

Because it is impossible to age every fish that is caught, fish biologists have developed age-at-weight relationships based on thousands of otolith-aged red snapper, and probabilistically assign ages to fish in the catch based upon this relationship. This generates uncertainty, and there are many other variables where such uncertainties exist. To overcome this problem in the computer models, both the variables of interest are allowed to vary over ranges observed in nature and the models are run over and over again, usually as many as 500-1,000 times (called bootstrapping) until a set of models emerge which provide the best hindcast and fit to the historical landings and the FI indices of abundance. Strong year classes are accounted for even if we don't know the environmental conditions that produced them. Only model runs that fit both of these criteria are considered. Most of the time spent on assessments is devoted to this first step, since every subsequent calculation hinges on these calculations. This is the base model, and it is used to predict harvest rates over the next couple of years, which is all that stock assessment models were ever intended to do.

Computer models for predictions of long-term management objectives are also bootstrapped, but do not actually use the assessment models described above in the same way. What is done in this step is to take the best estimates of parameters from the base model and assume that these are fixed in time at their average value and do not vary, although runs are done with different levels of recruitment. This is called an equilibrium model that also is run thousands of times for each assessment. But what are varying now are management alternatives. A run might be made with high recruitment, 40 percent reduction in bycatch, two fish bag limit for recreational fishery, 15 inch size minimum for the recreational fishery, 13 inch minimum for the commercial fishery, seasonal closures, each fishery with its specific regulatory discard rate and discard mortality, etc. This is projected forward in time both to estimate a harvest rate and to determine if the management goal is reached by the year 2032.

The next run could be low recruitment, 50 percent reduction in bycatch, three fish bag limit and 20 inch minimum size for the recreational fishery, 14 inch minimum for commercial sector, slight changes in discards, shorter fishing season, etc. This is projected forward in time to estimate a harvest rate and to determine if the management goal is reached, and on and on. You can imagine the number of different combinations possible. This is done thousands of times and what is generated and presented to the Gulf of Mexico Fisheries Management Council is a set of management alternatives that produces catches that can achieve rebuilding, but with very different probabilities of reaching the 2032 management goal successfully.

The longevity (they may live almost 60 years) of red snapper enters the picture here because Congress (not NMFS) ruled in the Magnuson-Stevens Sustainable Fisheries Act (MS-SFA) that rebuilding has to occur within 1.5 generation times, which for red snapper is the year 2032 based upon current information about longevity. NMFS is constrained by law to do this, but they are sometimes as skeptical about these long-term predictions as are others. They have lessened the probability of drastic restrictions by using 5-year rebuilding plans as a measure to provide stability in the industry. So far this is working, but the 2007 reauthorization of the MS-SFA incorporates many concerns of environmental groups, so overfishing now must end on all fisheries in U.S. waters by 2010.

Recent research, such as Reanalyses of Gulf of Mexico fisheries data: Landings can be misleading in assessments of fisheries and fisheries ecosystems, by Kim de Mutsert, James Cowan Jr., Timothy E. Essington and Ray Hilborn (Proceedings of the National Academy of Sciences 2008) mitigates some of the gloom-and-doom predictions that were used as evidence by the environmental groups to convince Congress that most fisheries are collapsing — but the MS-SFA remains the law of the land.

The Gulf Council expects to see management alternatives with probabilities of success that range from 16 percent to 84 percent; this is presented as the allowable biological catch (ABC) range.

By law, the Gulf Council must pick a total allowable catch (TAC) from within this range. For the last 15 years, the it has picked TACs from the low probability end (with a much-less-than 50:50 chance of rebuilding the stock by 2032) of the ABC range. These alternatives all were based on a significant reduction in shrimp bycatch mortality; each year that shrimp bycatch remained high, the less likely it became that 9.12 million pound combined harvest levels could be sustained. Because it was possible, albeit improbable, that recovery could occur with the proposed regulations, a decision was postponed until the shrimp bycatch numbers had been fully resolved. When it became overwhelmingly obvious that a technological solution to shrimp bycatch was not possible for red snapper, no options other than major catch restrictions were feasible.

- Jim Cowan

FISHERIES SERVICE PROPOSES AMBERJACK AND GRAY TRIGGERFISH RULE

NOAA Fisheries Service seeks public comment on a proposed rule that would implement measures to end overfishing and rebuild greater amberjack and gray triggerfish in the Gulf of Mexico. The most recent assessments for these species indicate reductions in harvest are needed to end overfishing and allow the stocks to recover within each species' respective rebuilding schedule. For 2008, the overall harvest of greater amberjack needs to be reduced by 32 percent, and for gray triggerfish, reduced by at least 49 percent. To ensure these targets are met, the rule proposes annual catch limits (ACLs) and accountability measures (AMs) for these species. These measures are outlined in Amendment 30A to the Fishery Management Plan (FMP) for the Reef Fish Resources of the Gulf of Mexico (Amendment 30A) submitted by the Gulf of Mexico Fishery Management Council.

Proposed Management Measures

For greater amberjack, the proposed rule would:

- Establish ACLs and AMs that require inseason adjustments for the recreational and commercial sectors.
- Increase the recreational minimum size limit to 30 inches fork length (FL).
- Set the bag limit for captain(s) and crew of for-hire vessels at zero.
- Establish a greater amberjack commercial fishery quota of 0.503 million pounds (mp) and a recreational fishery quota of 1.368 mp.

For gray triggerfish, the proposed rule would:

- Establish gray triggerfish ACLs and AMs.
- Increase the gray triggerfish recreational and commercial minimum size limit to 14 inches FL.
- Establish a gray triggerfish commercial hard quota of 80,000 pounds for 2008, 93,000 pounds for 2009 and 106,000 pounds for 2010.

Accountability Measures and Annual Catch Limits
The proposed rule addresses requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) that ACLs and AMs be in place by 2010 for stocks undergoing overfishing. ACLs and AMs work together as a management system to end and prevent overfishing. The ACL must be set ‘‘at a level such that overfishing does not occur in the fishery.”

Proposed AMs for both species give the NOAA Fisheries Service Assistant Administrator (AA) the authority to shorten the fishing season for a sector should landings go over the ACLs. For greater amberjack, the AA would have the authority to shorten the season within the fishing year and in the following year if ACLs are exceeded or are projected to be exceeded. For gray triggerfish, the recreational AM would provide the AA the authority to shorten the fishing year in the following year if the ACL is exceeded, while the commercial AM would give the AA the authority to shorten the fishing season within the fishing year and in the following year if the commercial ACL is exceeded. Gray triggerfish ACLs would be defined as multi-year running average landings, with exception of the first year which would use only 2008 landings.

All comments received by NOAA Fisheries Service specific to the proposed rule will be addressed in the final rule. To comment on these measures, your information must be received no later than 5 p.m., EST, on May 23, 2008. You may submit comments by any of the following methods:

Electronic Submissions: Federal e-Rulemaking Portal: *http://www.regulations.gov*. All comments received are part of the public record and will generally be posted to *http://www.regulations.gov* without change. All personal identifying information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information. NOAA Fisheries Service will accept anonymous comments. Attachments to electronic comments will be accepted in Microsoft Word, Excel, WordPerfect, or Adobe PDF file formats only.

Mail: Peter Hood, Southeast Regional Office, NOAA Fisheries Service, 263 13th Avenue South, St. Petersburg, Florida 33701. Fax: 727-824-5308, Attention: Peter Hood.

The proposed rule is also available via the Internet at:
http://www.gpoaccess.gov/fr/index.html (do an advanced search under proposed rules for “page 19040”). Printed or electronic copies of the rule and Amendment 30B can be obtained from the Southeast Regional Office by contacting Peter Hood (see address above).

FEDERAL DATA REQUIREMENTS FOR CHARTER FISHING

NOAA Fisheries Service is working to improve the quality of information used in managing the fisheries resources of the Gulf of Mexico. Having appropriate and current data enables the Gulf of Mexico Fishery Management Council and NOAA Fisheries Service to carry out responsive and timely fisheries management.

Operators participating in the for-hire fishery are reminded that, if selected to report by the Southeast Fisheries Science Center (SEFSC) Director, they are required to supply fishing reports of their fishing trips to an authorized statistical reporting agent or send reports in the mail postmarked not later than seven days after the end of each month.

Recently, the SEFSC mailed selection letters to for-hire permit holders who operate headboats for Gulf of Mexico Coastal Migratory Pelagics and Gulf of Mexico Reef Fish. Operators selected to report to the headboat survey are required to report landings and effort data from all trips made. For each trip there must be an accurate record of the name and official number of the vessel; the operator's U.S. Coast Guard license number; the number of fish of each species taken; the estimated total weight of each species; the number of anglers aboard; the date(s), location and duration of fishing; number of anglers actually fishing; pay type of trip (charter vs. per-person); distance from shore; and condition of released fishes (released dead or released alive). Reporting is required for trips fishing in state waters as well as in the federal waters of the Exclusive Economic Zone. Accurate and timely reporting of logbooks in the headboat fishery is a requirement for obtaining and renewing charter vessel/headboat permits. The Magnuson-Stevens Fishery Conservation and Management Act provides penalties for violations of its regulations, including civil monetary penalties up to $130,000, permit penalties that include sanctions and revocation, and forfeitures of catch and vessels.

Contact Ken Brennan at the NOAA Fisheries Service Beaufort Laboratory, 252/728-8618 with questions about reporting. Questions about required permits should be referred to the NOAA Fisheries Southeast Region Permits Office at 727/824-5326, or go their Web site for more information: *http://sero.nmfs.noaa.gov/permits/permits.htm*

THE GUMBO POT

Ken's Crabocado Dip

This is a favorite developed by Ken Rust of Baton Rouge. Ken reports that some people don't care for the anchovies, but rather than provide a substitution in the recipe, he suggests that "they won't like this one".

Melt 1 stick butter, add 1.5 cans cream of mushroom soup, 1 tablespoon crushed black pepper, 4 dashes Tabasco, ½ teaspoon of thyme. Simmer 5 minutes. Add 1 pound crabmeat, lump or backfin. Add 1 cup evaporated milk, and juice of one large lemon. Stir gently and salt to taste.

Slice 2 avocados and line your baking dish with them. Pour the crab mixture on top.

Dice one can of anchovies very finely and mix them with a full cup of bread crumbs. Spread this on top of the casserole mixture, and punch topping down into the mixture with a spoon. Bake 15 minutes at 350. You may want to broil it for a minute at the end to brown the top a little. Serve with crackers.

If you hear anything whistling….its your arteries.

For more information, contact your local extension agent:

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