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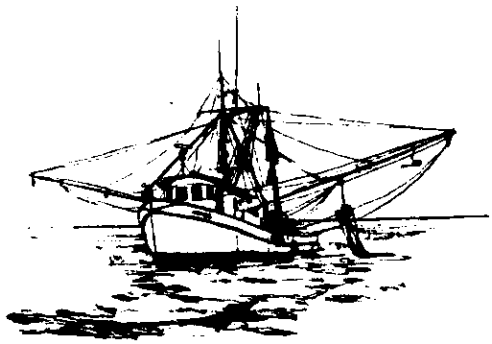
March 1, 2006 Volume 30, No.3

NEW PROBLEMS— OLD PROBLEMS



There is an old saying that the more things change, the more they stay the same. That may particularly be true of the shrimp industry. Shrimp are currently the most valuable commercial fishery in the Gulf and management of the shrimp industry is arguably the most controversial.

Review of a 1949 paper presented by William W. Anderson, Chief of Gulf Investigations for the U.S. Fish and Wildlife Service shows how much the problems of 1949 are still with us 57 years later.

When Anderson's paper was published, white shrimp made up 95% of the total shrimp catch of the Gulf and south Atlantic states and two-thirds of the total catch came from Louisiana. He opened his paper with an historical review of the fishery.

Before about 1912 to 1915, the most efficient gear for catching shrimp was the haul seine and the annual catch for the southeastern U.S. was about 20 million pounds. Somewhere between 1912 and 1915 the otter trawl was introduced and by 1917 it became the main commercial shrimp gear. Catches increased to 50 million pounds in 1918 and by 1945 they had reached 160 million pounds.

The first problem that Anderson said the shrimp industry faced in 1949 is that too many vessels were being built for the fishery. He used Louisiana as an example. By 1939, shrimp catches (mainly white shrimp) had reached about 100 million pounds and had stayed at about that level for 10 years, in spite of the addition of a large number of new boats and the vast amount of repowering of old vessels by the replacement of automobile engines with marine engines. He states that rather than catches going up with more vessels ".... we are merely dividing the annual production amongst an ever increasing number of units, for the industry is continuing to build vessels at a rather rapid rate".

The build-up was fueled, he maintained, by rapid increases in shrimp prices. In 1940, the price paid to fishermen for "jumbo shrimp" was $10 per barrel. The price rose during the early part of World War II until price controls were put on at $30 per barrel. After the war ended in 1945, price controls were lifted and by 1949, jumbo shrimp rose to $60 to $70 per barrel.

He pointed out that there were limits to what consumers would pay for shrimp and that there already appeared to be difficulty in moving shrimp at these prices. He summed his assessment of the problem by saying, "Since a smaller number of vessels could no doubt harvest the crop with less effort, it would seem an unwise procedure to continue increasing the number of vessels in the fishery."

Anderson then moved to the second problem that he saw in the shrimp industry, the harvesting of shrimp at too small sizes. After reviewing the biology of shrimp he stated, "At present we believe the best means of increasing the total poundage of shrimp lies in more efficient harvesting of the annual crop. This involves taking advantage of the rapid growth of shrimp and catching more of the larger ones and less of the smaller. To do this the fishing effort must be shifted in intensity from those areas and during those seasons where small shrimp are predominant to those where larger shrimp are predominant."

He added, "There are no doubt many persons engaged in the industry who realize the advantage of catching the larger sizes of shrimp which are much easier and less expensive to handle and which bring the biggest price. At the same time we continue to take vast amounts of small shrimp despite the fact that the more of these that are caught the less of the more desirable large shrimp will be available."

The third problem facing the shrimp industry, said Anderson, was the direct threat of pollution from the industrialization of coastal areas and the possible threat posed by dredging of waterways. "Just what effect this (dredging) may eventually have, we do not know at this time," he said. "But any drastic change in this environment may be detrimental to many species.

Source: *Some Problems of the Shrimp Industry.* W.W. Anderson. Proceedings of the Gulf and Caribbean Fisheries Institute, 1:12-14. 1949.

THE NOAA FISHERIES RECOVERY PLAN

In response to the effects of Hurricane Katrina, U.S. Commerce Secretary Carlos Gutierrez announced a formal determination of a fishery failure and made a fishery resource disaster declaration for the Florida Keys and the area from Pensacola Florida westward to the Louisiana-Texas state line. On October 4, Gutierrez made a similar declaration for all of Texas and Louisiana because of damages from Hurricane Rita.

Both actions were made through provisions of the Magnuson-Stevens Fishery. Conservation and Management Act, which authorizes assistance to assess the impacts,

restore the fisheries, prevent future failure, and assist fishing communities' recovery efforts after a natural disaster, and the Inter-jurisdictional Act, which authorizes that funds can be made available for assistance to fishermen to alleviate harm resulting from a natural disaster.

Under similar actions, after Hurricane Ivan struck the Gulf Coast in 2004, $9 million in aid was appropriated to repair the oyster industries in Alabama, Florida, Mississippi and Louisiana. In 1997, $10 million in relief aid was appropriated to recover from damage caused by Hurricanes Hugo and Andrew.

In late February 2006, NOAA Fisheries (National Marine Fisheries Service) released *A Plan for Recovering Gulf of Mexico Fisheries Using an Ecosystem Approach* for fisheries damaged by Hurricanes Katrina, Rita and Wilma. The "ecosystem" or "holistic" approach is being used because the issues in rebuilding are so complex and interrelated. Fisheries recovery will require partnerships among state, local, and regional planning and management bodies, along with the federal government and advice from fisheries user groups. NOAA is reportedly seeking a billion-and-a-quarter dollars in federal appropriations for the effort.

The NOAA Fisheries Plan has four major areas for recovery efforts:

1) Providing short-term financial assistance and other types of support services to fishermen adversely affected by hurricane events.

2) Restoring the infrastructure needed to support commercial and recreational fisheries.

3) Developing and funding capacity reduction, bycatch reduction, data collection, and monitoring, and enforcement programs intended to improve conservation and management of Gulf of Mexico fisheries over the long term.

4) Recovering essential fisheries habitat and building more resilient coastal areas supporting fish and fisheries.

SHORT TERM RELIEF

- Remove marine debris from oyster beds, tidal creeks, salt marshes and coastal wetlands, barrier islands, and the nearshore marine environment.

- Clean oyster beds of excess sediment, using hydraulic methods, and prepare for spatfall by planting sufficient amounts of cultch.

- Develop temporary marine services centers to cluster docking facilities, fuel, ice and provisions, offloading, processing and distribution and marine repair facilities for seafood industries.

- Provide direct assistance to fishermen and seafood workers to undertake cleanup activities and begin repairing damaged facilities.

- Employ fishermen and vessel owners in marine debris and living marine resource assessment activities.

- Utilize NOAA's charting and mapping capabilities to help identify and recover marine debris fields and other obstructions to fishing and navigation.

RESTORING INFRASTRUCTURE

- Re-development of marinas, piers, docks, wharves and warehouses to support commercial and recreational fishing, and especially investments in public facilities supporting working waterfronts.

- Planning and support for marine (fishing-related) industrial parks to cluster processing and marine support businesses in ways that increase access to key facilities and services, and enhance intermodal transportation of fishery products.

- Replacement of private fisheries infrastructure through loan programs and other investments to be repaid.

RESTRUCTURING FISIERIES TO BE SUSTAINABLE

- Develop buyback/buyout programs to ease overcapitalization and overfishing of Gulf resources (shrimp, red snapper, charter/headboat fisheries). Before the hurricanes struck the Gulf States, a number of fisheries had too many people and too much investment in them. This resulted in low or no profit and in some cases it led to overfishing. In particular, the shrimp fishery is severely overcapitalized. Its products suffer from low prices due to foreign competition and it is facing rising fuel prices. Gulf shrimp fisheries are already facing forced cutbacks in fishing effort in order to rebuild overfished populations of red snapper and other bycatch species. Other Gulf fisheries for which reductions in fishing effort have been discussed are the commercial red snapper fishery and charter/headboat red snapper fishery. One important recent example of the successful fishing effort reduction is the sea scallop fishery in the northeast U.S. Five years ago, the fishery was in poor condition, with falling catches, strong imports undercutting prices, and the prospects of large scale effort reductions to eliminate overfishing. This industry is now one of the most profitable of all United States fisheries. By reducing effort by more than half, the average catch per day fished has increased, even as the number of days at sea for full time vessels has been reduced to less than 100.

- Waive payback provisions of buyout programs to make the transition to profitability in the shrimp and other fisheries more likely.

- Coordinate effort reduction in federal and state waters to avoid a potentially significant loophole.

- Develop and implement a seafood promotion strategy for Gulf fisheries where restructuring for sustainability has occurred. Reducing costs and creating a unique market identity (niche) for the product are necessary to re-establish the Gulf shrimp fishery as a profitable sector in the seafood industry. By reducing effort, the average catch per unit of effort (CPUE) will increase, thereby increasing efficiency. This is a typical consequence of reducing effort in severely overcapitalized fisheries. In terms of creating unique products, one result of reduced effort will be larger average size of shrimp caught. Given the clear price effects for larger shrimp, this too should be a direct consequence of reduced effort. Finally, marketing wild-caught Gulf shrimp as distinct from aquaculture-derived imports is an important strategy to pursue, and has been part of industry efforts to date.

- Institute job-retraining programs to ease the transition of displaced fisheries workers into alternate occupations. In addition to downsizing the fleets fishing for shrimp, red snapper and other species, job retraining should be an important component in restructuring the fisheries. In previous fisheries where effort reduction programs were required, there were significant job retraining components. For example, when effort was halved in the New England groundfish fishery, 1,000 people were retrained for other professions through programs administered through the Department of Labor.

- Replace fishing gear (trawls, hook gear and gill nets) damaged or lost in the hurricanes for those vessels not bought out as a result of effort reduction programs.

- Distribute advanced versions of turtle exclusion devices and bycatch reduction devices in the remaining fleet of shrimp vessels.

- Purchase equipment (and provide one year of associated fees) to equip the entire offshore shrimp fleet and the reef fish fleet with electronic vessel monitoring systems (VMS) to record hourly positions.

- Equip all federally permitted fishing vessels with electronic logbooks to record haul-by-haul catch data.

- Provide 1% coverage of the shrimp and reef fish fisheries with at-sea observer coverage to document catch, bycatch and profitability of these fisheries, for three years.

- Develop and fund a cooperative research program to test various gears and to monitor the recovery of Gulf fishery resources and fisheries. This should include economic and social science research documenting the impacts on people of the restructuring of Gulf fisheries.

RECOVERING ESSENTIAL FISHERIES HABITAT

- Increase the number and size of wetlands restoration projects using CWPPRA in Louisiana and similar mechanisms in other states. These efforts will be especially focused on wetlands restoration in Louisiana and, potentially, barrier island restoration off Mississippi and Alabama. Fisheries of the Gulf of Mexico are unique because they depend heavily upon species that spend a considerable portion of their life cycles in nearshore coastal areas and estuaries. These estuarine-dependent species include brown, white and pink shrimp, oysters, menhaden, red snapper, seatrout, and many other species of commercial and recreational importance. NOAA Fisheries notes that legislation may be required to solve the problem of Louisiana not being able to meet its required 15% match of state funds, nor may Mississippi be able to meet its 50% match requirements.

- Develop all hazard risk maps for the northern Gulf and southwest Florida areas to assist land use planning for recovery.

- Utilize NOAA's expertise to assist creating rebuilding coastal communities, especially focusing on fisheries infrastructure, zoning to mitigate against future catastrophes and natural disasters, and creating building standards for coastal structures.

LSU BAIT CUTTING MACHINE

Louisiana's crab and crawfish fisheries share one thing, a shortage of bait. Shad and slicker (skipjack herring) supplies change from one year to the next, but are never plentiful. Freshwater fishery bycatch from the Lake Erie commercial fishery has been diverted to other uses. Menhaden supplies often seem to be most available at the wrong times.

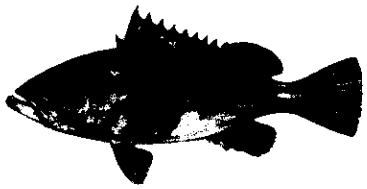
Common carp, often-called "German carp", have always been excellent bait, but are large and must be cut to small pieces to be used. Now Louisiana freshwaters have been overrun with two new carps, the bighead and the silver. Both make excellent bait, but both species are also large and must be cut up. Cutting any of these big fish with a band saw is slow and very dangerous.

An LSU AgCenter engineer, Lynn Hannaman, has developed a mechanized bait-cutting machine to cut up these large carp for crab and crawfish bait. The all-steel machine operates with a three-phase electric motor and is chain and sprocket-driven. The actual cutting is done by 24 notched coulter blades from a farm planter. These blades give a much cleaner cut than circular saw blades. According to Hannaman, the average-sized machine will cut 100 pounds of fish in 8 minutes.

Information on the cutter can be obtained from Lynn Hannaman, lhannaman@agctr.lsu.edu, 225/578-2918 or Glen Thomas, gthomas@agctr.lsu.edu, 337/828-4100, ext 300.

BIG BOY

Two big bad boys exist in the large grouper family, the goliath grouper (formerly called jewfish), *Epinephelus itajara* and the warsaw grouper, *Epinephelus nigritus*. The goliath grouper is larger, reaching weights of 800 pounds, but except in the southeastern Gulf, it is rarer than the warsaw grouper, which itself is no small fry at weights of up to 450 pounds.



The warsaw grouper prefers much deeper waters than the goliath grouper, being most often found at depths of 250-720 feet deep. It is most easily separated from the goliath grouper by checking the length of the hard second spine in the front part of its dorsal fin. In the warsaw grouper, it is much longer than the soft rear part, of the same fin. It is so long that it resembles the comb of a rooster. Goliath grouper have short stubby spines, making this part of the fin shorter than the soft part.

Since warsaw grouper are scattered and because they are so powerful that they are difficult to land, they are a little-studied species. In one age-and-growth study, otoliths (ear bones) were collected from warsaw groupers caught on head boats from North Carolina to the Florida Keys between 972 and 1985. Otoliths and measurements were collected from 124 warsaw grouper in that time. The otoliths were cut in thin cross-sections and ages were determined by right counting the yearly growth rings in them. The table on the right shows the results of the growth study.

The oldest grouper in the study was 41 years old and 7 feet, 8 inches long. Growth in length was rapid the first four or five years, but then slowed. Growth in weight would not show such a decline. Adding an inch in length to a 3-foot long fish may add a couple of pounds, but adding one inch to a 7-foot long fish may add dozens of pounds. This is because in both fish, the tip of the nose and the tips of the tail fin are about the same size. The added inch is in the middle of each fish. The diameter of the middle of a 7-foot fish is huge compared to

Age	Number of fish	Average Size (inches)	Annual Growth (inches)
1	103	11.5	11.5
2	96	21.3	9.8
3	74	27.7	6.0
4	59	32.6	4.9
5	36	36.2	3.6
6	26	38.9	2.7
7	22	41.1	2.2
8	20	43.2	2.1
9	15	45.1	1.9
10	13	47.0	1.9
11	12	41.8	1.8
12	10	50.5	1.7
13	8	52.0	1.5
14	6	54.0	2.0
15	5	55.7	1.7
16	3	55.7	0.0
17	3	57.1	1.4
18	3	58.8	1.7
19	3	60.1	1.3
20	3	61.4	1.4
21	3	62.9	1.5
22	2	66.2	4.0
23	2	67.9	1.7
24	2	69.1	1.2
25	1	74.0	4.9
26	1	75.0	1.0
27	1	76.9	1.9
28	1	77.9	1.0
29	1	79.4	1.5
30	1	80.4	1.0
31	1	81.4	1.0
32	1	82.4	1.0
33	1	83.4	1.0
34	1	84.5	1.1
35	1	85.5	1.0
36	1	86.5	1.0
37	1	87.5	1.0
38	1	88.5	1.0
39	1	89.5	1.0
40	1	90.6	1.1
41	1	91.6	1.0

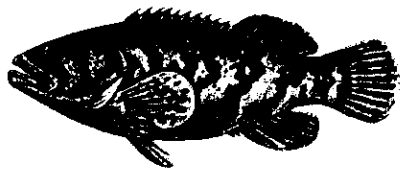
a 3-foot fish.

In this study, as in virtually all fish studies, the numbers of older fish are fewer than the numbers of younger fish. As the number of fish in any one age group declines, the higher the likelihood is that a single slow-growing fish or that a single stout fish can throw the numbers off some. For example, in this study, the average growth rate takes a big unexpected jump between ages 24 and 25. This occurred because the single 25-year old fish was a much stockier-than-average fish, in fact, later becoming accepted as the North Carolina state record warsaw grouper.

Source: *Age and Growth of the Warsaw Grouper and Black Grouper from the Southeast Region of the United States.* Charles S. Manooch III and Diane L. Mason. Northeast Gulf Science Vol. 9 No. 2, p. 65-75. December 1987.

THE BIGGEST GROUPER

Fishing for the biggest grouper of all, the goliath grouper has been closed since 1990. The complete harvest closure was in reaction to fears that the population had been fished by recreational and commercial fishermen to a tiny fraction of its former numbers.



In recent years fishermen and divers from all parts of the Gulf, from the center of abundance for the species off of southwest Florida to the northern Gulf off of Louisiana, have been reporting large increases in the number of goliath grouper. Many have asked when the harvest closure will be lifted.

The answer may be "not any time soon" if federal regulators adopt the assessment approach suggested by some federal biologists in a recent scientific paper.

Federal rules require that reference points to measure the health of a species' population be developed for each fish species under management. Also to be developed are minimum target numbers, such as spawning potential ratio (SPR) for each species. SPR is simply a measurement of the spawning ability of a fish population after it is fished, compared to what it would be in an unfished population. For the goliath grouper, that number is 50%.

Unfortunately, developing these numbers requires some data obtained from catches, something impossible to get from a closed fishery. This has led the scientists in their paper to purpose the use of a "catch-free stock assessment model".

What they have essentially done under this approach is to interview knowledgeable fishermen and divers about how many goliath groupers they think are out there and how large the fish are. Then they plug these opinion numbers (instead of numbers derived from catches) into mathematical formulas.

What this model tells them is that there is less than a 40% chance that the population of goliath grouper will recover to its 50% SPR target figure within 15 years. The reason for the less-than-rosy forecast is that according to the opinions of the fishermen interviewed, the fishing closure has only provided 83% protection from fishing mortality (deaths) rather than 100%, because of release mortality and illegal fishing.

A couple of points about "catch-free stock assessments" are in order. First, the approach was developed because developing hard numbers without catch data was not possible. Yet the biologists proposing its use admit that catch-free stock assessments cannot provide hard numbers either.

Secondly, recreational and especially commercial fishermen have for the last 25 years, been frustrated when their observations that fish populations were larger than scientists estimated were disregarded as unscientific opinion and "anecdotal". Now it seems that anecdotal information may indeed be useful if a scientist asks for it, and it supports keeping regulations tight. Interesting!

Source: *A Catch-free Stock Assessment Model with Application to Grouper (Epinephelus itajara) off Southern Florida.* Clay E. Porch, Anne-Marie Eklund and Gerald P. Scott. Fishery Bulletin, 104:89-101. 2006.

HACCP COURSES ANNOUNCEMENT

Jon Bell, LSU AgCenter Seafood Technologist has announced that registration is now open for a new HACCP class for seafood processors. Bell says that a Sanitation Control Procedures (SCP) class will also be held on April 18, 2006. While the SCP class is not required by the U.S. Food and Drug Administration, it provides training in information and compliance that is key to meeting pre-HACCP requirements. For more information on the SCP class, contact Bell at the address or number below.

AFDO Basic Seafood HACCP Training Program
Louisiana State University Agricultural Center

$180 Registration Fee includes Refreshments - Lunch is not included
Date: April 19 - 21, 2006 Course is limited to first 25 paid registrants

Place: Energy, Coast, and Environment Building, **on LSU campus**. The Conference Room, in the Rotunda of this new building on Nicholson Extension next to the Campus Credit Union. Baton Rouge, LA 70803. Limited parking is available around the building, with a pass available on the first day of class. Extended parking is nearby.

Contact: Jeff Schwab (JSchwab@agcenter.lsu.edu); Phone (225) 578-2631, Fax (225) 578-5300
Dr. Jon Bell (jonbell@agcenter.lsu.edu); Phone (225) 578-5190, Fax (225) 578-5300

Seafood HACCP Course Schedule

Wednesday – April 19, 2006
8:00 – 8:15 a.m. Registration
8:15 – 8:30 a.m. Welcome and Course Objectives
8:30 – 8:40 a.m. Introduction to HACCP

8:40 – 9:20 a.m.	**Prerequisite Programs and HACCP Preliminary Steps**
9:20 – 9:40 a.m.	**Commercial Processing Example and SSOPs**
9:40 – 10:30 a.m.	**Hazards (Biological, Chemical, and Physical)**
10:30 – 10:45 a.m.	**Break**
10:45 – 12:00 p.m.	**Principle 1: Hazard Analysis and Preventive Measures**
12:00 – 1:00 p.m.	**Lunch**
1:00 – 1:45 p.m.	**Hazard Analysis Exercise**
1:45 – 2:45 p.m.	**Principle 2: Identification of Critical Control Points**
2:45 – 3:00 p.m.	**Break**
3:00 – 3:45 p.m.	**Principle 3: Establishing Critical Limits**
3:45 – 4:30 p.m.	**Principle 4: Critical Control Point Monitoring**
4:30 – 5:00 p.m.	**Principle 5: Corrective Actions**

Thursday - April 20, 2006

8:00 – 8:45 a.m.	**Principle 6: Verification**
8:45 – 9:30 a.m.	**Principle 7: Record Keeping Procedures**
9:30 – 9:45 a.m.	**Break**
9:45 – 11:45 a.m.	**Overview of FDA Seafood HACCP Regulation 1**
11:45 – 1:00 p.m.	**Lunch**
1:00 – 2:30 p.m.	**Overview of FDA Seafood HACCP Regulation 2**
2:30 – 2:45 p.m.	**Break**
2:45 – 3:30 p.m.	**Sources of Information on Preparing HACCP Plans**
3:30 – 5:00 p.m.	**Review and Preparation for Developing HACCP Plans: Work Session**

Friday - April 21, 2006

8:00 – 11:45 a.m.	**Work Sessions: Developing HACCP Plans**
11:45 – 1:00 p.m.	**Lunch**
Afternoon	**Wrap-Up and Adjourn**

AN EXPLANATION OF COMMERCIAL & RECREATIONAL RED SNAPPER SEASONS

We get many questions about how commercial red snapper seasons can be open at the same time those recreational seasons for the species is closed. Below is an explanation of red snapper seasons, as presented by the Gulf of Mexico Fishery Management Council.

Differences between commercial and recreational seasons for red snapper can sometimes cause confusion, since sector allocations are managed differently.

On the commercial side, the red snapper quota is divided into spring and fall sub-quotas. The spring season opens at noon on February 1 and closes at noon on the tenth. This continues every month until the sub quota of 3.06 million pounds is reaches.

The fall season begins at noon on October 1 and ends at noon on the tenth, continuing through November. In December, the fishery remains open until the quota, 1.60 million pounds (adjusted for any over or under harvest during the spring), is caught, or December 31, whichever occurs first.

"When the commercial red snapper season remains open for the entire month of December, it isn't an extension of the season, it's simply what's outlined in the regula-

tions regulations that have been in place for years" said Dr. Richard Leard, Deputy Director of the Gulf of Mexico Fishery Management Council.

Recreational red snapper is managed in a different manner, through a fixed season, and is open from April 21 through October 31. The fixed recreational season is expected to keep the recreational sector within its quota on average. This means that in some years the recreational fishery may exceed it quota, while in other years it may catch less; but the average over several years should be close to the quota.

By comparison, the commercial fishery, with real-time monitoring, will rarely exceed its quota by any significant amount, though it may come in under quota in some years.

Any adjustment to either the recreational or the commercial regulations would require an amendment of those regulations through the rule making process.

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THE GUMBO POT

Zuppa Gambero

I named this in honor of the strong Italian contribution to New Orleans Creole cooking. It simply means "shrimp soup". While I admit having a personal bias towards seafood soups, I think that you will find this recipe delicious too.

¼	lb butter	2	tbsp flour
1	tbsp garlic, minced	1	oz white wine
¼	cup green onions, chopped	2½	cups chicken stock
1	4-oz can sliced mushrooms	1	tsp lemon juice
½	cup yellow or red bell pepper, chopped	1	tbsp parsley, chopped
¼	cup green bell pepper, chopped		corn starch
1	lb peeled medium shrimp		salt and pepper to taste

In a heavy pot, melt butter over medium heat. Add garlic and mushrooms and sauté for about two minutes. Add bell pepper and sauté until peppers soften. Add shrimp and sauté just long enough for them to turn pink, but not be cooked. Sprinkle in flour and mix well until any liquid in the pan is absorbed. Add the wine and stir, then add the chicken stock. Turn heat to medium-high. Add lemon juice and parsley. Cook until the sauce thickens. This is where you may need to add cornstarch. If the sauce boils too long before thickening, the shrimp will overcook. Salt and pepper to taste. Serves 4.

Sincerely,

Jerald Horst
Professor, Fisheries