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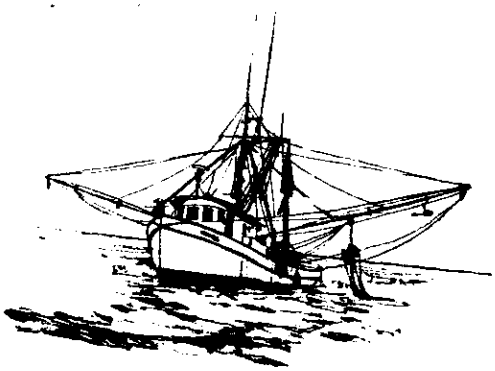
SHRIMP BUSINESS PLAN

The most valuable commercial fishery in the US is in deep financial trouble, so concludes the National Marine Fisheries Service (NMFS) in its publication *Draft Shrimp Business Options: Proposals to Develop a Sustainable Shrimp Fishery in the Gulf of Mexico and South Atlantic,* most often called the "Shrimp Business Plan".

It describes the current situation this way. **"At the risk of stating the obvious, the Gulf of Mexico and South Atlantic shrimp fishery is in a dire financial strait. No single factor has transpired to bring about this malignant condition; rather the confluence of a number of events, when taken together, has resulted in some of the lowest dockside prices in decades."** Strong words!



From 1980 to 2001, shrimp imports to the US have tripled. Average price received for shrimp harvested in the Gulf of Mexico states has dropped from $2.26 to $1.64 per pound from 1997 to 2002. Overall earnings to the Gulf fleet declined from $654 million to $381 million. Domestic prices have dropped by 55 cents per pound for every one dollar decline in import prices.

Worldwide, the volume of shrimp exported from one country to another has increased 240% between 1980 and 2001, but the total value of those exports has only increased 70%. This indicates a sharp price decline brought on by the world supply of shrimp being larger than world demand.

Shrimp are produced in more than 100 countries and 60% of the production enters world trade. Most exports go to only a few countries. Of these, the United States and Japan together use almost half of the supply, with European Union (EU) countries using an increasing share in recent years.

The shrimp price/supply situation in the U.S. has recently been affected by 3 factors. First, while the U.S. economy has indeed been in recession (and demand for

shrimp should have been weaker) the U.S. economy was still stronger than that of Japan and the EU, so shrimp were attracted to the US.

Secondly, the EU changed the status of Thailand, the world's largest shrimp exporter, so that it no longer receives special tariff treatment as a "developing country". The 12% EU tariff rate pushed Thai exports towards the US.

Finally, antibiotics such as chloramphenicol and nitrofuran are banned in food in both the EU and the US. However, the EU uses tests on imports that can find much lower levels of the antibiotics than the US can. Also, the EU policy is to destroy all shipments of shrimp in which any banned antibiotic is found. Both the better tests and the product destruction policy of the EU have reportedly caused many Asian suppliers to send imports to the US rather than the EU.

US shrimpers have also been seriously affected by increasing operating costs. A 1986-1997 study showed that shrimpers averaged spending $0.98 to earn $1.00. Fuel and insurance accounted for 42% of the operating cost of a shrimp vessel in the mid-1990s. Fuel prices have increased dramatically since then. Shrimpers are also forced by NMFS to use turtle excluder devices (TEDs) and (in federal waters) bycatch reduction devices (BRDs). Besides costing money to install and maintain, these devices allow shrimp to escape, reducing a vessel's catch.

Shrimp processing firms have also been hit hard. To survive declining profits per pound, each company must process more shrimp. As a result, a number of companies have been squeezed out. From 1980-2001, the number of shrimp processors in the Southeast US has declined from 173 to 89. Furthermore, an even-larger percentage of imports are now being processed in low-labor cost countries before being imported.

In their Business Plan, NMFS analyzed marketing. They looked at generic promotion, direct marketing and ecolabeling. **Generic promotion** is an effort to promote a product generally, rather than to promote one brand of a product over another. They note that generic promotions, from beef to watermelons, are usually funded by assessments on producers. NMFS found hundreds of studies that show generic promotion to work, although none in such an import-dominated industry such as shrimp. A big decision would be whether to assess only domestic production or imports as well. A one percent assessment on Southeast U.S. production only would yield $5.5 million annually. But if imports were included, that figure would rise to $38.4 million.

NMFS points out that the "rule of thumb" is that it takes at least $20 million annually to run a national promotion that includes television advertising. Including imports in the assessment may, however, give shrimp importers a voice in directing the promotion into a way not in the best interests of US producers.

Not using national television does not necessarily cripple a promotion effort. Rather than targeting the general public, the effort could focus on a select group of

buyers to convince a few major grocery and/or restaurant chains to feature and promote domestic shrimp.

Direct Marketing, from the fisherman directly to the consumer, NMFS says, is most practical where the catch is at about the same level as local demand. Because of the large production in the Gulf States, direct marketing has only a limited potential, except for independent smaller boats.

The **ecolabeling** concept is based on consumers being willing to pay more for products certified as coming from fisheries that are not being overfished or causing ecological damage. NMFS points, as an example, to the Marine Stewardship Council formed by the World Wildlife Fund and the Unilever Corporation, which manufactures Bird's Eye and Gorton's frozen fish products. Some studies indicate that consumers are willing to pay more for ecolabeled product, although as the price difference between labeled and unlabelled product increases, the willingness of the consumer to select to labeled product decreases.

One study did note that while wild ecolabeled shrimp were most preferred, that consumers preferred ecolabeled farm-raised shrimp over unlabeled wild shrimp. Currently, the Global Aquaculture Alliance is trying to certify farm-raised shrimp as using environmentally friendly production methods.

Finally NMFS analyzed 6 action options as tools to improve the economic health of the shrimp fishery:

1) Permit/License Moratorium
2) Government Buyback Program
3) Price Support Program
4) Marketing Program Paid for by Assessments
5) Cooperatives for Maximum Profit
6) Fractional License Program

Permit/License Moratorium

While such a moratorium may be useful when combined with other options, a moratorium alone would not improve financial stability in a situation where prices were expected to remain low over the long run.

Government Buyback Program

Under this option the government would buy permits/licenses and vessels and retire them from the fishery. Funding could come from two sources, government grants or a loan from the government to the shrimp fishery for 10 years at 5% interest.

For the Gulf, a grant-funded buyback is projected to bring large vessels to profitability if 10% of the vessel permits/licenses are removed and a license moratorium

is in place. For small boats in the Gulf, 50% of the licenses must be removed. This is because so many of the licenses are unused and many vessels are part-time.

In the Gulf, a loan-funded buyback would work if, as above, 10% of the vessels are removed, and a moratorium is in place. These vessels are projected to benefit, even if the small vessel fishery is not changed. Under a loan-based buyback, the small vessel fishery could not reach profitability at any level of buyback.

Price Support Programs

Under this program the government would set a target price for each size class of shrimp. If the price falls below the target price, the government would pay the difference to the shrimpers. NMFS concluded that target prices are expensive for the government. To increase price to shrimpers by 10% for 2005-2021 the cost would be $193.8 million, a 20% increase would cost $426.6 million and a 30% increase would cost $747.7 million. The NMFS projection for the Gulf is that shrimp prices would have to increase by 30% to get shrimpers profitable again.

Marketing Program Paid for by Assessments

How much money would have to be gathered by assessments to increase prices by promotion is not known. NMFS projects that would take a 5% increase in price for large vessels and a 15% increase in price for small vessels of the Gulf States to reach profitability.

Cooperatives for Maximum Profit

A cooperative would only work if all fishermen joined in one and the members would manage their cooperative like a monopoly and only allow enough vessels to fish to maximize the profit to the cooperative. NMFS recognizes that it may be unrealistic to believe that all shrimpers will work for a single cooperative. But they think that it may be possible that small cooperatives could be formed and that a certain amount of catch could be assigned to the cooperative. (It wasn't clear in the report who would do the assigning of catch and enforcement.)

Fractional License Program

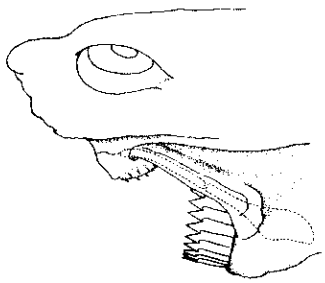
With fractional licenses, each vessel/person would be issued a tradable license that would only be worth a fraction of the whole license (100%) needed to fish. The fishermen could sell and trade their fractions of a license to others to get a whole license. For example if the fractional license was 50%, a fisherman would have to get control of another one's 50% to have a whole license. The government could help in making connections and by providing government-backed long term loans. The advantage in fractional licenses is that a target percentage of vessels is removed from the fishery quickly, allowing more catch to go to the remaining vessels. Under current conditions, large vessels would become profitable with a 30% or more reduction in license numbers. Small vessels would need a 50% reduction or more.

A HARD WAY TO MAKE A LIVING

In the fish world, if there is a way to make a living, there is a fish to do it. One of the most unusual ways to make it is practiced by the cookie-cutter shark, *Isistius brasiliensis.*

This flabby little fish is only 6 to 20 inches long, with a drab brown body color that is darker across the throat. It lives in warm open-ocean waters of the Atlantic, Pacific and Indian Oceans. It is found from the surface down to 1,800 feet deep and is believed to move shallower at night and deeper during the day.

This timid-looking little shark is known to feed on squid for part of its diet, but it is most famous for what else it eats. It bites plugs of flesh out of large living fishes, and even whales, without killing them.



It forms a seal on the skin of a larger fish with its fleshy lips. Then it sinks its hook-like upper teeth into the fishes' flesh, followed by its saw-like lower teeth. It twists its body lengthwise, like coring an apple, gouging out a plug of flesh and leaving a craterlike wound.

How such a slow-swimming fish ever gets near enough to attack fast-swimming tunas, wahoo, dolphin and marlin is a mystery to scientists.

Perhaps the small shark is approached by the larger predator fish as potential food. When the big fish veers off, the shark may make a quick dash in and grab a bite to eat. It is known that the belly and lower fins of the cookie-cutter shark are luminescent, giving off a faint to bright greenish glow. This may serve to attract the larger fishes on which the cookie-cutter shark preys.

Sources: *Sharks of North American Waters.* Jose I. Castro. Texas A&M University Press. 1983. *Prey Capture Behavior and Feeding Mechanics of Elasmobranches.* Philip J. Motta. Biology of Sharks and Their Relatives. SRC Press. 2004

FISHING PRESSURE AND GENETICS

Both commercial and recreational fishermen are often heard speculating about the effects of their fishing on the genetic make-up of the fish that they chase. Most of the discussion is on whether or not continual harvest of the larger members of a species will lead to breeding "a race of runts." Their logic is that if the faster-growing, larger individuals are continually removed and the slow-growing and small fish are left to spawn, that some inheritable effect is bound to show up.

In the past, most fisheries biologists have agreed that it is unlikely that fishing can produce such noticeable inheritable changes in a fish population. The accepted view was that as the number of fish in a fish population was reduced, there would be less competition for food and space, and the remaining fish would become larger, not smaller.

Scientists recently studied the Atlantic cod population off of Labrador and New Foundland, Canada and tried to separate the effects of fishing from its possible genetic effects. This Canadian cod population experienced one of the worst population collapses in the history of fishing. Stocks dropped 99.9% from the 1960s to the early 1990s.

The scientists' analyses showed that the "average" age of maturity for female cod dropped from six years in the mid-1980s to five years in the mid-1990s. With the reduced age at maturity, the fish were also smaller. The scientists were satisfied that their analysis method, involving estimating "probabilistic reaction norms", showed that fishing can result in genetic changes to fish populations.

Jeffrey Hutchings a biology professor at Dalhousie University, who wrote a forward to the study, says that the results are important for several reasons. When fish spawn at earlier ages they are likely to produce fewer eggs. The fish are also likely to grow slower because their energy goes to producing eggs rather than towards growth. Finally, smaller fish are less likely to survive the stress of spawning.

Hutchings emphasizes that this doesn't mean that fishermen should target smaller fish to reverse genetic effects. Rather, "It's more an indication of the importance of conservation." He concluded that, "the potential for fishing to generate evolutionary change within harvested populations can no longer be seriously discounted."

Sources: *Maturation Trends Indicative of Rapid Evolution Preceded the Collapse of Northern Cod.* Ebsen M. Olsen, Mikko Heimo, George R. Lily, M. Joanne Morgan, J ohn Brattey, Bruno Ernande, and Ulf Dieckmann. Nature. April 29, 2004. *Evolutionary Biology: The Cod that Got Away.* Jeffrey A. Hutchings. Nature. April 29, 2004. *Is Commercial Fishing Contributing to Fewer, Smaller Fish?* www.thewaveonline.com. April 29, 2004.

ABANDONED CRAB TRAP REMOVAL PROGRAMS PLANNED FOR 2005

The Louisiana Wildlife and Fisheries Commission has approved a notice of intent to approve an abandoned crab trap removal program in 2005. The first such program was held last year with a clean-up in upper Terrebonne Bay and in Vermilion Bay.

The Upper Terrebonne Bay effort was especially successful, with 245 volunteers removing 6,894 abandoned traps. All clean-ups involve closures on the use of crab traps for a short time period in the area to be cleaned up. Any traps left in the water are considered abandoned.

Four areas are slated for clean-up in 2005. Sabine Lake, Terrebonne Bay estuary, Breton Sound estuary and Vermilion Bay/West Cote Blanche Bay.

In the Sabine Lake closure, the commission intends to prohibit the use of crab traps for a 10-day period from 6:00 a.m., February 18, 2005 through 6:00 a.m. February 27, 2005 within that portion of Cameron Parish as described below:

From a point originating from the intersection of the southern side of LA Highway 82 and the eastern shore of Sabine Lake, thence north along the eastern shoreline of Sabine Lake to its intersection with East Pass, thence due north to Sabine Island, thence west along the southern shoreline of Sabine Island to its westward most point, thence due west to the Texas state line, thence south along the Louisiana / Texas state line to its intersection with LA Highway 82, thence east along the southern side of LA Highway 82 and terminating at its intersection with the eastern shore of Sabine Lake.

In the Terrebonne Bay estuary closure, the commission intends to prohibit the use of crab traps for a 16-day period from 6:00 a.m., March 5, 2005 through 6:00 a.m. March 20, 2005 within that portion of Terrebonne Parish as described below:

From a point originating from the intersection of LA Highway 57 and Dulac Canal, thence east along LA Highway 57 to its intersection with LA 56, thence due east to the western shoreline of Bayou Little Caillou, thence north along the western shoreline of Bayou Little Caillou to its intersection with Lapeyrouse Canal, thence east along the northern shoreline of Lapeyrouse Canal to its intersection with Bayou Terrebonne, thence south along the eastern shoreline of Bayou Terrebonne to its intersection with Seabreeze Pass, thence southwest to channel marker number 17 of the Houma Navigation Canal (Lat. 29 degrees 11 minutes 11.3 seconds N., Long. 90 degrees 36 minutes 44.5 seconds W.), thence southwest to the northern most point on Pass la Poule Island (Lat. 29 degrees 08 minutes 33.5 seconds N., Long. 90 degrees 39 minutes 01.3 seconds W.), thence west to Bayou Sale channel marker (Lat. 29 degrees 06 minutes 31.8 seconds N., Long. 90 degrees 44 minutes 34.2 seconds W.), thence north to the western shoreline of Bayou Sale, thence north along the western shoreline of Bayou Sale to its intersection with Four Point Bayou, thence north along the western shoreline of Four Point Bayou to its intersection with the Houma Navigation Canal, thence north along the western shoreline of the Houma Navigation Canal to its intersection with Bayou Grand Caillou, thence north along the western shoreline of Bayou Grand Caillou to its intersection with Dulac Canal, thence east along the northern shoreline of Dulac Canal and terminating at its intersection with LA Highway 57.

In the Breton Sound estuary closure, the commission intends to prohibit the use of crab traps for a 16-day period from 6:00 a.m., February 26, 2005 through 6:00 a.m. March 13, 2005 within that portion of St. Bernard and Plaquemines Parishes as described below:

From a point originating from the intersection of LA Highway 39 and LA Highway 46, thence east along LA Highway 46 to its intersection with LA Highway 300, thence east and then south along LA Highway 300 to its termination, thence due south to

Bayou Terre aux Bouefs, thence east along the northern shoreline of Bayou Terre aux Bouefs to its intersection with the "twin pipeline", thence south along the eastern edge of the "twin pipeline" to the eastern shoreline of the Mississippi River, thence north along the eastern shoreline of the Mississippi River to a point due west of the intersection of LA Highway 39 and LA Highway 46, thence due east and terminating at the intersection of LA Highway 39 and LA Highway 46.

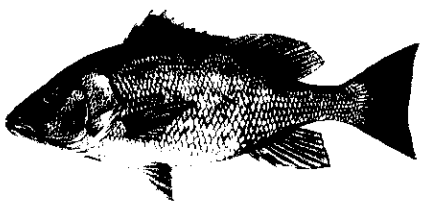
In the Vermilion Bay spring closure, the commission intends to prohibit the use of crab traps for a 9-day period beginning at 6:00 a.m. on the opening of the 2005 Spring inshore shrimp season in Vermilion Bay / West Cote Blanche Bay and ending at 6:00 a.m. nine days following the opening of the 2005 Spring inshore shrimp season in Vermilion Bay / West Cote Blanche Bay within a portion of Iberia, and St. Mary Parishes as described below:

From a point originating from the intersection of the Gulf Intracoastal Waterway and the Acadiana Navigational Channel, thence southwest along the Acadiana Navigational Channel red buoy line to the red navigational marker number 12 on the Marsh Island shoreline near Southwest Pass, thence east along the shoreline of Marsh Island to Longitude 91 degrees 43 minutes 00 seconds W, thence north along Longitude 91 degrees 43 minutes 00 seconds W to the shoreline of West Cote Blanche Bay, thence west along the northern shoreline of West Cote Blanche Bay to its intersection with the Ivanhoe Canal, thence north along the eastern shoreline of the Ivanhoe Canal to its intersection with the Gulf Intracoastal Waterway, thence west along the northern shoreline of the Gulf Intracoastal Waterway and terminating at the Acadiana Navigational Channel.

All crab traps remaining in the closed areas during the specified periods will be considered abandoned. The Department of Wildlife and Fisheries will be coordinating the abandoned crab trap removal efforts, but the program will be volunteer-based. The department will be soliciting assistance for the proposed trap sweeps. More information about volunteer participation will be provided at a later date. The 2004 abandoned crab trap removal program was successful only because of the exceptional volunteer participation.

MORE ON RED SNAPPER SITE FIDELITY

Red snappers have become the poster-child for overfished species in the Gulf and South Atlantic. They are an attractive fish, bright in color, grow to over 30 pounds, and are delicious tablefare. They are highly prized by both recreational and commercial fishermen.



There is a great deal of interest in how much red snappers move from reef site to reef site. Many studies indicate that red snappers stake out an area on a reef or obstruction and don't move from it much except to feed. Other studies indicate a good deal of movement, especially during tropical storm events.

In 2003, LSU scientists did more tracking work on red snappers by putting electronic pingers in the body cavities of 125 two to four year old fish. Ninety of the fish were released in the same location that they were captured from and 35 were relocated before release. The fish were captured at oil and gas platforms in a 9-square mile area 30 miles south of Bell Pass in South Timbalier. Electronic receivers were attached to 7 platforms and an artificial reef in the area. The receivers picked up, recorded and stored signals from each individual fish that swam into the area of the receiver. Data from the receivers was removed monthly.

The results showed that most tagged fish stay near the site of release for weeks or months and show little or no movement between platforms at first. However, the longer the fish were free, the higher the likelihood of movement became. Because of this movement, there was a high probability that snappers used more than one platform in their life. Over the 6 months of the study, the majority of tagged red snapper did leave the study area.

The fish were easy to track for the first 70 days, then a change in water layers interfered with tracking somewhat. Snappers that were relocated before release showed a slightly higher tendency to move than fish released at their capture site up to 70 days, after which they were less likely to move than non-relocated fish.

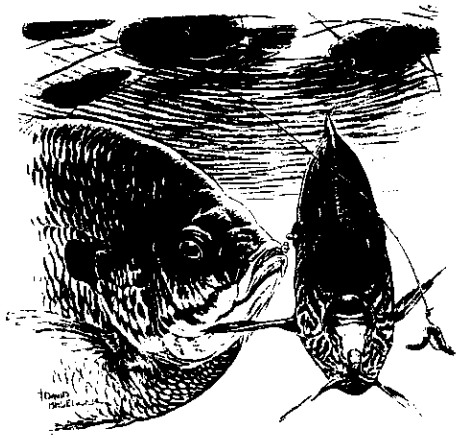
One thing that the study clearly showed was the twice-daily movement of red snappers away from the platform to feed at sunrise and sunset. Previous studies have shown that red snappers feed primarily on animals found on open bottoms away from reefs and platforms.

A total of 36 recaptures of tagged red snappers were made. Only two came from the commercial fishery, one from a restaurant and one from a fish house.

Source: *The Fidelity of Red Snapper (Lutjanus campechanus) to Petroleum Platforms and Artificial Reefs in the Northern Gulf of Mexico.* Megan B. Peabody and Charles A. Wilson III. Silver Anniversary Meeting of the Louisiana Chapter of the American Fisheries Society. February 2004.

BAD EGGS

Bluegill *(Lepomis macrochirus)* are a very popular freshwater panfish, often called "bream" or "perch" in Louisiana. Bluegill fishing is at its best during the warm summer months when the fish are "bedded". Beds are dense concentrations of dinner-plate size nests, sometimes numbering in the hundreds, located almost side-by-side in a couple of feet of water. Males build the nests simply by fanning a bowl-shaped depression clear of silt with their fins. The most desirable spots are those in the center of a bed as they are furtherest from egg-eating predators. Male bluegills fight fiercely for these spots, with the biggest fish always winning. The breeding males, called "parental" males, then guard their nest and wait for the females. Male bluegills are much larger and more colorful than females.



When the females do arrive, they can be very choosy about picking a male, often passing many nests. Once a female chooses a mate, the spawning is done in one day (although bluegills will spawn several times a season). The female tilts her body and releases a spurt of about 30 eggs into the nest. This is called "dipping". The male showers the eggs with his sperm. This is repeated until hundreds or even thousands of eggs are laid. Then the female swims away and leaves the male in charge of guarding the nest.

For the first two or three days after spawning, the male continually fans water over the eggs to oxygenate them. If he stops, the eggs will die. By the fourth day, the eggs hatch into tiny young. The male continues to guard them against predators until about the tenth day, when the young fish leave the nest and scatter. All of this work is tough on the male fish, which lose about 15% of their body weight.

Not all males play by the rules. A percentage of them become "cuckolders". They mature at two years of age, instead of being four or five years old like parental males. In the first phase of their adult lives, cuckolders are referred to as "sneakers". They hang around spawning beds, hiding behind debris or vegetation. When a female releases her eggs into a nest, the sneaker quickly darts into the nest, releases his sperm, and then hightails it before the large parental male can catch him.

As sneakers age, they grow too large to hide out near nests. Instead of taking on the color and behavior of parental males, they grow to look and act exactly like females. They so resemble females, that they completely fool the parental males, who welcome them into the nest. When a true female enters the nest and spawns with the parental male, the cuckolder gets on the other side of the female and attempts to fertilize as many of her eggs as possible.

DNA analysis has shown that cuckolders succeed in 20% of their fertilization attempts and can fertilize as many as 80% of the female's eggs on a dip. This can leave the parental males to protect the eggs and young of the cuckolder male.

Parental males are not defenseless. Experiments by biologists have shown that when parental males see sneakers near their nests, they tend to guard their nest less vigorously. The more sneaker males seen, the less the males protect the nest. In the worst cases, they may eat the eggs or abandon the nest.

Bluegills also are able to tell their young from others by smell once the eggs hatch. Parental males protect their own young much more vigorously then if the nest has been heavily fertilized by a cuckholder. Males who have given their nests poor protection because they have seen large numbers of sneakers, will step up their care when the eggs hatch, if the young are theirs. The odor may be emitted in the urine of the newly hatched young, as males do not respond to odor from eggs.

Ultimately, nature favors the parental males' success. Cuckolders are simply not present at all dips or are driven away in the sneaker stage by parental males. In the end, it is mostly the parental males that fertilize the hundreds or thousands of eggs in their nests.

Source: *Something Fishy in the Nest.* Bryan D. Neff. Natural History. February 2004.

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THE GUMBO POT

Shrimp iMonelli

This month's recipe was developed by Brian Blanchard, owner and chef of iMonelli Restaurant in Lafayette, Louisiana. Be sure to use the freshest Parmesan cheese possible. If it is dried out, it will make the sauce "gritty". For pasta, I used fettuccini, but use the pasta of your choice.

1	lb large shrimp
1½	tbsp olive oil
1½	tsp nutmeg
1½	tsp salt
1½	tsp black pepper
1½	tsp crushed oregano
1½	tsp crushed garlic
⅓	cup white wine
⅓	cup heavy cream
3	tbsp fresh Parmesan cheese
	pasta of your choice

Peel shrimp and sauté them for about 45 minutes (until pink) in olive oil. Add nutmeg, salt, black pepper, oregano, garlic, and wine. Bring to a boil for 2 minutes. Remove from heat and remove shrimp from pan. Add cream and Parmesan cheese. Bring to a boil. Add shrimp and simmer about 5 minutes until thickened. Serve over your favorite pasta.

Sincerely,

Jerald Horst
Professor, Fisheries