



A pelican flies above the oil booms at Grand Isle, Louisiana. Photo credit: Paula Ouder

Oil Toxicity and Louisiana Fishery Species

A large concern with an oil spill is the health of marine species. The effect of oil on Louisiana marine life is dependent on many factors including the type of oil that is spilled, the location of the oil, the weather during the spill, and the specific species and life stage. The oil from Deepwater Horizon has been classified as mostly light crude, according to U.S. Fish and Wildlife Service. Light crude is relatively volatile, and many of the polycyclic aromatic hydrocarbons (PAHs), a main source of toxicity, evaporate within 24 to 48 hours. However, even after this time, mortality and long-term effects still occur from weathered oil.

Oil exposure can occur in several ways and can vary by species. Direct exposure occurs through inhalation, absorption and ingestion. Benthic organism like oysters, clams and mussels can be exposed through oil directly covering their habitat or through filter feeding. As dispersants and natural means break down the slicks of oil into droplets, filter feeders can ingest oil droplets. Crabs, shrimp and other crustaceans can also have direct exposure to the oil, or they can ingest it from contaminated plant and animal material they consume. The oil contaminants, such as PAHs, can therefore, work up the food chain to organisms that never came into direct contact with the oil. The U.S. Food and Drug Administration (FDA) is monitoring PAH levels in seafood to check for this contamination and to ensure seafood safety.

For marine species oil effects and mortality can result one of two ways: acute or chronic. Acute toxicity of the oil is very quick. Acute mortality usually results from an individual animal being smothered when either the gills or lungs are covered in oil, preventing the animal from getting oxygen. Smothering can occur across all groups of animals: crustaceans, fish, birds and marine mammals, and affects all life stages. Marine and marsh plants can also be smothered by the oil. Weathered oil gets increasingly sticky resulting in a higher risk. Fish, crabs, oysters and shrimp can be smothered when they swim through an oiled area or when the oil washes over their habitat. Birds can be smothered when they dive through oil to hunt or when nesting in a region covered in oil. Acute toxicity can also occur if the animal is exposed to oil with PAHs or breathes in the volatiles

coming off of the oil. Younger life stages are often more susceptible to acute toxicity. It is spawning season for many fish and invertebrates in the Gulf of Mexico including bluefin tuna, snapper, grouper, spiny lobsters, blue crabs, brown and white shrimp, and many more. As the eggs and juveniles drift in plankton communities, they are at a very high risk of direct oil exposure resulting in smothering or acute toxicity.

However, toxicity and mortality effects are not always immediate. Chronic effects can also be seen across all groups of marine life. External effects of oil exposure may include skin and eye irritation. Internal effects include damage to respiratory systems, ulcers, bleeding, and damage to liver, kidney and reproductive systems. This damage may not be fatal to an adult, but is often fatal in a developing juvenile. These chronic effects often result in mortality of adult species from resulting infection, but problems remain even if the animal recovers. Long-term chronic effects are often decreased survival but also lowered reproductive success. Oil contamination that does not result in immediate death may be passed along to offspring resulting in defects of future generations or increased juvenile mortality. Therefore, oil spill effects may not even be seen for several years, past the immediate deaths seen from acute exposure. However, long-term research on the effects of oil on marine organism is difficult, leaving many unknowns in the duration of effects.

Sources: NOAA and FWS fact sheet

- http://www.amsa.gov.au/marine_environment_protection/educational_resources_and_information/teachers/the_effects_of_oil_on_wildlife.asp
- <http://www.gomr.mms.gov/PI/PDFImages/ESPIS/3/3445.pdf>
- <http://www.whoi.edu/oceanus/viewArticle.do?id=2493>

- Julie Anderson

NOAA Fisheries Service Publishes Final Rule to Implement the Comprehensive Ecosystem-Based Amendment 1

NOAA Fisheries Service has published a final rule to implement the Comprehensive Ecosystem-Based Amendment 1 (CE-BA 1). The provisions are effective July 22.

CE-BA 1 amends the Coral, Coral Reefs, Live/Hard Bottom Habitats of the South Atlantic Region Fishery Management Plan (Coral FMP) to establish Coral Habitat Areas of Particular Concern (CHAPCs) to protect what is believed to be the largest distribution (>60,000 square kilometers; 23,000 square miles) of deepwater coral ecosystems in the world. In the South Atlantic region, deepwater coral ecosystems are coral, coral reefs and live/hardbottom habitat in waters extending from 400 meters (1,300 feet) to the seaward boundary of the exclusive economic zone.

Within the CHAPCs, the possession of coral species and the use of all bottom damaging gear is prohibited including bottom longline, trawl (bottom and mid-water), dredge, pot or trap, or the use of an anchor, anchor and chain or grapple and chain by all fishing vessels.

CHAPCs are located in the following areas:

- Cape Lookout Lophelia Banks
- Cape Fear Lophelia Banks
- Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace (Stetson- Miami Terrace)
- Pourtales Terrace
- Blake Ridge Diapir Methane Seep

Currently, the only commercial fisheries that operate in the areas are the wreckfish, golden crab and deepwater shrimp fisheries. CE-BA 1 establishes allowable gear areas for the golden crab fishery and shrimp fishery access areas for the deepwater shrimp fishery. The establishment of these areas allows for the continuation of the golden crab and deepwater shrimp fisheries in their historical fishing grounds with little or no negative impacts to protected deepwater coral habitat.

For detailed maps and coordinates for the location of the CHAPCs, see the South Atlantic Fishery Management Council's website: <http://www.safmc.net>.

Determining Seafood Safety in an Oil Spill

There is a great deal of concern over the safety of seafood since the explosion of the Deepwater Horizon drilling platform and subsequent oil spill. Rather than posting signs indicating that they are proudly serving Louisiana seafood, restaurants are posting signs stating that they are *not* serving Louisiana seafood. Negative media attention is perpetuating this misconception.

The first step to assure seafood safety.

The reality dictates that in the event of an oil spill, waters are closed to seafood as a *precautionary* measure. This is an added measure of caution to protect the consumer from accidentally consuming contaminated seafood. The Food, Drug and Cosmetic Act (FD&C) empowers the U.S. Food and Drug Administration (FDA) to prohibit the entry of adulterated food into interstate commerce. The National Marine Fisheries Service (NMFS, a division within NOAA) is authorized to close waters 3 to 200 miles from shore to harvesting activities. The state Department of Fish and Wildlife oversees waters up to 3 miles from the shoreline.

The second step to assure seafood safety: The field inspector.

Fancy scientific equipment is not always needed to detect if seafood has been contaminated by oil. For centuries, dogs have been trained to track by scent, and more recently detect illegal drugs. They are not used to detect contamination by oil because their sense of smell is about 100,000 times greater than that of a human. A human field inspector is trained to screen by taking "bunny sniffs" of a

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seafood product, contaminated with known quantities of oil, that is held in a covered glass dish. Their level of sensitivity is about 10 parts per million (ppm). Trained experts can detect the aromatic compounds down to a level of 5 ppm.

What is the contamination?

The contamination is termed “taint” in seafood and the aromatic compounds are polycyclic aromatic hydrocarbons (PAHs). The oil in the Louisiana spill is light crude unlike that of the Exxon Valdez which was heavy crude. The PAHs are of concern because they may be carcinogenic or cancer causing.

Knowing seafood is safe.

Regulators began collecting seafood that was harvested in the days before the oil spill began. The purpose was two-fold: First, to have product with a known history. Second, to have native species that could be tainted for training purposes. Field inspectors are the first line of defense. Samples deemed positive for oil taint are sent for aroma evaluation to a panel of experts. If the sample is determined to be positive for taint, it is split and half is cooked and tasted. If this is positive, the remaining half is sent to the NMFS laboratory in Seattle for testing for the type and quantity of PAH.

How much seafood is tainted?

On June 17, 2010, NMFS released results of initial testing of seafood samples taken both outside of closed waters and inside. More than 600 samples were tested and shown to be pristine to a detection level of two parts per billion (ppb). FDA has deployed its mobile laboratory to the Florida Department of Agriculture to enhance testing for selected organic compounds. Other FDA field and state laboratories in Arizona, California, Florida and Wisconsin are ramping up to increase the laboratory capacity for testing .

– Lucina E. Lampila



Delaware Coast Gulf Aid

Delaware Coast Gulf Aid

With the motto of two coasts, one community, and one cause, an educational event and benefit concert for the Louisiana Gulf Coast is being organized for July 14 in Dewey Beach, DE. Delaware Coast Gulf Aid is the creation of a coalition of Delaware coast people and businesses, shocked and saddened by the horrific devastation caused by the Deepwater Horizon oil spill in the Gulf of Mexico. Home to the Inland Bays, one of 28 national estuary systems that provide critical habitat for coastal marine life, the community is inextricably linked to neighbors in the Gulf. They are committed to raise awareness and resources to help support and save their sister, the Barataria-Terrebonne National Estuary.

Through the local Center for the Inland Bays they are linked via the National Estuary Program to Barataria-Terrebonne Estuary. Funds raised will benefit the Barataria-Terrebonne National

Estuary Program (BTNEP). Visit <http://www.decoastgulfaid.org> for more information concerning the disastrous oil spill in the Gulf and its impact on human health, seafood, recover, and wildlife, or the Gulf of Mexico Sea Grant website, www.GulfSeaGrant.tamu.edu, which is being continually updated. For information about National Estuary Programs visit www.inlandbays.org and www.BTNEP.org.

iPhone App to Rescue Oiled Gulf Coast Wildlife

iPhone users who come upon oiled birds and other wildlife in the Gulf Coast region can immediately transmit the location and a photo to animal rescue networks using a free new iPhone app, MoGO, for Mobile Gulf Observatory. It was developed by four University of Massachusetts Amherst researchers to make it easier for the public to help save wildlife exposed to the oil spill in the Gulf of Mexico.

The UMass Amherst researchers hope the MoGO app will draw on the large network of “citizen scientists” who are as heartbroken as they are to witness the disaster for marine life and who are actively looking for ways to help save wildlife along the 14,000 miles of northern Gulf coastline. Any person, on land or at sea, wishing to use the free app for their iPhone can go to www.savegulfwildlife.org for more information on how to get it.

Louisiana Crabs

Louisiana supports the largest crab production of both hard and soft-shell crabs in the nation and is the number one suppliers of live #1 male crab in the southern states. The blue crab is one of the most popular food species of the more than 4,500 species of crabs found worldwide. The Louisiana blue crab is harvested year round in bayous, rivers, and inlets of Louisiana as well as the near-shore waters of the Gulf of Mexico, with the peak harvest of crabs during the warm water months of summer and fall. Crabs are caught primarily in wire crab traps baited with fish. One fisherman can have as many as 300 to 500 traps that are fished daily during peak harvest period.

Blue crab availability varies with the season to correspond with the crab’s life cycles, abundance and size. The blue crab population undergoes a series of molts and intermolts stages as they grow and mature. Thus, catches are composed of hard shell crabs, peeler crabs (about to shed) and soft-shell crabs (just shed still soft). Molt cycles are related to moon phases and growing conditions and occur in market sized crabs.

Season: Open year round. Licensed commercial fishermen can harvest crab using legally acceptable means throughout the year.

Crab Availability:

Live hard shell crabs: Year round, most plentiful and meaty during warmer months when feeding activity increases with warmer waters, and more scarce during colder months with March being the month least available

Freshwater crabs: Are just saltwater blue crabs that have migrated inland to freshwater. These are mostly male crabs and can attain a large size under ideal conditions.

Soft-shell crabs: Primarily March through November, most productive during May through September, and scarce when water temperature drops below 50 degrees Fahrenheit

Crab Product Forms:

A variety of crab products can be purchased locally, jimmies (males) and sooks (females) are available in various market forms and should be handled accordingly. Because jimmies are larger and meatier, they are more desirable when prepared whole- steamed or boiled. Sooks are often sold to commercial processing plants to be picked by hand and packaged as fresh or pasteurized meat. Pasteurization preserves the shelf life of the crab without changing the taste, appearance and texture.

Fresh, live, hard shell crabs: Crab should be alive, legs should move and shell should not be slippery when touched. To ensure freshness, only cook crabs that are alive. Remove any dead crabs prior to cooking. Cooked crabs should smell fresh.

Frozen, hard shell crabs: Store in freezer at 0 degrees Fahrenheit and use within two months. Thaw in the refrigerator for a day before using.

Pasteurized crab meat: Storage temperature is crucial when handling pasteurized crab meat. Pasteurized products that are refrigerated at 32-36 degrees F can have a shelf life of up to 6 months without changing the flavor, color and texture of the product. Bulk inventories should be rotated so that the oldest product is used first.

For home use, unopened pasteurized crab meat should be used within 60 days of the time it was purchased. Once opened, the product must be kept refrigerated and used within five days to ensure freshness.

Fresh-picked crabmeat is available in the following forms:

- **Lump (Jumbo)-** the highest quality of solid lumps of white meat, sweetest, best used when appearance is important
- **Backfin-** consist of both lump and flake body meats, mild flavor, can be used to substitute lump meat
- **Flake (special or regular)-** small pieces of white body meat
- **Claw-** brownish in color, meat from the claw, richer flavor, most often used in recipe when appearance is less important i.e. stuffed crabs
- **Crab Fingers (Cocktail Claws)-** actual pincer of the crab, often used in appetizers/cocktails

Live soft-shell crabs: Fragile and needs to be handled with extreme care. Soft-shell crabs should be stored in a cool moist environment (48-50 degrees F). Shelf life may be three to four days.

Frozen soft-shell crabs: Individually wrapped in plastic wrap, white butcher paper, or vacuum packed. For highest quality, soft-shell crabs should be cleaned just before cooking. Avoid purchasing precut soft-shell crab which causes drip loss, thus losing firmness and flavor.

Crab Sizes:

Hard shell crabs: A legal sized hard crab in Louisiana must measure 5 inches shell width (point to point). Larger crabs are usually sold for higher prices. There are no standard industry grades for hard and soft-shell crabs. Consumers will find crab sizes referred to as large, medium and small. Sometimes crabs are also graded as number one (male “jimmies”, most meaty), number twos (male “jimmies”, less meaty) and number threes (mix of ungraded, small crabs, often females). Most hard shell crabs are sold by the dozen, bushel or crate. A dozen crabs are exactly 12 crabs. The actual number of crabs in a bushel depends on the size of the crabs. To avoid confusion when ordering hard shell crabs, buyers should specify the size desired (in inches) and use the following table as a guide:

HARD SHELL CRAB SIZE CHART

SIZE NAME	CRAB		CRABS PER BUSHEL
Colossal	6 ½ or more inches	4-5 dozen	48 – 60 crabs
Jumbo	6 – 6 ½ inches	5 – 6 dozen	60 – 72 crabs
Large	5 ½ – 6 inches	6 – 7 dozen	72 – 84 crabs
Medium	5 – 5 ½ inches	7 – 8 dozen	84 – 96 crabs
Small, usually females	4 ½ - 5 inches	8-9 dozen	96 – 84c crabs

Fat Crabs vs. Empty Crabs: Those crabs that are empty or light in weight have recently molted. A larger new crab shell is produced through the molting process to allow for growth. That same lighter, empty crab will fill with muscle over time and become a full fat crab. This cycle will continue until maturity. Crabs that have just molted are bright, clean and shiny. Full crabs tend to appear darker and more discolored.

Soft-shell crabs: For soft-shell crabs, dozens are generally sold “straight-run,” which includes all sizes, or graded as small, medium and large. Individual producers may sell by weight or other means. Thus, to avoid confusion when buying soft-shell crabs, buyers should specify by size (in inches) or weight. See sizing and weight chart provided as a guide:

SOFT-SHELL CRAB SIZE CHART

SIZE NAME	CRAB DIMENSIONS	AVERAGE WEIGHT	DOZENS PER TRAY	DOZENS PER CASE
Whales	5 ½ inches +	5.9 oz	2	6
Jumbos	5 - 5 ½ inches	4.5 oz	3	9
Primes	4 ½ - 5 inches	3.3 oz	4	12
Hotels	4 - 4 ½ inches	2.5 oz	5	15
Mediums	3 ½ - 4 inches	1.8 oz	6	18

Transporting and holding crabs:

Live crabs should be stored in a suitable container with a layer of ice at the bottom when transporting. Containers should be shaded from direct sunshine, lid cracked open to allow for fresh air, and kept as cool as possible (50 degrees F). Crabs should be stored upright. They must be kept separate from melted ice water to avoid suffocation. Meat quality also becomes “mealy” instead of flaky in crabs that have been submerged for a time in ice water. Live crabs in good condition can be kept alive overnight in an ice chest if kept cool and held above the ice and water. Crabs can also be stored for a few hours in a wooden crab box or hamper with damp burlap cover. Be prepared with container and ice when making large purchase of live crabs. Do not purchase weak or dead crabs. Discard any dead crabs prior to cooking.

For live soft-shell crab, waxed boxes, beer flats or specially designed soft-shell crab boxes can be used to package and transit crabs. Arrange crabs with faces upward to allow air to enter their gill chamber. Cover with wet paper or thin cloth. Do not stack boxes. Remember, to keep the crabs moist and cool but not crush or allow moisture to leak out of the crabs.

How Much to Buy

Boiled crabs: Plan on two to four crabs per person depending on size for boiled crabs. Generally, a bushel of #1 will hold 60-72 crabs, which will feed about 10–12 people. If other foods are on the menu, then only half as many crabs are needed. Also consider crowd and appetite level.

Crab yield: Remember, when buying blue crab the actual edible portion of meat is quite low. The picked meat yield depends on the size of the crab and the experience of the crab picker. For example, an average matured crab weighs approximately 1/3 pound. An experienced crab picker can produce about 2 ¼ ounces of meat from each pound of live blue crabs. This is about a 14 percent yield once the shell is removed and all edible meat picked. Therefore, a dozen of live crabs weighing approximately four pounds will yield only 1/2 pound of actual edible meat.

-Thomas Hymel

Oil Spill Donations

The Louisiana Wildlife and Fisheries Foundation (LWFF) has established a site for interested parties to donate funds to be used for fish, wildlife and habitat cleanup associated with the BP oil spill in the Gulf of Mexico. The donation form can be accessed by clicking the LDWF Oil Spill Response banner at <http://www.wlf.louisiana.gov> or by entering <http://www.wlf.louisiana.gov/oilspill> into your browser's address bar, and navigating to the bottom of the page under the "Donate" heading.

Donations may also be made by contacting LWFF Executive Director Kell McInnis at kmcinnis@wlf.la.gov or (225) 765-5100.

Re-certification of Two Bycatch Reduction Devices (BRDs) for the Southeastern Shrimp Fishery

Small Entity Compliance Guide

NOAA Fisheries Service has re-established a two-year provisional certification for the Composite Panel BRD for the shrimp fisheries in the Gulf of Mexico and South Atlantic region, and the Extended Funnel BRD for use in the Gulf of Mexico shrimp fishery. The Extended Funnel BRD is currently certified for use in the South Atlantic shrimp fishery. These two BRDs are provisionally certified for use in the designated areas through May 24, 2012.

In addition, NOAA Fisheries Service is making minor modifications to relax the technical specifications of the Composite Panel BRD. For information regarding these BRDs, please contact NOAA Fisheries Service's Pascagoula Laboratory, Harvesting Technology Branch, 3209 Frederic Street, P.O. Drawer 1207, Pascagoula, MS 39568; phone: 228-762-4591.

The intended effect of this rule is to improve bycatch reduction in the shrimp fishery to better meet the requirements of National Standard 9 of the Magnuson-Stevens Fishery Conservation and Management Act.

Background

In 2008, NOAA Fisheries Service provisionally certified the Extended Funnel BRD for use in the Gulf of Mexico, and the Composite Panel BRD was provisionally certified for use in the Gulf of Mexico and the South Atlantic region for a two-year period. No new information exists to indicate these BRDs do not continue to meet the provisional certification criterion. Re-establishing these BRDs for use in the fishery will allow fishermen a wider choice of gear when seeking the most effective BRD for the specific local fishing conditions.

This bulletin provides only a summary of the information regarding the rule. Any discrepancies between this bulletin and the rule published in the *Federal Register* will be resolved in favor of the *Federal Register*.

Commercial Fishery for Black Sea Bass to Re-open in the South Atlantic

The commercial fishery for black sea bass opened on June 1. The fishery will remain open until May 31, 2011, or until the quota of 309,000 pounds is met. The black sea bass commercial fishery was closed on Dec. 20, 2009, because NOAA Fisheries Service had determined that the 2009-2010 commercial quota of 309,000 pounds would be met by that date.

Other Fisheries Opening

The vermilion snapper commercial fishery will open July 1.

Unique Aquaculture Program Based On Soft-Shell Crabs Will Provide Crabbers with Approximately \$14,000 Increased Annual Income

Operation Blessing International (OBI), the 7th largest international charity, is working in partnership with LSU AgCenter/Louisiana Sea Grant Program and the Louisiana Seafood Promotion and Marketing Board (LSPMB) to help crab fishermen and their families.

The OBI-LSU AgCenter project is based on a unique soft-shell crab shedding system developed by Louisiana Sea Grant and implemented by LSU after Hurricane Katrina as part of their recovery work. The system enables crab fishermen to reserve certain hard-shell crabs just before they shed (called Busters) and keep them in holding tanks until they do shed and can then be sold as soft-shell crabs. The system consists of a series of shallow tanks, PVC piping and a water pump that circulates salt water over the crabs in the tanks.

OBI is providing the initial funding for 25 soft-shell crab shedding sets. One set of tanks will generally yield 600 dozen soft crabs in a season, averaging 10 to 12 dozen per week with peaks as high as 36 dozen per week. Each set is expected to increase each family's income by approximately \$14,000 annually, with all 25 sets adding up to a combined \$350,000 in the first year alone. With proper maintenance, each system is expected to operate for seven to ten years before minor replacement parts may be needed. Soft-shell crabs typically sell for more than twice as much as hard-shell crabs, a result of their being much more difficult and unpredictable to harvest.

Bill Horan, president of OBI, said, "Many of the fishermen and their families in the Gulf still have not recovered from the loss of income and the struggle after Hurricane Katrina. Now, the oil spill has only made things worse for them. These soft-shell crab systems will help these families not only increase their incomes today, but also over the long-term." The sets, which cost OBI approximately \$2,000 each, are being manufactured in Westwego, thus helping the local economy further.

Testing finds Gulf Seafood is Pristine

Initial tests by NOAA on more than 600 samples of Gulf seafood, taken from both outside the closed areas and inside, show that so far, seafood has remained pristine. According to Dr. Steven Murawski, Chief Science Advisor for NOAA Fisheries Service, samples have been tested both for sensory and chemical analysis. The sensory analysis is being done at the NOAA lab in Pascagoula, MS, and the chemical analysis is being done in Washington State.

Murawski said that the chemical tests involve looking for polycyclic aromatic hydrocarbons (PAH), which are the items of concern in an oil spill. He said that the baseline tests of Gulf seafood showed pristine levels. In fact, seafood from the Gulf was cleaner and less contaminated than typical seafood samples from some other coasts, primarily, says Murawski, because the areas sampled in the Gulf are far from any large population centers. He said that closer to major cities, there is more environmental contamination with PAHs.

The chemical tests look for a variety of compounds, and they are sensitive for some compounds down to the level of 2 parts per billion. The samples tested so far revealed no differences between samples taken outside the closed zones, and samples taken from within the closed zones.

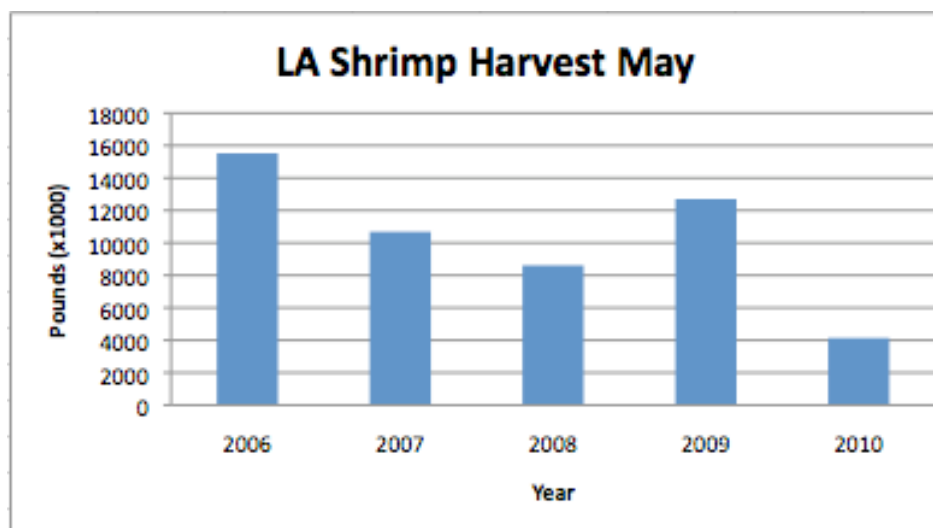
The FDA has deployed its Mobile Chemistry Laboratory to the Florida Department of Agriculture in Tallahassee, which will be used to run chemical analyses of samples collected by states for select volatile organic compounds. The technique will screen seafood samples for volatile headspace chemical compounds that may be indicative of petroleum taint. Positive results from these tests will trigger further chemical analysis for PAH. FDA has seven employees currently deployed to the mobile lab.

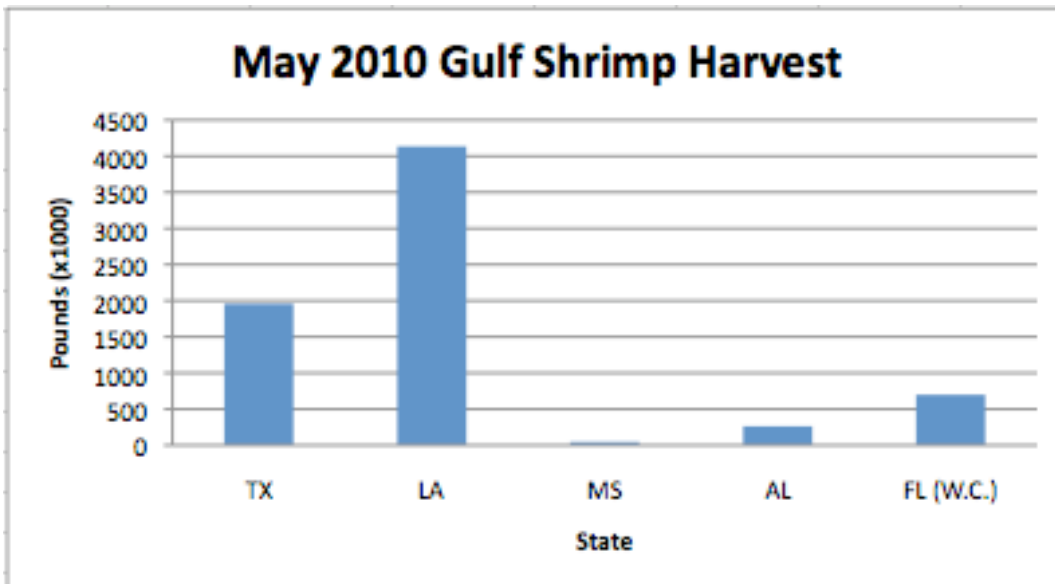
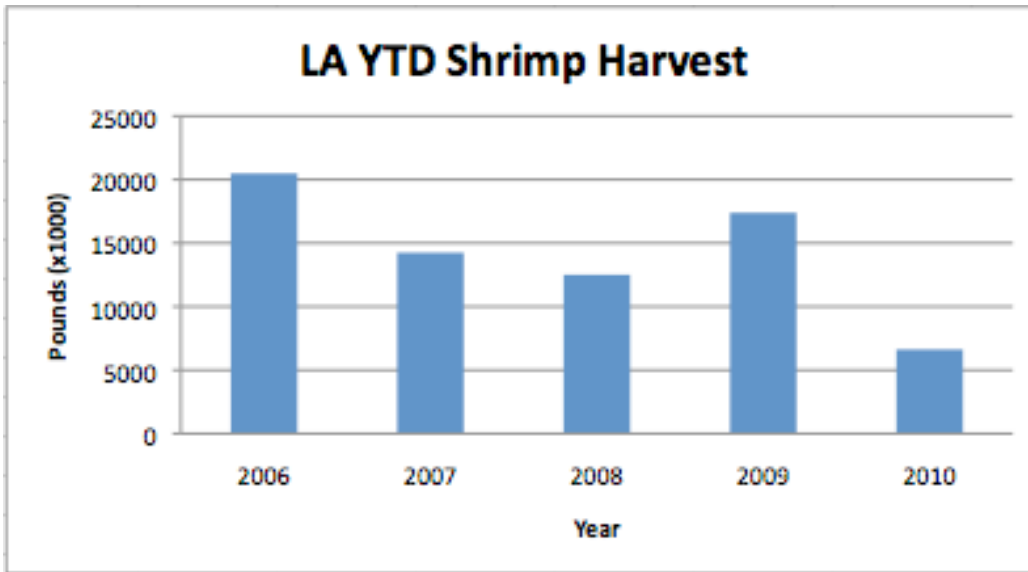
FDA's Arkansas Regional Laboratory has begun to test Gulf seafood samples collected by states, while three additional FDA field laboratories and state labs in California, Florida, Arizona and Wisconsin that are members of FDA's Food Emergency Response Network (FERN) continue to work on the implementation of testing protocols and methodology for PAH. These laboratories were expected to be ready to begin running samples by the end of June, and additional state and federal labs are also preparing to assist in the sample analysis.

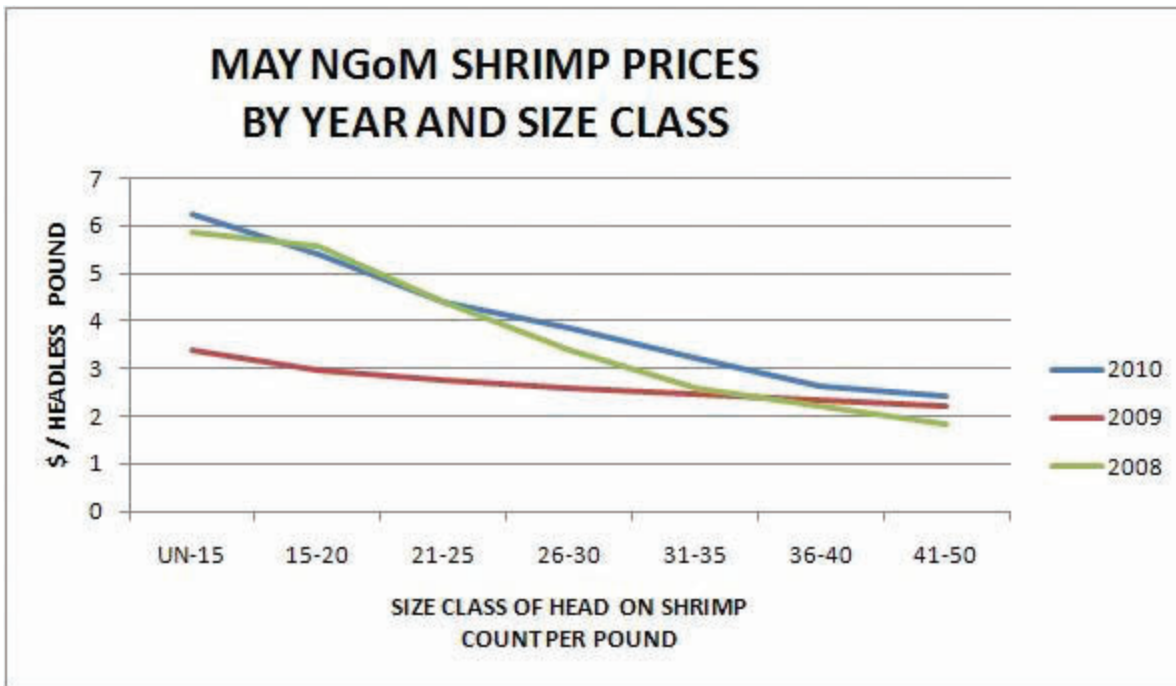
- John Sackton SEAFOOD.COM NEWS

Shrimp Watch

Louisiana specific data portrayed are selected from preliminary information posted by NOAA on their website. All data is subject to final revision and approval by NOAA. Shrimp landings are inclusive of all species harvested for ex-vessel prices. Missing, inadequate or withheld reporting are portrayed as "zero" in graphics. Prices reflect only central Gulf states (LA, MS, AL). For additional review of data, refer to: http://www.st.nmfs.noaa.gov/st1/market_news/index.html. Click on "monthly Gulf coast shrimp statistics."







Pictured from left, Kimberly Tucker, John Nguyen, David LeRay, Lance Nacio and Mark Hoffmann work together to develop HACCP plans specific to their products. Photo credit: Paula Ouder

HACCP Training

Fishermen, aquaculturists, dock owners, seafood processors and producers of specialty foods from as far away as Alaska recently attended a three-day seafood Hazard Analysis and Critical Control Points (HACCP) training at LSU, hosted by Louisiana Sea Grant and the LSU AgCenter. “HACCP is a means of internal control for safety, consistency, awareness and correction of process deviation in the food industry,” explained Lucina Lampila, LSG and LSU AgCenter associate professor. “It was first developed by Pillsbury to produce safe foods for astronauts to take into space.” The 28 workshop participants

came from seven states to study the Food and Drug Administration-recognized curriculum taught by LSG and LSU AgCenter researchers and professors alongside FDA and Department of Health and Hospital inspectors. Implementation of a HACCP plan in seafood processing facilities has been a federal requirement since 1997.

Cocahoe Minnow Culture

The Gulf killifish or cocahoe minnow (*Fundulus grandis*) is a hardy and popular live marine baitfish primarily used to catch redfish, speckled trout and flounder. The vast majority sold to anglers are wild caught. Wild stocks tend to be plentiful at certain times of year, but they are not always available and usually vary in size. Commercial production of the minnow in captivity has been limited by what LSU AgCenter assistant professor of aquaculture Christopher Green describes as “known bottlenecks” in the process.



Dr. Christopher Green examines newly hatched killifish. Photo credit: Paula Ouder

With support from Louisiana Sea Grant, Green and his colleagues at the LSU AgCenter’s Aquaculture Research Station are working to overcome these bottlenecks to facilitate the establishment of a Gulf killifish culture industry in Louisiana. They are exploring the optimum fish densities and sex ratios for breeding, what type of maternal feed produces the strongest offspring, what feed makes larval fish thrive, and are studying air incubation of fish eggs.

The good news is that these minnows are relatively easy to maintain and breed in outdoor tanks and indoor recirculating systems. The larval fish accept dry feed, negating the need for more expensive live foods, and Green uses readily available rock salt to salinate tanks. One of the more interesting characteristics of the Gulf killifish is the ability of its eggs to survive outside of water for more than two weeks, as long as they are kept moist. Green gathers eggs from special breeding mats and stores them under slight refrigeration in small plastic bins between two layers of synthetic foam to prevent hatching. This delay allows more eggs to be collected and held over several days so that they may be hatched at the same time. Cannibalism is common among larval killifish, with juveniles able to devour smaller fish only a day or two younger than themselves. Controlled, large-batch hatching reduces this problem, allows more fish to be reared in one tank and produces more consistently sized minnows.

Green held several workshops in coordination with LSG Extension personnel in coastal parishes to share his findings with residents who may be interested in pursuing killifish farming. “Aquaculture will supplement rather than replace wild-caught baitfish,” Green said. “Cultured minnows are healthier and better survive transport, but the techniques won’t go far until stakeholders adopt them.” A full day workshop for individuals interested in starting their own minnow farming will be held at the Aquaculture Research Station in Baton Rouge in October. More details will be coming in future issues.

The U.S. Department of Agriculture and Louisiana Department of Wildlife and Fisheries also provide funding to the project.

– Paula Ouder

The Gumbo Pot

If you have a favorite seafood recipe that you would like to share, please send it to Julie Anderson janderson@agcenter.lsu.edu for inclusion in future issues.



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We would like to hear from you! Please contact us regarding fishery questions, comments, or concerns you would like to see covered in the Lagniappe. Anyone interested in submitting information, such as articles, editorials, or photographs pertaining to fishing or fisheries management is encouraged to do so.

Please contact Lagniappe editor Julie Anderson at janderson@agcenter.lsu.edu

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