Gulf Fishery News

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Facial Recognition Technology and the Future of Fisheries Management

From the NOAA Fisheries Web Site

Recent advances in computer vision and facial recognition technology might soon allow for more efficient collection of fisheries data. But technology is unlikely to completely replace what human observers can do anytime soon.

After high-profile crimes, authorities sometimes have to sort through mountains of video footage taken by security cameras, TV crews, and even cell phone users near the scene. Today human analysts do most of this painstaking work. But developments in artificial intelligence and computer vision—including facial recognition and the ability to track individuals across multiple cameras—will allow computers to pre-process much of the footage. This will free up investigators to focus on the more complex tasks that only a human can perform.

These new technologies could offer great benefits for fisheries, where the labor-intensive process of collecting data and processing it might someday be aided by computer vision. For instance, many fishing vessels carry observers who collect information on the boat's retained catch and bycatch—that is, the fish and other animals inadvertently caught and then discarded at sea. By tallying what and how much each boat takes out of the water, observers enable the fleet to ease up as it approaches its annual limit. This feedback loop from fishing boats to managers and researchers is crucial to sustainably managing a fishery.

A Vision for the Future

But human observers are expensive. So, these same people—fishermen, managers and researchers—are asking ... could video cameras be brought onboard, with the catch accounting done by computer vision instead? The answer is ... maybe. Right now, technologies being developed for military and homeland security applications, as well as by Google and Facebook, might someday make this possible. Several NOAA scientists, alongside industry and academia partners, are also working to transfer those technologies to the fishing industry.

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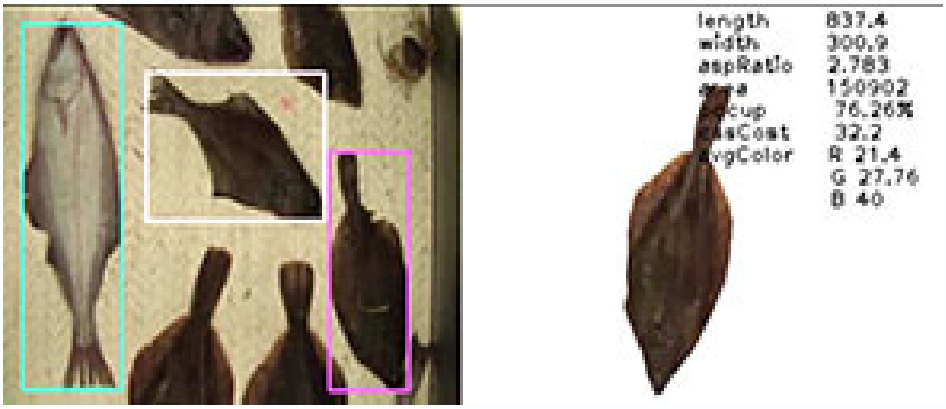

Inside this issue:

Did you know?

The Gulf Council encourages and accepts public testimony at every stage of the fishery management plan process. Comment opportunities go beyond scoping workshops and public hearings. The Council also takes open public comment during each Council meeting and accepts written comments throughout the process. Written comments can be emailed to: gulfcouncil@gulfcouncil.org, or mailed to:

Gulf of Mexico Fishery Management Council
2203 N. Lois Avenue
Suite 1100
Tampa, Florida 33607

Questions?

Call Charlene or Emily at 813-348-1630

Facial Recognition *continued*

The basic idea is that digital video cameras would record all fish brought onboard and all fish or other animals discarded as bycatch. Then, the computers would identify the species passing in front of the cameras and, in the case of fish, estimate their weight. These two pieces of data would allow computers to tally the catch for each species.

Estimating weight is a relatively straightforward computational problem. A computer can measure length if it knows how far a fish is from the camera, and it can then use standard conversions to get a weight. New technology to track a fish as it moves across the frame or between cameras would allow for multiple estimates that can then be averaged for a more accurate result.

Programming Computers to Recognize Fish

Recognizing different species of fish, on the other hand, is a challenging problem for a computer to solve. "It's not like having a fish in hand," said Kresimir Williams, a biologist at NOAA's Alaska Fisheries Science Center. "A computer can't just grab the fish and turn it over to get the cues it needs to figure out what species it is."

But computers are good at capturing what Williams called "discriminating features." Facial recognition algorithms developed by Google and Facebook rely on the ratio of several features—the distance between the eyes divided by the distance from eye-to-nose, for instance—to identify a human face. In fish recognition, the ratio of eye-to-mouth over eye-to-tail might serve the same purpose.

Williams is working with Jenq-Neng Hwang, a University of Washington computer engineer whose work is funded in part by NOAA, to develop fish recognition algorithms. They have found that six discriminating features are enough to reliably distinguish between several common species of fish.

Of course, it all depends on the species in question. In some fisheries, where there are relatively few and distinctive-looking species, video monitoring might have great potential in the near term. In the case of West Coast rockfish, on the other hand, there are over 60 different species, and telling some of them apart is a challenge even for experienced human observers. For those fisheries, the promise of video monitoring may be a long way out.

Next Steps

There's also the question of operational flexibility. "Human observers collect a wide range of data," said Farron Wallace, another NOAA scientist working on video monitoring research. "They collect data on endangered species and marine mammal interactions as well as catch and bycatch." Computer systems will never be as flexible at problem-solving as humans are. Not for the foreseeable future, anyway.

"Still," Wallace said, "that doesn't mean that camera systems can't be really important in the near future." As with investigators pouring over footage from a crime scene, the idea is not to replace human analysts, but to give them tools so they can work more efficiently. Programs that sift through hours of video and then queue up just the key moments might increase efficiency without sacrificing human ingenuity.

"Any software that makes the process more efficient," Williams said. "That's the direction we want to go."

Download the Free Federal Fishing Regulations App

The Gulf of Mexico Fishery Management Council offers a fishing regulations App for the Android and the iPhone - both are available for download.

The Apps are free and provide immediate access to the most up-to-date commercial and recreational federal fishing regulations for species managed by the Gulf of Mexico Fishery Management Council. The Apps also provide information on fish identification, measurement guidelines, sanctuaries and closures, and important telephone numbers.

Visit the App Store or Android Market to download the App - or simply scan the appropriate QR code on the left with your iPhone or Droid to begin downloading the Gulf Council's free regulations App!

Droid

iPhone

Free QR Code Reader Apps are available in both the App Store and Android Market.

For more information on federal fishing regulations, visit www.gulfcouncil.org.

Venomous Lionfish

Guest Column by Glen Ballinger

I have fished in the Gulf of Mexico out of Venice, Florida for the past ten years. My friend, Captain Joe Miller, has fished these same waters for well over 25 years. Like most people, I have heard about the venomous Lionfish taking over the Gulf of Mexico. I've been reading about it for years.

I typically fish about 50 trips a year, and in all that time I have never caught a single lionfish, though I hear that divers often spear them somewhere out in the Gulf.

Recently, we took an overnight trip to fish for large American Red Snapper. We had a great crew of experienced and excited fisherman. Excited because it would be the Super Moon - a great time to catch mangrove snapper and red snapper, not to mention the possibility of catching red grouper, true black grouper, porgies, and Almaco Jacks.

We stopped for live bait on the way out, then traveled 2-1/2 hours in calm seas to our first spot. Immediately we hooked up with some firetruck grouper, eventually working our way to a few more honey holes. Just before sunset, Ron Bowerman, an avid fisherman who lives in North Port, Florida, was bringing up a fish. Immediately we all knew what it was - a lionfish!

That trip lasted 21 hours, during which time we caught six lionfish. Up until now, I had never seen or heard of lionfish in these waters. Coincidentally, my friend Joe Miller with Fish Galore Offshore Charters caught a lionfish on the same day. His first as well.

Bottom line - lionfish are here, so be prepared, and take caution.

The lionfish is a popular saltwater aquarium fish with distinctive maroon/brown and white stripes, fleshy tentacles above the eyes and below the mouth, and an imposing fan of prickly venomous spines. Although not fatal, the sting of a lionfish is extremely painful. These fish are not aggressive toward people, so contact and poisoning is usually accidental. The species now found in U.S. waters produce a mild poisoning.

For now, scientists have five main suggestions:

- Track the lionfish population.
- Conduct more research.
- Educate the public.
- Notify physicians/health care providers about venomous fish in U.S. waters.
- Make regulations to control the introduction of non-native marine species.

Take the Lionfish Quiz by visiting http://oceanservice.noaa.gov/education/stories/lionfish/quiz/q1.html.

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- **review pending fishery management plans and amendments**
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Gulf Council Increases 2013 Red Snapper Quota, Sets a Fall Red Snapper Season

In a special meeting, the Gulf of Mexico Fishery Management Council voted to increase the 2013 red snapper quota. After listening to more than two hours of public comment, the Council agreed to increase the quota from 8.46 million pounds (mp) to 11 mp. This means a 2013 commercial quota of 5.610 mp and a recreational quota of 5.390 mp.

The 11 mp quota is the highest catch level the Council could set without having to possibly decrease the quota in subsequent years.

The Council also agreed that, if NMFS determines that unused recreational quota is available, a supplemental season will open October 1 and run continuously until the quota is met.

The season closure will be set when the June recreational landings data become available in mid-August. Commercial fishermen who are IFQ shareholders will get the additional allocation upon implementation of the increase.

The Framework Action will be submitted to the Secretary of Commerce and, if approved, will be implemented in time for the fall season.

Photo by Mark Miller

Photo by Kathy Hoak

Photo by Jason Whitaker

Photo by Jim Croley

Can't make a meeting?

Don't worry, you can watch the virtual presentation on Gulf Council TV. Simply visit http://www.gulfcouncil.org/resources/gulf_council_tv.php and scroll down to the presentation section.

Then submit your comments online at http://gulfcouncil.org/fishery_management_plans/scoping-thru-implementation.php

Photo: Captain Murphy

Photo: iStock

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Upcoming Public Hearings

The Gulf of Mexico Fishery Management Council will hold a series of public hearings around the Gulf to take comments on proposed Reef Fish Amendment 39 - Regional Management of Red Snapper and Amendments 19 and 20 to the Coastal Migratory Pelagics Fishery Management Plan.

Copies of the documents can be found on the Council web site at www.gulfcouncil.org. Click on the thermometer to view pending amendments and related documents.

The public hearing schedule is listed below. All hearings begin at 6 pm and will conclude after public input has ended, but no later than 9 pm.

Denotes both Regional Management and Mackerel 19 & 20 will be discussed.

August 1, 2013
Regional Management
Call-in session
888-323-2711
Password: Regional Management

August 5, 2013*
Courtyard Marriott
11471 Cinema Drive
D'Iberville, MS

August 6, 2013
Mackerel 19 & 20
Holiday Inn Select
2001 N. Cove Boulevard
Panama City, FL

August 7, 2013
Regional Management
Holiday Inn Select
2001 N. Cove Boulevard
Panama City, FL

August 8, 2013*
Regional Management &
Mackerel 19 & 20
Renaissance Riverview Plaza Hotel
64 South Water Street
Mobile, AL

August 12, 2013*
Regional Management &
Mackerel 19 & 20
Hilton St. Petersburg
950 Lake Carillon Drive
St. Petersburg, FL

August 12, 2013*
Hilton Garden Inn
6717 South Padre Island Drive
Corpus Christi, TX

August 13, 2013*
Regional Management &
Mackerel 19 & 20
Hampton Inn & Suites
2320 Gulf Freeway South
League City, TX

August 14, 2013
Regional Management
DoubleTree
4964 Constitution Avenue
Baton Rouge, LA

August 15, 2013
Mackerel 19 & 20
Louisiana Wildlife & Fisheries Lab
195 Ludwig Lane
Grand Isle, LA

August 15, 2013
Mackerel 19 & 20
Harvey Government Center
1200 Truman Avenue
Key West, FL

Public-Private Research Center Helps Foster Sustainable Fisheries

by David Malmquist

Industry partners help plan—and fund—basic fisheries research

Fisheries management is often a perfect storm of competing interests among commercial fishermen, recreational anglers, environmentalists, seafood wholesalers and retailers, seafood consumers, and other groups.

A new 5-year grant from the National Science Foundation to William & Mary's Virginia Institute of Marine Science will jumpstart a partnership in which members of these groups jointly plan and fund the research needed to promote sustainable fisheries throughout the Mid-Atlantic and Gulf coast region. That's a goal the groups all share.

Dr. Eric Powell, University of Southern Mississippi's Gulf Coast Research Lab, sorts clams on the fishing vessel ESS Pursuit during an assessment of surf-clam stocks in mid-Atlantic waters. This was a cooperative effort between the commercial fishing industry, NMFS, and academic programs lead by Powell and Dr. Roger Mann of VIMS. *Photo by Roger Mann.*

The public-private partnership, formally known as the Science Center for Marine Fisheries (SCeMFiS), is a cooperative venture managed by VIMS and the University of Southern Mississippi. The Center is led by Dr. Eric Powell of USM's Gulf Coast Research Laboratory, with Professor Roger Mann directing the SCeMFiS site at VIMS.

The Center's industry partners currently include the Garden State Seafood Association, the National Fisheries Institute Clam Committee, the Northeast Fisheries Science Center, Atlantic Capes Fisheries, Inc., LaMonica Fine Foods, Lunds Fisheries Inc., the National Fisheries Institute Scientific Monitoring Committee, Surfside Seafood Products, and L.D. Amory and Company.

When asked why L.D. Amory and Co. committed to be a SCeMFiS associate partner, owner C. Meade Amory, said "The key to fisheries management is the best possible science. By industry working together with scientists we have a better chance of getting a better handle on management."

"Management of these fisheries is difficult to say the least," Amory adds. "This is a great opportunity to work with scientists to improve stock assessments and modeling, and to make sure that we're doing everything we can to keep our fisheries sustainable into the future."

Powell says SCeMFiS is "unique in being the only federal-industry partnership that permits the fishing industry to retain a leadership role in designing the science program. This assures that sustainable fisheries will remain a focus of project design and that the science products will directly address the issues faced by the fishing industry."

Mann adds that Center activities will "benefit both the commercial and recreational fishing industries while helping to sustain the nation's fish resources." Research at the center, he says, "will use peer-reviewed science to help improve sampling methods for fisheries surveys, enhance population-dynamics models, develop new approaches to reducing discards, reveal geographic and biological variations in stock structure and dynamics, among many other benefits."

Mann says that initial areas of collaborative research will likely involve the surf clam and ocean quahog fisheries; trawl fisheries for squid, mackerel, summer flounder, black sea bass, and other species; and the purse seine fishery for menhaden.

SCeMFiS is funded through the National Science Foundation's Industry/University Cooperative Research Center program. NSF says the highly competitive program—in operation for more than 40 years—has become a model for collaborative research between industry and universities nationwide, with centers in fields as diverse as health care, energy, cloud computing, and homeland security.

Fisheries scientists at VIMS are already involved in a number of science-industry partnerships at the federal level, including the Northeast Area Monitoring and Assessment Program (NEAMAP), the Southeast Area Monitoring and Assessment Program (SEAMAP), and the Sea Scallop Research Set-Aside Program. However, says Mann, SCeMFIS and other centers allow industry a greater role—and greater fiscal responsibility—in fisheries research.

"SCeMFIS functions like these other programs in that the work is directly applied to industry need," says Mann, "but unlike those programs, the Center is run by an Industry Advisory Board. The Center and site directors respond to the IAB, and the IAB subscriptions pay for the research. The focus of the research is decided through a format dictated by NSF but voted on by the industry members—it's their money that we're spending on the research. So these are very direct industry collaborations."

How Hard Can it Really be to Count Fish? *Part 2*

Fisheries Independent Data Collection

It's simply impossible to accurately count each individual fish swimming in the Gulf of Mexico, but not for lack of desire. The size, depth, and diversity of the Gulf makes accounting for every single fish unmanageable using current technology.

The first article in this series, "How Hard Can it Really be to Count Fish?" describes how scientists use fisheries-dependent data collection to monitor fish populations by tracking harvest and fishing effort. While fisheries-dependent information is important for management and plays a role in stock assessments, it has its limitations. To use an analogy: you can't estimate the amount of water in a well by simply looking in the bucket. Likewise, you can't assess a fish stock by simply looking at what is being caught - you have to study the fish directly.

Fisheries-independent data collection does just that. State, federal, and university-based fisheries scientists directly sample fish populations in a variety of ways to collect information about the life history and abundance of each species.

Life history studies focus on the biology of a fish. The way a species survives and reproduces plays a major role in its ability to sustain a healthy population. Fisheries scientists use the following techniques to study the life history of fishes in the Gulf of Mexico:

Otolith Analysis - An otolith is a bone found in the fish's ear. Much like counting the rings of a tree trunk, the age of a fish can be determined by counting the rings on an otolith. This information, paired with information about the length of a fish, is used to determine the growth rates of fish and estimate the percent of fish at each age in a stock.

Photo: Amy Piko

Gonad Analysis - Gonads, or the reproductive organs of a fish, can be analyzed to determine the potential for spawning success. Reproductive information collected from gonads includes the age at which a fish first spawns, the male to female ratio within a population, and the number of eggs produced by a female each year.

Capture and Release - A couple of different techniques are used to study the death rates, growth rates, and movement of fish. Scientists catch fish, tag them, and ask anglers who recapture them to report information about location and size of the fish. To determine whether a fish survives release, they are either fitted with acoustic tags that monitor movement, or they are placed in underwater cages and revisited after a few days time.

In addition to life history information, fisheries-independent studies collect information on how many fish are in an area. The techniques used to study abundance all measure the amount of fish caught per unit of effort. When compared year after year, these studies can show trends in population size and location.

Trawl Surveys - Researchers pull large nets behind a research vessel and observers are sometimes placed aboard shrimp vessels to monitor bycatch. These survey techniques are used mostly to estimate the amount of juvenile fish of a particular species that can potentially grow large enough for harvest (often red snapper).

Traps - Baited fish traps are placed in different types of habitat (artificial structures, natural reefs, and sand bottom, among others) to compare which species are present at each type of location.

Photo: FWRI

Direct Observation - SCUBA divers survey different areas and count fish.

Video Surveys - Video cameras are placed in different habitats to record and measure the amount of fish in the area, and to gather information about fish size.

Hook and Line - Scientists also collect information about fish by fishing with standardized gear and sometimes using electric reels. This is an effective way to collect samples around structures that would interfere with nets and other types of sampling gear.

Continued on next page

Counting Fish *continued*

Longlines - A longline is a very long fishing line with multiple hooks branching off the main line.

Longlines can be miles long and rigged with hundreds of hooks at a time. Longlines that fish vertically can be used around structure, but lines fished at the surface or along the bottom are intentionally set to avoid it.

Plankton Tows - Bongo nets are used to collect small organisms drifting in the water. Tiny fish found in the plankton samples can indicate the number of young born each year, and scientists can estimate their potential to grow into adults that can later be harvested.

Fisheries science is so complex because the subject it studies is vast, difficult to access, and exists in an ever-changing environment. The wide variety of fisheries-independent and fisheries-dependent studies performed in the Gulf of Mexico provide us with snapshots of different aspects of the fishery. The conclusions drawn from each individual study have value on their own, but assessing a stock throughout the entire Gulf requires a combination of all of these studies in order to formulate a comprehensive understanding of what's going on.

The final installment of "How Hard can it Really be to Count Fish?" will describe how scientists combine the conclusions drawn from individual studies for use in a Stock Assessment, which gives fisheries managers the information they need on a stock's status so they can make management decisions.

Photo: Kathy Hoak

Photo: NOAA

New Education Program Comes to the Southeast

This past April, the Marine Resource Education Program – Southeast, kicked off its first science education workshop designed for fishermen, by fishermen. The program, modeled after the New England program run by the Gulf of Maine Research Institute, is tailored to meet the needs of the Southeast region and aims to inform fishermen about the Fishery Science & Management processes used in the Gulf of Mexico, South Atlantic, and Caribbean.

By all accounts the workshop was a great success, with 30 participants from around the southeast region representing recreational anglers, commercial fishermen, industry representatives, NGOs, and the media, completing the science module.

Participants spent three days learning about a variety of topics, including a segment on Population Biology and Sampling & Survey Methods. This segment involved a visit to several hands-on stations where participants were introduced to sampling gear and the use of video cameras and the side beam sonar; the use of fish tags and acoustical data collection; and how scientists determine age, growth, and sexual maturity of a fish. A tour of the research vessel Weather Bird was also included.

Continued on next page

August Council Meeting Reminder

The next Council meeting is scheduled for the week of August 26 - 30, 2013, at the Hilton Palacio Del Rio, 200 South Alamo in San Antonio, Texas. Please make your reservation under the Gulf of Mexico Fishery Management Council room block to receive the special discounted room rate.

Note that all written comments will be posted on the Council's web site for viewing by Council members and the public.

To help ensure that Council members have sufficient time to consider your written testimony for a specific Council meeting, please submit your comments at least seven business days prior to the start of the Council meeting.

Comments can be submitted online by clicking the thermometer on the Council's homepage - www.gulfcouncil.org. Find your topic of interest and click on the "Submit Your Comments here" link.

Materials submitted to Council members or staff for distribution prior to or during a Council meeting will be treated as all other written comments and will be posted to the web site.

Oral or written communications provided to the Council, its members, or its staff that relate to matters within the Council's purview are public in nature. These communications will be made available to the public in their entirety and will be maintained by the Council as part of the permanent record. Further, knowingly and willfully submitting false information to the Council is a violation of Federal Law.

A draft agenda will be posted on the Gulf Council web site at www.gulfcouncil.org.

MREP *continued*

After visiting the stations, participants reported back to the classroom where, over the next couple of days, they learned about the SEDAR Process, Stock Assessment Modeling, Cooperative Research, Conservation Engineering & Gear, Oceanography and Climate, and Ecosystem-Based Management.

Here's what some of the participants had to say:

- You always feel scientists are hiding behind the best available data phrase, but I now believe they are continuously trying to improve the system by looking at new options. This program gave me a new respect for the process.

- Fishermen need this as a basis for action and knowledge.

- Education is the key. There are so many rumors in the fishing world.

The management portion of the program is tentatively scheduled for September 2013, in Tampa, Florida. For more information about the program visit http://www.gmri.org/community/display.asp?a=5&b=15&c=266

Send us Your Fishing Photos

We want to see your favorite fishing photos! Whether from a spear fishing adventure, a charter trip, or a commercial effort, we'd like to see your photos and possibly use them on our web site or in our publications.

Send us your photos and help us build a photo library! To submit your photos, send an e-mail with "Photo Library" in the subject line to gulfcouncil@gulfcouncil.org. Be sure to include your name, address, and phone number, along with a description and proper photo credit, then simply attach the image and send.

Photo by: Jeff Berman

Photo descriptions may be edited for grammar, clarity, and/or length. Photos must be in jpeg format and cannot exceed 1.5 MB (200 ppi).

NOTE: By submitting photos, you understand that your photo may be used on our web site, in our newsletter, or in other publications. Photo credit will be given.

Recipe Rewind

Here's another blast from the past. This recipe was taken from *The Book of Household Management (1861)*, reprinted on the *Vintage Recipes* web site.

Potted Shrimps

Ingredients

1 pint of shelled shrimps
1/4 pound of fresh butter
1 blade of pounded mace
cayenne to tase
when liked, a little nutmeg

Instructions

Have ready a pint of picked shrimps, and put them with the other ingredients, into a stewpan; let them heat gradually in the butter, but do not let it boil. Pour into small pots and when cold, cover with melted butter and carefully exclude the air..

Modern Day Recipe for Potted Shrimps

1-1/2 cups unsalted butter
Juice of ¼ lemon
¼ tsp ground mace
¼ tsp white pepper
½ tsp anchovy paste or Gentleman's Relish
1-1/2 cups cooked and peeled brown shrimps
Cayenne pepper, to serve

1. Melt the butter in a pan over a gentle heat, and then allow to simmer until you spot the first dark flecks – watch it carefully, or it will burn. Strain through some butter muslin, or two sheets of kitchen roll, into a jug.
2. Wipe out the pan, and pour in two-thirds of the butter. Add the lemon juice, mace, pepper, anchovy essence, and a pinch of salt and simmer very gently for five minutes, then take off the heat and allow to cool but not set. Divide the shrimps between 4 ramekins, pressing them in tightly.
3. When just warm, but still liquid, divide the spiced butter between the ramekins and put in the fridge to set. Once solid, pour over the remainder of the clarified butter and return to the fridge to set.
4. Serve with a sprinkle of cayenne pepper and a lot of hot toast.

Stay in the loop with *Gulf Currents*

Stay up to date on Gulf of Mexico Fishery issues - visit our blog - *Gulf Currents*.

Gulf Currents will keep you in the loop and prepare you to participate effectively in the fishery management process by educating you about current events, possible management considerations, regulatory changes, the management process, and more.

Gulf Council Honors Departing Members

During its July meeting in New Orleans, Louisiana, the Council honored members Kay Williams and Larry Abele for their service on the Council.

Kay Williams, who is finishing up her second three year term, but who also previously served three three-year terms, plans to remain active in fisheries issues and continue her work with the commercial industry. During her fifteen years on the Council, Ms. Williams has served as its Chair and its Vice-Chair.

Dr. Larry Abele, who is retired from Florida State University, was appointed to the Council in 2010 and served as chair of the Coral Management and Highly Migratory Species Committees.

Both Ms. Williams and Dr. Abele have made significant contributions to the Council and its mission.

Quick Guide to Submitting Online Comments

The Gulf Council wants your input on the many issues under consideration.

One way to give your input is by attending scoping workshops and public hearings held around the Gulf of Mexico. But it's impossible for the Council to hold a workshop or hearing in every coastal community, so for anyone who can't make a meeting because it's too far away or because of other commitments, we're producing online presentations and comments forms for each amendment.

Check it out! Go to www.gulfcouncil.org and click on the thermometer in the middle of the page. From there you can read up on all the pending actions, watch the video presentations, read comments, and submit your own. All comments submitted through the online form are automatically posted on our web site for Council review. Other comments are manually posted every couple of days.

There is also a thermometer for each issue that lets you know where the Council is in the process for that particular amendment, whether its the scoping phase, final action, or implementation.

Let us hear from you!

MANAGEMENT PLANS

Click on the thermometer to:

- **review pending fishery management plans and amendments**
- **review available amendment guides**
- **review public comments**
- **submit public comments**

Marine Fisheries Regulations & Management Workshop

Sponsored by Florida Sea Grant, FWC, and NOAA

When: September 11, 2013 from 9:00 am - 12:30 pm (Registration is at 8:30 am)

Where: Twin Lakes Park; 6700 Clark Road, Sarasota, FL 34241

Who Should Attend: Resource Managers, Law Enforcement Personnel, Harbor Masters, Park Rangers and others who routinely interact with anglers or are interested in these topics

Topics Covered: How fishery managers use science to set fishing limits and quotas; The latest innovations in reducing barotrauma in 'no keep' catches; Detailed explanation to help one navigate Florida's confusing fishing license requirements; Updates in Federal and State fisheries rule changes; Question and Answer period with the experts.

Registration is free - visit http://2013fisheriesowrkshop.eventbrite.com/#

The Gulf of Mexico Fishery Management Council

Protecting our marine resources

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The Gulf Council would like to hear from you! Please contact us regarding fishery questions, comments, or concerns you would like to see covered in the Gulf Fishery News. Anyone interested in submitting information, such as articles, editorials, or photographs pertaining to fishing or fisheries management, is encouraged to do so. Submissions may be mailed to Charlene Ponce, Public Information Officer, Gulf of Mexico Fishery Management Council, 2203 North Lois Avenue, Suite 1100, Tampa, FL 33607. Materials can also be sent via fax to 813-348-1711, or by e-mail to charlene.ponce@gulfcouncil.org.

The Gulf of Mexico Fishery Management Council is one of eight regional Fishery Management Councils established by the Magnuson-Stevens Fishery Conservation and Management Act. The Council is responsible for the development and modification of fishery management plans (FMPs) that are designed to manage fishery resources in the exclusive economic zone (EEZ) of the Gulf of Mexico from state boundaries to the 200-mile limit.