

Florida LAKEWATCH



Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume 50 (2010)

The Gulf Coast Oil Spill



Emily Ellis

Bulldozers closing the outlet to the Gulf of Mexico from Lake Powell in Bay County.

It has been five months since the explosion and fire on an offshore oil-drilling platform Deepwater Horizon on April 20 in the Gulf of Mexico. Three months later, on August the 5th, BP pressure tested their latest

attempt, the static kill cement plug and determined that it was a success and that no more oil would flow into the Gulf from the Deepwater Horizon well.

The National Incident

Command (NIC) assembled interagency scientific experts to estimate the quantity of oil that was released from the

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well in that three month plus interval, and additionally the fate of that oil. These experts estimated that the Deepwater Horizon Well released 4.9 million barrels or 205,800,000 gallons of oil into the Gulf of Mexico.

They also estimated that burning, skimming and direct recovery from the wellhead removed 25% of the oil from the Gulf with another 25% being evaporated and dissolved naturally. Additionally, they estimated that 24% was dispersed as microscopic droplets in Gulf waters. This leaves an estimated 26% (1.27 million barrels or 53,508,000 gallons) of the total oil spilled in the Gulf as light sheen or in weathered tar balls. Some of this residual oil has washed ashore, been collected from shore, or buried in sand and sediments. Oil in the residual and dispersed categories will continue to degrade and along with effects of chemical dispersants, are being studied and mitigating actions taken where possible.

Given the magnitude of this disaster, what has been and is being done in Florida to help mitigate the effects of this spill? In Florida, the Department of Environmental Protection (FDEP) is the lead agency for responding to the oil spill and has implemented plans for cleanup and disposal of oil waste and air and water monitoring. In addition to FDEP the Florida Fish and

Wildlife Conservation Commission (FWC) conducted post-spill fish and wildlife assessments, including testing for contamination in sediments, fish and shellfish and evaluated critical habitat for fish, shorebird and sea turtle nesting areas that might be impacted by the oil spill. In addition the Sea Grant Programs of FL, GA, NC and SC held two "oil spill summits" where 10 leading experts from each respective state university and one NOAA expert addressed the issue of physical, chemical and biological transformation of oil as it moves from the Gulf of Mexico to the South Atlantic.

On the local level County Governments in the Florida Panhandle responded with

booms and other barriers to attempt to keep oil from reaching sensitive bays, marshes, wetlands and coastal dune lakes. They also provided outlets for the dissemination of information from other state and federal agencies. In both Walton and Bay Counties outlets from coastal dune lakes (see Vol 42 of the Florida LAKEWATCH Newsletter for information on Florida's coastal dune lakes) were manually closed in an attempt to keep oil out of these unique waterbodies. The outlet on Lake Powell, Florida's largest coastal dune lake, which is located in both Bay and Walton Counties, was filled with about 4,500 cubic yards of beach compatible sand to prevent any oil from reaching the lake.



BP staging area, downtown Panama City, Florida.

RMA-Baywatch, Panama City

Now that oil is no longer escaping from the well, the response has transitioned from one of emergency operations to one of monitoring. On August 27th, the State Emergency Operations Center transitioned to a monitoring status for the Deepwater Horizon Event. State emergency response officials will continue to respond to impacts as they are reported to the State Watch Office and ensure proper cleanup occurs as needed.

As part of this transition, the Florida Oil Spill Information Line was deactivated on August 27. Callers seeking state information regarding the oil spill should view the Deepwater Horizon website at www.deepwaterhorizonflorida.com or call the BP Community Information Line at 1-866-448-5816 or the Gulf Coast Claim Facility at 1-800-916-4893. It is likely that beaches in Northwest Florida will continue to receive impacts, mainly scattered tar balls in the coming months caused by natural tides and weather conditions. According to BP daily reports to Escambia County, thousands of pounds of weathered oil were still being removed from Pensacola Bay in late August. Now that peak hurricane season is here it is possible that immediately following tropical activity, lingering ocean swells and



RMA-Baywatch, Panama City

Cleanup vessels out of Saint Andrews Bay working on the Gulf oil spill.

higher tides could push offshore tar ball fields closer to the coast. So as you can see, Florida will be dealing with the

aftermath of the gulf oil spill for some time to come but we are all hopeful that the worst is behind us.



RMA-Baywatch-Panama City, Florida

Protective boom stored at the Panama City Marina, ready to be deployed to prevent oil from entering the Saint Andrews Bay.

This story was compiled from reports from FDEP, FWC, the Panama City News Herald and pnj.com.

A New Prospective on Phosphorus Limitation



Florida LAKEWATCH

Lake Mary Jane in Orange County

A limiting nutrient is a chemical necessary for plant growth-but available in smaller quantities than needed for algae to increase their abundance. Once the limiting nutrient in a waterbody is exhausted, algae stop growing. If more of the limiting nutrient is added, larger algal populations will result until their growth is again limited by nutrients or other environmental factors.

In Florida waterbodies, phosphorus is most often the limiting nutrient, except in watershed where soils contain sizable deposits of phosphorus. In these watersheds, nitrogen is usually the limiting nutrient.

While many scientists at Agencies and Universities across Florida and the nation look at ways to limit the amount of phosphorus entering our waterbodies, scientists at Arizona State University (ASU) are looking at phosphorus limitation on a much broader scale.

Dr. James Elser, an ecologist at ASU, has been studying the concept of phosphorus scarcity. “For the last 25 years, I’ve been working on phosphorus limitation of everything: bacteria, daphnia (a micro-crustacean found in freshwater lakes), phytoplankton (a microscopic free-floating algae), plants, cancer, evolution—everything. But, I was surprised I had never thought about

whether phosphorus limitation could operate at the level of human society—that it could constrain our food production or cause societal problems, famine, food security, national security issues.”

Now most of us have thought about how phosphorus could affect our lawns and lakes, but very few of us have considered phosphorus when thinking about national security issues.

How could phosphorus be related to National Security? Well according to Elser, phosphorus has the potential to limit society because the vast majority of phosphorus is mined and most of it is used in intensive farming practices to fertilize crops.

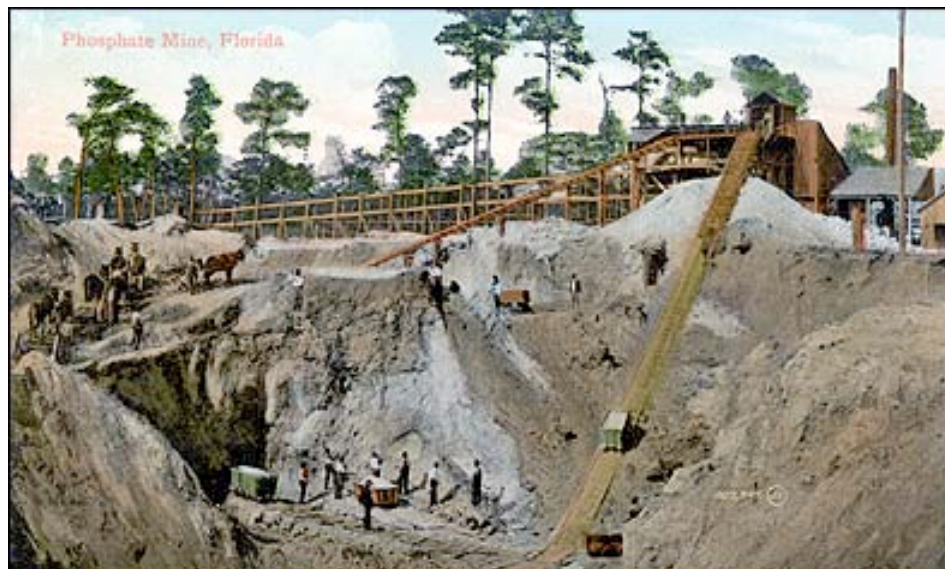
Where is this phosphorus mined? About 90 % of the geological supply of phosphorus occurs in Morocco and the Western Sahara, China, South Africa, Jordan and the United States. The United States is currently producing the most phosphate in the world, while Morocco and China rank second and third respectively. Florida provides 75% of the nations supply of phosphorus 25% of the world supply. The problem is that 90% of the world supply of phosphorus is controlled by five countries. Compare that to the petroleum industry where 12 countries control about 75% of the worlds oil supply.

Although the United States is currently producing more phosphate rock than Morocco and phosphorus currently seems plentiful, Morocco's phosphate reserves are estimated to be nearly six times that of the United States. "Morocco is poised to be the Saudi Arabia of phosphorus," commented Elser.

Elser and several of his colleagues are concerned about the small number of mines and the uncertain and limited number of reserves and how that could affect rising prices or even worse, food riots and famine in the future.

According to Elser, scientists should look at the worldwide picture of phosphorus distribution. "We can sequence entire genomes of species, but no one can really say how much economically extractable phosphorus reserves exist. That's not very reassuring."

So how much phosphorous is left? According to the Florida Institute of Phosphate Research (FIPR), it is hard to tell. In the *Phosphate Primer* FIPR says, "For decades, it has been said that the phosphate in Florida could be mined for about another 25 years. Technological advances and



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Florida provides 75% of the nations supply of phosphorus 25% of the world supply.

market changes, however, have continually lengthened the expected life of phosphate mining, allowing mining of rock that wouldn't have been mined in previous years."

FIPR also claims that based on the current mining rate, Florida's 10 billion tons of soluble phosphate would last for more than 300 years if economic and technological conditions allow. Technological advances can change these estimates producing a more efficient fertilizer that could deliver nutrients only to plants when they need them. These "efficient fertilizers" would provide the added benefit of reduced nutrients in runoff to surface and ground waters.

While technological advances can extend longevity of mining reserves the fact that most of the worlds reserves are found in five countries has Elser and two other scientist from ASU, Mark Edwards, an agro

business expert, and Daniel Chambers, a phosphorus biochemist, worried. "Mark said that he couldn't sleep for three weeks after he made the connection," Elser related. The three have teamed up to create societal change by launching the Sustainable Phosphorus Initiative. This initiative strives to build collaborations with farmers, educators, engineers, designers and civic leaders on green agriculture, wastewater reclamation, and long-term sustainability.

"We need to be asking how we can achieve sustainable phosphorus by closing the phosphorus cycle in human and agricultural waste streams. Our hope for this launch is that we can, and our students can, not only help better define the problems, but turn an idea into creative solution building with the community," said Elser.

The information from this article comes from the National Science Foundation-Discoveries article "On Earth Day and Everyday, Ecologist Fights for Phosphorus" and the Florida Institute of Phosphate Research's "Phosphate Primer."

Volunteer Bulletin Board

The Florida Lake Management Society's

Love Your Lake Program



FLMS has created a cost-share program that funds lake, pond and shoreline projects demonstrating management techniques that help protect, preserve and restore Florida's aquatic resources. Each year FLMS solicits grant proposals describing successful management projects. FLMS will provide matching funds for expenses incurred by the selected applicant. Expenditures may be in the form of labor or monetary contributions utilized in the program. Proposals are reviewed by a selection committee based on the following criteria:

Monetary or labor match — programs encouraging community involvement are strongly recommended.

Location — project must be accessible to the public (may include large communities or neighborhoods - dependent on accessibility).

Signage — educational component explaining project.

Water quality enhancements — examples include Florida-friendly landscaping, environmental berm and swale, and other innovative erosion control techniques.

Please contact [Sherry Brandt-Williams](#) if you have any further questions.

"Love Your Lake" project proposals must be submitted by March 1, 2011. Projects must be completed by December 1, 2011.



Volunteer Bulletin Board

The Florida Lake Management Society's

Shoreline Grants Program



The Florida Lake Management Society (FLMS) sponsors an annual Shoreline Development Funding Program. FLMS will provide specific grants through local sponsors such as governments and environmental organizations to distribute to shoreline homeowners for enhancement projects that combine a beneficial, native, aquatic plant habitat with some simple stormwater treatment techniques. Each homeowner may receive up to \$200 for projects approved by the local sponsor and FLMS.

Grant Selection Process:

Each homeowner must submit an application that includes:

- Name, address, and contact number or email address
- Pictures of the shoreline before any work is done. (if available)
Explanation on one sheet of paper of the proposed improvements to the shoreline area and why this will be beneficial to the surrounding environment. Upon completion of the project each homeowner or local entity must submit:
- A brief description of the completed projected
- Receipts for any purchases

Not sure where to start?

The FLMS Shoreline Funding Program is administered by a local entity. The sponsoring agency can help you decide which aquatic plants are beneficial to the environment, what permits may be needed and who to contact, and how to construct simple stormwater treatment areas, such as a berm and swale system.

Please contact [Sherry Brandt-Williams](#) for further questions.

Send individual proposals to: FLMS PO Box 950701 Lake Mary, FL 32795-0701



Conservation Education and the Deepwater Horizon Oil Spill

By Bob Wattendorf of the Florida Fish and Wildlife Conservation Commission

Summer provides ample opportunity for children to learn to love nature. Every time they get outdoors and connect a little more with nature, it helps them develop healthier, happier and smarter lifestyles and appreciation for conservation. Whether they visit a fishing pond, climb a tree, help in the garden, go swimming or tubing, or explore a park or wooded lot, it gets them outside to participate in active pursuits.

When Richard Louv published “Last Child in the Woods-- Saving Our Children from Nature-Deficit Disorder” in 2005, it spurred a global movement led by the Children and Nature Network to accomplish just that. “In Florida, Get Outdoors Florida!” is both the initiative and coalition, with the goal of helping parents and families find fun ways to lead healthier more natural lifestyles and to better appreciate our resources. Visit GetOutdoorsFlorida.org for places to go and tips on fun activities. You can also learn more about the benefits or how to make a contribution.

Throughout the summer the Florida Fish and Wildlife Conservation Commission (FWC), a major proponent of the “Get Outdoors Florida!” movement, conducted numerous camps and events to help create the next generation who cares. From Joe Budd Aquatic Education Center and



Frances Keiser

Connecting with nature and getting exercise goes hand and hand.

the Beau Turner Youth Conservation Center, both near Tallahassee, to the Ocala Outdoor Adventure Camp, Tenoroc Fish Management Area and Chinesgut Nature Center all the way down to the Everglades Youth Conservation Camp, thousands of kids experienced the joys of being outdoors, burned calories, expanded their imaginations, developed recreational skills and learned to appreciate nature. The FWC is working to tie these programs together and make major capital improvements at these facilities by creating a Florida Youth Conservation

Center Network (MyFWC.com/youth).

As education writer and philosopher David Sobel says, we must "give children a chance to love the earth before we ask them to save it." Ever since the oil-drilling platform, Deepwater Horizon, exploded in the Gulf of Mexico on April 20, setting off one of the largest ecological disasters in American history, Floridians have been reconsidering how critical a conservation ethic is to our quality of life.

It is important that parents be able to communicate with their children at an appropriate age



Bob Wattendorf

Joe Budd Aquatic Education Center provides camps that encourage youth for the long-term in nature-based recreation.

level about catastrophes of all types as well as the importance of nurturing nature. Ranger Rick (NWF.org/Kids/RangerRic) provides some excellent tips.

The FWC continues to work diligently with the Florida Department of Environmental Protection, county governments, water management districts and several federal agencies, to conduct wildlife assessments and to protect Florida's wildlife populations throughout this crisis. This includes taking water samples and testing for contaminants in sediments, fish and shellfish, and evaluating critical habitat, shorebird and sea turtle nesting areas.

Gov. Charlie Crist requested and received a determination from the U.S. Department of Commerce that some of Florida's vital fisheries have failed. This allows fishermen and affected businesses to

qualify for economic injury loans. Meanwhile, the National Oceanic and Atmospheric Administration's Fisheries Service has enacted emergency regulations to close a portion of the Gulf of Mexico exclusive economic zone to all fishing, and the FWC has issued local fisheries advisories. Since these are subject to change, please see MyFWC.com/OilSpill for updates.

In spite of all this, Florida remains the Fishing Capital of the World, with most of our saltwater fisheries and all of our freshwater fisheries still providing diverse year-round nature-based recreation to Floridians and tourists. Help keep it that way by taking a kid fishing, buying a license and contributing to youth

fishing/hunting programs when you make your purchase (MyFWC.com/License). All of your license fees go to conservation and donations go specifically to youth fishing and hunting programs in Florida. FWC Chairman, Rodney Barreto in an open letter regarding the crisis said: *"We continue to fight for the welfare of Florida's precious wildlife that cannot speak, but we can speak. We are their voice, and we say loud and clear, 'BP, open your purse strings and save our fish and wildlife so our grandchildren and great grandchildren will not have to learn about our wild animals from textbooks and museums because they became the dinosaurs of the 21st century.'*



FWC

Nick Wiley, Executive Director of the FWC, assists with the sea turtle nest relocation to help them avoid the oil spill.

Now is the time to take extreme measures to save our precious resources. Fish and wildlife are critical to Florida's survival. Without the benefits they bring to our everyday lives, Florida would not be the special place it is today."

The FWC is working aggressively to protect and restore fish and wildlife species and their habitats and to reconnect children with nature, since the ultimate solution to such ecological crises will be in their hands. Floridians should care about and be able to enjoy our natural resources in ways that our forebears did to preserve not only our sporting heritage, but also Florida's diverse natural wildlife and the aesthetics that drive the real estate economy, tourism and our sense of being.

Education and opportunity is the

key. When children or adults get outdoors more frequently they achieve healthier, happier and smarter lifestyles (see childrenandnature.org for details) and understand how fragile and interconnected our environment is.

Healthier: The Let's Move Outside website suggests "Kids need at least 60 minutes of active and vigorous play each day, and one of the easiest and most enjoyable ways to meet this goal is by playing outside." Having fun doesn't seem like a steep price to pay for being healthier, reducing weight problems and preventing associated diseases such as diabetes, heart problems, attention deficit disorder, asthma and more.

Happier: I won't bother going to the research for this one;

just watch any child's smile as they catch their first fish, chase a lightening bug or climb up to a new tree limb.

Smarter: Dr. Kellert, Yale University, found that "Play in nature, particularly during the critical period of middle childhood, appears to be an especially important time for developing the capacities for creativity, problem-solving, and emotional and intellectual development." Andrea Faber Taylor's research at the University of Illinois suggests the brain uses two forms of attention: "directed" attention for concentrated thinking, and "involuntary" attention, when we're distracted by things like a beautiful sunset or watching a turtle slip into the water from a fallen log. Directed attention is limited so hours in front of a computer or playing video games leave us fatigued. Whereas time spent in natural settings activates involuntary attention, giving the brain time to rest, resulting in enhanced performance at school and work.

The President's "America's Great Outdoors Initiative" (www.DOI.gov) and First Lady Michelle Obama's "Let's Move Outside" program (www.LetsMove.gov) are national efforts that contribute to preserving and enjoying our natural heritage, combating obesity and creating a brighter future for our children. Together we can keep Florida a beautiful place for children, fish and wildlife to grow together as nature always intended.



Fishing is one of the key gateways to other forms of recreation. Who doesn't remember their first fish, the excitement and curiosity that engenders.

Outstanding LAKEWATCH Volunteer

Leon Couch, a native of North Carolina, came to Florida in 1963 to attend graduate school at the University of Florida. In 1968 he obtained a Ph.D. in electrical engineering and remained at UF, eventually becoming a professor. After teaching and conducting research at UF for 26 years, he retired in 2004.

Leon and his wife, Margaret, were fortunate to acquire property on Lake Higginbotham in southwestern Putnam County in 1974. Lake Higginbotham is an oligotrophic (clearer water with low nutrients and algae) located in the Trail Ridge lake region. The region is dominated by well-drained, nutrient-poor soils with mostly small, acid, clear lakes, with some slightly colored lakes. Average lake phosphorus values are mostly less than 10 u/L.

In 1990 Leon heard about the LAKEWATCH program and joined as a volunteer in March of that year. He has now sampled Lake Higginbotham for 20 years (over 243

months). During this time, all of the property on the lake has been developed into residential lots with many permanent residents living there. Fortunately, the LAKEWATCH data has shown that this development has not caused the lake's water

and Margaret with many hours of enjoyment. Their three children grew up on this lake learning how to swim, fish and water ski. Their children are married now, live out of state, and have children of their own. When they can, the children and grandchildren

spend time on the lake, and the grandchildren are learning to swim, spending great times together. Leon and Margaret are thrilled to pass this enjoyment on to their children and their families, and so, the cycle of life continues.

When not enjoying time on the lake, Leon Couch's field of interest is in communications systems, with expertise in modulation theory and applications to wireless communication systems. At one time or another, he taught each of the different undergraduate and graduate communication courses in the UF

Electrical and Computer Engineering Department. He taught thousands of undergraduate students, and supervised the work of about



Leon Couch has now sampled Lake Higginbotham in Putnam County for 20 years (over 243 months).

quality to deteriorate. The average values for each year have remained nearly the same over this 20-year period.

The lake has provided Leon

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LAKEWATCH

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90 master's students, and five Ph.D. students.

Dr. Couch has published about 30 papers and many editions of textbooks. In particular, the first edition of *Digital and Analog Communication Systems* was published in 1983, and the seventh edition of this book was published in English with a copyright date of 2007, in Italian and Spanish with copyright dates of 2008, and the Indian Edition in English with a copyright date of 2009. Since its inception, the book has been adopted by hundreds of schools worldwide and is available from Pearson/Prentice Hall in English, Indian, Spanish,

Italian, and Chinese editions.

Leon is a dedicated volunteer to the LAKEWATCH program who has never missed a sample in 20 years of service and it has been a pleasure having Leon as a member of the program. We rarely come across volunteers like Leon whose dedication and service to his lake and those around him goes beyond anything we expected from a volunteer when the program was created. All of us at LAKEWATCH want to give Leon a big,

THANK YOU!