



The mission of the Mississippi Department of Environmental Quality is to safeguard the health, safety, and welfare of present and future generations of Mississippians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation.

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Mississippi Department of Environmental Quality

Environmental News

VOLUME 11 ISSUE 2

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EMERGENCY SERVICES STAFF ALWAYS AT THE READY

MDEQ's Emergency Services Branch responds to emergencies involving hazardous materials, oil spills, or any pollutant that poses a threat to human health or the environment. As the lead for environmental emergencies, they respond around the clock to incidents across the state such as truck accidents, oil pipeline failures, chemical spills, and many, many more.

Two recent incidents, at a biodiesel plant fire in New Albany and a train derailment in Perry County along with numerous truck accidents caused by winter weather, have kept Emergency Services staff busy from one end of the state to the other this year.



Train derailment near New Augusta in Perry County.

While it is difficult to project how many incidents they will handle, in 2013 they responded to approximately 870 calls for assistance or to reported emergency releases.

“While our work is sometimes intense, it is at the same time rewarding to resolve difficult and dangerous situations so that the environment as well as any residents in an area are protected. We have a great group that takes pride in using their knowledge and expertise to help their state,” said Trudy Fisher, MDEQ Executive Director.

“Most responses are a joint effort of our agency with local governments including fire, police, and emergency management officials, other state agencies, and sometimes the EPA, U.S. Coast Guard, F.B.I., or other federal agencies. It takes well-coordinated responses to protect Mississippi’s citizens and the environment. In addition, we receive unlimited support from our Executive Director, other management, and MDEQ staff that help during and after an emergency,” said Barry McMaster, Supervisor of the Emergency Services Branch.

Leo Francendese, the On Scene Coordinator for EPA Region 4’s Mobile Outpost, is one of the partners that works with MDEQ’s staff: “I’ve been at the Mobile Outpost for about a year now. I’ve always known MDEQ had a fine ER program, but I wasn’t fully aware of how deep the talent went until the most recent series of spills. No matter the challenge, I look forward to the ‘can do’ attitude of the MDEQ ER Team.”

Left: MDEQ responded to a fire at a biodiesel plant in New Albany in January. Right: an oil skimmer attached to a vacuum truck removes a biodiesel and chicken fat mixture near the site of the fire.



MDEQ is a regulatory agency governed by state pollution control laws, and that means that the responsibilities of the Emergency Services staff and MDEQ don't end once the immediate emergency situation has passed. Emergency Services staff works closely with the Environmental Enforcement and Compliance Division and the Groundwater Assessment and Remediation Division for issues such as ensuring emergency sites are managed properly, that any waste or debris is handled correctly, and assessing the impact, if any, to the environment in the area. In addition, MDEQ experts in technical fields such as biology, chemistry, air modeling, hazardous waste, solid waste disposal, and law may also be needed during or after an emergency situation.

The Emergency Services staff's other duties include providing hazardous materials awareness training to personnel at the Mississippi Law Enforcement Training Academy and the State Fire Academy as well as participating in numerous exercises and drills with state, federal, and local counterparts, and companies such as pipelines and refineries that operate in the state. Homeland Security is also a top priority for training and planning.

MDEQ's Emergency Response staff are on-call statewide 24 hours a day, seven days a week. To report any emergencies call 1-800-222-6362.

Winter weather caused multiple problems including these two tanker accidents in Copiah County (left) and Lincoln County (right).



MISSISSIPPI AGENCIES WORK TOGETHER FOR SOUTH MISSISSIPPI

The Mississippi Department of Environmental Quality (MDEQ) and the Mississippi Department of Marine Resources (MDMR) are two agencies with different roles but similar missions to protect and improve the state's natural resources. The aftermath of Hurricane Katrina and the response efforts to the *Deepwater Horizon* oil spill increased the responsibilities of the agencies and in turn increased the need for cooperation. Coordination on activities such as protecting water quality, monitoring the safety of seafood, and oil spill restoration efforts ensures that expertise and knowledge are shared for the benefit of the residents and the environment of South Mississippi.

Some of these activities include working together on oyster sampling for the Natural Resource Damage Assessment process, coordinating on fish kills and algae blooms on the Coast, and responding to citizens' complaints. MDEQ participates in MDMR's Beneficial Use Program for Dredge Spoils and has a role in MDMR's Mississippi Coastal Program, including working together on wetlands issues. MDEQ staff assists with the Mississippi Coastal Cleanup, led by MDMR, with litter removal and the proper disposal of hazardous wastes and share data for MDMR's oyster harvesting program. MDMR staff participates in the Beach Monitoring Task Force led by MDEQ and serves on MDEQ's Pascagoula River, Coastal Streams, and Lower Pearl River Basin Management Team.



MDEQ's Trudy Fisher and MDMR's Jamie Miller at a seafood dinner in Jackson for legislators, state officials, and the media promoting Mississippi seafood.



“We greatly respect and appreciate the expertise and knowledge of Jamie Miller and the MDMR staff as we work together on a variety of issues to benefit the Coast and its residents. Although it’s not even been a year, Jamie’s leadership and dedication have clearly made a difference at not only his agency but also for the cooperative efforts between our two agencies,” said Trudy Fisher, MDEQ Executive Director.

“Trudy Fisher and her staff always are willing to share their expertise with us so both agencies will benefit. I look forward to expanding our partnership in the future,” said MDMR Executive Director Jamie Miller.

One joint program with a direct impact on residents and the economy is the Mississippi Seafood Safety Testing Program, which is a joint effort of MDEQ and MDMR. A Memorandum of Understanding between BP and the MDMR, MDEQ, and the Office of the Governor provides for monthly sampling and analysis of Gulf seafood to assure the public that the seafood is safe for consumption. The program is a continuation of an effort MDMR and MDEQ began in May 2010 in response to the *Deepwater Horizon* Oil Spill.

The sampling program focuses on finfish, shrimp, crabs, and oysters as they are harvested recreationally and commercially and normally consumed by the public. Samples are collected by MDMR staff in state waters, processed by MDEQ, and sent to the Mississippi State Chemical Laboratory in Starkville for analysis. Analysis is done for polycyclic aromatic hydrocarbons and for dioctyl sodium sulfosuccinate, a component of the dispersant used in response to the oil spill. To date all testing results are below levels of concern, and Mississippi seafood is safe to eat and enjoy. Seafood safety data is available to the public through the MDMR Mississippi Seafood Safety Newsletter at <http://www.dmr.ms.gov/news-a-events/newsletters>).

The success of the Mississippi Seafood Safety Testing Program is a clear result of the benefit of cooperation. It is likely that responsibilities for both agencies will increase in the future, and the foundation of coordination and mutual respect formed by these two agencies will undoubtedly result in a better Gulf Coast.

ENHANCE ACCEPTS NEW MEMBERS



The Mississippi Department of Environmental Quality has accepted three new members, seven renewal memberships, and two returning members into its enHance program for the 2014 class. enHance is a voluntary stewardship program begun in 2009 that recognizes committed environmental leaders who accomplish goals beyond their legal requirements. enHance is open to facilities, cities, counties, and other entities who are interested in the program, and applicants can choose from three tiers: Associate, Steward, or Leader.

“We have had outstanding classes of members, and we look forward to including this next group into the program. There are many facilities in Mississippi doing good work and achieving standards beyond their permit requirements. We believe they should be recognized for their leadership,” said Trudy Fisher, MDEQ Executive Director. “In addition, successful participation in this program results in the reduction of waste and the conservation of resources leading to long term economic benefits and continuous environmental enhancement.”

The new members for 2014 are:

Toyota Motor Manufacturing , Mississippi, Inc. (Blue Springs) — Leader.

Cooper Tire Company (Clarksdale) — Steward

DeSoto County Environmental Services — Associate

More information is
available at:
www.enhance.ms.

The renewing members are:

Columbus Air Force Base — Leader

Custom Engineered Wheels, Inc. (Tupelo) — Leader

Flexsteel Industries (Starkville) — Leader

Nissan North America, Inc. (Canton) — Leader

Cooper Tire Company (Tupelo) — Steward

Leaf River Cellulose, LLC (New Augusta) — Steward

City of Ridgeland — Steward

And, two members are returning to the program:

Gulf State Manufacturers (Starkville) — Leader

Northrop Grumman Electronic Systems (Ocean Springs) — Steward

The projects submitted by the new members as part of the application process include:

Toyota Motor Manufacturing , Mississippi, Inc.

► **Project 1: Geothermal Compressed Air Dryer Cooling Water**

A geothermal heat exchanger project supplies chilled water to the compressed air dryer to eliminate the chiller load in the winter months when the plant HVAC systems are not utilizing chilled water. The goal is to reduce electricity usage by 1,500,000 kWh/year.

► Project 2: 50 KW Solar Cell Bank

A single axis solar cell array with a maximum output of 50 KW tied into the New Albany Light, Gas, and Water grid.

► Project 3: Community Service – National Public Lands Day and Earth Day

More than 650 employees participated in National Public Lands Day at Howard Stafford Park in Pontotoc. On Earth Day employees worked with Boy Scouts to install 20 wood duck boxes throughout the Toyota site. Boxes will be prepared for the nesting season and monitored.

Cooper Tire Company

► Project 1: Landfill Reduction

The plant seeks to reduce waste to landfill through the recycling of materials such as wood and plastic pallets, plastic packaging materials, cardboard and paper packaging materials. Balers have been installed by a recycle broker and a program implemented to capture and process recyclable materials. Trash to landfill was reduced from 2010 levels by 122 tons in 2011 and 145 tons in 2012 and should decrease further this year with the balers in use.

► Project 2: Energy Management Program

The plant has developed an energy management program to monitor energy use and identify and implement energy savings.

DeSoto County Environmental Services

► Projects: Household Hazardous Waste and Earth Days

A Household Hazardous Waste event was hosted for citizens to bring in products labeled caution, poisonous, toxic, flammable, or corrosive.

More than 9,000 pounds of hazardous waste was collected. To promote energy efficiency, resource conservation, and sustainable living, an Earth Day event was hosted with over 40 vendors and approximately 1,000 people in attendance.

There are currently 36 members in the enHance program. Members include private companies, federal government facilities, counties, and local municipalities. Membership is voluntary, and applications for membership may be submitted each year from July 1 through September 30.

More information about the program and how to apply is available at www.enhance.ms.

The 2014 enHance training session and awards luncheon is scheduled for April 9 this year in Jackson. Check the enHance website or contact Dallas Baker at 601-961-5670 for more information.





Mississippi Manufacturers Association
The Voice of Industry since 1951
www.mma-web.org

enHance WORKSHOP

Tools & Techniques for enHanced Operations: Energy Efficiency and Waste Reduction Opportunities

Don't miss the chance to learn how you can reduce energy usage, reduce material and labor wastes in operations, reduce waste going to the landfill, and improve your bottom line. This timely workshop will provide networking opportunities to learn what others in the state are doing to improve operations and increase profits.

Workshop— The workshop will feature speakers addressing the latest tools & technologies associated with energy efficiency and waste reduction practices.

Presentations include:

- ◆ Case studies on industrial process improvement projects that resulted in thousands of dollars of savings.
- ◆ Demonstrations of tools that can be used to identify energy savings opportunities including thermal imaging, data loggers, and leak detectors.
- ◆ Strategies to optimize energy and environmental management systems including presentations by Nucor and Toyota.
- ◆ Opportunities for growing recycling efforts within Mississippi.

Awards Luncheon honoring 2014 enHance members— New members of the enHance Class of 2014 will be recognized. enHance is a voluntary Stewardship program, sponsored by the Mississippi Department of Environmental Quality, that recognizes environmental leadership efforts towards sustainable operations.



When & Where

Wednesday, April 9, 2014,
Jackson Marriott, 200 E Amite Street, Jackson; 601-969-5100.

Cost

\$85 per person. Parking vouchers will be handed out by MMA.

Schedule

- ◆ **Registration** 8 to 8:30 a.m.
- ◆ **enHance Workshop** 8:30 a.m. to 12:30 p.m.
- ◆ **Awards Luncheon** 12:30 to 1:30 p.m.

Suggested Hotels in Jackson

(Room rates based on availability.)

- ◆ **Jackson Marriott**; 200 E Amite St., Jackson; 601-969-5100; \$129 per night; Reference codes: MSMMSMS (online), or Mississippi Manufacturers Association (phone). Deadline to receive this special rate is March 19.
- ◆ **Cabot Lodge Millsaps**; 2375 N State Street; 601-948-8650. Corporate rate: \$99 per night; code: MMA.

REGISTER ONLINE NOW

Reminder notices will be sent a few days prior to the seminar. If you do not receive a reminder notice, or if you would like more information about this or other MMA seminars, contact Barbara at 601-292-1125 or barbara@mma-web.org.

If the link above does not work, use this link to register: <http://www.mma-web.org/PageContent.aspx?url=/page/seminarregistration&>



Mississippi Manufacturers Association

MMA Seminar Registration Form

Seminar Name _____

Seminar Date _____ Seminar location _____

Name of Attendee(s) and job title(s) _____

Company Name _____

Company Address _____

City _____ State _____ Zip _____

Attendee Phone Number _____

Attendee Fax Number _____

Attendee E-mail Address _____

If different than above:

Name of Person Submitting Registration _____

Job Title _____

Address _____

Phone Number _____ Fax Number _____ E-mail _____

If different than above:

Billing Contact _____

Address _____

Phone Number _____ Fax Number _____ E-mail _____

Job Title _____

Return form and payment to: Mississippi Manufacturers Association, P.O. Box 22607, Jackson, MS 39225-2607; fax (601) 948-6197. You may also register online at www.mma-web.org.

American Express _____	Visa _____	MasterCard _____
Card number _____	Expiration date ____/____	Security code _____

- ◆ No refunds without 48 hours cancellation notice! No refunds for no-show.
- ◆ REMINDER NOTICES WILL BE SENT A FEW DAYS PRIOR TO SEMINAR DATE. If you do not receive a reminder notice, please contact Barbara at 601-292-1125 or barbara@mma-web.org.



VISKUP HEADS SRO

Barbara Viskup was recently named Supervisor of MDEQ's South Regional Office (SRO). MDEQ's three regional offices, located in Oxford, Pearl, and Biloxi, assist the public in many ways including complaint response, monitoring, compliance, and emergency response responsibilities.

"I am excited about this change in position and the challenges that come with running a regional office. On the Coast we are at the forefront of many environmental issues, and my background plus what I have learned from the great staff here at the SRO, have prepared me to help both the environment and the citizens of South Mississippi," said Viskup.

Barb has worked for more than 17 years for MDEQ as a biologist at the South Regional Office. She was the first regional biologist at the SRO and helped to set up the regional biologist program. Since then she has headed up many projects such as the Estuarine Nutrient Study, the National Coastal Assessment, a *Pfiesteria* study, and a large study on the Mississippi River. She also worked closely with MDEQ's Emergency Response personnel checking the water and organisms following a spill. With this knowledge and background, Barb was the Mississippi Environmental Lead for the Deepwater Horizon Oil Spill. She worked closely with not only many MDEQ personnel, but also with many other federal and state agencies during the response to the spill.

Barb graduated from the University of Southern Mississippi with a Master's degree in Biology (emphasis in Aquatic Ecology) in 1995. Prior to coming to MDEQ in 1996, she worked as a biologist with the Missouri Department of Natural Resources on the floodplains of the Missouri River.

DISCHARGE MONITORING REPORTS -- NEWS AND REMINDERS

Kayra Johnson, Environmental Compliance and Enforcement Division

If you are required to submit a Discharge Monitoring Report (DMR), you will have noticed the DMR form has changed, as well as some of the requirements on how to complete the DMR.

Mailing of blank forms

In 2014 MDEQ implemented quarterly mailing of blank DMR forms to permit holders. Every quarter we mail blank DMRs that will be due the following quarter. For example, if you submit monthly DMRs, your first package of blank DMRs included only forms for the first quarter of 2014. If you submit quarterly, then you received only the DMRs for the first quarter. For those submitting DMRs semi-annually, you will receive the forms during the second quarter of 2014. If your requirements are for annual DMRs, your blank forms will be mailed during the third quarter 2014.

If you need additional or replacement DMRs, please don't hesitate to call our office for assistance.

Completing your DMRs correctly

All blocks on the form must be completed. Leaving any portion of the DMR "blank" and in some instances, using a "zero" (for concentrations and loadings, for example), are not acceptable. If the sample for a particular parameter is below detection limit, you must use the appropriate No Data Indicator (NODI) code (see table below) to report it. Do not enter a "zero."

Once the DMR is complete, make a copy for your records and mail the original signed form to MDEQ.

Below is a list of NODI codes. If you use one of these codes, please make sure you include an explanation in the comment section of the DMR.

LIST OF NODI CODES

NODI Code	Description
1	Wrong Flow*
2	Operation Shutdown
4	Discharge to Lagoon/Groundwater
5	Frozen Conditions
8	Other (see comments)*
9	Conditional Monitoring-Not required this period
A	General Permit Exemption
B	Below Detection Limit/No Detection
C	No discharge
D	Lost sample/Data*
E	Analysis not conducted/No sample *
F	Insufficient Flow for sampling
G	Sampling Equipment Failure*
H	Invalid Test*
I	Land Applied
J	Recycled-Water Closed system
K	Natural Disaster
Q	Not quantifiable
S	Fire Conditions

***If you use any of these codes, EPA's new data system (ICIS-NPDES) flags these as a violation. MDEQ recognizes that from time to time, data is unavailable for reasons outside the permittee's control. In the event you are unable to provide required data, especially in cases where the cause will now trigger system-generated violations, it is imperative that you provide written justification for the missing data and include that justification with the DMR. MDEQ will evaluate that justification and determine if additional actions are necessary.**

For more information or questions, contact Kayra Johnson at 601-961-5106 or kayra_johnson@deq.state.ms.us.



WILLIAMS ELECTED TO SERDC BOARD

MDEQ's Mark Williams was recently elected to again serve a two-year term on the Board of Directors for the Southeast Recycling Development Council (SERDC) representing the State of Mississippi. The organization is comprised of numerous members from industry, government, and non-governmental organizations and works cooperatively to grow the recycling industry and to promote sustainable recycling in the Southeast. For more information, visit SERDC.org.

Williams is the program administrator at MDEQ for the Solid Waste and Recycling programs. He also serves as an advisor to the Board of Directors for the Mississippi Recycling Coalition and on the Board of Directors for Keep Mississippi Beautiful.

Project Rezway
2014

SAVE THE DATE!

Plans are underway for Project Rezway 2014, the Reservoir's Recycle fashion show.

**April 17, 2014,
MS Craft Center, Ridgeland**

DESIGNERS
Feeling crafty? Build apparel and accessories from 75 percent recyclable items and compete for awesome prizes.

SPONSORS
Help us get the word out about your business while helping a worthy cause! KRB is selling tables and sponsorships. Money raised from this event pays for litter clean-up and beautification efforts around the Reservoir. The event drew over 200 attendees last year. It received great press in The Clarion-Ledger, VIP Magazine, The Rankin Record and others.

CONTACT
www.keeptherezbeautiful.org
Keep the Rez Beautiful
TreasureTheRez
keeptherezbeautiful@gmail.com

Business E-Waste Day



Friday, April 25, 2014



MS Farmers Market
929 High Street
Jackson, MS 39202

8:00 a.m. to 2:00 p.m.

Bring any unwanted electronics to the Mississippi Farmers Market, Friday, April 25, from 8:00 a.m. to 2:00 p.m. Doing so will lighten the electronic waste from their offices in an environmentally friendly way!

Acceptable Items:

Computers, All Computer Components, Desktop Copiers, Fax Machines, Radios, Televisions, Cell Phones, Desk Phones, VCR Players, DVD Players, Electronic Games, Monitors, Keyboards, Printers, Laptops, Scanners, Stereos/Radios

*****There is a \$2 charge per monitor & \$12 charge per television*****

This charge covers the cost incurred by Magnolia Data Solutions from recycling these items properly and in keeping with EPA requirements (i.e. shipping and weight for CRT tubes.) All items collected are properly recycled at Magnolia Data Solutions.

For more information on this event, please contact Jenny Woodruff at (601) 948-7575, ext. 231 or email jwoodruff@greaterjacksonpartnership.com or contact Marsha Hobson at (601) 366-4842 or email keepjack@bellsouth.net.

This e-Waste day is brought to you by the following organizations



FOSSIL FISH OF MISSISSIPPI

David T. Dockery III, Office of Geology

Fish fossils in Mississippi are rarely preserved as body fossils in sedimentary rocks known by the German name Lagerstätten, as is shown in the Glendon Limestone in Figure 1. They are primarily known from their teeth (shark and ray teeth being the most common), isolated vertebrae and spines, bills, and ear bones called otoliths. Otoliths are located in the inner ear and provide the fish with sensitivity to gravity and linear acceleration. They are composed of calcium carbonate (usually aragonite) and grow with the fish, forming growth lines that can determine a fish's age in years (less growth in winter and more in summer) and even days. Linda Ivany (Ivany et al., 2000 and 2003) of Syracuse University used the oxygen isotope of winter and summer growth rings from otoliths of the Jackson and Vicksburg groups in Mississippi to study climatic cooling across the Eocene-Oligocene boundary some 33.7 million years ago. Otoliths are also diagnostic for fish families, genera, and species, allowing the reconstruction of ancient fish ecologies. As they are relatively common in formations where aragonitic shells are preserved, otoliths give the best fossil record of Mississippi's ancient fish species.

World otolith expert Dirk Nolf of the Royal Belgian Institute of Natural Sciences in Brussels, Belgium, came to Mississippi to collect otoliths from the Gulf Coastal Plain with his wife Dora and daughter Sylvia in June and July of 1987. While Dora and Sylvia were sightseeing, Dirk and I spent three weeks (June 19-July 10) collecting otoliths from formations in Mississippi and Alabama, using the Office of Geology jon boat to reach the river localities (Figure 2). In 1990, Dirk and I published the otoliths of the Cretaceous Coffee Sand (Campanian) of Lee County, Mississippi (before this publication less than 20 valid otolith species were known for the whole Cretaceous), and in 1993 published the otoliths of the Paleocene Matthews Landing Member of the Porter's Creek Formation in Alabama. Dirk collaborated with Gary Stringer of the University of Louisiana at Monroe to publish a synthesis of North American Cretaceous fish otoliths in 1996 and the otoliths of the Yazoo Clay at Copenhagen, Louisiana, in 2003.

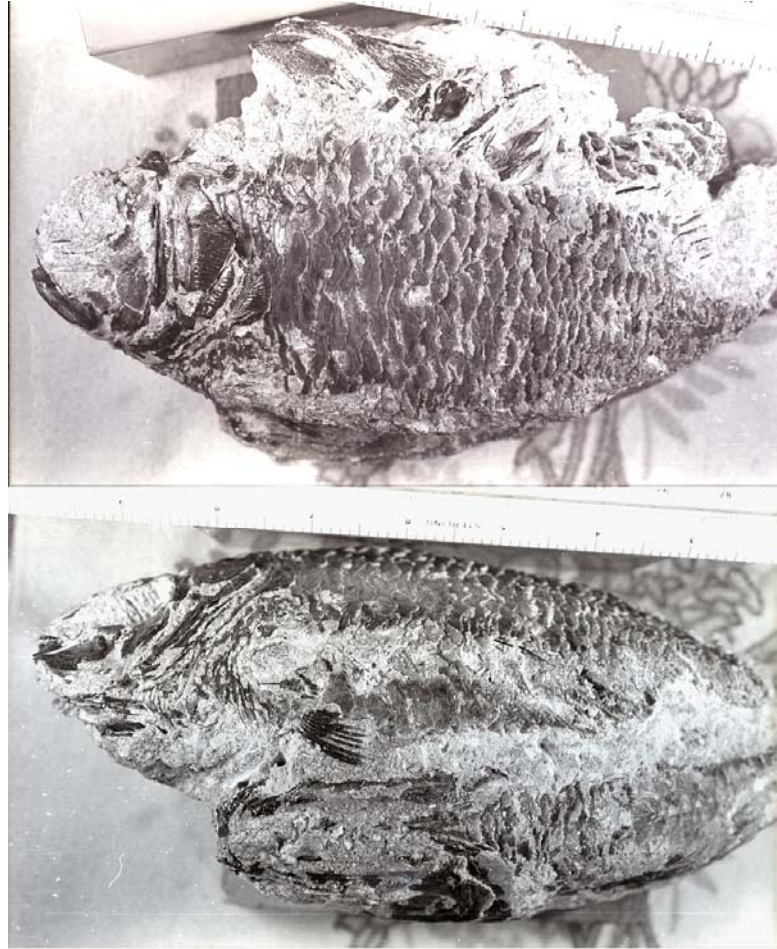


Figure 1. A pair of the fossil squirrel fish *Holocentrites ovalis* from the Glendon Limestone near Florence in Rankin County, Mississippi (private collection). Picture (negative composite 86-41 at top and 86-42 at bottom; Image 1711) taken around March of 1981; scale in inches.

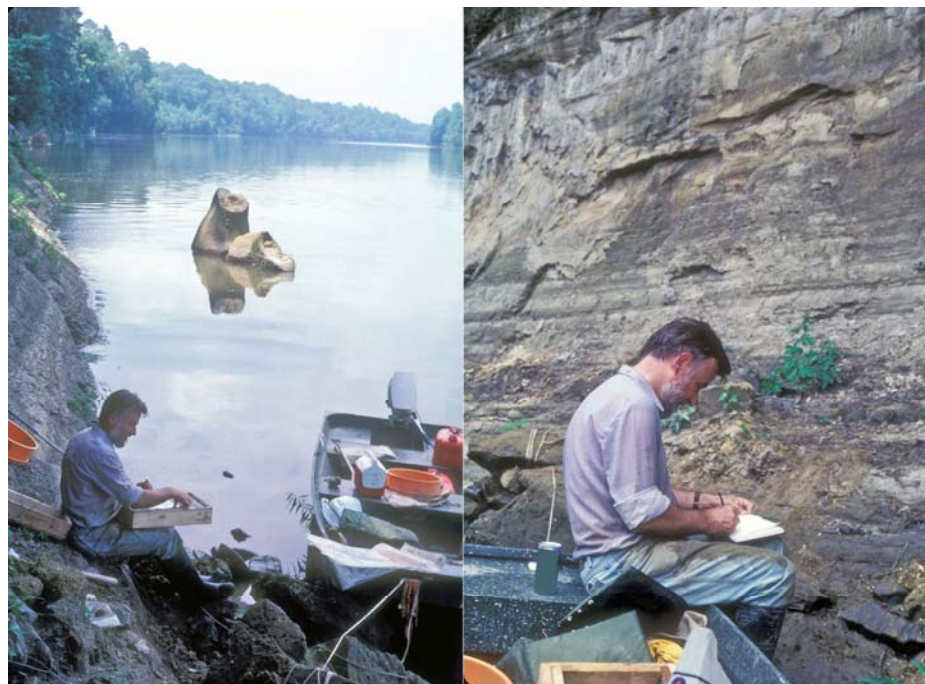


Figure 2. Dirk Nolf collecting fossil otoliths at the type Bells Landing Member of the Tuscahoma Formation at Bells Landing on the Alabama River in Monroe County, Alabama. Pictures (Kodachrome slides 185-5 and 185-8) were taken on June 26, 1987.

Dirk Nolf (with Dora) made additional trips to Mississippi in May of 2001 to collect Cretaceous otoliths from the Owl Creek Formation in Tippah County and the Coon Creek Tongue of the Ripley Formation at Blue Springs in Union County and in September of 2003 to collect Oligocene otoliths from the Red Bluff and Byram formations of the Vicksburg Group (figures 3-4). After a long career of traveling the world to collect fossil otoliths and otoliths dissected from preserved fish specimens in museums, Dirk Nolf has published an impressive monograph (Figure 5) entitled *The Diversity of Fish Otoliths, Past and Present* (222 pages plus 359 full-page plates). In the publication, 2666 nominal species of fossil otoliths are recorded, of which 1391 are believed to be valid. There are also 406 Recent fish species known as fossils, bringing the total number of otolith-documented fossil fish species to 1797. Fossil otoliths from an amazing number of localities worldwide are illustrated, including some 29 species from Mississippi.



Figure 3. Dirk Nolf at Archusa Water Park campground site in Clarke County, Mississippi, breaking up samples to be sun-dried (left) and standing beside drying samples on plastic sheets (right). Pictures (slides 370-1 and 370-3) were taken on September 9, 2003.



Figure 4. Top: Dirk Nolf at the contact of the Shubuta Clay Member of the Yazoo Formation and the overlying Red Bluff Formation as marked by the rock hammer (=Eocene-Oligocene boundary) at the Red Bluff type locality on the Chickasawhay River in Wayne County. Bottom: Dirk Nolf taking a sample of the Red Bluff Formation on the Chickasawhay River bluff at Hiwannee in Wayne County. Pictures (slides 371-6 and 370-4) were taken on September 9, 2003.

Dirk's work with Mississippi otoliths provided: (1) information about the state's ancient fish populations, (2) a way to identify and give meaning to otolith fossils found in the state, and (3) another fossil element that might prove useful in distinguishing, correlating, and mapping geological formations in Mississippi. On the other hand, Mississippi played an important role in Dirk's global monograph of the world's ancient fishes. When the Cretaceous (Campanian) otoliths from the Coffee Sand of Mississippi were published, people took notice and began finding and publishing pre-Tertiary otoliths in other formations of Cretaceous age and even older.

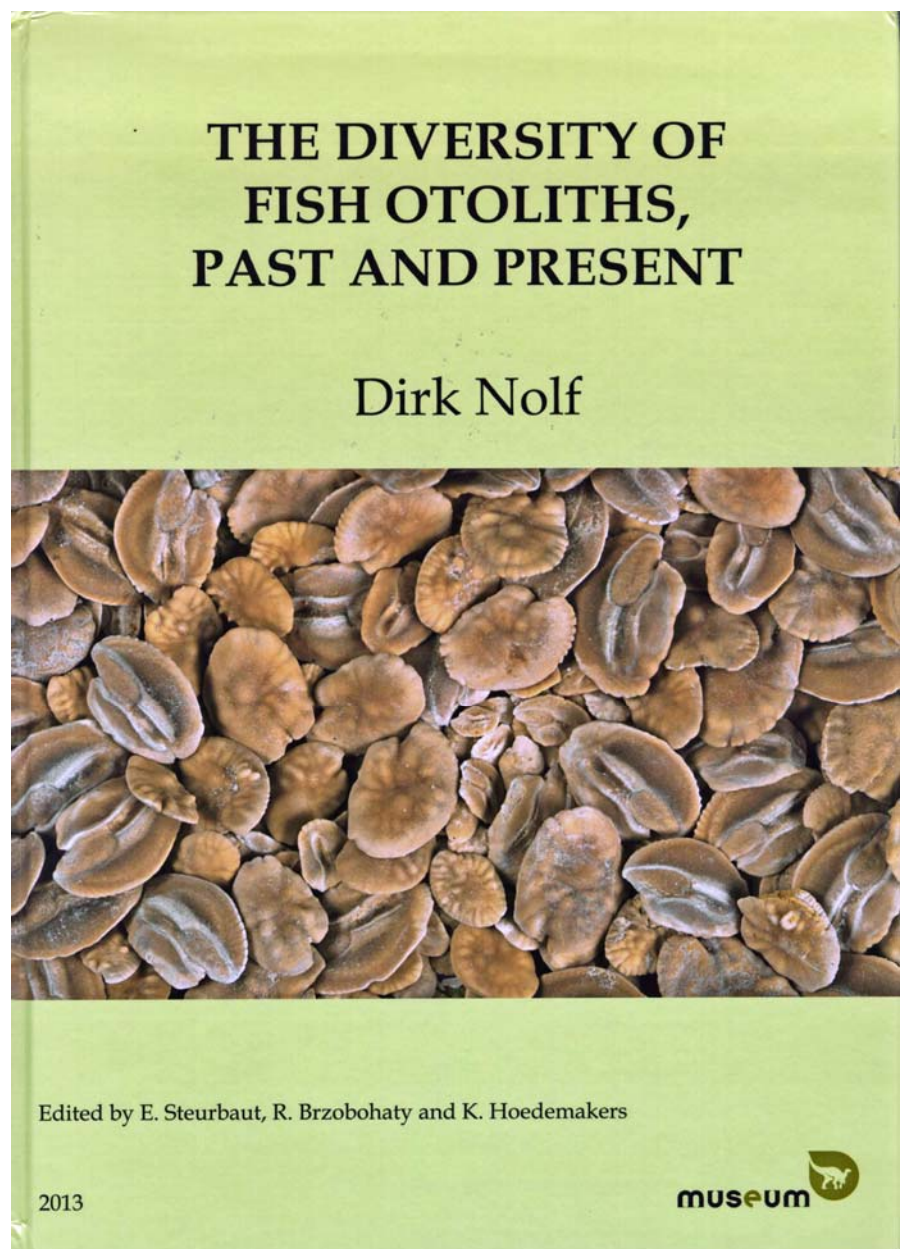


Figure 5. *The Diversity of Fish Otoliths, Past and Present*, by Dirk Nolf, 2013. Otoliths on cover are from the Middle Eocene of Belgium.

MDEQ ENVIRONMENTAL ACTION LINKS



- Draft permits currently at public notice, <http://opc.deq.state.ms.us/publicnotice.aspx>.
- Permits and certificates issued in the last 90 days, http://opc.deq.state.ms.us/report_permits.aspx.
- General permit coverages issued in the last 90 days, http://opc.deq.state.ms.us/report_gnp_issued.aspx.
- Notices of Intent for coverage under a Statewide General permit received by the Environmental Permits Division, http://opc.deq.state.ms.us/report_gnp_notice.aspx.
- List of the 401 Water Quality Certifications currently at public notice, http://opc.deq.state.ms.us/report_wqc_public_notice.aspx.
- List of the compliance inspections recently conducted, http://opc.deq.state.ms.us/report_eced_tasks.aspx.
- Orders issued by the Mississippi Commission on Environmental Quality, http://opc.deq.state.ms.us/report_orders.aspx.

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Quality**

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PICTURE OF THE MONTH

Sunrise

Madison County

Taken by Billy Warden,
Environmental Permits
Division

