



# LOUISIANA DEPARTMENT OF **WILDLIFE & FISHERIES** 2013-2014 ANNUAL REPORT





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*The charge of the Louisiana Department of Wildlife and Fisheries is to protect, conserve and replenish the natural resources, wildlife and aquatic life of the state.*



*Administration for fiscal year 2014-2015*

**BOBBY JINDAL, GOVERNOR**

**ROBERT J. BARHAM, SECRETARY**

Bryan McClinton, Undersecretary

Randy Pausina, Assistant Secretary

Jimmy Anthony, Assistant Secretary

Mark Schexnayder, Deputy Assistant Secretary

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Scott Longman, Fisheries

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**WILDLIFE AND FISHERIES COMMISSION**

Edwin "Pat" Manuel, Chairman

Dan Davis, Vice Chairman

Billy Broussard

Ronald "Ronny" Graham

Edward W. Swindell

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## LOUISIANA DEPARTMENT OF WILDLIFE &amp; FISHERIES

## ORGANIZATIONAL OVERVIEW

## Office of Secretary

*The Office of Secretary is administered by LDWF's chief administrative officer, who oversees all scientific operations as organized by the Office of Wildlife and the Office of Fisheries. The Secretary also has ultimate authority over the operation of LDWF's fiscal and business matters as administered by the Office of Management and Finance. Support operations of LDWF report directly to the Secretary. These include the Enforcement Division and LDWF's Legal Section.*

➔ **ENFORCEMENT DIVISION**

The Law Enforcement Division is responsible for enforcing laws enacted by the Louisiana Legislature and federal laws relative to fish and wildlife resources, boating safety, waterways enforcement activities, search and rescue, and homeland security missions.

➔ **LEGAL SECTION**

The Legal Section represents the department and the Wildlife and Fisheries Commission in all legal matters involving promulgation, enforcement and administration of the state's fish and game laws and regulations, litigation involving department programs, daily advising and counsel, and drafting of contracts, legal documents and legislation.

## Office of Management &amp; Finance

*The Office of Management and Finance is directed by the Undersecretary. This unit is responsible for the following functions: accounting, budget forecasting and control, strategic and operational planning, property control and fleet management, boat registration, motor and boat titling, federal grant reporting, license and permit administration and issuing, fees, taxes, and penalties collections.*

➔ **LICENSING**

The Licensing Section administers the issuance of all licenses, harvest tags and most other permits, boat and motor titles and registrations, and is responsible for the collection and deposit of related fees.

➔ **PROPERTY CONTROL**

The Property Control Section is responsible for LDWF's movable property program, fleet management program, and managing property, marine, general liability, aviation and vehicle insurance claims.

➔ **FISCAL**

The Fiscal Section is responsible for all financial operations of LDWF.

## Office of Wildlife

*The Office of Wildlife consists of two divisions, Wildlife Division and Coastal & Non-game Resources Division.*

➔ **WILDLIFE DIVISION**

The Wildlife Division is responsible for the state's wildlife conservation program and gathering biological data to properly manage wildlife resources.

➔ **COASTAL & NONGAME RESOURCES DIVISION**

Conservation of coastal wildlife species and their marsh habitats, along with statewide responsibility for nongame and threatened & endangered species are the primary division responsibilities. This responsibility is addressed through major programs: Rockefeller Wildlife Refuge; White Lake Wetlands Conservation Area; White Lake Property Advisory Board; Furbearer Management; Fur Advisory Council; Minerals Management; Habitat Program, including Environmental Permitting, Scenic Streams & Rivers, and Nongame; Natural Heritage Program; Oil Spill Response; Natural Resource Damage Assessment; Alligator Program; Alligator Advisory Council; and Coastal Operations Program.

## Office of Fisheries

*The purpose of the Fisheries program is to manage living aquatic resources and their habitat, to support the fishing industry, and to provide access, opportunity and understanding of the Louisiana aquatic resources to the state's citizens and others beneficiaries of these sustainable resources. The Office of Fisheries is comprised of six sections: Marine Fisheries, Inland Fisheries, Fish Management, Fisheries Extension, Fisheries Oversight, and Fisheries Administration.*

# A Word From the Secretary



Fiscal year 2013-2014 was a year of notable accomplishments and solid progress on projects important to the mission served by the Louisiana Department of Wildlife and Fisheries (LDWF).

The Enforcement Division began a new in-service agent training program that spreads coursework over 10 months to accommodate seasonal work requirements and any unforeseen events that require agents to be called upon as first responders. The 10 required training components add annual specialized training to keep agents current on procedures and evolving tactics and equipment upgrades.

A 27th class of cadets graduated from LDWF's Law Enforcement Academy, filling 13 vacant slots in our statewide fish and game regulations enforcement staffing.

Office of Wildlife staff continued their efforts to manage the 1.6 million acres in the Wildlife Management Area Program which provides habitat for numerous wildlife species and outdoor recreation opportunities for outdoorsmen and women. In addition, the department's Private Land Program biologists provided habitat management information and advice to private landowners with acreage totaling another 458,000 acres.

The Archery in Louisiana Schools Program, within the Wildlife Division, set a record with 714 participants at the state tournament in March, producing 115 qualifiers for the National Archery in the Schools Tournament in May. The program continues to

grow and introduce more youth annually to the competitive sport of target style archery.

Over 800,000 customers were serviced by the Office of Management and Finance, including license sales at over 800 vendor outlets around the state. OMF additionally handled 188,000 boat registration/title transactions while maintaining over one million records on watercraft.

The department also worked closely with Louisiana Public Broadcasting to produce a six-part television series - Alive! In America's Delta - highlighting the important work performed by our field staff to restore threatened species and protect fish and game populations. The 30-minute programs were premiered and re-broadcast on LPB's statewide network, and the episodes on whooping cranes and the Louisiana black bear were honored with national awards for excellence in nature programming.

I would like to thank the anglers of our state for supporting a bill to increase the saltwater fishing license fees in our state. This fee increase has allowed LDWF to pull away from NOAA Fisheries' Marine Recreational Information Program (MRIP) in favor of the Louisiana Recreational Creel Survey (LA Creel). A program that started out as a very specific red snapper quota-monitoring program evolved into a robust recreational data collection tool. LA Creel allows the Office of Fisheries to collect better data on recreational saltwater fisheries harvests in Louisiana and has provided more fishing days for our red snapper anglers.

We have always strived to better serve our commercial fisheries during my term as Secretary. The Louisiana Fisheries Forward (LFF) program is a collaboration between the Office of Fisheries and Louisiana SeaGrant that will enhance the opportunities for our commercial seafood industry. LFF is a professionalism program for all sectors of the state's commercial fishing industry, including fishermen, dock owners, processors and distributors. This program will provide the education and training essential for the continued success of the industry and will focus on a number of important topics, including seafood quality and safety best practices. This new program will help Louisiana's commercial fishing industry gain a competitive edge in the market - developing a highly skilled and adaptable industry through training and outreach, for both newcomers and those looking for continuing education.

These are but a few highlights of another busy year for your Louisiana Department of Wildlife and Fisheries. The details that follow illustrate more fully what is involved in this agency's natural resource management efforts.

Robert J. Barham  
LDWF Secretary



# Office of Secretary



# ENFORCEMENT DIVISION

The Louisiana Department of Wildlife and Fisheries Law Enforcement Division (LDWF-LED) is responsible for enforcing laws enacted by the Louisiana Legislature and federal laws relative to fish and wildlife resources, boating safety, waterways enforcement activities, search and rescue, and homeland security missions.

LDWF-LED is a fully-commissioned statewide law enforcement agency with the primary mission of protecting Louisiana's natural resources and serving the people who utilize them. Beyond the traditional role of ensuring compliance with licensing and harvesting regulations, LDWF-LED also conducts search and rescue missions, enforces boating safety laws, investigates boating crash incidents and hunting accidents, and provides boater education classes for thousands of citizens each year.

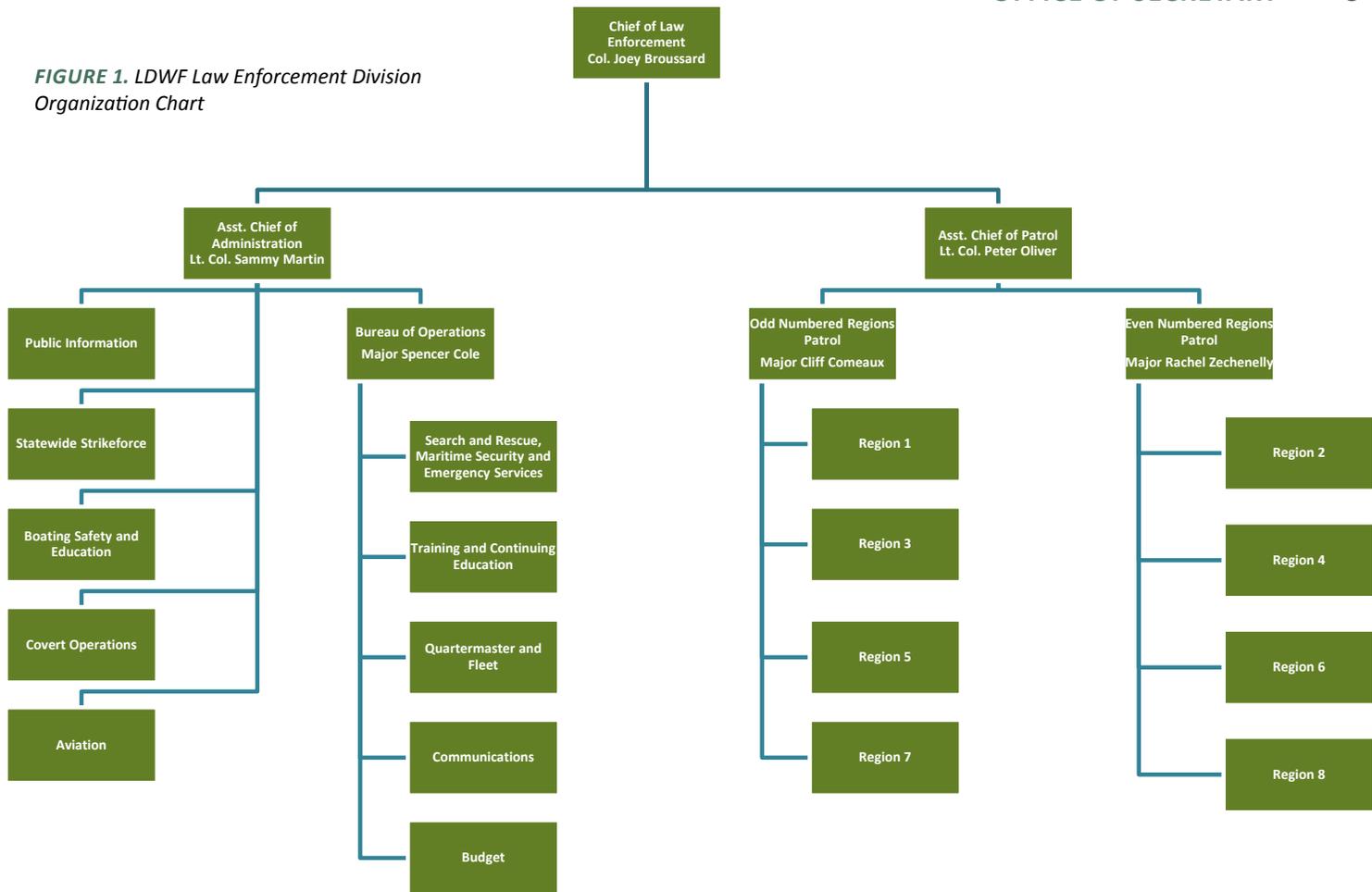
The Law Enforcement Division is responsible for enforcing laws as provided for in the:

- Constitution of the State of Louisiana
- Louisiana Revised Statutes
- U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration/LDWF Law Enforcement - Cooperative Enforcement Agreement - Law Enforcement Services under:
  - Magnuson-Stevens Fishery Conservation and Management Act
  - Endangered Species Act of 1973
  - Marine Mammal Protection Act of 1972
  - Lacey Act
- U.S. Department of Interior, U.S. Fish and Wildlife Service/LDWF Law Enforcement - Memorandum of Agreement - Law Enforcement:
  - Migratory Bird Treaty Act
  - Lacey Act; Migratory Bird Hunting and Conservation Stamp Act
  - Bald and Golden Eagle Protection Act
  - Airborne Hunting Act
  - National Wildlife Refuge System Administrative Act
  - Endangered Species Act, Marine Mammal Protection Act
  - Archeological Resources Protection Act
  - African Elephant Conservation Act
  - Antarctic Conservation Act
  - Wild Bird Conservation Act and Recreation Act
- U.S. Coast Guard/LDWF Law Enforcement - Statement of Understanding - Boating Safety Regulations:
  - BWI
  - Public Education and Training
  - Boating Accident Investigations
  - Search and Rescue
  - Regattas and Marine Parades
- Louisiana Department of Health and Hospitals/LDWF Law Enforcement
  - Memorandum of Understanding - Louisiana Shellfish Sanitation Program
  - National Shellfish Sanitation Program.

LDWF-LED conducted 292,031 patrol hours in FY 2013-2014: 207,510 on land and 84,521 on water. Agents made 732,881 contacts with the public, the majority of whom were in compliance with state and federal wildlife and fisheries regulations. LDWF-LED agents issued 12,551 criminal citations and 5,020 warnings during this period. The most common types of citations were fishing without a license, failure to comply with personal flotation device requirements, not abiding by rules and regulations on wildlife management areas, and failure to comply with deer tagging or harvest record regulations.



**FIGURE 1. LDWF Law Enforcement Division Organization Chart**



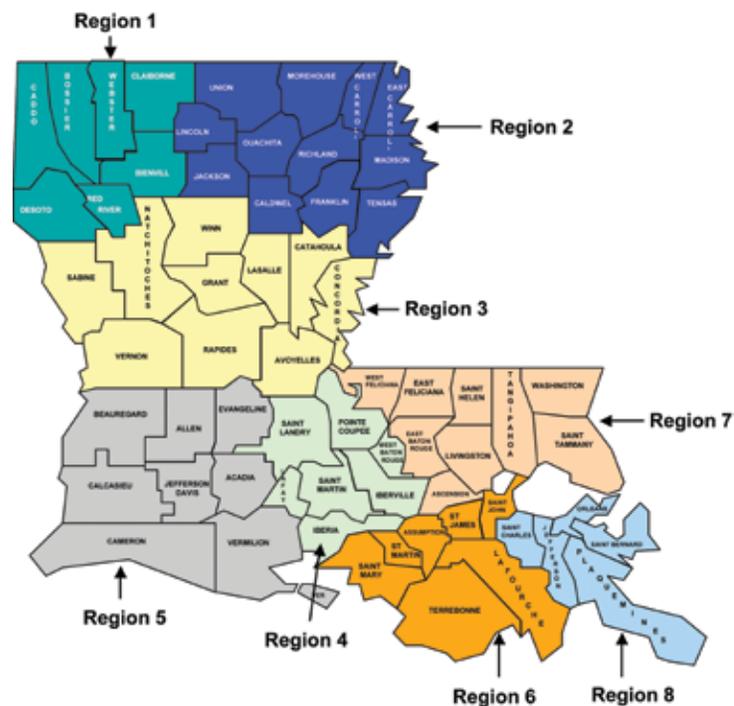
## ORGANIZATIONAL STRUCTURE & PERSONNEL

LDWF-LED is organized in a paramilitary structure to assure the efficient use of resources, consistent statewide enforcement policy, and an effective, coordinated response to urgent needs (Figure 1). LDWF-LED is commanded by one colonel, the Chief of Enforcement, who reports directly to LDWF’s Secretary and oversees administration of the division. Reporting to the colonel is two Lieutenant Colonels. One Lieutenant Colonel who serves as assistant chief of administration which includes state boating law administrator, statewide strikeforce, covert, public information and aviation sections supervisor. The other Lieutenant Colonel serves as the assistant chief of patrol and supervises all state regional field operations. There are three majors: one over the even-numbered enforcement regions of the state and serves as policy and procedure administrator; one over the odd-numbered regions and safety coordinator; one over the emergency services, training, support and budget sections.

The Enforcement Division is divided into eight enforcement regions (Figure 2), each composed of two or three multi-parish districts, with headquarters in Baton Rouge. Each region is managed by a captain who supervises two or three district supervisors of the lieutenant rank. Regions have between 16-25 agents, depending on regional size, resident population and participant population. Current funding provides a field enforcement staff of two to four agents per parish, according to the nature of wildlife-based activities in the area, the number of people participating, the frequency of their participation and other factors.

Total division head count is 257 positions including 235 enforcement agents, 24 administrative staff, six communications officers and two pilots. The actual number of filled positions (as of January 2015) is 235.

**FIGURE 2. Enforcement Division Regions**





## REGIONAL ENFORCEMENT PROGRAMS

Most of the law enforcement activity performed by LDWF-LED is conducted by regional agents. Regional agents work a schedule assigned by their supervisors to address seasonal needs, reported violations, weather conditions and predominant activities. Agents are on-call 24 hours per day and must be willing to change their work hours and locations as circumstances require. Schedules are often changed due to weather and reported violations, and agents are often called out to respond to violations in progress, boating and hunting accidents, and calls for search and rescue.

Agents use a variety of vehicles during land patrols, primarily four-wheel drive trucks and all-terrain vehicles. The primary patrol vessels used during water patrols are outboard bay boats and 19-to-40-foot marine patrol vessels. LDWF-LED also deploys go-devils, airboats, surface river mudboats, bass boats and flat-boats.

## SPECIALIZED UNITS

LDWF-LED contains four specialized units with selected missions or purposes: the Special Operations Section; the Statewide Strike Force; the Maritime Special Response Team; and the Aviation Section. Agents in specialized units have developed specific skills, expertise and knowledge appropriate for their particular

operational fields. Agents in specialized units operate in relatively broad geographic areas and may work alongside regional enforcement agents when appropriate.

### SPECIAL OPERATIONS SECTION

The Special Operations Section houses covert operations in which undercover agents work to stem the illegal sale of fish and wildlife, develop information about ongoing criminal enterprises, and address major violations of state and federal law.

### STATEWIDE STRIKE FORCE

The Statewide Strike Force is assigned to work problem areas statewide. They devote attention to commercial fisheries operations, license fraud and white collar crimes. Violations include smuggling, interstate commerce violations and false reporting, and under-reporting of commercial fish harvests. These agents provide regional patrol with additional manpower on wildlife management area (WMAs) and places of high seasonal utilization, such as Grand Isle and other locations throughout the state. Strike Force agents also assist regional agents with oyster harvest enforcement, which primarily addresses harvesting oysters in closed waters, stealing from oyster leases and state grounds, and oyster size regulations.

### MARITIME SPECIAL RESPONSE TEAM

The Maritime Special Response Team cooperative endeavor by LDWF-LED and the Louisiana State Police SWAT team addresses maritime security threats within the state of Louisiana. The team provides a maritime tactical response capability at the state level in order to effectively provide public safety, officer safety,

Chemical, Biological, Radiological, Nuclear and High-yield Explosives (CBRNE) prevention, and response and tactical support for LDWF's federal, state and local partners.

### AVIATION SECTION

The Aviation Section contains two pilots and three airplanes. The Aviation Section's aircraft provide a valuable platform for detecting illegal hunting and fishing activities and frequently play a vital life-saving role in search and rescue operations. The Aviation Section also contributes its services to other divisions for biological missions, such as waterfowl counts and the monitoring of commercial fisheries.

## BOATING SAFETY PROGRAM

With 15,000 miles of tidal coastline, 5,000 miles of navigable waterways, three of the busiest ports in the country, a thriving shipping industry, a large commercial fishing fleet, and over 320,000 registered boats, Louisiana contains many geographic, demographic and economic features that pose special challenges for boating safety enforcement. LDWF-LED agents made 243,383 public contacts during the course of 73,803 patrol hours dedicated to boating enforcement, education and accident investigation in FY 2013-2014. Of those hours, 56,044 patrol hours were performed in vessels on the water.

The adoption of "Rules of the Road" regulations for boaters has enhanced the enforcement of boating safety regulations and boating under the influence laws. These regulations

provide the boating public with clear rules for the manner in which boats are operated and are an important tool in determining fault in boating accidents. The “Rules of the Road” also enhance the ability of agents to address reckless and careless operation of motorboats. In FY 2013-2014, LDWF-LED agents issued 60 citations for careless and reckless operation of a vessel and 60 citations for operating a vessel while intoxicated.

The statewide LDWF-LED boater education course teaches safe, legal and responsible boat operation and is approved by the National Association of State Boating Law Administrators. This program provides a vital outreach to the community and has greatly improved the awareness of and compliance with boating safety practices and regulations in Louisiana. Agents hold monthly classes in each region for anyone who wishes or is required by Louisiana law to take them. In FY 2013-2014, 9,429 citizens were certified in classroom and online classes. LDWF-LED continues to recruit and train additional volunteer instructors to complement and enhance the efforts of its own agents. Since the inception of the boating safety education course in 2003, LDWF has certified 75,006 students.

LDWF-LED remained committed in marketing and promotion of boating education courses by creating special events and activities for students attending courses. LDWF-LED coordinated its third annual “Statewide Boating Education Lagniappe Day” certifying 164 boaters on May 10, 2014. LDWF-LED sponsored two Summer Day Camps for children 12 to 16 years old at the Waddill Outdoor Education Center and certified 43 children in both boating and hunter education. LDWF-LED participated in “Operation Dry Water” from June 27-29 and made contact with 3,102 boaters resulting in 98 safe boating violations including five Boating Under the Influence (BUI) violations on the water. LDWF-LED also promoted and participated in “Safe Boating Week” from May 17-23, stepping up safe boating patrols and promotion of safe boating during the week.

Agents also provided an emergency pedestrian shuttle service to 18,459 pedestrians on Bayou Grosse Tete after damage occurred to the Bayou Grosse Tete Bridge when it was hit by a barge. Agents spent over 2,500 hours ensuring waterway safety and provided the service free to the public.

## SEARCH & RESCUE OPERATIONS

LDWF-LED is responsible for providing and coordinating search and rescue response and maritime security activities for the state. This activity supports the state’s goal of hurricane recovery and emergency preparedness by planning, training and coordinating local, state and federal response for search and rescue associated with natural or manmade disasters. Preparedness and efficient execution of search and rescue response events is essential to saving lives and swift recovery efforts. Providing maritime security on our state’s waterways is essential to protection of critical infrastructure located in maritime environments throughout Louisiana.

Emergency Support Function Annual Support Plan for our search and rescue partners has been completed. LDWF-LED serves as the primary state agency for search and rescue.

## AGENT TRAINING PROGRAM

LDWF-LED annual in-service program consists of 10 training sessions conducted over a 10-month period. In addition to the required areas of training, this new program allows for areas of specialized training to be added to the curriculum each year while ensuring the continuance of training throughout unforeseen events and relieves the schedule burden of the consecutive week program.

The LDWF Law Enforcement Academy graduated its 27th class of cadets into the ranks of LDWF Enforcement Division Agents in June. After six months of intensive physical and academic training at the academy, 13 newly commissioned agents are ready to begin enforcing hunting, fishing and boating regulations that govern the use of state’s natural resources. At the academy, cadets train to enforce the state’s recreational boating laws, the state and federal wildlife and fisheries laws, and general law enforcement work on the state’s many WMAs. The academy also covers general law enforcement training equal to that of other state law enforcement officers.

At the end of 2013, LDWF-LED completed certifying all agents in the National Association of Safe Boating Law Administrators (NASBLA) BUI Program, which includes the new validated seated test battery. This training gave agents

another means of effective detection in their efforts to prevent fatalities on the water.

At the end of 2013, LDWF-LED agents completed training in Boating Accident Report Database (BARD) using their issued iPads. This training allows the investigating officer to enter accident data, which will allow for a more accurate account of the investigation.

## JOINT ENFORCEMENT AGREEMENT

LDWF-LED again entered into a Joint Enforcement Agreement with the National Oceanic and Atmospheric Administration’s Office for Enforcement. LDWF-LED received approximately \$976,976 in FY 2013-2014 to patrol for compliance with federal commercial and recreational fisheries regulations, primarily in the Gulf of Mexico. Several patrol vessels and other necessary equipment has been acquired under this program. Agents have been very successful identifying illegal and unregulated fishing activity and obtaining a number of large cases involving commercial and recreational violations.

## OPERATION GAME THIEF

Louisiana Operation Game Thief (OGT), Inc. is a program which provides cash rewards to those providing information leading to the apprehension of wildlife violators. Violations can be reported anonymously by calling a 24-hour toll-free telephone number (1-800-442-2511) or by using LDWF’s tip411 program. To use the tip411 program, citizens can text LDWF and their tip to 847411 or download the “LADWF Tips” iPhone or Android apps from the Apple App Store and Google Play free of charge. The hotline and the tip411 program are monitored 24 hours a day by the LDWF Communications Center. Reports are immediately referred to agents for action.

During the 2014 year, OGT paid out \$16,200 in rewards. The OGT board reviewed a total of 40 cases with a total of 67 subjects apprehended and a total of 218 offenses/violations. The total amount of rewards paid by OGT since its inception 28 years ago is \$358,900.



## HOMELAND SECURITY

LDWF-LED is an active participant in Louisiana's Homeland Security Plan and represents the state in waterborne emergencies. Through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), LDWF-LED is the lead agency for search and rescue operations during natural disasters and maritime security of Louisiana's vital business and government interests along the coast and major rivers. As members of the Governor's Homeland Security Advisory Council and all major port security committees within the state, LDWF-LED agents frequently respond to requests to deploy LDWF marine resources for security concerns. LDWF-LED's specialized training and equipment and its ability to operate throughout the state's vast maze of waterways and wild areas has complemented Louisiana's ability to respond to emergencies on land and water.

Emergency Support Function annual support plan for maritime and port security has been updated. LDWF-LED serves as the primary port and maritime security support partner.

LDWF-LED developed a five-year maritime security strategic plan in order to provide direction and guidance for the expansion of its mission to include maritime security. This role further advances coordination efforts between the United States Coast Guard, Louisiana State Police, ports, federal, state, and local government, and private partnerships to increase the efficiency and effectiveness of maritime safety and security and all hazards response for Louisiana and our nation. This expansion is necessary in order to meet the needs and threats that we face within Louisiana's maritime domain.

LDWF-LED is a member of the First Responder Committee through GOHSEP which was legislatively created. LDWF-LED's maritime security role coincides as a multi-mission responsibility and further enhances the agency's core mission responsibilities: to improve public safety services and protect natural resources and the supporting ecosystem while improving security in the state and nation.

LDWF-LED participated in a State and Local Stakeholders Working Group Meeting held in St. Louis, Mo., to discuss Global Nuclear Detection Architecture (GNDA) topics and to hold the Interior Focus Group, the Training Advisory Forum, and the Radiological-Nuclear (R/N) Interior and Maritime Assistance Working Group meetings. This meeting is a well-established Department of Homeland Security (DHS) Domestic Nuclear Detection Office (DNDO) outreach effort aimed at DNDO's working-level state and local partners in the R/N detection mission. This working group is designed to foster strong partnerships with state, local and tribal agencies. It also promotes a sense of community and cooperation which serves to strengthen R/N detection capabilities across the nation in support of the GNDA.

LDWF-LED initiated efforts within the state to establish a partnership between DNDO and key state and federal partners in order to develop and implement a Preventive Radiological and Nuclear Detection Program. The mission of the Louisiana Preventive Radiological/Nuclear Detection (PRND) Program is to provide the capabilities to enable Louisiana and its participating agencies to protect Louisiana's residents, economy, critical infrastructure and natural resources against threats posed by the unauthorized use of radiological or nuclear materials. A steering committee was formed and will work to develop and implement a statewide PRND Program strategy to include an

overall Strategy, Concept of Operations, Standard Operating Procedures and an implementation and sustainment strategy through a programmatic assistance effort.

## PUBLIC INFORMATION

The LDWF-LED Public Information team consists of two people who do various media and public information related tasks. The team handles public email, Facebook questions, media requests including setting up interviews, and gathering enforcement related information.

LDWF-LED issued 95 enforcement related press releases during FY 2013-2014. These press releases were issued to a media contact list via email both state and nationwide. They were also posted on the LDWF website. The press releases ranged from rewards for information on current cases, conviction results, announcements of event and upcoming cadet academies, highlighting big, important and unusual cases, enforcement division and agent achievements and awards won, and boating safety information.

The media production team produced a total of 20 video projects and photographed over two dozen events throughout the year, as well as provided footage and photos to media outlets both in-state and nationally. In an effort to raise public awareness to hunting rules and regulations, a series of hunter safety videos were launched covering basic hunting practices and step-by-step guides to activities like tree stands. At the end of each video, a uniformed wildlife agent would appear with size and bag limits and a brief summary of the documentation a hunter would be required to present if approached by an agent in the field. The videos are shared through LDWF's website, Facebook and Youtube. In-house, the production team began to produce videos specific to the training wildlife cadets receive at the academy. Many of these videos are used in the early weeks of the academy in order to prepare cadets for what is expected. This is an on-going effort between the academy staff and public information.



Office of  
Management  
& Finance

# LICENSING

The Licensing Section serves as the information hub for more than 1 million customers who operate businesses, fish commercially, recreationally fish and hunt, and use state lands for non-consumptive purposes. The staff provides customers with state, federal and commission laws, rules and regulations that govern fishing, hunting and titling/registration of boats and motors in Louisiana. The Licensing Section handles the issuance of all commercial licenses, boat and motor title and registration services, and various permits; manages the statewide electronic licensing system providing recreational license availability at more than 800 locations statewide. The Licensing Section continues to evaluate processes and streamline to improve availability and reduce processing time for licenses and boat titles and registrations.

License and boat and motor title/registration activities and related revenue collections are as follows:

- Issue in excess of 2.5 million recreational hunting, fishing, trapping and non-consumptive use licenses and permits sold to 800,000+ customers, generating in excess of \$20 million in revenue. Maintain license records for in excess of 70,000 lifetime licensees.
- 65,252 commercial licenses sold, representing 12,402 commercial fishermen, 2,755 business entities, 880 charter businesses, and various permits that generate in excess of \$3.8 million in revenue.
- 188,000 boat registration/title transactions that generate in excess of \$4 million in revenue. Maintain boat data in excess of 1 million records - 322,159 of which are actively registered.
- Make available various types of game harvest tags to deer and turkey hunters and oyster tags to oyster fishermen and processors as required by federal and state law - in excess of 3 million.

# PROPERTY CONTROL

The Property Control Section is responsible for managing the Louisiana Department of Wildlife and Fisheries' Property, Risk Management Insurance Claims, and Fleet Management programs. The section is staffed with five full-time employees.

## PROPERTY CONTROL PROGRAM

During FY 2013-2014 this program certified a moveable property inventory which consisted of 9,597 items for a total acquisition cost of \$71,448,464.31. Annually, the program is responsible for ensuring that a physical inventory of moveable property is conducted at its locations throughout the state.

## FLEET MANAGEMENT PROGRAM

In accordance with state fleet management regulations this section records, approves and processes requests for personal assignment or home storage, daily vehicle usage, vehicle maintenance, and title, registrations and vehicle licenses for LDWF's 584 fleet vehicles and 1,038 other licensed equipment.

The Property Control Section also managed the vehicles assigned to the Baton Rouge Headquarters Motor Pool.

## RISK MANAGEMENT PROGRAM

The Property Control Section is responsible for filing insurance claims and recovering payment from the Office of Risk Management and third party insurance companies for property damage, automobile physical and liability damage, and wet marine, aviation, boiler and machinery damage. The section is also responsible for filing general liability insurance claims.

Driver's authorization and annual certification for LDWF's approximate 900 employees is also a responsibility of the Property Control section. This process is accomplished in accordance with Office of Risk Management's loss prevention guidelines.

# FISCAL

The Fiscal Section staff consists of 14 employees who are responsible for all financial operations of the Louisiana Department of Wildlife and Fisheries. The main goal of the Fiscal Section is to achieve compliance with all applicable laws, rules, policies and regulations governing the functions managed. This section develops and implements fiscal controls, provides advice, assistance and training, and standardizes procedures for approximately 900 employees.

The functions include:

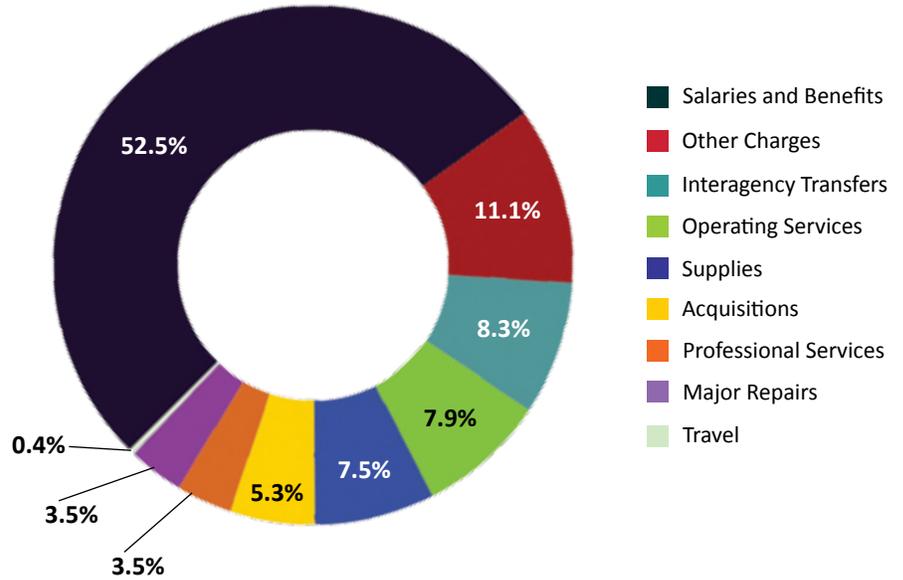
- budget and expenditure control and monitoring.
- federal grant tracking and reporting.
- preparation of all required financial reports.
- reviewing and processing professional and consulting contract payments.
- payment of all vendors.
- receipt and classification of various sources of revenue.
- fund management.
- assessment of civil fines.
- processing of employee travel reimbursements.
- strategic and operational planning.
- financial management of FEMA projects and other disasters.

During FY 2013-2014, the Fiscal Section staff:

- prepared four agency budgets consisting of five programs totaling \$205 million
- audited and processed 641 contract invoices payments with a total amount payable of \$17.7 million.
- processed 9,143 vendor invoice payments.
- audited and processed 20,026 purchasing card transactions.
- audited and processed 1,706 travel reimbursements.
- processed 3,079 checks through Quick-Books.
- warranted funds and prepared periodic reports for 119 federal grants.
- deposited \$44.16 million in receipts from various sources on 439 pay in vouchers.

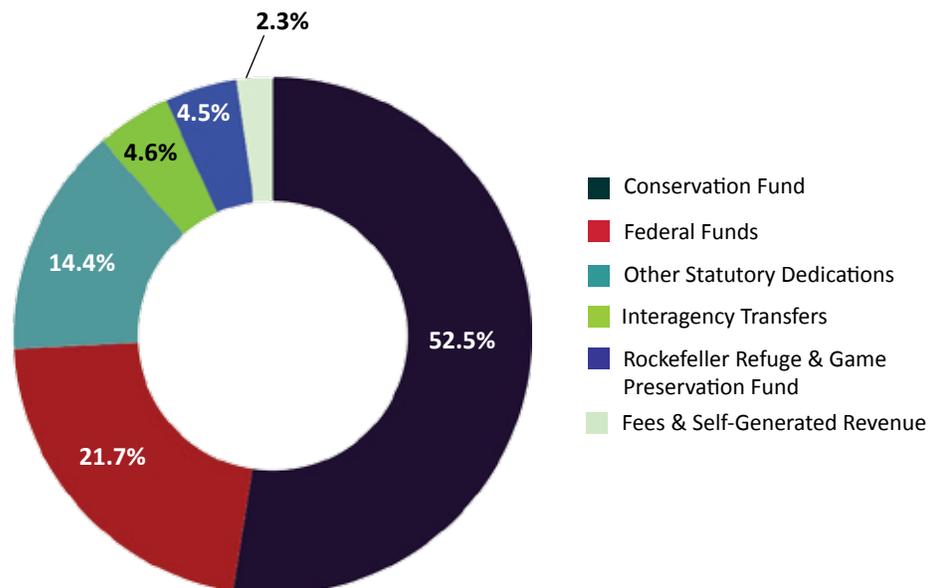
## LDWF EXPENDITURES BY CATEGORY (FY 2013-2014)

Total Expenditures: \$129,640,473



## HOW EXPENDITURES WERE FUNDED (FY 2013-2014)

Total Means of Financing: \$129,640,473



EXPENDITURES BY CATEGORY	
Salaries and Benefits	68,119,221
Other Charges	14,354,015
Interagency Transfers	10,745,090
Operating Services	10,353,298
Supplies	9,728,734
Acquisitions	6,836,665
Professional Services	4,479,937
Major Repairs	4,473,194
Travel	550,319
<b>TOTAL</b>	<b>\$129,640,473</b>

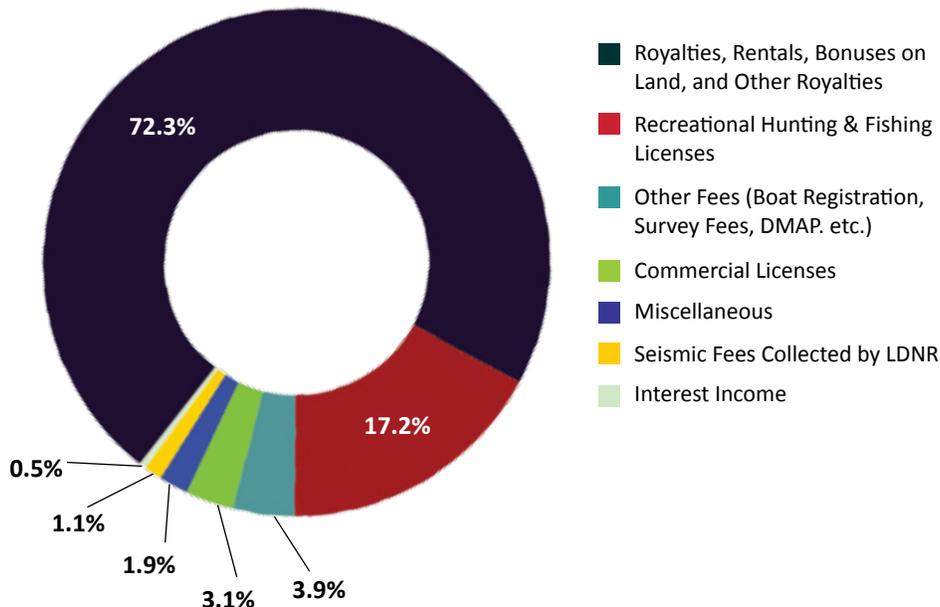
HOW EXPENDITURES WERE FUNDED	
Conservation Fund	68,016,788
Federal Funds	28,181,324
Other Statutory Dedications	18,665,943
Interagency Transfers	5,996,913
Rockefeller Refuge & Game Preservation Fund	5,862,243
Fees & Self-Generated Revenue	2,917,262
State General Fund	0
<b>TOTAL</b>	<b>\$129,640,473</b>

SOURCES OF REVENUE TO THE CONSERVATION FUND	
Royalties, Rentals, Bonuses on Land, and Other Royalties	77,530,016
Recreational Hunting & Fishing Licenses	18,482,832
Other Fees (Boat Registration, Survey Fees, DMAP, etc.)	4,203,276
Commercial Licenses	3,320,378
Miscellaneous	2,008,628
Seismic Fees Collected by LDNR	1,195,035
Interest Income	506,825
<b>TOTAL</b>	<b>\$107,246,990</b>

EXPENDITURES BY PROGRAM	
Office of Fisheries	47,363,014
Office of Wildlife	42,571,274
Office of Secretary - Enforcement	28,488,982
Office of Management & Finance	10,259,044
Office of Secretary - Administration	958,159
<b>TOTAL</b>	<b>\$129,640,473</b>

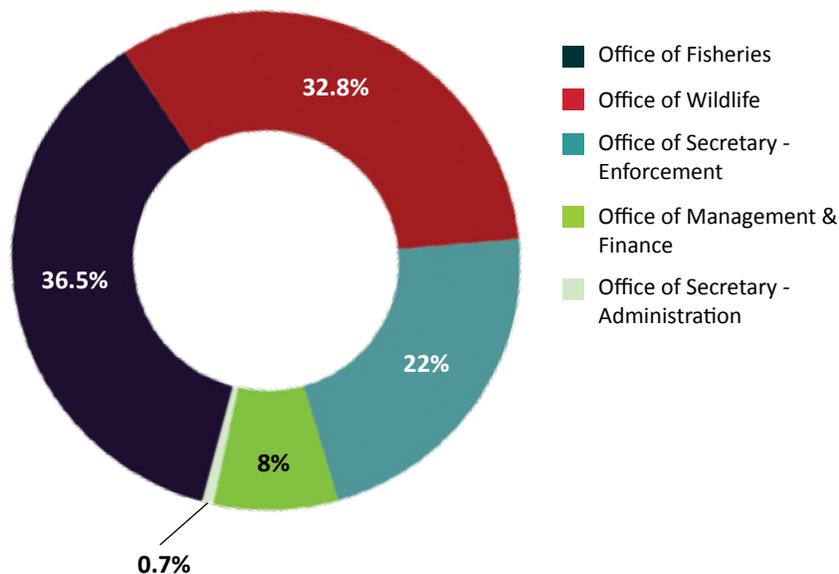
### SOURCES OF REVENUE TO THE CONSERVATION FUND (FY 2013-2014)

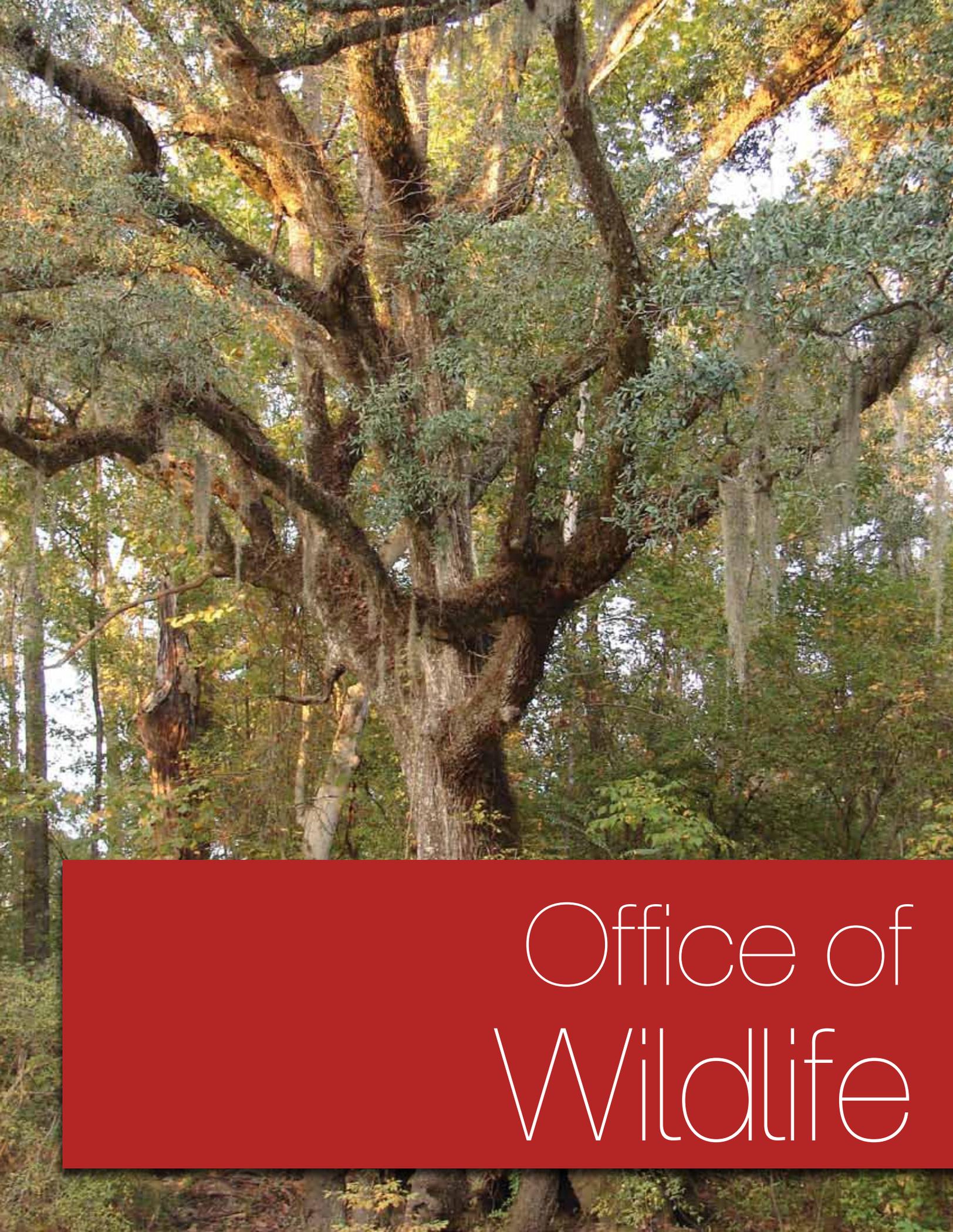
Total Revenue: \$107,246,990



### LDWF EXPENDITURES BY PROGRAM (FY 2013-2014)

Total Expenditures: \$129,640,473





Office of  
Wildlife



# WILDLIFE DIVISION

## WILDLIFE RESEARCH

A wide range of research and management work is conducted in order to maintain healthy productive populations of wildlife and to provide wildlife associated recreational opportunities for citizens to enjoy. Staff biologists conduct research and surveys for use in formulating hunting regulations and for development and management of habitat. They present information to the public and develop workshops for personnel of the Louisiana Department of Wildlife and Fisheries (LDWF) and other agencies. In addition, the staff represents LDWF on state, regional and national committees, providing input to a wide array of public agencies, non-governmental organizations and private industry. The species programs are White-tailed Deer, Webless Migratory Game Birds, Wild Turkey and Resident Small Game, Waterfowl, Large Carnivore, and Wildlife Disease.

### WHITE-TAILED DEER

During the 2013-2014 deer season, 191,300 deer hunters harvested 166,200\* white-tailed deer. On wildlife management areas (WMAs), 2,654 deer were harvested during managed deer hunts. During managed deer hunts, hunters are required to bring their deer to a check station where LDWF staff collect biological data from the deer. The total hunter effort (a hunter having used a WMA for a hunt) for the managed deer hunts was 25,401.

*\* Senior hunters and harvest included in the mail survey.*

The Deer Management Assistance Program (DMAP) harvest was 15,002 deer. There were 742 clubs/cooperators with 1.62 million acres participating in the program, similar to the previous year.

Deer harvest information from across the state was analyzed and evaluated. These data were used to establish deer regulations for the

2013-2014 season. Harvest data for WMAs and DMAP cooperators are summarized in Federal Aid W-55-26 Report.

Bucks harvested during 2013-2014 that scored high enough to qualify for the Louisiana Big Game Records Recognition Program were documented in the annual Deer Program report. Trophy deer that qualify for the State Record List were also added.

In order to better manage the state's white-tailed deer population, several research projects are ongoing. Efforts by the Coastal and Nongame Resources Division to capture and mark deer at Pass-a-Loutre WMA have been completed. Researchers are currently analyzing home range, mortality and survival data to prepare a final report. Herd health collections and disease and parasite investigations continued on both private and public lands. The Tensas deer research project designed to measure fawn mortality and adult deer movement at Tensas National Wildlife Refuge (NWR) continued for the second season. Researchers captured and collared another 15 males, 32 females and 19 fawns.

### WEBLESS MIGRATORY BIRDS

#### DOVE

Mourning dove call counts were conducted along established routes throughout Louisiana. With the new mourning dove harvest strategy, the U.S. Fish and Wildlife Service (USFWS) is no longer collecting dove call count data from states. Louisiana will continue to collect dove data along the established dove call count survey routes. In addition to collecting data on mourning dove trends, data on white-winged and collared doves will be collected. White-



**LEFT:** Banded mourning dove. **RIGHT:** American woodcock.

winged doves were detected on three of the 19 routes. Collared doves were detected on 10 of the routes.

Dove hunting regulations for Louisiana in 2013-2014 were set at 70 days with a bag limit of 15 birds. A survey of resident license holders indicates that approximately 38,300 Louisiana hunters harvested approximately 728,800 doves during the 2013-2014 hunting season. An estimated 26,100 Eurasian collared-doves and 40,500 white-winged doves were also taken.

In addition to dove fields on 11 WMAs, LDWF leases property from private landowners for public hunting. This land is leased for public hunting on opening day only. In 2013, three fields totaling 702 acres were leased. During the opening day hunt, 604 hunters participated, bagging 1,102 doves.

In the spring of 2003, USFWS adopted a National Mourning Dove Harvest Management Plan. Determining current harvest rate in each management unit was identified as a key component of the plan. Wildlife Division personnel banded 1,967 doves during July-August 2013 as part of a national effort to provide information needed to develop harvest rate estimates for mourning doves. Another aspect of this study has been the development of production indices from mourning dove wings collected from hunters. A Wildlife Division biologist participated in the annual Mourning Dove Wing Bee held in Missouri. During a three-day period, state and federal biologists from across the country aged more than 40,000 wings.

Soil samples were collected at four dove fields at Sandy Hollow WMA to examine lead deposition rates within these fields by dove hunt-

ers. Soil samples were collected post-hunt (October 2012 & 2013), pre-field preparation (March 2013 & 2014), and post-field preparation (June 2013 & 2014). Soil samples will continue to be collected and will be subsequently analyzed for lead pellets.

Data are summarized in the Federal Aid W-55-28 Annual Report.

## WOODCOCK

Beginning in October 2013, a research project examining diurnal microhabitat use by American woodcock was initiated. Woodcock were captured at night, fitted with a U.S. Geological Survey (USGS) aluminum band and a backpack style radio transmitter. Woodcock were then relocated at least once per week, and vegetation data at both use and random sites was collected. Thirty-six woodcock were captured and fitted with radio transmitters and relocated from Dec. 11, 2013 through Jan. 23, 2014 at Sherburne WMA. Seven of the birds were

after-hatch-year birds and 29 were hatch year birds; 29 were females and seven were males. During the 2014-2015 season, an additional 40 woodcock will be fitted with radio transmitters and vegetation data at both use and random sites will be collected.

LDWF participated in the USFWS Annual Woodcock Wing Bee in 2013. Data derived from aging and sexing about 12,000 woodcock wings were used to develop trend data on woodcock production and hunter success. These data, in combination with breeding bird surveys, are used to develop management strategies for woodcock. Although many people in Louisiana consider woodcock an under-utilized species, Louisiana's harvest of woodcock at one time ranked among the nation's highest. However, the number of woodcock hunters has decreased by over 90 percent since their peak in the early 1980s. Nonetheless, Louisiana still consistently ranks fourth in the nation for woodcock harvest. A survey of resident license holders indicates that approximately 3,700 Louisiana hunters harvested 9,800 woodcock during the 2013-2014 season.

Data are summarized in the Federal Aid W-55-28 Annual Report.

## ANNUAL HUNTER HARVEST SURVEY

Big and small game harvest indices for the 2013-2014 hunting season were obtained through a mail survey based on the purchasers of basic resident hunting licenses or any other resident license that included the basic resident hunting privileges for 2013-2014. The 2013-2014 Game Harvest Survey was mailed to 17,242 (6 percent sample) residents who had purchased the license for the current year's hunting season (or



**LEFT:** Wildlife biologists searching a field at night for woodcock. **RIGHT:** American woodcock are aged and sexed by examining the wing feathers.

had a lifetime license). Non-deliverables numbered 1,805. The survey questionnaires were completed and returned by 3,077 individuals before the cutoff date. The estimated harvest and hunter efforts for the 2013-2014 hunting seasons utilized 2,050 responses. According to the responses, the 2013-2014 basic license was not purchased by 185 respondents (approximately 8 percent). The procedures used to calculate the 2013-2014 estimates were the same as those used for the 2012-2013 harvest estimates. The 2013-2014 harvest estimates were extrapolated based on the current year's license sales of 254,970. Hunter numbers reflect those that hunted a species even if they did not bag. No attempt was made to adjust the statistics to compensate for the lack of residents under 16 years old who are not required to purchase a basic license.

Data are summarized in the Federal Aid W-55-28 Annual Report.

## WILD TURKEY AND RESIDENT SMALL GAME

### WILD TURKEY

A poult production survey was initiated in 1994 to assess annual brood rearing success and monitor long-term production trends. The 2013 survey indicated an improved hatch in two of the five habitat regions. The North Mississippi Delta, Southeast Loblolly Pine, Western Longleaf, and Atchafalaya/South Mississippi Delta all experienced increases in production from the previous year. The Northwest Lob-

lolly/Shortleaf/Hardwood region exhibited a slight decrease in production from 2012.

The most recent turkey hunter survey estimated 21,300 turkey hunters harvested 5,200 wild turkeys during the spring of 2014. These numbers do not include youth and exempted hunters. The wild turkey population in Louisiana is estimated at about 60,000 birds.

LDWF is involved in several wild turkey research projects. LDWF supports a wild turkey research project on the Kisatchie National Forest in conjunction with the University of Georgia, with additional support from the National Wild Turkey Federation (NWTF). This project is investigating the movements of female wild turkeys and broods in relation to large scale prescribed burning. LDWF is also engaged in banding gobblers on all five ranger districts of the Kisatchie National Forest. Banding and subsequent reporting by hunters of banded gobblers provides information needed to estimate wild turkey harvest rates. Information collected to date has helped justify expanded youth hunting opportunities on Kisatchie. During the past year 19 wild turkeys were restocked in Northwest Louisiana. Most of the restocked turkeys were tagged with GPS telemetry to monitor success.

### QUAIL

Statewide fall whistling counts were conducted on 42 randomly located routes and an additional six routes on LDWF WMAs and the Kisatchie National Forest. Fall whistle counts did not differ among four of the five habitat types for 2013, but was improved in the Southeast Loblolly region. All regions continue to exhibit

significant long-term (1983-2013) declines in calls per stop. A spring bobwhite survey was also conducted on the Sandy Hollow WMA. Inferences about population status and habitat conditions were developed based on the combined results of these survey techniques and general observations by LDWF personnel during the breeding season. Data are summarized in the Federal Aid W-55-28 Annual Report.

A survey of resident license holders indicates that approximately 1,100 Louisiana hunters harvested 1,200 wild quail during the 2012-2013 season. Hunters were also asked about their harvest of pen-raised quail. About 1,700 hunters harvested over 29,000 pen-raised quail.

LDWF continues to work with its partners to address the decline in bobwhite populations. Habitat development efforts using U.S. Department of Agriculture (USDA) Farm Bill programs and the State Wildlife Grant Program have been developed and were operational in 2012-2013.

## WATERFOWL

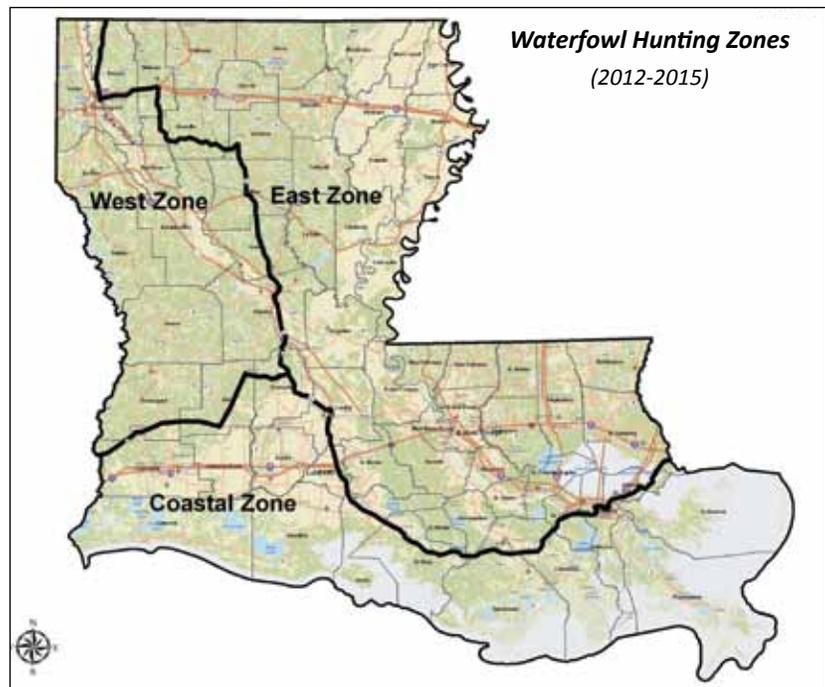
Louisiana has approximately 3.5 million acres of coastal marsh that winter large and diverse waterfowl populations. Aerial waterfowl inventories of the entire coastal marsh, as well as associated agricultural lands in north central and northeast Louisiana, are conducted each winter.

The mid-winter inventory conducted in early January 2014 maintained traditional methods in all surveyed regions and indicated 4.05 million ducks and 897,000 geese wintered in coastal marsh and inland areas of the Mississippi Delta. This was 29 percent more ducks than 2013 and 23 percent more than the most recent 10-year average. Similarly, this was 57 percent more geese than in 2013 and 37 percent more than the most recent 10-year average. It was an unusual outcome because populations of ducks and geese were far below average on November and December aerial surveys and during the majority of the waterfowl hunting season. Indeed, the November aerial survey in the coastal zone was the lowest on record, and December counts were below average before the late migration moved large numbers of birds into the state for the mid-January survey. Especially impressive were counts of scaup on lakes Maurepas, Pontchartrain and Borgne, where the estimated 733,000 scaup were the most ever seen on the January scaup survey.



**LEFT:** A wild turkey hen on Kisatchie National Forest. **RIGHT:** A bobwhite quail monitored at Sandy Hollow WMA.

FIGURE 1.



For the second of at least four years, Louisiana used three zones for waterfowl hunting to provide more targeted season dates in each region of the state and offer additional opportunities. Because Thanksgiving Day was very late (Nov. 28) and the latest closing date allowed by USFWS was early (Jan. 26), season dates established in the East and West Zones included only a five-day split for the first time, rather than a 12-day split as in past years, to increase the number of open hunting days later in the season. Based on federal harvest estimates, 77,600 active duck hunters harvested 2.39 million ducks. This represents a 25 percent decline in the number of active duck hunters from 2012-2013 and a 13 percent reduction in ducks harvested. The reduction in hunter numbers is likely unreasonable, especially when sale of resident duck licenses actually increased. USFWS has acknowledged there were problems with the 2013-2014 harvest survey, and other Mississippi Flyway states reported similarly unreasonable declines in hunter numbers. However, LDWF's Big and Small Game Harvest Survey also estimated an 11 percent decrease in duck hunters and a 32 percent reduction in duck harvest. It is suspected that low populations and poor hunting success in November and early-December reduced hunting activity later in the season. Despite the decline from 2012-2013, the estimated harvest of 2.39 million ducks in Louisiana is still the highest of all states, as is the estimated 30.8 ducks killed per hunter during the season. Species composition in the 2013-2014 harvest included 27 percent blue-winged teal, 20 percent gadwall, 18 percent green-winged teal, 7 percent wood duck, 6 percent ring-necked duck, 6 percent shoveler, and 5 percent mallard. Scaup, mottled duck, pintail, wigeon, canvasback, and redhead comprised the remainder.

Louisiana goose hunters harvested 37,000 geese during the 2013-2014 waterfowl hunting season; another 30 percent decline from the previous year, further reinforcing concerns about Louisiana's declining goose harvests. This spring was the third consecutive year of at least average breeding conditions on arctic breeding grounds, of expected at least average production on the breeding grounds, and of increases in the fall staging survey of white-fronted geese. Furthermore, the goose migration was not as delayed as in 2012-2013. Harvests of both snow geese and white-fronted geese declined by 30 percent despite above-average mid-winter population estimates. The goose harvest was comprised of 58 percent white-fronted geese and 42 percent snow geese. Federal harvest surveys picked up no Canada geese in the sample of hunters.



**LEFT:** New pump at Ouachita WMA. **RIGHT:** Geese in southwest Louisiana.

## NORTH AMERICAN WATERFOWL MANAGEMENT PLAN

Louisiana continues to play an important role in the North American Waterfowl Management Plan (NAWMP). LDWF strives to maintain ongoing projects and other activities associated with NAWMP. In FY 2013-2014, North American Wetland Conservation Act (NAWCA) project construction continued on Sherburne WMA's South Farm and Russell Sage WMA's Pump Trail Road greentree reservoir. Work yet to be completed on the South Farm includes land levelling to improve moist soil management capability and increase wetland acreage.

Enhancement work on Russell Sage included initiating repair to a flood-damaged spillway and site preparation for the installation of a large re-lift pump on Bayou Lafourche. Contractor delays necessitate extending both of these projects into next fiscal year. Duck Stamp funds were used to improve a previous NAWCA grant project on Ouachita WMA. Activities on Ouachita included replacement of a power unit on the refuge units, construction of a new re-lift pump to provide reliable water delivery to impoundments and replacement of dilapidated water control structures and culverts. An additional 58 acres of managed wetlands will be enhanced using local Delta Waterfowl Foundation chapter funding on Buckhorn WMA.

Prolonged high water levels minimized undesirable vegetative treatments on Catahoula Lake during FY 2013-2014. Herbicide spraying, bush hogging and bulldozing activities are planned for summer 2015 pending favorable water levels on Catahoula Lake. Herbicide applications are planned for Sherburne's Des Ourses Swamp and North and South Farms, as well as on Buckhorn during summer 2014. Many other mechanical, chemical and prescribed fire treatments were conducted on other WMAs to invigorate wetlands.

Construction of a 3,007-acre greentree reservoir on Dewey Wills WMA will begin during FY 2014-2015. This work includes construction of a large canal gate, installation of several weirs and screwgates, and elevating Hunt Road and an ATV trail. Investigations into habitat enhancement opportunities on Wham Brake were conducted, including a topographic survey and LIDAR data acquisition. A NAWCA grant application will be developed seeking funding assistance to replace dilapidated water control structures and a spillway with a new structure that will better enable shallow water management.

## WOOD DUCKS

During 2013-2014, LDWF banded 2,489 wood ducks. It was a substantial decline over last year's 3,227, but is still the second highest number banded. The unprecedented three-year run of banding over 2,400 wood ducks has been due to increased effort and success in all regions of the state including mandatory training courses held by the NAWMP Coordinator and Turkey Program Manager to improve trapping techniques and rocket-netting skills combined with continued maintenance and intense trapping at stations established near Baton Rouge. Pre-season rocket-netting accounted for 2,136 of the total bandings, and 353 hens were captured in nesting boxes. In addition, 3,639 black-bellied whistling ducks

were banded during the winter and spring. This is over three times that in 2012-2013 and is the highest number ever banded by LDWF. The NAWMP Coordinator has expanded banding efforts throughout the coastal parishes to generate a database that may have to depend on recaptures rather than hunter-recoveries to obtain information on movement and survival of these birds and support future harvest management decisions.

The wood duck nest-box program completed its 25th year in 2014. LDWF personnel are maintaining 2,068 boxes currently in use. That is about the same as last year, but fewer than the 2,269 in use in 2012. Substantial loss of boxes to Hurricane Isaac in southeast Louisiana and prioritizing replacement of old boxes and relocation of existing boxes to more productive nesting and brood-rearing habitat over installing additional boxes has stabilized the number of boxes in the program to between 2,000 and 2,100. The number of boxes maintained and monitored through landowners in the Private Lands Program continues to grow. Utilization was monitored at 1,957 boxes, which is back to the level prior to Hurricane Isaac. Utilization has ranged from 45-100 percent in past years with an average utilization of about 80 percent.

## LARGE CARNIVORE PROGRAM

### BEAR RESEARCH

The Louisiana black bear is designated as a threatened species under the Endangered Species Act. LDWF's bear research efforts are targeted at gathering information that will enable the department to remove the Louisiana black bear from the threatened list and effectively manage for sustainable black bear populations. There were 13 bears captured for research purposes.

Summer hair-snare surveys were conducted again in the Tensas River and Upper Atchafalaya River basins during this fiscal year. Samples were collected from 209 and 116 sites, respectively, resulting in 2,256 samples.

To estimate population size (N), change in population ( $\lambda$ ), density and genetic characteristics of bears in the Three Rivers Complex subpopulation, non-invasive hair traps were placed randomly in a systematic grid encompassing the entirety of the repatriation area. A sampling grid utilizing a spacing of 2.5 km<sup>2</sup> x 2.5 km<sup>2</sup> was constructed and superimposed across the landscape using ArcMap 10.1, and a final sampling grid composed of 140 contiguous sampling cells that covered a 875-km<sup>2</sup> area was used. Hair trap spacing was determined by the average annual female home range size of Louisiana black bears based on existing radio-collar data. The spacing utilized ensures at least two hair traps were established within the average annual female home range size of Louisiana black bears. A larger spacing was used for Three Rivers Complex than for Tensas River Basin and Upper Atchafalaya River Basin because the extent of occupied bear range at Three Rivers Complex was unknown; therefore two hair traps per female home range allowed sampling of a larger area. A single baited, barbed-wire hair trap was constructed within each sampling cell to collect black bear hair. All hair traps were constructed using two wires placed 35 cm and 65 cm above the ground; each were wrapped around three to five perimeter trees to form an enclosed polygon. Traps were baited with pastries and raspberry scent, and traps were checked weekly for eight consecutive weeks from June to August. Traps were not moved between or during any sampling sessions. Each barb on the barbed-wire was treated as an individual sample, and hairs were removed using tweezers that are sterilized between collections. Only samples containing five or more hairs were collected. The collected samples were placed



**LEFT:** Repair work on the spillway at Russell Sage WMA. **RIGHT:** Herbicide treatment of undesirable vegetation at the North Farm at Sherburne WMA.

in individually labeled paper coin envelopes that were then stored at room temperature. A flame was used to sterilize barbs following individual sample collections in an attempt to prevent cross-contamination of samples. A total of 574 samples were collected during this period. Collected hair samples were sent to Wildlife Genetics International (WGI; Nelson, British Columbia) for analyses using microsatellite markers.

To investigate bear connectivity and gene flow between the Three Rivers Complex and the Tensas River Basin subpopulations, LDWF has established a linear non-invasive hair trap transect between the Tensas River Basin and Three Rivers Complex subpopulations to collect black bear hair. A sampling grid utilizing a spacing of 2.5 km<sup>2</sup> x 2.5 km<sup>2</sup> was constructed and superimposed across the landscape using ArcMap 10.1, and a final sampling grid composed of 94 contiguous sampling cells that covered a 587.5-km<sup>2</sup> area was used. Hair trap spacing was determined by the average annual female home range size of Louisiana black bears based on existing radio-collar data. The spacing utilized ensures at least two hair traps were established within the average annual female home range size of Louisiana black bears. Ninety four samples were collected during this sampling period.

There were 26 bears captured for research purposes. Bears were either marked and collared (VHF or GPS-VHF) or marked based on sex and age class. VHF signals were monitored by fixed-wing aircraft across all study areas for 35 bears fitted with VHF-only radio collars and four bears fitted with a GPS-VHF radio collar during each month of this reporting period. Locations were obtained for the GPS-VHF bears. Fifty six mortalities from all causes were recorded. Den work was conducted on all radio-collared females to determine reproductive status and obtain DNA samples from their cubs.

## BEAR MANAGEMENT

LDWF Large Carnivore Program Manager participated in a Safe Capture Chemical Immobilization Course in order to maintain certification addressing the need to sedate bears. LDWF Private Lands biologists worked to identify landowners willing to pursue habitat restoration within the Louisiana black bear corridor. The Private Lands biologists are in the process of connecting these landowners with the restoration program that will best suit their needs. The Large

Carnivore Program staff attended a South-eastern Association of Fish and Wildlife Agencies (SEAFWA) Large Carnivore Working Group sponsored Bear Attack Response training in Gatlinburg, Tenn. Work continued with USGS to improve the BearTrak database. The Large Carnivore Program Manager presented a bear workshop to the Law Enforcement Cadet Class educating cadets on bear behavior and biology. Presentations were provided to law enforcement in areas experiencing range expansion to educate agents on bear biology and ecology. LDWF Large Carnivore staff, along with others, continued to work on a Louisiana Black Bear Management Plan. The population monitoring portion of a Post Delisting Monitoring Plan was written and provided to USFWS for their review and comment. Program staff worked with film crews to obtain footage for a new National Geographic show featuring denning of Louisiana black bears. LDWF personnel responded to 141 bear calls from the public and other government agencies. Response varied from technical assistance being provided over the phone to site visits with recommendations provided to reduce conflict. During this time period 18 management captures of bears occurred to address nuisance behavior reported to LDWF.

## BEAR SAFETY IN MIND

Accomplishments include:

- Maintain close communications with biologist to assist specific call areas by working closely with the caller reporting the nuisance bear behavior to ensure all bear proofing efforts are being implemented.
- Daily monitoring of bear proof cans occurs to assist homeowners and industrial complexes with questions, damages and procedures to further bear proof their property and facilities.
- Maintain close communications and work with Bill Frey, Division Manager and Kuchonnie Lewis, District Manager of Progressive Waste Solutions to resolve damage/maintenance issues, customer concerns and proper can distribution of bear proof cans.
- Maintain close communications and work with the city of Patterson leaders Mayor Rodney Grogan, Community Development Director Ryan Aucoin, and Utilities Director Steve Bierhorst to ensure new bear-proof cans are distributed to residents in newly constructed homes in high nuisance areas, communications/maintenance regarding dam-





**TOP:** All captured bears are marked with eartags and PIT tags. **CENTER:** Dewey Wills WMA black bear. **BOTTOM:** Garbage management remains our main challenge in coastal Louisiana.

aged bear-proof cans, and issues with garbage pick-up.

- Continue to work on the Board of Directors with the Bayou Teche Black Bear Festival.
- Working with LDWF and St. Mary Parish to implement a No Feeding Bears Ordinance.
- Sugar Ridge Apartment complex in Patterson began using tall side, "bear-proof" dumpsters at their facility to help with bear proofing efforts in that high nuisance area.
- Worked with LDWF on nuisance calls and monitoring bear traps in Patterson, Glencoe, Louisa and LA Highway 317.
- Distributed bear-proof garbage cans to residents along LA Highway 317.
- Coordinated the placement of a bear-proof dumpster at the Burguieres Memorial Boat Landing located under the LA Highway 317 bridge and adjacent to Cabot Industries.
- Participated with the Youth Wetlands Program at the Palmetto State Park through LSU AgCenter Southwest Region Extension Associate Natalie McElyea.
- Worked with the town of Berwick and the Bayside Village Apartments to replace slant top dumpsters with bear-proof dumpsters due to bear(s) getting into the non-bear-proof dumpsters.
- Progressive Waste Solutions received shipment of new bear-proof garbage can lids to repair damages caused by garbage trucks and mishandling of bear-proof cans by garbage truck drivers.
- Participated with outreach material during the Black Bear Festival.
- Conducted black bear "proofing" presentations to the Franklin Rotary, Hattie Watts Elementary in Patterson, Raintree Elementary in Baldwin, Patterson Boy Scouts, and at the LDWF's teacher workshop at Palmetto State Park in Abbeville.
- Placed additional bear-proof garbage cans to further bear-proof Kemper Williams Park and The Atchafalaya Golf Course.

## EDUCATION AND OUTREACH

A large portion of outreach centered on hosting "Bear With Us" educator workshops. Two workshops were held between July 1, 2013 and June 30, 2014. A total of 41 educators from Louisiana participated in these professional development workshops and the majority of educators were middle and high school teachers.

Workshop length varied between a day-long workshop to a more extensive 1.5 day workshop. Each educator workshop featured an overview of the LDWF Louisiana black bear program presented by LDWF biologist(s). Participants were given the historical overview of the state's bear population, information about the current recovery efforts in Louisiana, and black bear lessons to be utilized in the classroom setting. Participants of each workshop were required to take a pre- and post-test, with questions comprised of topics discussed throughout the course of the workshop. Additionally, each participant completed an evaluation of the workshop, rating their "Bear With Us!" workshop experience.

The following is a summary of each workshop hosted by LDWF:

### **Cypress Black Bayou Nature Center - Benton, La. (February 2014)**

This workshop was held in conjunction with the 2014 Louisiana Environmental Education annual conference. A total of 15 educators were in attendance. The workshop agenda included PowerPoint presentations with topics including bears of the world and Louisiana black bear research. A total of four lessons applicable for the classroom setting were demonstrated. Each participant received a certificate for seven hours of instructional time to be used toward needed professional continuing learning units (CLUs).

### **Palmetto Island State Park - Abbeville La. (June 17-18, 2014)**

A total of 25 educators were in attendance at this 1.5 day workshop. Topics covered within the agenda ranged from bears of North America to preventing conflicts with bears. A total of four lessons were demonstrated for use in the classroom. In addition, each participant engaged in a structured field activity, in



LDWF “Bear With Us workshop” attendants reviewing materials contained within the workshop binder

which participants learned how to plot points using a GPS, entered coordinates for potential black bear habitat, and gained an appreciation for the use of tracking devices in wildlife management. This field activity also allowed participants to become familiar with a GPS unit prior to utilizing the device in their respective classrooms. Upon completion of the workshop, participants received a certificate for 10 professional contact hours (CLUs) and a Garmin Etrex 20 GPS unit for use in the classroom.

In summary, each participant of the “Bear With Us” workshops received the following workshop deliverables:

- Workshop binder containing Louisiana black bear factsheets, high school, middle school and technology-based lesson plans, black line masters, rubrics, and additional resources
- USB memory stick containing all lessons within the binder and copies of PowerPoint presentations presented during the workshop

The Louisiana Black Bear outreach program also provided educational information to members of the general public and school age children. This method of outreach was accomplished through exhibitions at festivals and other local events, presentations at school assemblies and public functions, and general distribution of literature.

The following literature was designed in 2013-2014 in order to inform Louisiana residents of black bear safety:

- **“Preventing Bear Conflicts Around Your Home”** - This document provides tips on deterring bears from frequenting neighborhoods. The publication provides suggestions and deterrents ranging from proper garbage storage to the removal of attractants such as pet food bowls and bird feeders.

- **“Bear Deterrents For Louisiana Outdoor Enthusiasts”** - This publication provides suggestions of physical and psychological barriers applicable for the outdoor enthusiast. These suggestions may help to ensure an enjoyable outdoor experience while hunting and recreating in Louisiana bear country. Barriers and deterrents described include electric fencing, bear proof ice chests and use of bear spray.

## WILDLIFE DISEASE

The statewide Wildlife Disease Program was administered by the State Wildlife Veterinarian and the Assistant State Wildlife Veterinarian.

Chronic Wasting Disease (CWD) surveillance continued as 18 samples were submitted from all regions of the state to the Southeastern Cooperative Wildlife Disease Study laboratory. Due to cessation of federal funding for this program, only target animals such as neurological or emaciated deer, deer hit by cars, deer harvested adjacent to captive cervid facilities, and escaped exotic cervids were tested.

A study funded by the USFWS was continued on Catahoula Lake to determine the status of lead shot consumption by ducks and to evaluate and compare the current lead shot content of soil with historical levels.

Surveillance of feral swine for Brucellosis and Pseudorabies was continued this year, with nearly 1,200 animals tested. To date, sampling has revealed a 5 percent incidence of Swine Brucellosis and a 12 percent incidence of Pseudorabies. Surveillance efforts will continue. Additionally, LDWF cooperated with University of Louisiana at Monroe graduate students to investigate depredation of alligator nests by feral swine.

A study of the gastric contents of feral swine was initiated this year. To date, nearly 10 percent of the stomachs examined contained some sort of animal matter. In conjunction to this study, feces from feral swine is being evaluated for the presence of novel parasites, unique to feral swine.

Smaller research projects include analysis of coyotes for stomach contents, heartworms, intestinal parasites and serological disease markers. Additionally, a study investigating the prevalence of the zoonotic parasite *Baylisascaris procyonis* was initiated.

The Wildlife Disease Program initiated a study into the interaction of waterfowl and feral swine in regards to the transmission of influenza viruses on Catahoula Lake, La.

Disease investigations included several mortality events involving birds, including a traumatic injury event in waterfowl in northeast Louisiana and a poisoning event in northwest Louisiana.

The Wildlife Disease Program participated in the treatment and rehabilitation of numerous birds, amphibians and reptiles injured during an oil spill in northeast Louisiana.

A study utilizing GPS technology and telemetry was concluded in East Feliciana Parish to evaluate the movement and habitat utilization of feral swine. Much information was gained from the study, including home ranges, feeding patterns, and vegetation densities of the bedding areas of feral swine.

# LAND DEVELOPMENT & MANAGEMENT

## WILDLIFE MANAGEMENT AREAS

The Wildlife Division of LDWF currently manages over 1.1 million acres in its Wildlife Management Area Program. These areas are distributed across the state and are comprised of a vast array of habitat types. The WMA Program's mission is to deliver conservation priorities to Louisiana's landscape, as well as provide an array of outdoor recreational opportunities to the public. The lands in the program serve to protect, conserve, replenish and manage the wildlife resources occurring on those areas. Habitats within these lands harbor and help conserve a multitude of endangered species such as the Louisiana black bear, red-cockaded woodpecker and gopher tortoise. The majority of these lands are available for the public to utilize in recreational pursuits. Recreational opportunities range from a variety of hunting and fishing, to canoeing, hiking, ATV riding, and berry picking. Habitats range from upland pine-hardwood, to cypress tupelo, pine savanna, bottomland hardwood, brackish marsh, and the list goes on with many globally rare habitat types and plant communities as well. For administrative and management purposes,

the WMAs are grouped by ecoregions - Gulf Coastal Plain (east and west) and Mississippi Alluvial Valley (north and south).

### WEST GULF COAST PLAIN (WGCP) WMAs (425,554 acres):

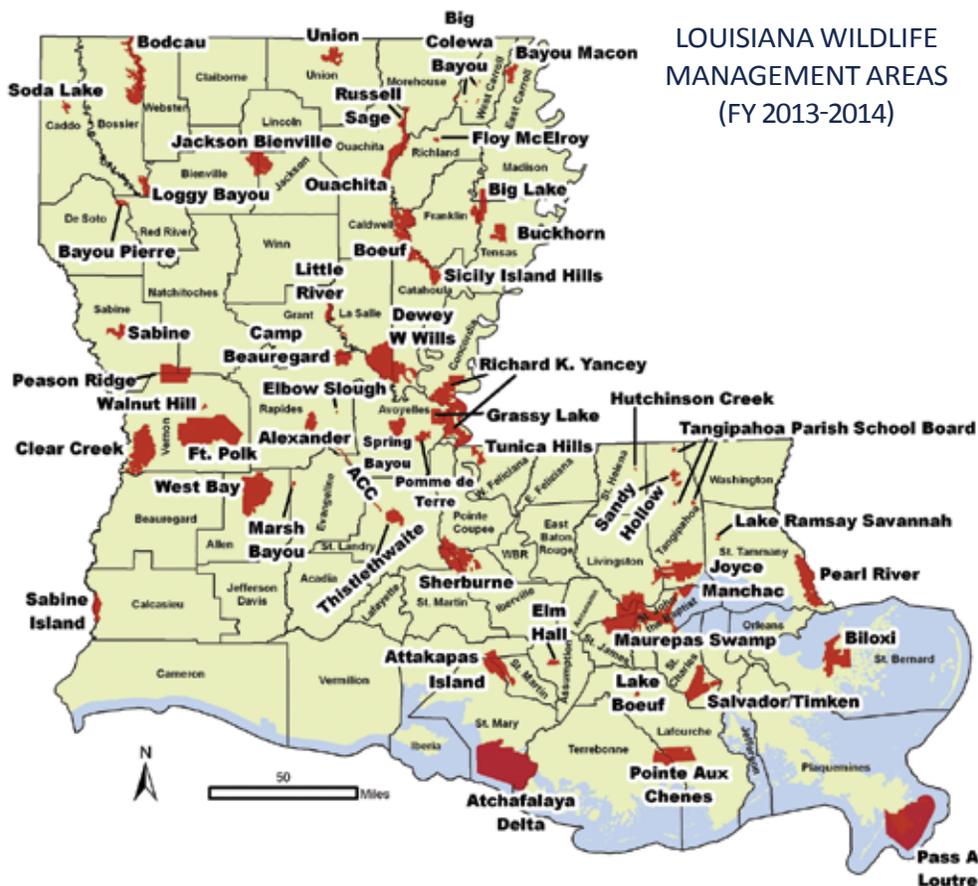
- Alexander State Forest
- Bayou Pierre
- Bodcau
- Camp Beauregard
- Clear Creek
- Elbow Slough
- Fort Polk
- Jackson-Bienville
- Loggy Bayou
- Marsh Bayou
- Peason Ridge
- Sabine
- Sabine Island
- Soda Lake
- Union
- Walnut Hill
- West Bay

Habitat on these WMAs includes bottomland hardwoods, upland hardwood bottoms, pine

plantations, natural pine stands, and mixed pine-hardwoods. Recent land additions included 17,999 acres added to Peason Ridge WMA in April 2014.

A total of 112,666 user days were estimated for WGCP WMAs during FY 2013-2014. These areas are readily accessible and very popular with the public. Along with public hunting and fishing opportunities, these areas provide many types of non-consumptive outdoor activities. Managed deer hunts were conducted on several of the WMAs to collect accurate information on herd health and hunter success rates. Collectively, managed deer hunts on WGCP WMAs resulted in 8,696 hunter efforts accounting for 925 deer harvested.

Guided youth-only lottery turkey hunts were conducted on Ft. Polk, Jackson-Bienville, Loggy Bayou and Union WMAs. In addition to the regular physically challenged hunts scheduled on several WMAs, a lottery physically challenged hunt was conducted on Sabine WMA. The Sabine physically challenged hunt is conducted in conjunction with the local organization known as HELP (Hunters Enriching the Lives of People). Persons participating in the hunt are provided



LOUISIANA WILDLIFE MANAGEMENT AREAS (FY 2013-2014)



TOP: Calcareous prairie on Bodcau WMA.

BOTTOM: Successful youth lottery hunter on Jackson Beinville WMA.



*Water control structures placed on Bayou Pierre WMA Impoundment.*

food and transportation to blinds and assisted with recovering/cleaning deer and any special needs. The hunt is intended to get people into the field that may not otherwise have an opportunity to hunt.

Except for Bayou Pierre, Elbow Slough, Marsh Bayou and Walnut Hill, which are owned by LDWF, at least a portion of the remaining WGCP WMAs are leased free of charge to LDWF for public use from the landowners (Hancock Timber, Roy O. Martin, Plum Creek, U.S. Army, U.S. Forest Service, Forest Investments, Calcasieu School Board, Molpus, Weyerhaeuser and the State of Louisiana). To continue these lease areas, LDWF personnel are required to meet and negotiate annual agreements with the landowners. The leases help the landowners and LDWF to properly manage and maintain these properties for wildlife and public recreation.

WGCP personnel participated in a variety of Wildlife Division activities. These include environmental assessments, technical assistance, research, planning, development, management, and alligator and nuisance animal programs. A total of 420 wood duck nesting boxes

were maintained and monitored by WGCP WMA personnel.

Personnel also reviewed and monitored oil and gas exploration activities and interstate pipeline installations on several WGCP WMAs.

**EAST GULF COAST PLAIN (EGCP) WMAs**

(205,846 acres)

- Hutchinson Creek
- Joyce
- Lake Ramsey Savannah
- Manchac
- Maurepas Swamp
- Pearl River
- Sandy Hollow
- Tangipahoa Parish School Board
- Tunica Hills

Habitat types on these WMAs include marshes and swamps, natural longleaf and plantation loblolly pine stands, bottomland hardwoods, and rugged loess bluff uplands. In July 2013, 4,960 acres were acquired and added to Maurepas Swamp WMA. Additionally, 480 acres were added to Sandy Hollow WMA in October 2013.

A total of 90,437 user days were estimated for EGCP WMAs during FY 2013-2014. An alligator season was available on Joyce, Manchac, Maurepas Swamp and Pearl River WMAs with a harvest of 1,233 alligators by 17 commercial alligator trappers. Recreation alligator harvest opportunities were also made available to the public. To facilitate recreational alligator harvest, 59 additional people were selected by lottery, issued three tags each, and harvested an additional 137 alligators on these four areas. EGCP personnel maintained existing WMA boundaries, buildings, equipment, roads and

trails. Managed public hunts were also conducted on several WMAs. Combined results for managed deer hunts were 1,347 hunter efforts with a total of 81 deer harvested.

On Sandy Hollow WMA, the USDA Natural Resources Conservation Service (NRCS) Wildlife Habitat Incentive Program (prescribed burning) and cogongrass control projects were completed. Three miles of bird dog field trial courses were maintained, as well as six dove fields and 10 acres of food plots for upland birds. Alligator egg collections were monitored by EGCP personnel on Manchac, Pearl River and Maurepas Swamp WMAs. A total of 12,840 eggs were collected.

EGCP personnel maintained 98 wood duck boxes. Eighty-three boxes were added to the 15 previously monitored in 2012-2013. Prior to Hurricane Isaac, 192 boxes were maintained but were destroyed. Plans are in place to replace these boxes. Personnel also participated in the statewide mourning dove banding program, responded to numerous deer and nuisance animal complaints, provided technical assistance to the public, conducted public meetings, and collected white-tailed deer brain and lymph node samples across the region for CWD testing. EGCP personnel continued to work with the deer program manager to collect deer reproductive data to better understand deer breeding periods within the ecoregion.

Feral hogs have become a serious nuisance and ecological threat throughout the state. Aggressive control methods have been used on certain WMAs, such as Pearl River, to reduce their numbers. Each year, feral hog blood samples are collected and tested for a variety of diseases.



**LEFT:** Longleaf pine savanna on Lake Ramsay WMA. **CENTER:** Successful waterfowl hunt on Pearl River WMA. **RIGHT:** Prescribed burning on Sandy Hollow WMA.



**LEFT:** Greentree pump project on Russell Sage WMA. **CENTER:** Biologist collecting data on managed deer hunt at Boeuf WMA. **RIGHT:** Banded wood duck hen.

## MISSISSIPPI ALLUVIAL VALLEY - NORTH (MAVN) WMAs

(132,330 acres):

- Bayou Macon
- Ben Lily
- Big Colewa Bayou
- Big Lake
- Boeuf
- Buckhorn
- Bussey Brake
- Floy Ward McElroy
- Ouachita
- Russell Sage
- Sicily Island

The primary habitat type found on MAVN WMAs is the Mississippi River Alluvial Valley bottomland hardwood forest, with the exception of Sicily Island Hills which provides a unique mixed pine upland hardwoods habitat on the fringe of the Mississippi Alluvial Valley. Several of the WMAs feature reclaimed agricultural lands which have been reforested with bottomland forest hardwood species. Moist soil management units and greentree reservoirs are managed to provide habitat for waterfowl and other wetland birds.

Recent additions to lands within the MAVN WMA ecoregion include Ben Lily WMA (247 acres), Bussey Brake (2,614 acres), and 2,954 acres added to Ouachita WMA. Ben Lily is a small tract adjacent to Chemin-a-haut State Park and Bayou Bartholomew. It was donated to LDWF by The Nature Conservancy in 2013. Plans for the area include limited lottery only hunts, the inclusion of horse riding trails, and a canoe/kayak launch into Bayou Bartholomew. Bussey Brake is a man-made reservoir. The pri-

mary management objective for this property is to be recreational fishing. The acreage added to Ouachita WMA is wetland mitigation property acquired by the U.S. Army Corps of Engineers (USACE).

MAVN biologists conducted a wide range of activities including research and surveys involving mourning doves, Canada geese, wood ducks, wild turkey, bald eagles, bobwhite quail, shorebirds, white-tailed deer, and other species. Additional effort was expended conducting public meetings, interacting with various universities as well as parish, state and federal agencies in reference to projects of mutual concern, conducting the alligator management program at the ecoregion level, and various other projects.

Recreational opportunities were provided to thousands of hunters, fishers, campers, sightseers and other public users. A total of 92,565 user days were estimated for MAVN WMAs during FY 2013-2014. Deer hunting was the most popular utilization of these WMAs. Either-sex deer hunts, with mandatory deer checks were held on the WMAs, with 3,309 user-days recorded and 545 deer harvested. An additional 15,338 hunters harvested 994 deer during the either-sex gun, primitive weapon and archery hunts where self-clearing permits were utilized. Youth deer and dove hunters on Big Lake, Boeuf, Buckhorn, Ouachita, Russell Sage and Floy McElroy WMAs had a successful season. A deer hunt for women who participated in the Becoming an Outdoors Woman program was conducted on Floy McElroy WMA. Deer and waterfowl hunting opportunities were provided for wheelchair confined hunters on Big Colewa Bayou, Buckhorn and Ouachita WMAs. Turkey hunting was provided on Bayou Macon, Big Lake, Boeuf and

Sicily Island Hills WMAs. Bayou Macon, Big Lake, Boeuf, Buckhorn, Ouachita and Russell Sage WMAs provided quality waterfowl hunting for 10,693 hunters, including some who traveled from out of state. Waterfowl impoundments on Ouachita and Russell Sage WMAs were not operational during a portion of the season due to ongoing pump replacement projects. A total of 10,197 small game hunters enjoyed hunting on MAVN WMAs.

MAVN WMA technicians performed a variety of development and maintenance functions such as boundary marking, road maintenance, water control structure operation, moist soil management, timber marking, shorebird management, beaver and other nuisance animal control, farm contract supervision, equipment maintenance, public user data collection, vegetation control, food plot planting, and reforestation. They also assisted biological staff in conducting managed hunts and research projects. A total of 292 wood duck nesting boxes were maintained and monitored by MAVN WMA personnel.

The "Wish I Could ATV Trail Ride," an annual one-day ATV trail riding event, was held on Boeuf WMA in June 2013. The event attracted 2,850 ATV riders who entered the WMA to ride the 17-mile long trail. This ATV trail ride is sponsored by a charitable organization and is legislatively mandated. Even though this event is extremely popular, it has caused extensive ecological damage to hundreds of acres of bottomland hardwood habitat, virtually destroying the original ATV trail.

## MISSISSIPPI ALLUVIAL VALLEY - SOUTH (MAVS) WMAs

(259,364 acres):

- Acadiana Conservation Corridor
- Attakapas
- Dewey W. Wills
- Elm Hall
- Grassy Lake
- Little River
- Pomme de Terre
- Richard K. Yancey
- Sherburne
- Spring Bayou
- Thistlethwaite

Habitat types range from mixed pine-hardwoods to backwater bottomland hardwoods interspersed with agricultural lands, and cypress-tupelo swamps to open-water areas. One USFWS Refuge (Atchafalaya NWR) and four USACE properties (Bayou des Ourses, Dewey W. Wills tract, Little River tract and Shatters Bayou) are also managed within the MAVS. In June 2014, LDWF entered into a cooperative agreement to add 1,109 acres of USACE property to Little River WMA and 256 of USACE property to Dewey W. Wills WMA.

MAVS personnel administer and manage a variety of wildlife oriented activities. These personnel work in conjunction with and provide technical advice to many different agencies, including other state agencies, USFWS, USACE, Louisiana Department of Natural Resources (LDNR), Louisiana Department of Environmental Quality (LDEQ), USDA, and local parish entities. MAVS personnel helped deliver alligator and nuisance animal programs and assisted with program projects such as dove and wood duck banding, as well as deer, woodcock, turkey, black bear and nongame research projects.

The WMAs are maintained and managed to provide outdoor recreation opportunities for all user groups, including both consumptive and non-consumptive. WMA personnel performed a variety of development and maintenance functions such as boundary marking, building maintenance, road maintenance, water control structure operation, moist soil management, beaver and other nuisance animal control, farm contract supervision, equipment maintenance, public user data collection, vegetation control, food plot planting, reforestation, and conducting managed hunts.

A total of 216,339 user days were estimated for MAVS WMAs during FY 2013-2014.

White-tailed deer is the most popular game animal hunted on the MAVS WMAs. Either-sex deer hunts, with mandatory deer checks were held on the WMAs, with 12,049 user-days recorded and 1,103 deer harvested. An additional 735 deer were harvested during other either-sex, bucks-only, youth/handicapped, archery and muzzleloader hunts, where self-clearing permits were utilized. Turkey hunts were held on seven WMAs, where 33 turkeys were harvested by an estimated 925 users. This includes 27 youth hunters who participated in the Sherburne, Spring Bayou, Grassy Lake, and Pomme de Terre WMAs youth lottery hunts. A member of NWTF or MAVS staff member served as a guide for each youth hunter to ensure a quality hunt and to teach youth safe turkey hunting techniques. Squirrel and rabbit hunting is also very popular on the ecoregion's bottomland hardwood WMAs, accounting for over 24,740 user days. Waterfowl hunting is very popular as well on MAVS WMAs in moist soil impoundments, greentree reservoirs, swamps and flooded bottoms. Waterfowl user days totaled over 12,260 for this period. Dove fields are maintained, along with many acres of



*Turkey telemetry research project on Sherburne WMA.*

food plots. Feral hogs have populated many of the WMAs and damaged the resource. Hunting is used as a tool to help reduce feral hog populations. Hog hunting with dogs was allowed under permit.

Biologists and technicians maintain and monitor over 530 wood duck boxes, conduct pre-season wood duck banding, and collect samples for CWD, avian influenza and other disease testing. They also assisted with numerous nuisance animal complaints, illegal captive deer and sick deer complaints. Biologists assisted LSU researchers with ongoing research projects.

Youth lottery deer and duck hunts were also held in MAVS, with great success on these hunts. Twenty-one youth waterfowl lottery hunters harvested 109 ducks, for an average of 5.2 ducks per youth hunter. One-hundred and ten youth deer lottery hunters harvested 27 deer on 18 hunts. Youth hunters observe many deer on these hunts. The hunts are held in refuge areas set aside for youth hunts, where these youth hunters have a quality hunt and learn about hunting in a safe environment. Wheelchair-bound waterfowl and deer hunts were held in MAVS with much participation and success from this group of hunters.

Alligator applications were reviewed, and licenses and tags were issued to 70 WMA hunters. There were also seven WMA alligator hunters who bid on tags on the WMAs, with all but one WMA hunter participating in the season. One hunter was not allowed to complete the hunt, due to failure to follow contract guidelines. These hunters filled 312 tags. This lottery hunt is done through an application process, with each hunter selected receiving three tags. This gives the public an opportunity to participate in the alligator harvest program.



**LEFT:** Parking area construction on Dewey W. Wills WMA. **RIGHT:** Chemical control of invasive exotic vegetation on Sherburne WMA.

Major project being completed included:

- completion of the Sherburne WMA headquarters renovation.
- installation of handicapped restrooms at the Sherburne WMA campground.
- completion of Phase 1 of the Spring Bayou Boat Launch Project.
- completion of ATV trail projects on Pomme de Terre, Sherburne and Little River WMAs.

Routine maintenance activities on MAVS areas included road grading, culvert replacement, road and trail repairs, drainage improvements, beaver control, boundary work, sign replacement, self-clearing station maintenance, vegetation control, equipment maintenance, and facility upkeep. Efforts to improve the road system on Dewey Wills WMA continue. Repairs on all WMA roads and trails were made as funding allocations allowed.

WMA personnel conducted user interviews and operated check stations. Wildlife food plots were also planted on several MAVS WMAs.

## FORESTRY PROGRAM

The mission of the Forest Management Program is to improve forest and wildlife habitat on WMAs through sound forest management, reforestation practices and active forest/wildlife research activities.

Customized wildlife habitat/forest inventories were completed this year on Little River, Ouachita, Pearl River, Pomme de Terre, Sicily Island, Spring Bayou, and Tunica Hills WMAs. Approximately 38,550 acres were inventoried this year under an inventory method that measures both forest and wildlife variables. This method helps us both identify present conditions and better understand the long term changes of

our forest and wildlife resources in the future. General habitat inventories were conducted to facilitate the development of management prescriptions for Dewey Wills, Grassy Lake, Little River, Loggy Bayou, Ouachita, and Three Rivers WMAs

Harvest preparations including timber sale development, inventory, regeneration counts, timber marking, GIS map development, sale proposal preparations, sale amendments, and contract development were completed on Bayou Bacon, Boeuf, Dewey Wills, Grassy Lake, and Sandy Hollow WMAs. Harvests to improve wildlife habitat were initiated and/or completed on Big Lake, Boeuf, Dewey Wills, Grassy Lake, Ouachita, Red River, Russell Sage, Sandy Hollow, and Walnut Hill WMAs.

Chemical treatments of invasive/non-native species, primarily Chinese tallow tree and cogon grass continued on Alexander State Forest and Sandy Hollow and Grassy Lake WMAs. Invasive control was initiated on the Acadiana Conservation Corridor. Beaver control activities continued on Big Lake, Boeuf, Buckhorn, Russell Sage and Dewey Wills WMAs. No forest loss was reported this year from beaver activity.

The annual statewide WMA mast survey was conducted to estimate annual mast production. The survey is used as an indicator of mast availability for wildlife as well as a predictor of small mammal populations. The mast survey is also used to map local abundance which aids in seed collection efforts.

Our reforestation program supplement planted approximately 120 acres on Grassy Lake WMA. This planting effort is one part of a larger study evaluating harvest patch size and seedling survival/sapling development. Hardwood plantations were inventoried and evaluated on Boeuf,

Buckhorn, Ouachita, Red River and Sherburne WMAs. Initial measurements and treatments were completed on the Ouachita WMA plantation study in order to investigate wildlife response and tree growth to various silvicultural treatments.

Our GIS program continued with emphasis on updating timber sale data, boundaries, roads and streams data input relative to our WMA forest management and development activities. Work continued on the comprehensive forest management database with support from partner of the Lower Mississippi Valley Joint Venture and Gulf Coastal Plains/Ozark LCC.

Growth Monitoring Plots were reevaluated on Elbow Slough, Sandy Hollow and Three Rivers WMAs. These permanent plots aid in monitoring habitat conditions and effects of our forest management program on the habitat components represented on the WMAs.

A "Monitoring Avian Productivity and Survival" project continued on Sherburne WMA with seven stations and on Pearl River WMA with two stations. Results from this study will aid us in understanding avian use of the various silvicultural treatments applied across WMAs.

Forestry Section personnel continued to implement the Louisiana Statewide Red-cockaded Woodpecker (RCW) Safe Harbor Program (SHP) to benefit the federally and state endangered RCW. LDWF has entered into a total of 14 Safe Harbor Management Agreements, enrolling 494,855 acres in the RCW SHP with 126 baseline RCW family groups and one above-baseline RCW family group. LDWF personnel conducted annual site visits to 13 SHP properties to confirm compliance with the voluntary RCW management activities that each landowner agreed to implement on their property and



**LEFT:** Timber marking on Boeuf WMA. **RIGHT:** Red-cockaded woodpecker banding at Alexander State Forest WMA.

to provide technical assistance regarding RCW management. LDWF hosted a meeting for all SHP participating landowners in Bastrop, La., and conducted a field tour of two Safe Harbor properties. Forestry Section personnel continue to promote SHP via press releases, presentations at public forums and the LDWF website.

Forestry Section personnel performed RCW demographic monitoring and management for 13 RCW family groups at Alexander State Forest WMA located in Woodworth, La. These activities included: annual activity status checks of over 200 RCW cavity trees, adult RCW capturing and color banding, RCW nest checks and nestling color banding, RCW fledgling checks to determine survivorship, RCW artificial cavity installation and maintenance, midstory control in 14 RCW cluster sites, and providing technical assistance to Louisiana Department of Agriculture and Forestry (LDAF) staff regarding timber management to benefit the RCW.

Forestry Section personnel performed RCW demographic monitoring and management for 39 RCW family groups located at Jackson-Bienville WMA and other lands owned by the Weyerhaeuser Company. These activities include: adult RCW capturing and color banding, RCW nest checks and nestling color banding, RCW fledgling checks to determine survivorship, and RCW artificial cavity installation and maintenance.

In addition, Forestry Section personnel provided technical assistance to USFWS staff performing RCW demographic monitoring for 17 RCW family groups at Big Branch Marsh NWR in Lacombe, La.

Other survey and research projects on the WMAs that were supported by Forestry Section staff involved wildlife use of forested habitats and their response to various silvicultural treatments. Continued research efforts, especially long-term, will be sought and cooperatively engaged in to learn more about the forest systems we manage across the state. Continuing education for the Forestry Section staff was practiced through participation at various symposiums, workshops, seminars, research meetings and conferences throughout the year, in and out-of-state.

## PRIVATE LANDS PROGRAM

The Private Lands Program offers assistance to landowners, land managers, hunting clubs and others who desire to improve habitat and/or manage wildlife on their property. Assistance can vary from answering simple questions to a comprehensive written management plan. Assistance is not only available for traditional game species such as deer, ducks and turkey, but includes all wildlife and their habitats. Most Private Lands Program biologists are responsible for three to five parishes, with those along the coast responsible for six to nine parishes.

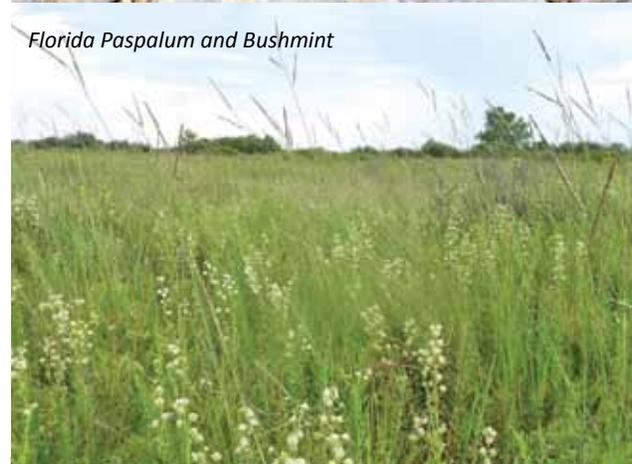
Many landowners are already working with a natural resource professional, such as a consulting forester, or are enrolled in state or federal programs such as DMAP, Forest Stewardship and/or USDA-NRCS programs such as the Wetland Reserve Program, Conservation Reserve Program or Environmental Quality Incentives Program. LDWF Private Lands biologists cooperate with other natural resource professionals to achieve the landowner's objectives. Most importantly, landowners are encouraged to develop a cooperative relationship with LDWF Private Lands biologists and other natural resource professionals. Wildlife habitat is dynamic, and with the assistance of knowledgeable wildlife professionals, landowners can provide productive habitat for wildlife while meeting other goals they may have, such as income generation and optimizing recreational opportunity.

During FY 2013-2014, Private Lands Program biologists made habitat recommendations impacting 457,756 acres by conducting 340 site visits and delivering 48 written habitat management plans. These same staff members conducted 53 deer browse surveys. They fielded 8,801 requests for information from the public. Under an agreement with USDA-NRCS, Private Lands Program biologists conducted 359 inspections of Wetland Reserve Program properties to assess conditions and make recommendations for management. This project provided these biologists an opportunity to impact an additional 104,913 acres of wildlife habitat.

*Native coastal prairie southwest Louisiana.*



*Killdeer Eggs*



*Florida Paspalum and Bushmint*



*Alligator emerging from winter den in spring.*



**LEFT:** Biologist assesses property with Morehouse Parish landowner. **RIGHT:** Landowner presented with sign upon certification of his property in the Forest Stewardship Program.

Private Lands Program biologists are actively engaged with other agencies and organizations to coordinate conservation delivery efforts in Louisiana. Program biologists chair the LA Prescribed Fire Council and Louisiana Conservation Delivery Committee. They are also active partners on the Texas/Louisiana Longleaf Pine Task Force, West-Central Louisiana Ecosystem Partnership, Louisiana/Mississippi Alluvial Valley Conservation Delivery Network (CDN), and other groups focused on natural resource management of private land in Louisiana. The Louisiana/Mississippi CDN, along with the Lower Mississippi Valley Joint Venture, have created a priority planning tool and a landowner database for that region that are assisting these biologists in strategically identifying areas to focus efforts toward conservation delivery in the region.

Private Lands Program biologists are also responsible for carrying out activities such as waterfowl and dove banding, collection of biological data for research, habitat evaluations, disease investigations, administration of the alligator program, delivery of the DMAP program, and public outreach.

## FARM BILL/GRANTS PROGRAM

### FARM BILL

The Farm Bill Program provides support for many species management programs and the Private Lands Program within LDWF. A primary function of the program is to provide input on conservation and other programs contained within the Farm Bill at the national, state and local level to enhance wildlife habitat. During FY

2013-2014, the program provided direct input on many conservation programs, such as the Agricultural Conservation Easement Program (ACEP), Conservation Reserve Program (CRP), Environmental Quality Incentives Program (EQIP), Regional Conservation Partnership Program, Conservation Stewardship Program (CSP) and Working Lands For Wildlife Program included in the newly passed Agricultural Act of 2014. In addition, the program conducted four training sessions for Private Lands Program staff and developed articles providing updates on changes made to conservation programs that impact Louisiana landowners and wildlife habitat. The Farm Bill Program also successfully established an agreement with the USDA-NRCS to provide technical assistance for the Wetland Reserve Program (WRP) and Agricultural Conservation Easement Program (ACEP). This agreement provides funding to develop wildlife habitat management recommendations in response to Compatible Use Authorization requests

on WRP/ACEP easements in Louisiana, which currently total approximately 298,000 acres. Additional accomplishments in FY 2013-2014 include working with numerous partners and states through Conservation Delivery Networks to develop a tri-state project proposal for the newly created Regional Conservation Partnership Program for Louisiana, Mississippi and Arkansas. This project involves creating additional wetland habitat for migratory birds and other wildlife and enhancing water quantity and quality on the working agricultural landscape in northeast Louisiana. Farm Bill program coordination from many states through the National Bobwhite Technical Committee resulted in additional lands becoming eligible for CRP under the CP33 practice for quail and other grassland birds. Input was also provided on concise recommendations to the Farm Service Agency on implementing a practice for CRP that will provide incentives for landowners to enhance habitat for quail and other grassland birds on upland CRP tracts in Louisiana which total approximately 40,000 acres. Lastly, the program participated in a partner effort between USDA-NRCS, USFWS and The Nature Conservancy to revise the ACEP program ranking criteria for Louisiana to ensure that the program favors those tracts that provide the best opportunity to restore wildlife habitat and wetland hydrology.

### GRANTS

During FY 2013-2014, three separate State Wildlife Grants were administered under this program with assistance from the Private Lands Program. Both the East Gulf Coastal Plain and West Gulf Coastal Plain Prescribed Burn Initiatives provided funding to enhance wildlife habitat on privately-owned forestlands in Louisiana. Cumulatively these initiatives funded prescribed burning activities on 31 tracts to-



**LEFT:** Biologist scores elk harvested by a Louisiana resident. **RIGHT:** Biologist instructs students in Biology lab at UL Monroe.

taling 4,796 acres in FY 2013-2014. These activities will continue during the current fiscal year as additional State Wildlife Grant funding has been obtained. In addition, a National Fish and Wildlife Foundation grant was secured in FY 2013-2014 to fund prescribed burning activities in north Louisiana on 6,000 acres of private forestlands.



*Pine Savannah site in St. Tammany parish enrolled in the EGCP Prescribed Burn Initiative. Pitcher plant and other understory species respond after prescribed burning.*

## EDUCATION

Conservation education is a vital part of the LDWF mission. The Education Program is a component of the Wildlife Division and focuses on three main areas: Hunter Education, Aquatic Education, and General Wildlife Education/Outdoor Skill Development.

Staffing for the Education Program consists of 12 educators who work in the field, three supervisors who have field responsibility in addition to their supervisory duties, one National Archery in Schools coordinator, one administrative specialist, one education manager, and one education program manager. Three wildlife technicians staff LDWF-operated shooting ranges, and one maintenance repairer is responsible for maintenance of an education facility, including a shotgun and air rifle range.

### HUNTER EDUCATION

Hunter and bowhunter education classes cover firearm safety and operation, hunter ethics, principles of wildlife management, outdoor survival, and treestand safety. Hunter education certification is mandatory for hunters born on or after Sept. 1, 1969. There are exceptions to the hunter education requirement that allow persons to hunt without hunter education certification if they are directly supervised by someone 18 or older with hunter education certification or by a licensed hunter born prior to Sept. 1, 1969. An exemption is also provided for persons with a current POST certification or military experience, and a hunter education exemption card is issued to those who qualify. Most states have mandatory hunter education



requirements, and these exemptions, including the POST/military exemption, apply only in Louisiana. The regular Louisiana hunter education certification card is honored in all 50 states.

Students have two options for taking a hunter education class. The classroom course consists of 10 hours of instruction, usually spread over two to three days. The home-study course consists of an interactive online or CD based course that the student can complete at home and is followed by a mandatory four to six hour field day event. The field day reinforces the lessons learned in the home-study version and provides an opportunity for hands-on learning. Both the classroom course and the home-study field day include a live-fire exercise where students must demonstrate that they can safely handle and discharge a firearm.

Hunter education classes are taught by Education Program staff and a network of volunteer instructors. There are approximately 1,500 volunteer hunter education instructors in Louisiana. Volunteer instructors complete an instructor training course and background check prior to being certified. Education Program staff coordinate the delivery of classes with volunteers, recruit and train volunteer instructors, and keep volunteer instructors supplied with materials to teach classes. In FY 2013-2014, 116 new volunteer instructors were trained through 10 instructor courses. A volunteer instructor workshop was held at Camp Grant Walker in Pollock, La., with 128 instructors in attendance. Service and performance awards were presented to volunteer instructors. The time volunteer instructors and volunteer range officers give to delivery of hunter education classes and shooting range operation is used as in-kind match for the hunter education federal grant. In FY 2013-2014, volunteers contributed 22,147 hours of service time.

## STUDENT CERTIFICATION

Total hunter education certifications declined from last fiscal year (15,817 in FY 2012-2013). The home-study version continues to increase in popularity as the number and proportion of students choosing this option increased in FY 2013-2014 (3,039 students for 19 percent in FY 2012-2013). Demand for bowhunter education continues to decline as this requirement is no longer mandatory to hunt with archery equipment on national wildlife refuges in Louisiana. Certification details are as follows:

### Hunter Education

Course Type	# Courses	# Students	Percentile
Classroom Course	382	11,864	79%
Home Study/Field Day	101	3,114	21%
<b>Total</b>	<b>483</b>	<b>14,978</b>	

### Bowhunter Education

Four bowhunter education classes were offered, with 16 students certified.

## HUNTING INCIDENTS

During FY 2013-2014, there were 17 reported hunting incidents involving injury or death. Two of the 17 resulted in fatalities. Three of the incidents involved falls from an elevated stand. The remainder involved firearms. Incidents were compiled and entered into the International Hunter Education Incident Database. Information on these incidents was presented to instructors at the 2014 Volunteer Instructor Workshop. Education Program staff and volunteer instructors are placing additional emphasis on treestand safety in their hunter education classes and field days.

Primary causes for these incidents were as follows:

Hunting Incidents (FY 2013-2014)	
Type	# Victims
Careless Handling of Firearm	6
Failure to Use a Fall Restraint Device	3
Trigger Caught on Object	2
Failure to Identify Target	2
Failure to Check Beyond Target	2
Faulty Equipment	1
Shooter Stumbled & Fell	1
<b>Total Incidents</b>	<b>17</b>

## SHOOTING RANGE/TRAINING FACILITIES

Two education centers and four shooting ranges are available to the public and managed by the LDWF Education Program.

### Bodcau Shooting Range

This range is located in Bossier Parish on the Bodcau WMA. Accommodations for public use include 25 shooting points on the rifle/handgun range and a shotgun range with four manual and one remote controlled clay target thrower. The range is open to the public three days a week and is staffed by one technician.

### Woodworth Education Center

The Woodworth Education Center located in Rapides Parish contains a classroom, lodging facilities and a public shooting range. Range facilities consist of a rifle range, handgun range and a five-stand shotgun range. The range is open for public access and receives a high degree of use. The range is staffed by one wildlife technician and a part-time range officer with assistance provided by the manager. Volunteer help to operate the range is provided by the Bayou State Muzzleloaders Association and other volunteers. An effort is being made to increase volunteer recruitment to assist with range duties. Volunteers are certified through the NRA Range Officers Safety Course.

### Sherburne Shooting Range

Located in Pointe Coupee Parish at the Sherburne WMA, the Sherburne range consists of two shotgun ranges, one archery range, one handgun range and one rifle range. It is operated by one technician and is open to the public seven days per week.

### Waddill Outdoor Education Center and Refuge

The Waddill Outdoor Education Center and Refuge in East Baton Rouge Parish provides an

outdoor education environment in an urban setting. A classroom, shotgun range, archery range and air rifle range are used for hunter education instruction and recreational shooting opportunities. The facility is staffed by one manager and one technician.

### Honey Island Shooting Range

The Honey Island Shooting range is located on the Pearl River WMA in St. Tammany Parish. The range is managed under an agreement with Southeast Louisiana Firearms Safety, Inc. (SLFS). SLFS is a non-profit organization staffed by volunteers that maintains and operates the range for public use. Shotgun, rifle and handgun shooting opportunities are available to the public. The range is open to the public three days per week. There is a \$6 per day fee to use the range that is collected by SLFS. Some of the SLFS volunteers also serve as hunter education instructors and offer hunter education field day courses at the range.

## AQUATIC EDUCATION

LDWF's Education Program introduces people to the sport of fishing and promotes awareness of Louisiana's aquatic resources. This is accomplished through fishing clinics, camps, teacher workshops and distribution of publications. Aquatic education programs are delivered by Education Program staff and volunteers. During FY 2013-2014, volunteer aquatic education volunteers provided 12,881 hours of service which was used as in-kind match for the aquatic education federal grant.

## FISHING CLINICS

Fifty-five aquatic education clinics were held across the state, with 7,343 people participating. Subjects covered in aquatic education clinics include outdoor ethics, fish identification, tackle selection, casting and fishing techniques. Participants also had an opportunity to go fishing. A week-long fishing day camp for



**LEFT:** Kids fishing event. **RIGHT:** Alligator hatchlings in the classroom.



**LEFT:** FUN Camp at Indian Lake. **RIGHT:** FUN Camp with Biologist Supervisor Dana Norsworthy.

youth aged 10-15 was held for the second time at the Woodworth Outdoor Education Center. Twenty youth participated and learned about fishing techniques, fish identification, fish cleaning, boating basics and aquatic ecology.

### PUBLICATIONS

Three publications were distributed to teachers in Louisiana schools for classroom use. These publications promote appreciation of aquatic resources and habitats.

- "Fishing For Fun" - 7,558 distributed
- "Let's Go Fishing" - 7,525 distributed
- "Finnie the Fingerling" - 4,996 distributed

### TEACHER WORKSHOPS

Teacher workshops were conducted to provide training in aquatic education that can be brought back to the classroom. The following workshops were conducted:

#### Wetland Education for Teachers (WETSHOP)

WETSHOP was held July 6-11, 2014 at the Grand Isle Marine Laboratory. WETSHOP is a week-long teacher workshop that focuses on the important role wetlands play in our coastal ecosystem. Teachers spent time learning about wetland plant communities, aquatic life, how fragile coastal ecosystems can be, and how to

bring this message back into the classroom. Partial funding was made possible through a grant by the Barataria-Terrebonne Estuary Program, who partners with LDWF to host this workshop. Twenty-one teachers were trained and equipped to return to their respective jurisdictions and train additional teachers about bringing wetland education into the classroom.

#### Coastal Wetland Workshops

Coastal Wetlands Workshops were held to train teachers about wetlands ecology in coastal habitats. "Wonder of Wetlands" manuals and other resources were provided to help prepare teachers to deliver wetland education to their students. Two workshops were held in which 29 teachers were trained.

#### Native Fish in the Classroom

Native Fish in the Classroom (NFC) is a multidisciplinary, classroom-based aquaculture stewardship project for middle school and high school students. The goal of the NFC project is to develop an attitude of natural resource stewardship and to create a constructive, active learning situation in which students can explore strategies for sustaining aquatic ecosystems. Students obtain hands-on, science-based knowledge of the state's aquatic resources. Teachers attended several workshops

and meetings to ensure successful preparation for receiving paddlefish eggs in the spring. Teachers then participated in the spring paddlefish spawn where they received paddlefish eggs to hatch and raise in their classrooms. The paddlefish fingerlings were then returned to the LDWF Booker Fowler Fish Hatchery. Schools brought students on a field trip to the hatchery to return their classroom raised fish. The hatchery then released the student-raised paddlefish into suitable aquatic habitats. During the 2013-2014 school year, 23 teachers and 2,300 students participated in the NFC project

## GENERAL WILDLIFE EDUCATION AND OUTDOOR SKILL DEVELOPMENT

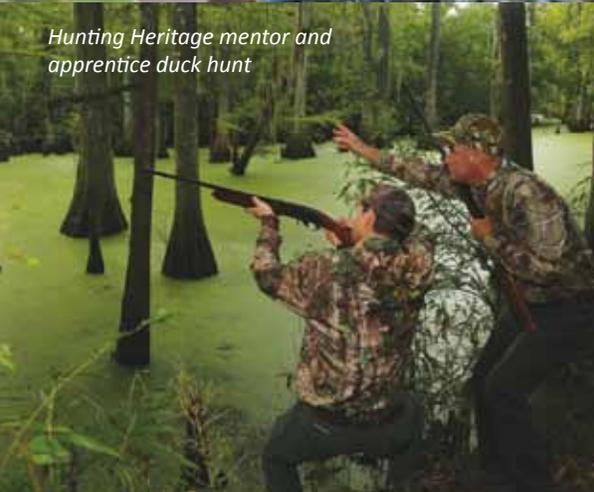
Education Program staff are involved in a variety of activities beyond hunter and aquatic education. Staff provide information and make presentations on topics of interest to civic organizations, school groups and others. Outdoor skill development programs and efforts have increased in recent years. Demand is high for programs that teach beginners about getting started in hunting, fishing and the shooting sports. In recognition that funding and support for conservation is directly linked hunters, fishers and shooters, the LDWF Education Program has expanded its efforts to recruit and teach skills to new outdoor enthusiasts.

### NATIONAL HUNTING & FISHING DAY

The general public is invited to join LDWF and other conservation partners in an open house atmosphere that involves hands-on activities and information about conservation. The Education Section provided training to the public in the safe use of shooting and fishing equipment. Four LDWF-sponsored events were held at the following locations: Bodcau WMA, Monroe Field Office, Woodworth Outdoor Education Center and Waddill Outdoor Education Center and Refuge.



Private Lands information booth at National Hunting and Fishing Day.

*Archery in Louisiana Schools**Hunting Heritage mentor and apprentice with first deer.**Hunting Heritage mentor and apprentice duck hunt*

### **BECOMING AN OUTDOORS WOMAN (BOW)**

BOW is a popular program with women interested in learning about outdoor recreation. During the BOW weekend workshop, education staff and volunteers conduct classes on a variety of outdoor skills, including shooting, fishing, canoeing, hunting, orienteering, camping, and wildlife appreciation. One BOW workshop was conducted in FY 2013-2014 with 135 participants and a Beyond BOW deer hunt was conducted of Floy McElroy WMA.

### **LOUISIANA WOMEN IN THE WILD (LWW)**

LWW is a recruitment and retention program that strives to introduce women to the outdoors through hands-on learning. One workshop was held to introduce the participants to the basics of hunting and another was held to teach fishing basics. Approximately 50 women participated in the two workshops. The hunting workshop was followed by a hunting trip where the workshop attendees were selected by lottery to participate in either a deer or duck hunting trip. The fishing workshop was followed by a fishing trip to Grand Isle for workshop attendees.

### **FAMILIES UNDERSTANDING NATURE (FUN) CAMP**

Families Understanding Nature provides both fun and education to a parent and youth through a weekend of staff-lead outdoor activities. Family members are introduced to archery, rifle and shotgun shooting, kayaking, fishing and camping. The education staff participated in two FUN Camps during FY 2013-2014. One camp was Mother/Child and the other was Father/Child.

### **ARCHERY IN LOUISIANA SCHOOLS (ALAS)**

ALAS is Louisiana's version of the National Archery in the Schools Program (NASP). ALAS promotes international style target archery as part of the physical education curriculum for grades 4-12. The curriculum covers archery history, safety, technique, equipment, mental concentration, core strengthening physical fitness, and self-improvement. The ALAS state tournament was held in March 2014 at the mega-shelter in Alexandria. Thirty schools were represented and 656 archers in the elementary, middle and high school divisions participated. The Benton Elementary School team qualified for the national NASP tournament in Kentucky, finishing 8th. Benton Elementary then went on to compete in the NASP World Tournament in Wisconsin and placed first, bringing home the World Champion trophy to Louisiana.

### **LOUISIANA HUNTING HERITAGE PROGRAM (LHHP)**

The LHHP is a program to recruit and develop new hunters by matching individuals who want to learn to hunt (apprentices) with experienced hunters (mentors). Many individuals have an interest in hunting but lack the social network to become involved. Once accepted in the program a pairing is made of an apprentice with a mentor who agrees to take the apprentice under their guidance. Since the program began 67 apprentices and 30 mentors have signed up, with 17 new pairings being made for FY 2013-2014.

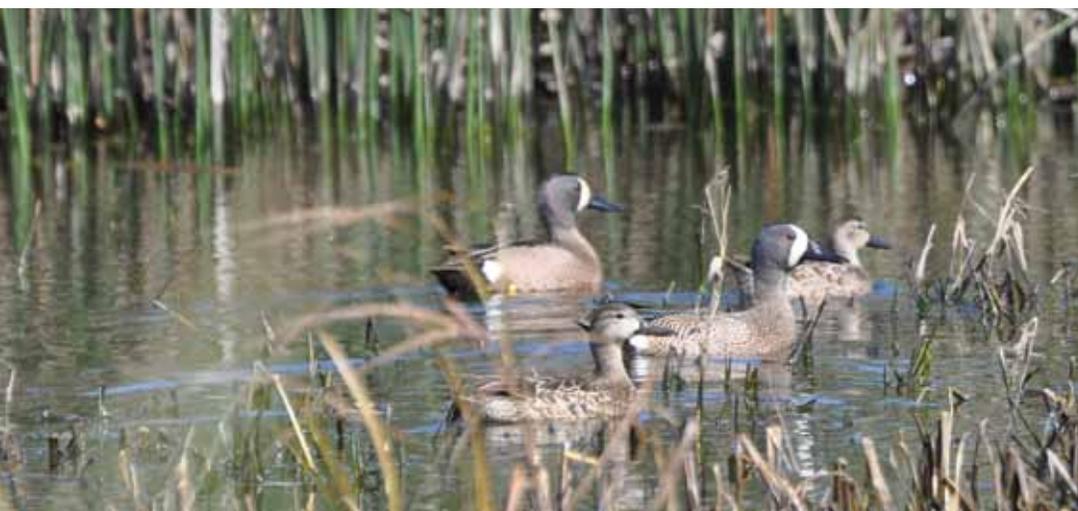


# COASTAL & NONGAME RESOURCES

## ROCKEFELLER WILDLIFE REFUGE

Rockefeller Wildlife Refuge (RWR), located in coastal Cameron and Vermilion parishes, was created in 1920 through a land donation developed by E.A. McIlhenny. He later persuaded the Rockefeller Foundation to deed the land to the State of Louisiana. Along with serving as a refuge for fisheries and wildlife species, RWR is also considered an “outdoor laboratory,” with the property serving as a site for marsh-related research pursued by RWR staff, collaborators and governmental and academic researchers. RWR staff also provides professional expertise regarding the sustainable use of alligators, management of coastal wetlands, and other important wildlife and fisheries resources. Further, management expertise, technical assistance and guidance is provided by RWR staff to local landowners for the wise use of their marshland. Lastly, RWR serves as a recreational outlet for the local populace, as well as a destination for regional tourists.

Based on the original deed of donation, the primary goal of RWR is to provide a refuge and preserve for all wildlife and fisheries species. Therefore, management activities are used to promote appropriate habitat and conditions for waterfowl species (the original intent of E.A. McIlhenny for the property), establish/maintain historic flora and fauna of RWR, and maintain the hydrology of the Mermentau River Basin. In many cases, refuge management activities positively benefit other marsh inhabitants including shorebirds, wading birds, alligators, furbearers, and estuarine organisms (i.e., fish, shrimp and crabs). Another main goal is to study wildlife, fisheries and wetlands in order to 1.) address pertinent ecological research questions and 2.) to disseminate findings to local, state, national and international audiences. Since 1955, RWR staff has contributed over 500 professional and popular publications, as well as contributed papers to pro-



fessional conferences and to a wide array of audiences. Secondary goals include 1.) providing technical assistance and public outreach and 2.) to provide a popular destination for recreational activity, primarily through the use of abundant fisheries resources (i.e., fishing, shrimping, crabbing) and the diversity of watchable wildlife (i.e., birdwatchers); it should be noted that these two activities never supersede the main goals of RWR.

RWR staff provided a presentation to the U.S. Fish and Wildlife Service (USFWS) for the 2013 Rockefeller Programmatic Review. The program was found to be in compliance with the Deed of Donation and doing “an exemplary job of managing the land base” and providing research “that is very useful to all of southwest Louisiana natural resource managers and the overall scientific community.” The review recommended placement of a law enforcement officer to be stationed at RWR.

## CONSTRUCTION/REPAIRS

RWR personnel and administrators continue to work with FEMA to move post hurricanes Rita and Ike construction projects forward. In FY 2013-2014, construction was completed on the four residences, the Lake 2 nature drive, Joseph Harbor boat launch, and the Price Lake fishing piers. Maintenance and construction staff continued to clean ditches and maintain levees throughout the marsh on RWR.

Louisiana Department of Wildlife and Fisheries (LDWF) personnel have completed negotiations with FEMA and the Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP) to reconstruct the laboratory and build a new alligator research grow-out facility. The lab and grow-out facility will be moved to the storm platform area for storm surge protection and efficiency. Staff began working with architects on the design of the new laboratory and alligator grow-out facility FY 2013-2014. Engineering and design continued on the FEMA project to replace the Vermilion Nine-Pipe Water Control Structure. Construction should begin in 2014-2015. Additional water control structures and levees that were damaged by the hurricanes are scheduled for replacement with FEMA funds (Old Cop Cop, Josephine, Dyson, Dyson Plug) or to be repaired (Big and Little Constance, Unit 3 levees) in 2014-2015. Marsh terraces were designed for the Superior and Price Lake Units to be completed in FY 2014-2015, while Capital Outlay levee work was in the design phase during FY 2013-2014 and is anticipated in FY 2015-2016.



*Lineham Creek well on Rockefeller.*

## MINERAL MANAGEMENT

Beginning in October 2011, Chevron began rig setup and exploration for an ultra deep gas venture (known as Lineham Creek) in the northwestern corner of RWR. Biologists spent considerable time working with Chevron to minimize environmental impacts associated with access and well pad development. The well pad created a large foot print (660 feet by 660 feet) due to the size of the rig, with Unit Rig 201 being one of the largest land rigs in North America (200 feet tall, 1500 tons). Initially, Chevron was drilling to depths of approximately 30,000 feet, making it one of the deepest on-land oil/gas wells in the United States. However, due to mounting costs and several failed attempts, it stopped drilling at approximately 24,500 feet to produce oil/gas above that level; the rig was demobilized and off site by June 2014. Along with this project, staff monitored the removal of pipelines and oilfield related structures on RWR.

## MARSH, WILDLIFE AND FISHERIES MANAGEMENT

### MARSH MANAGEMENT

RWR staff maintains over 200 miles of levees and 40 water control structures for the conservation of approximately 71,000 wetland acres on RWR and 100,000 private sector acres within the Mermentau River Basin. Objectives of maintenance and manipulation of RWR’s system of levees and water control structures vary somewhat by management unit, but general goals are to maintain marsh health, provide conditions favorable for production of

waterfowl food plants, and incorporate multi-species management when possible. Biological staff uses the approved RWR management plan, which acts as a tool to guide research and management on the property.

Habitat conditions have become more stable, with many water control structures replaced (or planned to be replaced) for management of water levels throughout RWR. Further, staff has also worked on wetland permit applications with the U.S. Army Corps of Engineers (USACE) for over 20 miles of levee restoration. Projects to restore hydrology continued as a result of damage sustained from Hurricane Rita in 2005 and Hurricane Ike in 2008, but these projects have experienced heavy delays due to FEMA and permitting issues. Maintenance personnel continued cleaning ditches, maintaining levees, and repairing water control structures in Units 8, 10 and 13, which directly benefits the management of 3,280 wetland acres. In addition to water control, staff performed vegetation control with herbicides via airboat to help improve habitat in Units 6, 8, 10 and 13. Aerial applications were also conducted to assist with vegetation control of 500 total acres in Units 8, 10 and 13.

Marsh fires during the right time of the year have been shown to decrease fuel loads of marsh vegetation, prevent catastrophic fires when the marsh is excessively dry during the summer, and also provide new stem growth for migratory waterfowl species. Generally, one-third of the refuge is burned on a yearly basis. During FY 2013-2014, approximately 13,850 acres were burned on RWR. In addition, approximately 4,000 acres of marsh burned naturally in the Superior Unit by lightning fires.

Two invasive species were the target of management activities during 2013-2014: giant salvinia and feral hogs. Giant salvinia became an issue on RWR and adjacent landowners in the spring of 2013 and continued into 2014. In an effort to halt the movement/growth of the giant salvinia, weevils were introduced in areas without access to saltwater (i.e., inland freshwater areas). Higher levels of salinity were introduced via staff opening the East End Locks; the effort was a success and restored navigability of water ways and ponds without severely impacting the marsh or impacting freshwater sources for the rice/crawfish agricultural areas north of Grand Lake. Since 2011, feral hogs have been trapped on the eastern end of the refuge, primarily Unit 14, in order to prevent wetland and levee damage. Efforts will continue in 2014-2015 to monitor the status of these two invasive species on RWR.

#### **Marsh Creation and Habitat Enhancement with Beneficial Use of Dredge Material**

LDWF entered into an agreement with USACE and other regulatory agencies to construct the Rockefeller Mitigation Bank to offset wetland losses caused by adverse impacts in Louisiana's Coastal Zone. The major objective of LDWF in establishing the Mitigation Bank is to compensate for impacts occurring on RWR or for impacts outside the refuge (provided there are no available approved mitigation projects).

LDWF originally permitted three areas on RWR as potential wetland mitigation sites in 2000 (totaling 177.7 acres). Actual work began on the first site (4.7 acres) in 2007, with dredging completed on Feb. 24, 2010. In June 2009, construction on the second site (66 acres) was completed during FY 2011-2012. Grass plantings have been very successful at both sites and sites have attracted fisheries species, a diversity of birds and even muskrats. Construction at the third site (107 acres) began in April 2013 and dredging was completed FY 2013-2014; it is anticipated that grass plantings will occur during FY 2014-2015.

#### **Shoreline Protection and Stabilization**

The \$1.7 million Bio-Engineered Oyster Reef Demonstration Project LA08 is sponsored by Louisiana Department of Natural Resources

(LDNR) and was implemented in 2011 with the barrier placed approximately 2.5 miles west of Joseph Harbor Bayou. The objective is to evaluate an oyster break system's capacity to reduce and/or prevent shoreline erosion and wetland loss. Preliminary observations indicate that the breakwater sections are slowing coastline erosion and catching sediment behind the structures. Dr. Steve Hall and students continue to monitor the structures for oyster development.

Preparations were also made by refuge staff for Phase II CWPPRA funding for 3 miles of breakwater sections with design work assistance from J. Foret National Oceanic and Atmospheric Administration (NOAA). A decision by the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) board is anticipated December 2014.

### **WILDLIFE MANAGEMENT**

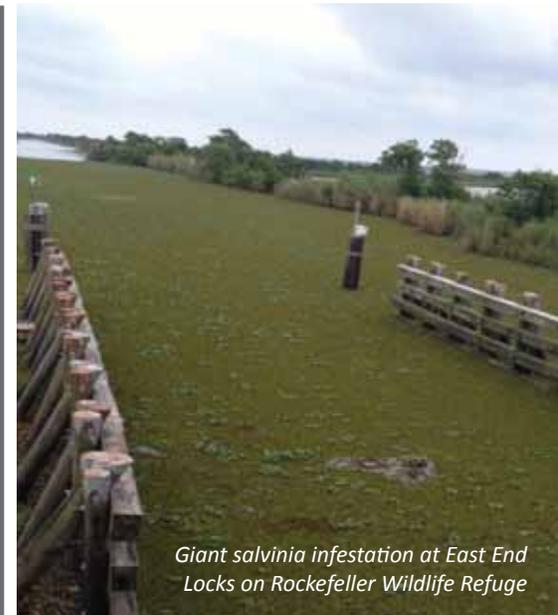
#### **Alligator Nuisance Harvest**

An experimental nuisance alligator harvest was conducted on RWR from Sept. 4-6, 2013 by nine Rockefeller alligator hunters (with 40 tags each). The harvest was done by alligator hunters with a prior trapping history on RWR, as well as two hunters selected via a lottery system; all were approved by LDWF after successful completion of an enforcement background check. Hunting areas were distributed throughout RWR with the intent of taking alligators from areas with high public use, thus reducing the chance of negative interactions between alligators and humans. The average length of 2013 harvested alligators was 7.61 feet, compared to 7.53 feet in 2011. The average price per foot was \$32.03 per foot in 2013, compared to \$23.74 per foot in 2011; 2013 prices were slightly lower than the high of \$38.28 per foot in 2008.

### **FISHERIES MANAGEMENT**

RWR began a more active approach with the operations of water control structures across the refuge. This permits the ingress and egress of estuarine marine organisms into and out of the marsh without impacting established habitats on RWR and adjacent landowners.

Staff continued efforts in stocking Florida-strain largemouth bass (*Micropterus salmoides v. floridanus*) to supplement populations lost on the refuge due to hurricane impacts and extreme drought conditions; these efforts will also improve recreational oppor-



*Giant salvinia infestation at East End Locks on Rockefeller Wildlife Refuge*

#### **Close up of giant salvinia**

*(photo by Troy Evans, Great Smoky Mountains National Park, forestryimages.org)*



*Construction of the third wetland mitigation site on Rockefeller*



*Shoreline protection and stabilization.*



the spring, but the three other birds returned to the Dallas area during the spring of 2014. Of the trio, the lone female returned to the same location used the previous year, while the pair headed to Dallas several weeks later with a different lone female; the latter female returned to the same ranch she used the previous year. The pair used a new location for the spring and summer, but it was only about 8 miles northeast of their previous location and where the third member of their trio was located. These four birds remain in Texas as of June 30, 2014.

Four birds were documented molting this spring (two 3-year-olds and two 2-year-olds). It is unknown if the birds in Texas molted or not, though as 2-year-olds some of them may have. One bird, L5-11 was found dead, likely killed by a predator while he was molting, but the rest survived and completed their molt.

Most exciting this year was the development of a new pair of birds (L7 & L8-11, 3-year-olds), who built a nest and laid eggs on a private crawfish farm in Avoyelles Parish (this was especially exciting following the shooting in early February 2014 of the pair that had previously built a nest in 2013). The birds incubated full term, but after the eggs failed to hatch, they were collected and determined to have been infertile. We were surprised when approximately 2.5 weeks later the birds re-nested and once again incubated both eggs to term. These eggs were also infertile, but it was encouraging that the pair were able to incubate both clutches to full term. This was huge accomplishment for the birds and for the project, with infertile eggs not surprising because they were young birds.

Again in 2012-2013, a large grant was obtained from Chevron specifically for education and outreach. Funding was used to promote the importance of the reintroduction project and implemented with teacher training workshops, billboards, short radio spots and TV advertisements. Chevron funds purchased 11 vinyl billboards (each about 12 x 40 feet in size) that were displayed along the I-10 and I-49 corridor, resulting in over 500,000 weekly views by the traveling public, beginning in the summer of 2013.

In summation, we believe that this region is the best hope for reintroducing whooping cranes in North America due to the:

- vast amount of available and suitable habitat.
- relatively small human population and low probability for large population growth in the future.
- stable agricultural/natural resource economy.
- whooping cranes utilizing almost all habitat types throughout 3.5 million acres in southwestern Louisiana.

## WILDLIFE AND FISHERIES RESEARCH

A unique attribute of RWR is the emphasis on wildlife, fisheries and marsh management research. Throughout the year, staff biologists conducted independent and collaborative research, while also presenting research findings at regional, national, and international meetings. Several notes or manuscripts describing research results or observations were also accepted for publication in peer-reviewed journals. Our staff Research

Ornithologist received another position, so this position will be filled in FY 2014-2015.

## STAFF RESEARCH AT RWR

### Diamondback Terrapin Distribution, Abundance and Population Status

In 2011, RWR staff determined that critical information regarding the abundance and population of diamondback terrapins (*Malaclemys terrapin*) in Louisiana was lacking and conducted a study to address that need. During the spring of 2014, staff sampled at eight sites in Iberia, Vermilion and Cameron parishes. Terrapins (n = 314) were captured at all five sites sampled, including 19 long-term recaptures at three sites. Terrapins were recorded in new locations in Turner's Bay (Calcasieu Parish), which is a new parish record for the species. Over the four-year study (2011 – 2014), 800 terrapins (including 19 recaptures) have been captured at 14 of 17 sample sites, with terrapin site abundance varying considerably. High terrapin abundance was always associated with large expanses of unmanaged, brackish and salt marshes, while abundance was typically negatively associated with smaller marsh sizes and channels or bayous that are no longer connected to the Gulf of Mexico. All sites with terrapin captures represent either a new locality for terrapins or the first record for that locality in over 40 years.

### Diversity and Abundance of Birds in Altered Wetlands and Effects of Mineral Exploration

The loss of wetlands is one of the most pressing environmental issues across coastal Louisiana. However, many altered wetlands still provide some value to wildlife species.



**LEFT:** Louisiana whooping crane on nest. **RIGHT:** Whooping crane nest with eggs.



*Diamondback  
Terrapin*



*Reddish Egret*



*Black-bellied  
Whistling Duck*

RWR staff designed a field study to document the avian diversity and abundance in altered wetlands (i.e., pump-off wetlands); this project also secondarily documents the effects of the Chevron Lineham Creek well on avian diversity and abundance. Throughout the three-year study (July 2011 – 2014), we observed a total of 23,423 individuals of 67 species on line transects over 138 weekly sampling periods. Dominant species include red-winged blackbirds (40 percent), eastern meadowlarks (14 percent) and boat-tailed grackles (12 percent). In addition, 10 Louisiana bird species of concern were documented during the study. Field work has been finalized on the project and results are forthcoming.

#### **Rabbit Island Colonial Waterbird Nesting, Diversity and Abundance**

Rabbit Island is a relatively small island (220 acres) located in West Cove of Calcasieu Lake. In spite of its small size, the island is the most important colonial waterbird nesting island in southwestern Louisiana, supporting the only colony of brown pelicans in the region. In February 2013, staff biologists began a research project to document the bird species diversity and abundance on the island throughout the annual cycle, as well as the number of nesting species present on the island. Bi-weekly and monthly sampling was completed via shoreline survey, line transects and perimeter point counts; the latter was done in place of line transects when birds were nesting on or near line transects. Through 29 sampling periods, 52,318 and 68,315 bird observations were made of 63 species (17 Louisiana species of concern) on shoreline and transect/point count surveys, respectively. Fifteen species (six Louisiana species of concern) were also confirmed nesting on the island, including the first records of American oystercatchers (one pair,

two fledglings) and reddish egrets (21-24 pairs) for southwestern Louisiana. Field work has been finalized on the project and results are forthcoming.

#### **Movements of Black-Bellied Whistling Ducks Captured in Louisiana**

Black-bellied whistling ducks (BBWDs) have recently expanded their range to include southern Louisiana. A recent species account shows BBWDs breeding in south Louisiana, but does not report wintering BBWDs in south Louisiana. However, numerous large flocks of BBWDs are seen in late winter in coastal Louisiana, and BBWDs have been seen regularly in Gulf Coast habitats and associated agricultural areas during summer. The extent and chronology of migration occurring in BBWDs present in southern Louisiana is unknown. Sport hunters in Louisiana harvest BBWDs as a part of an aggregate daily bag limit during the regular duck season; hunter harvest in Louisiana appears to have increased dramatically since 2000, but data for accurate estimates of hunter harvest are currently limited.

Pilot work was continued in spring 2014 to evaluate and assess movements of BBWDs in the area. Transmitters from 2013 failed at high rates, presumably due to a circuit board failure by the transmitter company. In April 2014, six transmitters were affixed to male BBWDs and were monitored after deployment. Because the biologist conducting this project moved on to another position, this project will be considered for full implementation at a later date.

#### **COLLABORATIVE RESEARCH AT RWR**

During the 2013-2014, RWR biologists collaborated on a number of marsh management,

wildlife, and fisheries research projects on the refuge, across the region and state, and beyond. These projects include:

- Conservation genetics of the ringed sawback turtle. W. Selman with D. Gaillard, The University of Southern Mississippi
- Evaluating the effects of coastal restoration on shorebirds and shorebird habitats in Cameron Parish. W. Selman with A. Arfman and E. Lyons, McNeese State University
- History, nesting population, migration, home range, and habitats used by Louisiana Bald Eagles. T. Hess with A. Afton and N. Smith, LSU
- Hybridization and population structure of Mottled Ducks in the western Gulf of Mexico. W. Selman with R. Ford and S. Taylor, LSU
- Population status of diamondback terrapins in Louisiana and the interaction of crab fisheries on population viability. W. Selman with J. Wiebe and S. Pearson, LDWF
- Population genetics of diamondback terrapins in Louisiana. W. Selman with C. Petre and B. Kreiser, The University of Southern Mississippi; S. Pearson and J. Wiebe, LDWF
- Pigment variability of diamondback terrapins in Louisiana. W. Selman with B. Reinke, Dartmouth
- Spatial and temporal differences in diets of diamondback terrapins in southwestern Louisiana. W. Sylvest and E. Lyons, McNeese State University
- Surveys of the aquatic turtle fauna in southwestern Louisiana, with emphasis on three Louisiana species of conservation concern. W. Selman with E. Lyons, C. Huntzinger, I. Louque, McNeese State University; P. Lindeman, Edinboro State University

**PUBLICATIONS BY RWR STAFF BIOLOGISTS**

Selman, W. 2014. *Macrochelys temminckii* (Alligator Snapping Turtle). Geographic distribution note. *Herpetological Review* 45:90.

Selman, W. and C. Baccigalopi. *Malaclemys terrapin* (Diamond-backed Terrapin). Geographic distribution note. *Herpetological Review* 45:460.

Selman, W., B. Kreiser, and C. Qualls. 2013. Conservation genetics of the yellow-blotched sawback (*Emydidae: Graptemys flavimaculata*). *Conservation Genetics* 14:1193-1203.

Selman, W., C. Qualls, and J. Owen. 2013. Effects of human disturbance on the behavior and physiology of an imperiled freshwater turtle. *Journal of Wildlife Management* 77:877-885.

Selman, W., R. King, B. Stultz, D. Cassady, A. Magro, T. Credeur, and J.J. Wiebe. 2014. *Chelonia mydas* (Green Sea Turtle). Geographic distribution note. *Herpetological Review* 45:89.

Walter, S.T., M.R. Carloss, T.J. Hess, and P.L. Leberg. 2013. Hurricane, habitat degradation, and land loss effects on Brown Pelican nesting colonies. *Journal of Coastal Research* 29:187-195.

Walter, S.T., M.R. Carloss, T.J. Hess, G. Athrey, and P.L. Leberg. 2013. Brown Pelican movement patterns and population structure. *Condor* 115:788-799.

**TECHNICAL ASSISTANCE, OUTREACH AND EDUCATION**

Refuge personnel continued public outreach activities, hosting several events to educate elementary, high school and college students in wildlife, marsh ecology and coastal erosion. RWR staff also participated in guided tours for a number of organizations and groups. One of the largest groups the refuge hosts each summer is the 4-H Marsh Maneuvers Camp. In 2013, 65 high school students from 18 parishes throughout Louisiana participated in the week long camps in July. These camps are designed to educate high school students in the importance of coastal marsh erosion, restoration, conservation, and ecology. Examples of other technical assistance provided by RWR staff include:

- assisted the Natural Heritage Program during annual winter plover surveys and to construct prairie research enclosure pens at the Gray Ranch.
- assisted private landowners in assessing marsh conditions and management for waterfowl.
- assisted LDWF and USDA Natural Resources Conservation Service (NRCS) with chenier plant seed collection.
- conducted peer-review and editorial duties for scientific journals; reviewed graduate student theses.
- served as student presentation judge at international meeting, and judged science fair projects at local high school.
- participated in guided tours to the whooping crane pen site and Nunez Woods Bird Sanctuary.
- assisted with mourning dove banding for the statewide dove monitoring program.
- presented on the whooping crane reintroduction to multiple grade school, col-



A. Arfman, McNeese State graduate student, surveys shorebirds on Rockefeller Wildlife Refuge

lege, local and professional groups, as well as providing an informational table at multiple local and state festivals.

- presented lectures to visiting college and university students on wetlands ecology, wetlands management, waterfowl ecology and conservation research.
- reviewed research and grant proposals for university students and faculty.
- assisted the Alligator Research and Management Program with logistics and tour for the Crocodile Specialist Group Meeting field trip.

**RECREATIONAL USE**

Marsh management units and more specifically, water control structures, continue to be very popular with sport fishermen. This fiscal year was the first time since hurricanes Rita and Ike that all water control structures via Joseph Harbor boat launch were fully operational; we were able to enhance the fishing opportunities while also maintaining adequate salinity levels. In addition to this, the reconstruction of the new boat launches and bulkheading at Joseph Harbor (FY 2012-2013), as well as the new fishing piers on Price Lake Road (FY 2012-2013 and 2013-2014) have been a great attraction for local and regional fishermen. Both new projects greatly enhanced fishing opportunities at these already popular recreational areas. During FY 2013-2014, 86,639 vehicles (approximately 202,958 person use days) were counted entering the refuge. This is a 70 percent increase over counts for FY 2012 -2013 (61,365 vehicles, approximately 143,752 person use days).



**TOP:** R. Ford, LSU graduate student, with captured mottled duck. **BOTTOM:** I. Louque, McNeese State graduate student, with two Sabine map turtles.

# WHITE LAKE WETLANDS CONSERVATION AREA

## LOCATION

The White Lake Property (as referred to in Act 613, 2004 Louisiana Legislature) or White Lake Wetlands Conservation Area (WLWCA) (as referred to by the LDWF) is located in Vermilion Parish. The contiguous unit is 70,965 acres, located along the western boundary of Vermilion Parish; it is bounded on the south by White Lake, and the northern boundary is 7.4 miles south of Gueydan at the south end of Hwy. 91. Lafayette is 32 air miles northeast, and Lake Charles is 40 air miles northwest. The southern boundary of White Lake is 17.5 miles north of the Gulf of Mexico. The property averages 12 miles from east to west and 9 miles from north to south.

## HISTORY OF OWNERSHIP

BP America Production White Lake properties have a long history of company ownership and management. Note that Stanolind Oil and Gas Company (Stanolind) preceded Amoco Production Company (Amoco) which preceded BP America Production Company (BP). Stanolind acquired the 70,965-acre property from Wright Morrow by Act of Sale on July 31, 1935. This sale included all of the property acquired by Yount-Lee Oil Company from P. L. Lawrence, et. ux., by Act of Sale dated March 7, 1931 and a portion of the property acquired by M.F. Yount from Elizabeth M. Watkins by Act of Sale dated Nov. 5, 1929. BP owned and managed the BP American Production White Lake Property until July 8, 2002 when BP donated the property to the state of Louisiana. On July 8, 2002, a Cooperative Endeavor agreement between the state and White Lake Preservation Inc. (a 501(c) 3 corporation) for management of the property was executed. On Jan. 1, 2005, Act 613 of the 2004 Regular Legislative Session became effective. This act established:

1. Transfer of property management from White Lake Preservation Inc. to LDWF.
2. The White Lake Property Advisory Board, LDWF and the Wildlife and Fisheries Commission powers and duties relative to the management of the White Lake Property.
3. A special account within the Conservation Fund for the White Lake Property.

On Dec. 17, 2004, the state, BP and White Lake Preservation Inc. signed a Transition Agreement for the management of the property by White Lake Preservation Inc. until July 1, 2005, at which time LDWF took total control.

## SURFACE LEASES

### AGRICULTURAL AND HUNTING

LDWF entered into a land swap agreement with the Vermilion Parish School Board. In this agreement, LDWF received the surface rights to three school board sections (two on WLWCA and one on Rockefeller) in exchange for WLWCA Tract C and additional monetary compensation from the Rockefeller budget.

With the land swap changes, there are currently 37,841 acres of property leased out in nine separate tracts. The property is leased to five separate tenants for the purpose of farming, raising cattle, crawfish farming and hunting. There is a rice base totaling 4,587.5 acres on this property. There were approximately 2,000 acres of rice planted in 2014. There were approximately 600 acres of crawfish ponds on the property in 2014.

There are over 100 miles of levees, canals and roads on WLWCA agricultural lands that are maintained by our agricultural tenants. They also own and operate the pumping systems that are needed to manage water levels on this impounded agricultural land. All of the farmland on WLWCA was at one time fresh-water marsh that was impounded in the late 1940s when agricultural activities first began on the property.

### TRAPPING

There were a total of 373 alligator tags issued for the 2013 Alligator Trapping Season. The average size of the alligators trapped was 6.38 feet, with an average live length value of \$30.20 per foot.

There was a contract negotiated for the collection of alligator eggs from the WLWCA property in 2013 for a two-year period. In 2013, WLWCA received a payment of \$20 per egg. A total of 5,662 eggs were collected.

Fur trapping did not occur on WLWCA this year due to the continued low numbers of fur-bearers on the property. There has been no fur trapping on this property for over 30 years because of the low numbers of fur-bearers.

### Other Surface Leases

There are three oil and gas valve site leases on the property. In addition there is one oil & gas surface use agreement with an associated road servitude agreement.

## LOTTERY ACTIVITIES

### FISHING LOTTERY

**2013** - Seventy-nine fishing permits were issued at a cost of \$40 per permit. Permittees and their guest were allowed to fish the Florence Canal Area and specified well location canals that flow into the Florence Canal. The area was open from sunrise to sunset from March 15 - Aug. 15, 2013.

**2014** - Seventy-nine fishing permits were issued at a cost of \$40 per permit. Permittees and their guest were allowed to fish the Florence Canal Area and specified well location canals that flow into the Florence Canal. The area was open from sunrise to sunset from March 15 - Aug. 15, 2014.

### WATERFOWL LOTTERY

Waterfowl Hunting (2013-2014 Season)		
	Total Hunts	Participants
Teal Lottery Hunts	9	105
Marsh Lottery Hunts	15	173
Youth Hunts	2	16
Rice Field Lottery Hunts	35	276
Group Hunts	9	101

Waterfowl Hunting Results (2013-2014 season)		
	Marsh	Rice Field
Total Ducks Harvested	1880	542
Average Kill/Hunter (ducks)	5.09	1.96
Total Geese Harvested	195	84
Average Kill/Hunter (geese)	0.53	0.30

## NON-CONSUMPTIVE ACTIVITIES

LDWF established dates for the use of WLWCA facilities for non-consumptive group activities including nature photography, bird watching, educational field trips and business retreats. Use of WLWCA for non-consumptive purposes was offered from Feb. 1 - May 31, 2014. Site use was scheduled on a first come first serve basis pending facility and staff availability, with up to 15 guests allowed to attend the day trips and up to 12 guests allowed to attend the over-

night trips. During this period there were two day-trips scheduled and hosted by WLWCA for nature/birding groups. In addition, WLWCA hosted a group of 112 attendees for the International Crane Foundation on a day trip to visit the whooping crane release pen located on the WLWCA property. This large group attended the 13th annual North American Whooping Crane Workshop event, which was conducted in Lafayette, La. A total of 142 nature photographers, bird watchers and International Crane Foundation guests visited the property in conjunction with our non-consumptive trip activities.

### **BIRDING TRAIL**

The WLWCA Birding and Nature Trail, with accompanying kiosk, was completed in April. A Grand Opening of the trail was held on April 12, 2012. The trail is on approximately 30 acres of property located on the northern boundary of the property where LA-91 ends. Birding paths, a parking area, access bridges, a birding tower and a picnic pavilion are open to the public. There have been approximately 210 logged names in our Visitor's Guest Book in FY 2013-2014.

## **EDUCATION, OUTREACH AND RESEARCH**

### **MARSH MANEUVERS**

During December 2013, WLWCA was host to a group of 16 high school 4-H students for three days. The three-day camp was designed to educate the students on the importance of coastal erosion, restoration, conservation and ecology. They were also able to go on a simulated waterfowl hunt and were taught waterfowl identification techniques. They participated in a sporting clay shoot where they were instructed on gun safety and the proper use of a shotgun.

### **COASTAL PRAIRIE**

There is approximately 200 acres of coastal prairie on the WLWCA property located south of the Gulf Intracoastal Waterway and west of the Florence Canal. For the past couple of years the Louisiana Natural Heritage Program (LNHP) has been conducting research on the different plant species located on this prairie. To date, approximately 95 different species have been identified.

### **WHOOPING CRANE RE-INTRODUCTION PROJECT**

WLWCA assisted the Whooping Crane Reintroduction Project by providing office space, staff and vessel support. In addition, WLWCA staff maintained the 700-acre impoundment located approximately 3.5 miles north of the existing pen location.

### **WOOD DUCK PROJECT**

WLWCA continued a wood duck banding program to compliment the LDWF statewide banding program. In addition to banding birds, staff monitored nest boxes and collected data for potential survivability and recruitment studies.

## **MARSH MANAGEMENT RESTORATION, HABITAT ENHANCEMENT, AGRICULTURAL MANAGEMENT, AND MINERAL MANAGEMENT**

### **MARSH MANAGEMENT**

The WLWCA property consists of approximately 52,000 acres of fresh water marsh. There are four separate management units that comprise the marsh. Within these marsh areas there are over 100 miles of trenasses, seven water control structures, four pumping stations, and over 30 miles of levees, all of which are operated, managed and maintained by WLWCA personnel. Objectives of maintenance and manipulation of the refuge's system of levees and water control structures vary somewhat by management unit, but generally goals are to maintain marsh health, provide conditions favorable for production of waterfowl food plants, and incorporate multi-species management when possible.

As part of the overall management of the WLWCA properties, in the fall of 2008 a comprehensive set of rules and regulations was drafted and presented to the Wildlife and Fisheries Commission for approval. The White Lake Rules and Regulations were approved by the Commission and became effective in the spring of 2009.

### **AGRICULTURAL MANAGEMENT**

Although WLWCA is comprised mostly of marsh, the property consists of approximately 19,000 acres of agricultural land. The agricultural land is separated into seven tracts that are leased out to the highest bidder. Each

leaseholder follows an LDWF lease agreement that directs the leaseholder to complete numerous habitat management practices each year. These practices maintain the property in farmable condition, while also providing valuable habitat for wildlife. The benefits to the leaseholder are the ability to farm, graze and hunt the property.

### **MINERAL MANAGEMENT**

There are three producing oil and gas fields on the WLWCA property that were once operated by Amoco Production Company. Amoco sold the subsurface rights in these fields and all the facilities associated with these fields in the latter part of the 1990s to Hilcorp Energy Company. Hilcorp has since sold these fields, and for a period of time they were operated by three separate owners/operators: the West White Lake Field (approximately 1,500 acres) was owned and operated by Energy Quest; the Florence Field (approximately 1,920 acres) was owned and operated by Dune Energy Company; and the South Kaplan Field (approx. 800 acres) was owned and operated by Texas Petroleum Investments. In the spring of 2010, Texas Petroleum Investments purchased the West White Lake and Florence Field and became the sole oil and gas operator on the WLWCA property. However in July 2011 Magnum Producing secured a mineral lease from BP to drill an exploratory well in the Kaplan Field Area. LDWF granted a Surface Lease to Magnum Producing to facilitate the drilling of this well. This well was successfully completed and is currently producing. In 2013 LDWF granted Magnum Producing an additional Surface Lease for a Salt Water Disposal Well, which also included a road servitude and P/L ROW agreement. The State of Louisiana owns the surface of the property that comprises these three production areas. LDWF monitors surface activities and helps enforce the conservation terms of the agreements that were executed by and between Amoco Production Company, BP and the three owners/operators mentioned. Texas Petroleum Investments has responsibilities for maintenance of roads, levees, canals, bridges, etc.

## **MAINTENANCE OF FACILITIES AND EQUIPMENT**

There are approximately 50 acres of property associated with the White Lake Lodge Facility, Sporting Clay Course, Skeet Range, Birding Trail and Florence Canal Landing area. This acreage is maintained and landscaped throughout the year by WLWCA personnel.

Routine maintenance on the WLWCA buildings and equipment was conducted throughout the year.

Routine maintenance was performed on our fleet of more than 25 boats. Our four mud boats were dry-docked and repainted, and other routine annual maintenance was done.

## 2013-2014 FINANCIAL REPORT

Totals	
<b>Beginning Fund Balance 2013-2014</b>	\$1,594,667
<b>Total Revenue</b>	\$1,227,495
<b>Total Expenditures</b>	-\$1,029,292
<b>Ending Fund Balance 2013-2014</b>	\$1,792,870

Revenue	
<b>Group Hunt Trip Fees</b>	\$104,062
<b>Group Hunt Charitable Contributions</b>	\$164,500
<b>Agricultural Leases</b>	\$706,453
<b>Alligator Egg Collection</b>	\$133,240
<b>Lottery Hunt Fees</b>	\$71,455
<b>Alligator Trapping Income</b>	\$28,991
<b>Interest Income</b>	\$2,476
<b>Mineral Bonuses</b>	-
<b>Surface Leases</b>	\$31,838
<b>Surplus Property</b>	-
<b>FEMA Reimbursements</b>	-
<b>Oil and Gas Royalty</b>	-
<b>Non-Consumptive Trips</b>	\$870
<b>Fishing Lottery</b>	\$3,610
<b>Total</b>	<b>\$1,227,495</b>

Expenditures	
<b>Salaries</b>	\$344,980
<b>Wages</b>	\$64,836
<b>Related Benefits</b>	\$181,654
<b>Travel</b>	-
<b>Operating Services</b>	\$93,707
<b>Supplies</b>	\$108,898
<b>Professional Services</b>	\$2,745
<b>Other Charges</b>	-
<b>Acquisitions</b>	\$106,326
<b>Major Repairs</b>	\$95,110
<b>Interagency Transfers (insurance)</b>	\$31,036
<b>Total</b>	<b>\$1,029,292</b>

## FURBEARER MANAGEMENT

### MONITORING FUR HARVEST

The 2013-2014 furbearer harvest was monitored by compiling distribution and total harvest data. Each year, fur buyers and dealers are required to submit reports providing information on pelts purchased by species and parish of harvest. Annual audits of all fur dealers provide a record of total pelts by species shipped from Louisiana. River otter and bobcat possession tags provide data on timing and location of all bobcat and otter harvested in the state. These tags are necessary to ensure that Louisiana otter and bobcat are tagged with federal export tags (a federal requirement for out-of-country shipment).

Records indicate a total of 2,848 trapping licenses were sold during the 2013-2014 trapping season. Of these, 2,701 were adult resi-

dential licenses, 43 were adult non-residential trapping licenses, and 104 were youth residential licenses. These figures show an increase in trapping licenses sold when compared to the previous season (2,140).

A total of 419,299 animals were harvested (all species), which was an increase of 809 from the previous season's total of 418,490. The total value of the 2013-2014 fur harvest to the state's trappers was estimated at \$2,312,379.80. This total value was a decrease of \$39,505.33 from the previous season.

The nutria harvest (388,264) increased by 104 from the previous season's total of 388,260. The average nutria pelt price paid to trappers during this past season was \$2.12. An additional \$5 was paid for all nutria taken during the Coastwide Nutria Control Program by registered participants.

### COAST-WIDE NUTRIA CONTROL PROGRAM

The Coast-wide Nutria Control Program (CNCP) is funded by the CWPPRA. The objective is to decrease the damage to coastal vegetation that is caused by nutria by increasing the incentive for harvest. During the 2013-2014 season, a total of 388,264 nutria tails, worth \$1,941,320 in incentive payments, were collected from 281 participants. Seventy-eight participants (28 percent) turned in less than 200 tails, 52 participants (19 percent) turned in 200-499 tails, 35 participants (12 percent) turned in 500-799 tails, and 116 participants (41 percent) turned in 800 or more tails.

### TOTAL NUMBER OF NUTRIA HARVESTED BY METHOD OF TAKE IN 2013-2014

There were 19 parishes represented in the program with harvests ranging from 929 to 130,952 nutria per parish. Terrebonne Parish reported the highest number of tails with 130,952 followed by St. Mary and St. Martin parishes with 58,229 and 54,027, respectively.

January was the most active month for harvesting nutria (131,006 tails) while November was the least active month (13,037 tails). (See CNCP 2013 - 2014 Report, CWPPRA Project LA-03b.)

### VEGETATIVE DAMAGE CAUSED BY NUTRIA

As a monitoring requirement of CNCP, a coast-wide aerial survey was conducted in April 2014 covering the coastal parishes of Louisiana. The total number of sites visited in 2014 was 13, 11 of which were classified as nutria damage in 2013. During the 2014 survey, 10 sites were classified as nutria damage, two were considered recovered, and one new site was identified.

The 2014 survey identified 13 sites (nutria) with a total of 1,115 acres impacted by nutria feeding activity along transects (4,181 extrapolated). This is approximately a 9.5 percent decrease from the 1,233 damaged acres reported in 2013. CNCP continues to be a successful means of controlling the nutria population with over 300,000 animals harvested annually. Consequently, the number of nutria-impacted acres in Louisiana's coastal marsh has also decreased significantly over the 12 years of the program.



## FUR ADVISORY COUNCIL

The Fur Advisory Council has continued to focus on two major goals this year. The first goal is educating the public concerning the role of wildlife utilization in conservation. This goal leads naturally into the second goal of addresses public opinion of the fur market and enhancing the market for Louisiana fur products.

The Fur Advisory Council has supported a statewide education program. The utilization of trapping for habitat management was the primary focus of the educational message. The program was carried to schools and public libraries throughout the state of Louisiana during FY 2013-2014. The school based educational program continued to be well-received, and additional educational materials were

provided to teachers on CDs and through online resources. Requests for sample skins and programs have been steady. The Fur Advisory Council presented at educational events, such as the Louisiana Science Teachers Association, and public events, such as the Louisiana State Fair. The council also worked with Boy Scouts during Jakes Day 2014. The council website carried the educational story to a much broader audience. The success of our education program will likely impact the future of markets, which supports a valuable habitat management tool for the state of Louisiana.

The international fur market has declined during the 2013-2014 year with political unrest and economic crisis in Eastern Europe. Main-

land China still holds the largest market for Louisiana furs, and Chinese fur buyers purchased from Louisiana this year. The Chinese economy continues to grow, even as fur prices have plummeted world-wide. The Fur Advisory Council attended fur shows in mainland China In 2013-2014. The council has continued to pursue a promising market in Turkey. The marketing contractor attended the Istanbul Fur Fair in 2013 to determine its potential for the Louisiana market. The fur markets in Asia and Eastern Europe have slowed, but marketing efforts have continued to bring buyers into Louisiana despite poor market conditions. Louisiana dealers are developing the infrastructure necessary to expand the fur harvest locally in the future.

## MINERALS MANAGEMENT

The Minerals Management Program, hereafter called Mineral Program, is responsible for ensuring that mineral activities on all LDWF properties are compatible with the environment, and that wildlife management area (WMA)/refuge goals and objectives are met. Mineral Program staff reviewed and evaluated 66 well locations, pipeline projects and other mineral exploration related permits on LDWF properties. The program also issued 10 rights-of-way, surface leases, surface/subsurface leases, and 18 mineral leases were allowed on LDWF properties during FY 2013-2014. All of these projects are reviewed and coordinated with field personnel to ensure that they are compatible with LDWF management area programs.

In FY 2013-2014 the Mineral Program continued to generate significant revenues for LDWF, which includes mineral royalties, rights-of-way, surface leases and seismic fees. In addition, the Mineral Program staff issued 57 airboat/marsh buggy permits for various activities on LDWF properties. The Mineral Program also coordinated with the LDNR Office of Conservation for the removal of numerous abandoned oil and gas facilities on WMAs and refuges. The Mineral Program continues to work closely with other programs within LDWF and the LDNR Office of Coastal Management in an ongoing effort to streamline the Coastal Use Permitting process.

In addition to the previously mentioned duties, the Mineral Program has continued to administer LDWF's Dredge Fill Program. This program issues approximately 75 to 100 dredge licenses annually, generating approximately \$1 million in annual revenue.

The Mineral Program also applied for and received 12 USACE permits which authorized LDWF to undertake management actions on LDWF properties.

## HABITAT

The objectives of the Habitat Section are to gather and compile data on fish and wildlife resources, determine the requirements for conserving the resources, and provide information to governmental agencies, nongovernmental organizations (NGOs) and the public. Data are also gathered on the potential impacts of human activities on the resources. These data and technical assistance are provided to regulators, planners and decision-makers in advance of execution of projects in order to avoid, minimize and/or mitigate any adverse environmental impacts. In FY 2013-2014 the Habitat Section was comprised of the four following programs: Statewide Environmental Investigations; Louisiana Natural and Scenic Rivers Program; Permits Coordination; and Seismic Section.

to 1,893 state and federal permit applications during FY 2013-2014. It was determined that compensatory mitigation was required on approximately 30 percent of the 1,893 projects reviewed. Written comments and recommendations aimed at avoiding, minimizing and/or mitigating adverse impacts were issued by LDWF for all state and federal permit applications received. *Figure 1* shows the dramatic increase in the number of permits being applied for and is a good indication of the increased demand on staff in the last four years.

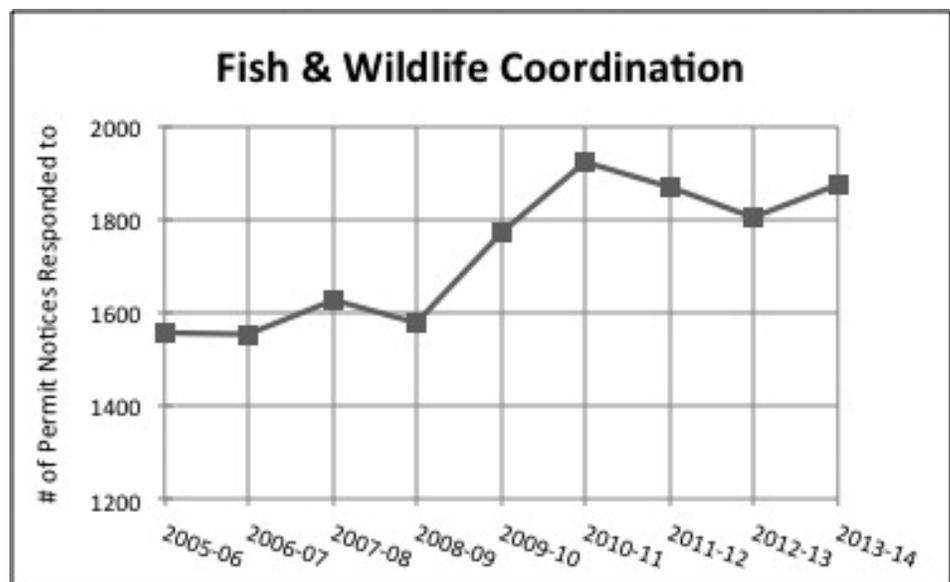
As seen in the past two fiscal years, staff continued to receive a significant number of USACE Section 10 permit applications for the with-

drawal of surface water classified as waters of the United States. These water withdrawal requests were primarily for hydraulic fracturing of shale formations in the Haynesville Shale of northwest Louisiana and the Tuscaloosa Marine Shale of southeast Louisiana. LDWF responded to all such permit requests with recommendations on how to conduct these substantial water withdrawals while also avoiding adverse impacts to fish and wildlife resources. As a direct result of this surface water need, LDWF worked with LDNR and the Louisiana Department of Environmental Quality (LDEQ) to provide USACE regulators with a single comprehensive and technically sound guidance document for each Section 10 permit application.

## STATEWIDE ENVIRONMENTAL INVESTIGATIONS

### PERMIT REVIEW AND COMMENT – LDNR & USACE

Statewide Environmental Investigations is authorized under the Fish and Wildlife Coordination Act and is partially funded by a USFWS grant. Staff is responsible for reviewing and providing comments and mitigation recommendations on all permits sought from state and federal environmental regulatory agencies, primarily LDNR and USACE. Staff members received, reviewed and provided comments



**FIGURE 1.** Technical assistance provided to regulatory agencies.

In addition to permit review, staff participated in permit site inspections and habitat evaluations, provided technical assistance to the public on wetland issues, and worked with private developers and consultants involved in the regulatory process. During FY 2013-2014, staff conducted 123 on-site field inspections and participated in 139 meetings with applicants, agents and regulatory agency personnel.

Staff members also represented the agency on two Mitigation Bank Interagency Review Teams chaired separately by the USACE Vicksburg and New Orleans districts. The purpose of the Interagency Review Teams is to provide regulatory review, approval and oversight of wetlands mitigation banks. During FY 2013-2014, staff evaluated, inspected and provided technical comments and recommendations on dozens of wetlands mitigation banking proposals, mitigation banking instruments, and mitigation banking monitoring plans. A total of 11 wetland mitigation banks were approved and authorized in Louisiana during FY 2013-2014, totaling over 3,657 acres statewide. Staff also attended all Interagency Review Team meetings and as many of the site investigations as was possible.

Staff continued to provide technical assistance to USACE related to post-hurricane (i.e., Katrina and Ike) levee refurbishment, planning of improved hurricane protection systems, and identification of suitable compensatory mitigation to offset implementation of such systems.

Statewide Environmental Investigations also assisted in protecting all lessees of private oyster grounds by reviewing water bottom assessments submitted by project applicants prior to the initiation of activities affecting state water bottoms under lease to private parties for oyster production. When appropriate Coastal Use Permit applicants were required, at the request of Statewide Environmental Investigations staff, to modify the activity if the proposed location unnecessarily impacts an oyster reef. There were 114 water bottom assessments reviewed and approved by agency staff during FY 2013-2014.

## PROJECTS OF OTHER AGENCIES AND THE PRIVATE SECTOR

LDWF worked with numerous governmental agencies in conducting environmental investigations including: USFWS; National Marine Fisheries Service; U.S. Environmental Protection Agency; USACE; U.S. Forest Service; USDA; Federal Highway Administration; Federal Aviation Administration; Farmers Home Administration; U.S. Coast Guard; Department of En-



FIGURE 2. Gulf Coast Prairie Landscape Conservation Cooperative map.

ergy; Federal Energy Regulatory Commission; Department of Defense; Housing and Urban Development; Louisiana Department of Transportation and Development; LDNR; LDEQ; the Louisiana Department of Culture, Recreation and Tourism (DCRT); and the Louisiana Division of Administration, Office of Community Development.

## WATER RESOURCES

LDWF continued to serve on the Louisiana Water Resources Commission. The purpose of the commission is to develop a statewide water management plan for ground water and surface water use and conservation. Much of the focus of this initial plan was on ground water resources. The commission convened twice between July 1, 2013 and June 30, 2014 to receive reports on progress of implementing the recommendations of the initial plan. As the commission continues its work, our role will be to ensure that the conservation of fish, wildlife and their supporting habitats are an important consideration when making water management decisions.

## LANDSCAPE CONSERVATION COOPERATIVES

We have continued to commit time and resources to participating in the Gulf Coast Prairie Landscape Conservation Cooperative (Gulf Coast Prairie LCC). The LCC, comprised of state and federal agencies, universities and NGOs, is charged with providing the best available science as the foundation in delivering a coordinated approach to meeting conservation needs across the Gulf Coast Prairie LCC landscape (Figure 2). LDWF participates as both a Steering

Committee member and Science Team member. This past year the Science Team developed a list of 28 focal species which will serve as important indicators of functioning landscapes and is needed to implement Strategic Habitat Conservation. The Science Team also finalized a Science Strategy that will provide strategic guidance to the LCC for the next five years.

## TECHNICAL ASSISTANCE PROVIDED

As a new performance indicator, we began tracking the number of telephone and e-mail responses provided to any request of a technical nature from the public, landowners, media, public agencies, universities, schools and NGOs for conservation recommendations, guidance, biological data or project reviews. During FY 2013-2014 we replied to a total of 2,047 requests for technical information.

## LOUISIANA NATURAL AND SCENIC RIVERS PROGRAM

The Scenic Rivers Program is charged with the administration of the Louisiana Natural and Scenic Rivers Act. The act requires that LDWF, through the Scenic Rivers Coordinator, administer a permitting system for activities that have potential for significant ecological impact to designated natural and scenic rivers, as well as a system of monitoring, surveillance, investigation and enforcement for the purpose of ensuring compliance with the act. The Scenic Rivers Act, and the rules and regulations promulgated under its authority, provide for the development of management plans, stream



*Heavy rains from Hurricane Isaac and the spring floods of 2013 resulted in extensive stream migration and bankline erosion along streams in the Florida Parishes of southeast Louisiana. The image on the left is of a mobile home washed into the Bogue Chitto River, a Natural and Scenic River. The image on the right is of the same site following an LDWF-led effort to have the mobile home and associated debris removed from the scenic river.*

surveys and enforcement. There are currently approximately 80 streams and/or stream segments in the system constituting an estimated 3,100 linear miles of Louisiana's streams, rivers and bayous.

Changes to the Scenic Rivers Rules and Regulations developed during FY 2012-2013 (including prohibiting motorized vehicles in the streambeds of Scenic Rivers, regulation of houseboats and floating camps moored on Scenic Rivers, clarification of the "100-foot rule" with respect to the need for permits, and modernizing of the permit application submittal process) were presented to the Wildlife and Fisheries Commission on two separate occasions during fiscal year 2013-2014. Following public notice, Scenic Rivers staff accepted public comment for a period of 11 weeks. Staff assisted in completing the Notice of Intent and Fiscal and Economic Impact Statement, and the new Scenic Rivers Rules and Regulations took effect on March 20, 2014.

House Concurrent Resolution 68 was passed in the 2013 Session of the Legislature. Resolution 68 directed LDWF to take another year focusing on that part of Bayou Teche that flows through St Martin and St. Landry parishes (i.e., excluding that portion of Bayou Teche that flows through Iberia and St. Mary parishes) for possible inclusion as a designated Historic and Scenic River. In order to receive public input and gather comments Scenic Rivers staff held seven additional public meetings. LDWF conducted the follow-up study, completing our work prior to the convening of the 2014 Legislative Session; however, due to a lack of public support the nomination ultimately did not move forward.

The Scenic Rivers Program's website began undergoing very extensive renovation during FY 2012-2013 and continued to be updated throughout FY 2013-2014. Applications for

proposed activities on Scenic Rivers are now available online for review and comment by all interested parties. The interactive map which allows users to see where activities have been permitted in the past along with information about the applicant and nature of the activity was regularly updated by staff. The website and forms continue to be updated and modernized.

Staff has continued work on the State Wildlife Grant (SWG) project to accurately map our Scenic Rivers and use those maps to generate reports for each Scenic Stream that alert us to the presence of elements and species of concern tracked by our Natural Heritage Program to assist us in providing appropriate protection to the resources when we are able. In addition program staff submitted a separate SWG proposal for the funding of Scenic Rivers Management Plan development. This funding will assist Scenic Rivers in completing Management Plans for Beckwith Creek, Hickory Branch, Barnes Creek, Bundicks Creek and Drakes Creek during FY 2014-2015.

In FY 2013-2014, the information needed to complete the Bayou Liberty Management Plan was accumulated and LDWF began drafting of the Scenic River Management Plan for Bayou Liberty (located in St. Tammany parish). The Bayou Liberty Management Plan is being developed in consultation with the Division of Administration, Louisiana DCRT, Louisiana Department of Agriculture and Forestry, LDEQ, local government agencies and NGOs. Each Scenic River Management Plan aims to accomplish the following:

- Identify important features to be protected and preserved.
- Identify potential issues, problems and needs that impact the river.
- Recommend measures for enhancement and reclamation of resources.

- Set forth management goals for the preservation of the river.
- Provide for continuing public involvement.

Scenic Rivers staff gave 12 presentations on the Scenic Rivers Program to local civic and governmental organizations. LDWF has continued to work with the Webster Parish Police Jury and the State Lands Office as a member of the Bayou Dorcheat Restoration Committee to remove a number of out-of-service bridges and other man-made obstructions on Bayou Dorcheat. In addition, LDWF actively participated in Tangi Clean citizen's group, Bayou Manchac Group, and the Comite River landowners group.

Several enforcement actions were initiated in FY 2013-2014. These included cases of illegal mining activities, littering, illegal point source discharges, operating on scenic rivers without permits, and illegal commercial cutting of trees. One case of illegal mining in East Baton Rouge Parish, made in 2009, remains in litigation. The coordinator and staff, through routine surveillance, project inspections and response to complaints, ensured compliance with permit conditions, utilization of adequate sediment control measures, and appropriate cleanup and restoration of permitted project sites.

The coordinator and staff maintained regular contact with both state and federal agencies to ensure that designated scenic rivers were considered in all levels of planning and permitting. They also worked closely with city planners, police juries, mayors and local interest groups and organizations throughout the state.

A total of 30 Scenic River Permits were issued during FY 2013-2014. In addition to issuing permits, Scenic Rivers staff made 10 determinations of "no permit required" for activities undertaken near scenic rivers but with no po-

tential to significantly degrade the ecological integrity of a scenic river. The coordinator and staff conducted 88 site visits and field investigations statewide, surveyed approximately 184 stream miles and attended 15 meetings specific to Scenic Rivers issues.

### PERMITS COORDINATION

The purpose of the Permits Coordination Program is to ensure that LDWF receives, reviews and responds to and distributes comments and mitigation recommendations on all permit notices received from state and federal environmental regulatory agencies in an efficient and timely manner (i.e. prior to public notice comment period deadlines). LDWF’s written comments are in-turn used by the regulatory agencies to make final determinations on how to best avoid, minimize and/or mitigate adverse impacts to fish and wildlife resources.

In order to accomplish this task, the LDWF Permits Coordinator serves as the primary liaison and “single point of contact” for all regulatory agencies, primarily LDNR and USACE. It is the responsibility of the Permits Coordinator to ensure that the LDWF biologist with the appropriate authority and expertise is included in the formulation of written comments and mitigation recommendations. The Permits Coordi-

nator also ensures that there is adequate department representation at all LDNR Geologic Review and pre-application meetings.

The Permits Coordinator also utilizes, maintains and populates a comprehensive searchable database for all permit notices. This database is of critical importance to ensure a timely response from LDWF. The database also archives LDWF’s formal response to all permit notices dating back to 2006.

During FY 2013-2014, the Permits Coordinator received, processed, tracked and disseminated responses to 1,893 permit notices.

### SEISMIC SECTION

The LDWF Seismic Section was created in 1939 specifically to protect fish, oysters, shrimp, wildlife and other areas of concern from the effects of seismic exploration. Seismic exploration uses energy waves to generate a profile of sub-surface reflective layers that help define potential oil and gas traps. The energy waves can be produced by explosives detonated below the ground, by air guns that emit a burst of air at the surface of water bodies, by large vibrating pads placed on the surface, or other energy sources. These projects can occur in sensitive wetlands, water bodies and uplands.

LDWF performs a Natural Heritage Review on each individual seismic job to determine the presence of rare, threatened and endangered species and other areas of conservation concern. The Natural Heritage Review includes specific conditions that the applicant must adhere to for the protection of such species. LDWF Seismic agents also monitor geophysical companies to protect Louisiana’s fish and wildlife resources by ensuring compliance with LDWF seismic rules and regulations.

Some of the Seismic Sections accomplishments for FY 2013-2014 are:

- Monitored 15 seismic projects throughout the state.
- Closely interacted with seismic companies to ensure compliance with the rules and regulations of the Seismic Section.
- Ensured protection of threatened and endangered species and other areas of concern.

## LOUISIANA NATURAL HERITAGE PROGRAM

The Louisiana Natural Heritage Program (LNHP) is responsible for the conservation of Louisiana’s rare, threatened and endangered (RTE) species, nongame birds, and habitats. LNHP staff conducts research on nongame birds, rare species and habitats of conservation concern, and works with landowners that have rare species and habitats to promote the future survival of those elements. Data concerning rare elements are collected and stored in the Biotics database system. These data are then used to determine potential adverse impacts to the environment. LNHP is composed of four main sections: Data, Botany/Ecology, Zoological and State Wildlife Grants.

### LANDSCAPE CONSERVATION COOPERATIVES

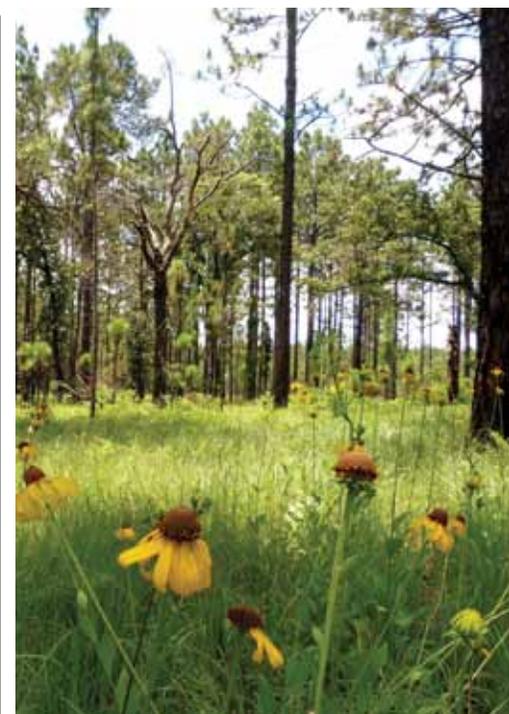
We have continued to commit time and resources to participating in the Gulf Coast Prairie LCC. LDWF participates as both a Steering

Committee member and Science Team member. This past year the Science Team has developed projects concerning barrier islands, coastal prairies, bobwhite, oyster, alligator gar, *Quadrula* species, and mottled ducks. The LCC has also developed a prairie team that has focused on coastal prairies and is tasked with the following:

1. Describing coastal prairie and its variations-pasture, improved pasture, rangeland (the mosaic),
2. Where should conservation efforts be focused to acquire, restore and manage coastal prairie
3. Focus on the Chenier Plain in Calcasieu and northern Cameron Parish to Jefferson and Chambers counties in Texas

### EAST GULF COASTAL PLAIN JOINT VENTURE

LDWF LNHP continued to participate as a board member in the East Gulf Coast Plain Joint Venture (EGCPJV). The LNHP manager served as



*Pine forest with rough coneflower.*

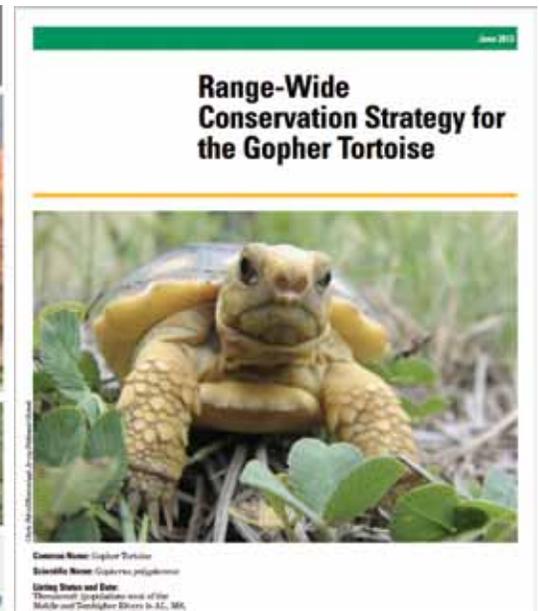
chair of the Prescribed Fire Committee and coordinated the development of the Prescribed Fire Communications Plan. This strategy builds upon the unique strengths of the EGCPJV Management Board and staff, which lend themselves to achieving prescribed fire goals. It was developed over the course of several months based upon information provided in interviews of approximately 45 prescribed fire/resource management experts throughout the East Gulf Coastal Plain, as well as guidance from the EGCPJV staff and board members concerning their mission, strengths and appropriate roles in promoting prescribed fire. The EGCPJV's vision for prescribed fire in the Southeast is to maintain and restore fire regimes through an increased use and acceptance of prescribed fire, since fire has historically and evolutionarily played a critical role in the health of East Gulf Coastal Plain upland systems and marshes. Specifically, communications and partnerships will increase the safe use of prescribed fire to restore, improve and sustain the ecosystem health of fire-dependent systems such as shortleaf and longleaf pine, mixed pine woodlands, oak woodlands and savannas, native warm season grasses and distinct climax grasslands such as the Black Belt Prairies of Mississippi/Alabama and Big Barrens of Kentucky/Tennessee.

## COMMUNICATIONS GOALS AND APPROACH

- 1. POLICY GOAL:** Support and advocate the establishment and/or strengthening of laws, policies, budgets and regulations required to consistently allow, promote and apply prescribed fire across the Southeast.
- 2. OUTREACH GOAL:** Foster the adoption and increased application of prescribed fire among East Gulf Coastal Plain resource program and management communities by providing science-based information and training focused on fire's ecological, wildlife and habitat benefits. Include a focus on recruitment and training of professionals and consultants to increase overall capacity for conducting prescribed burns.
- 3. EDUCATION GOAL:** Promote an increased societal awareness of and demand for safe, science-based application of prescribed fire in support of community safety and ecological health. In particular, focus on training for landowners to achieve fire capacity and application at a large scale.



**LEFT:** The cover of the East Gulf Coastal Plain Prescribed Fire Strategy. **RIGHT:** Range-wide Gopher Tortoise Conservation Strategy developed by the SEAFWA Wildlife Diversity Committee.



## SOUTHEASTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES: WILDLIFE DIVERSITY COMMITTEE (SEAFWA WDC)

The SEAFWA WDC mission is to determine whether federal candidates and petitioned species warrant listing under the Endangered Species Act. This committee is composed of Southeastern state representatives and USFWS personnel. LNHP staff continued to represent Louisiana on the WDC and attended the annual SEAFWA conference in October 2013. Staff also attended the winter WDC meeting in Mansfield, Ga. During the FY 2013-2014, this committee developed the Range-wide Gopher Tortoise Conservation Strategy. This strategy addresses issues concerning gopher tortoise both in the listed and non-listed portions of this species range.

## BIODIVERSITY WITHOUT BOUNDARIES 2014 CONFERENCE

LNHP along with NatureServe hosted the annual Biodiversity Without Boundaries conference in New Orleans. This conference is attended by natural heritage programs from Canada, US, Mexico and Central and South America. This is the first time this international conference

has been hosted in Louisiana. LNHP led several field trips including a birding trip to Grand Island and a botany trip to Lake Ramsey WMA. LNHP also aided in Natural Heritage Methodology Training for this conference. LNHP also led a Forest Management Symposium at the conference that was sponsored by Weyerhaeuser. Below is a list of LNHP activities leading up to, and during the conference.

- Biweekly conference calls with NatureServe's Conference Planning Committee
- Southeast planning conference calls where LNHP staff offered suggestions on content and format for the conference to ensure the conference was pertinent and valuable to all states in the Southeast Region.
- Planning and coordination of four all day field trips held for conference participants, with LNHP staff leading the excursions
- Planning and coordination of auction items
- Worked with NatureServe's Chief Development and Engagement Officer on local sponsors for BWB
- Webinars
- Logistics including transportation, hotel accommodations, conference registration, etc.
- Co-hosted NatureServe's 2014 Core Heritage Methodology Training (CHMT) in Covington, Louisiana. This included:
  - Monthly conference calls with NatureServe's CHMT Committee
  - Planning and coordination of logistics including hotel, evening social, transportation, lunches, etc

**BWB**  
**2014**  
**NOLA**

**BIODIVERSITY WITHOUT BOUNDARIES**  
The NatureServe Conservation Conference  
April 6–10, 2014

## Join Us at Biodiversity Without Boundaries 2014!

New Orleans, Louisiana is the site of NatureServe's next Biodiversity Without Boundaries (BWB) conference, taking place from April 6-10, 2014. BWB is where the NatureServe network, our partners, and our friends gather to celebrate our successes, collaborate on new initiatives, share our innovations, and design the future. More than ever, we'll be emphasizing education, working sessions, and networking. Join us in our discussions about how we are providing, and how we can continue to provide, the scientific basis for effective conservation.

With one of the world's most fascinating cities as the backdrop, NatureServe and the [Louisiana Natural Heritage Program](#) are planning a full and satisfying conference. NatureServe Methodology Training will be offered Saturday through Monday. Sunday's field trips will explore southern Louisiana's beautiful and diverse wildlands – cypress-tupelo swamps, bays, marshes, mangroves, bottomland hardwood forests, chenier woodlands, and remnant prairies. Workshops will explore how member programs can stay relevant in an increasingly competitive environment, and how to design a program to provide the basis for effective conservation action. Other highlights include the member program awards reception, and the NatureServe Conservation Award dinner (past winners include Walt Reid, William Ruckelshaus, and E.O. Wilson).



**LEFT:** Announcement for the Biodiversity Without Boundaries 2014 conference. **TOP RIGHT:** Core Methodology Training in the field - looking at a gopher tortoise burrow (photo by Shara Howie / NatureServe). **BOTTOM RIGHT:** LNHP staff leading birding trip at TNC property in Grand Isle (photo by Don Kent / NatureServe).

- Planning and coordination of field site for field based training
- Planning and coordination with NatureServe staff on field training Including: threatened and endangered species within the selected field site, maps, site visits prior to the training, the CHMT agenda, and LNHP staff Involvement in the field based training
- Webinars

### RARE, THREATENED AND ENDANGERED SPECIES WORKSHOP FOR PLUM CREEK TIMBER COMPANY

LNHP provided a workshop on RTE species and communities for Plum Creek in Winnfield, La. This workshop focused on rare elements that occur or may occur on Plum Creek properties in Louisiana. The first half of the course consisted of in class presentations, and the latter

half consisted of a field trip to a Plum Creek owned calcareous prairie where we discussed management for rare communities and the role of prescribed fire in the maintenance of these systems. This workshop provided six hours of Sustainable Forestry Initiative (SFI) continuing education credits. Across Canada and the United States, more than 240 million acres (100 million hectares) are certified to the SFI forest management standard, the largest single forest standard in the world. The SFI program's unique fiber sourcing requirements promote responsible forest management on all suppliers' lands. SFI chain-of-custody certification tracks the percentage of fiber from certified forests, certified sourcing and post-consumer recycled content. SFI on-product labels identify both certified sourcing and chain-of-custody claims to help consumers make responsible purchasing decisions. The data that LNHP provides to timber management organizations regarding RTE species and communities allows these companies to ensure that they meet SFI standards by managing for these elements on

their land holdings. LNHP provides free data agreements to timber companies and training on rare elements on their properties. In exchange for these services, LNHP is allowed access to timber company lands to survey for rare, threatened, and endangered species and communities.

### LNHP COMMITTEE PARTICIPATION

LNHP staff participates in a myriad of organizations both at the state and national level. Below is a list of groups that LNHP is associated with:

- Wildlife Diversity Program Manager (national Teaming With Wildlife coalition)
- East Gulf Coastal Plain Joint Venture Management Board
- East Gulf Coastal Plain Joint Venture Priority Species Working Group
- East Gulf Coastal Plain Joint Venture Prescribed Fire Team
- Coastal Prairie Conservation Partnership



*Plum Creek Workshop Field Trip to Calcareous Prairie.*

- USDA-NRCS State Technical Committee
- Ivory-billed Woodpecker Recovery Team
- LA Association Professional Biologists
- LA Forestry Association Recreation & Endangered Species Committee
- LA Wildlife Federation
- SEAFWA Wildlife Diversity Committee
- AFWA SWAP Coordinators Committee
- Dusky Gopher Frog Recovery Team
- Texas/Louisiana Longleaf Taskforce
- Natural Areas Preserve Committee
- LA Amphibian Monitoring Program
- LA Reptile and Amphibian Task Force
- Gulf Coastal Plains & Ozarks LCC
- Committee on Standard English and Scientific Names
- Gulf Coastal Plains & Ozarks LCC Alligator Snapping Turtle/Pine Snake/LA PearlsHELL Mussel Groups
- CORA and MYAU Conservation Strategy Development Team
- Gopher Tortoise Council
- LA Pine Snake Conservation Committee
- LA Pine Snake Conservation Committee Trapping & Monitoring Subcommittee
- LA Pine Snake Reintroduction Committee
- National Military Fish and Wildlife Association
- LA Amphibian Monitoring Program
- NRDA Marine Mammal and Sea Turtle TWG
- NRDA Terrestrial and Aquatic TWG
- Gopher Tortoise Bank Review Team
- White-nosed syndrome committee: southeastern partners
- LA PearlsHELL Mussel Conservation Committee
- State Wildlife Grants Committee
- Gulf Coastal Plains & Ozarks LCC Adaptation Science Management Team
- Gopher Tortoise Council
- Gopher Tortoise Minimum Viable Population Working Group
- Gopher Tortoise Rangewide Conservation Strategy Working Group
- Gopher Tortoise Rangewide Waif/Disease Working Group
- Southeast Partners in Amphibian and Reptile Conservation Committee
- Northern Gulf Manatee Stranding Network
- American Oystercatcher Working Group
- LA/MS Conservation Delivery Network
- BTNEP Invasive Species Action Team
- East Gulf Coastal Plain JV Pine Communities Working Group
- LA Native Plant Society
- LDWF Safety Review Committee
- AFWA Bird Conservation Committee
- Atchafalaya Basin Nongame Bird Committee
- Bird Island Working Group
- BTNEP Bird Project Committee
- Eastern Black Rail Working Group
- Gulf Coast Joint Venture Landbird MERT
- Important Bird Areas Technical Committee
- Gulf of Mexico Bird Monitoring Working Group
- Mississippi Flyway Council Nongame Technical Committee
- NRDA Avian TWG
- NRDA Avian Restoration
- Southeast Partners In Flight
- Quail and Grassland Bird Task Force
- Swallow-tailed Kite Conservation Alliance (Working Group)
- Whooping Crane/White Lake Advisory Board
- Working Wetlands
- Wind Energy Task Force
- Gulf Coast Prairies LCC Science Team
- Gulf Coast Prairies LCC Prairie Team

## LNHP OUTREACH PRESENTATIONS AND PUBLIC EVENTS

- Lafayette Horticultural Society meeting
- New Orleans Herb Society meeting
- GFWC Lagniappe Women's Club meeting
- Land Trust for Louisiana meeting
- "Field Studies in Wildlife Habitat" (RNR 3005) course at LSU
- "Flora of the Central Gulf Coast" (BIOL 4055) course at LSU
- Cub Scouts of America forestry training course
- Louisiana Master Naturalists of Greater New Orleans training course
- Fort Polk Environmental and Cultural Resources seminar
- Biodiversity Without Boundaries Conference botany field trip to Lake Ramsey WMA.
- Plum Creek Timber Company Rare Species and Habitat Workshop
- Birds, Bogs and Butterflies presentation and nature walk
- Louisiana Environmental Education Commission Symposium
- Stir the Pot Seafood Cook-off and Festival
- Louisiana Heritage Cook-off festival
- Neotropical Migratory Songbird Tour
- Louisiana Wildlife and Fisheries Foundation Auction Bird Tours
- NatureServe Biodiversity Without Boundaries field trips
- Grand Isle Migratory Bird Festival
- Audubon Endangered Species Day
- National Hunting and Fishing Day
- Yellow Rails and Rice Festival
- Various library, high school, elementary and Cub Scout talks.
- Palmetto Island State Park Stir the Pot Festival
- Lake Charles American Press article on rare crawfish
- Lake Charles American Press article on bats
- Annual Gopher Tortoise Council Meeting and Spring and Fall Business Meetings
- Field lecture to Biology class at SE LA University
- LPB "Life on the Edge" documentary series
- Plum Creek sustainable forestry workshop
- Baton Rouge WBRZ interview regarding American White Pelicans
- Lake Charles KPLC interview regarding turtles
- Southeast Partners in Amphibian and Reptile Conservation Annual Meeting
- SEAFWA conference and Wildlife Diversity Committee meetings
- Moderated annual Louisiana Pine Snake Working Group meeting

- Annual Gopher Tortoise CCA meeting
- Gopher Tortoise Minimum Viable Population Coordination meeting
- Louisiana Amphibian Program Annual Meeting
- Presentation to CPRA regarding coastal bird protection
- Invited speaker for Texas Waterbird Society meeting
- Presentation to Louisiana Master Naturalists and Louisiana Ornithological Society on anthropogenic bird mortality
- Louisiana Environmental Education Symposium

## LOUISIANA’S WILDLIFE ACTION PLAN AND STATE WILDLIFE GRANTS PROGRAM

In November 2001, Congress created the State Wildlife Grants (SWG) program. According to the federal legislation that created the program, SWG was established “for the development and implementation of programs for the benefit of wildlife and their habitat, including species that are not hunted or fished.” The inclusion of species that are not hunted or fished is a crucial aspect of the SWG program, as many of these species previously had no existing source of funding. In fact, the SWG program has now become the primary funding source for non-game conservation nationwide, with the stated goal of preventing species from being federally listed as threatened or endangered.

### WILDLIFE ACTION PLAN REVISION

Congress stipulated that each state fish and wildlife agency that wished to participate in the SWG program develop a Comprehensive Wildlife Conservation Strategy by October 2005. In response, LDWF developed a comprehensive planning document to establish conservation needs and guide the use of SWG grant funds for the next 10 years. The document, known as the state’s Wildlife Action Plan (WAP), was submitted for approval to the National Advisory Acceptance Team and was subsequently approved in December 2005. The WAP is the roadmap for non-game conservation in Louisiana, and must be reviewed and revised every 10 years to ensure that it remains an effective tool for conservation planning and implementation.

The first comprehensive revision of the Louisiana WAP is currently underway, and must be

submitted to USFWS by Oct. 1, 2015. A total of 22 WAP revision meetings were held before the end of the fiscal year, and significant progress was made on the revision. Tasks completed during FY 2013-2014 included finishing revising the Species of Greatest Conservation Need, Research Needs and Conservation Strategies, more comprehensively addressing the issue of invasive species, addressing climate change impacts to species of greatest conservation need, revising and adding habitat descriptions, and working towards defining priority areas for conservation, known as Conservation Opportunity Areas. The SWG Coordinator devoted 430 hours to the revision during the fiscal year.

### FY 2013-2014 SWG FUNDING CYCLE AND GRANT MANAGEMENT ACTIVITIES

The SWG program is funded by annual Congressional appropriations. The USFWS apportions these funds to state fish and wildlife agencies based on the land area and population of each state. Since the inception of the SWG program, the state of Louisiana has received approximately \$12,000,000 in federal SWG funding, with an apportionment of \$690,000 in FY 2013-2014. Louisiana has funded 125 projects through the SWG program to date. Funded SWG projects have included biological inventories, research projects, habitat management, and the development and maintenance of databases. A wide range of SGCN have benefited from SWG funding in Louisiana, including the Louisiana black bear, whooping cranes, swallow-tailed kites, alligator snapping turtles, freshwater mussels, and neo-tropical migrant songbirds.

SWG proposals are accepted by LDWF on an annual basis, and include projects developed by LDWF personnel, NGOs and universities. SWG proposals are reviewed by LDWF’s SWG Committee, consisting of 17 biologists representing the CNR Division, Inland Fisheries, Marine Fisheries, and Wildlife Division.

During FY 2013-2014, 16 new project proposals were received for funding consideration. Eleven proposals received approval by the SWG Committee by the end of FY 2013-2014 (*Table 1*), and had been submitted to USFWS for approval, along with all required documentation. After grant closings on June 30, 2014, there remained 43 ongoing SWG-funded projects, including the 11 new projects approved prior to June 30. Also, in FY 2013-2014 LDWF was awarded a competitive multi-state SWG entitled “Recovery of the Alligator Snapping Turtle in the Mississippi River Drainages of Southern Illinois, Oklahoma, and Louisiana,” in partner-

TABLE 1.

New Louisiana State Wildlife Grants Opened During FY 2013-2014	
	The Impact of Off-road Vehicle Traffic on Turtle Nests and Populations in the Comite River
	Comprehensive Survey of Marine Bivalves in Near-shore Waters of the Chandeleur Islands
	Promotion of Prescribed Burning as a Management Tool on Selected Habitat Types within the Louisiana East Gulf Coastal Plain
	Overwinter Survival of Henslow’s Sparrows in Louisiana
	Alligator Snapping Turtle Headstart Program
	Productivity and Survivorship of Landbirds in Bottomland Hardwoods
	Surveys for the Northern Long-Eared Bat in Louisiana
	Colonial Waterbird Response to Predator Removal on Barrier Islands
	Develop and Publish Management Plans for Five Louisiana Designated Natural and Scenic Rivers
	Bald Eagle Nesting Surveys
	Coastal Prairie Stewardship on White Lake Wetlands Conservation Area

TABLE 2.

Louisiana State Wildlife Grants Closed During Fiscal Year 2013-2014	
T-2-R	Impacts of Chinese Privet Invasion in South Louisiana Bottomland Hardwood Forests
T-30-3	LDWF MAPS Stations on Wildlife Management Area
T-30-4	LDWF MAPS Stations on Wildlife Management Area
T-66	Promotion of Prescribed Burning as a Management Tool on Selected Habitat Types within the Louisiana West Gulf Coastal Plain
T-68	Participation in a Region-Wide Count of Swallow-tailed Kite Pre-migration Roosts
T-72-4	Black Bear Conflict Management Program
T-77	Louisiana Coastal Prairie Condition Assessment
T-78	Aquatic Herpetofaunal Surveys at Boeuf WMA
T-86	Natural Community Inventory Enhancement
T-88-2	The Efficacy of Newly Constructed Barrier Island Marshes and Rock Breakwaters for Providing Fish Habitat
T-94	Surveys of the Aquatic Turtle Fauna of Southwestern Louisiana
T-100	Dredge Spoil Island Management at the Atchafalaya Delta
T-103	Ringgold Morse Clay Prairie Restoration

ship with the Illinois Department of Natural Resources and Oklahoma Department of Conservation, as well as the University of Louisiana at Monroe.

During FY 2013-2014, 13 SWG grants were closed (Table 2). Copies of final reports for all closed SWG grants are available to interested parties upon request. Twenty-two grant amendments were submitted to USFWS during FY 2013-2014, and 46 grant reports were submitted to USFWS during the fiscal year.

## STATE WILDLIFE GRANTS FUNDED RESEARCH PRODUCTS

Since the inception of the SWG program in Louisiana, research funded through these grants has produced over 50 peer-reviewed publications, adding greatly to the body of

knowledge concerning Louisiana's fish and wildlife. During FY 2013-2014 Louisiana SWG produced 10 peer-reviewed publications, representing seven different grants (Table 3).

## DATA SECTION

LNHP gathers occurrence information for rare, threatened and endangered wildlife species. Heritage data are integral in determining the status and state rankings for species of conservation concern, which drives the direction of non-game species research and conservation for the state of Louisiana. The information is stored in easily accessed GIS computer database files known as Biotics, which was developed by the Natural Heritage Network's parent organization, NatureServe. During FY 2013-2014, a total of 238 element occurrence records were added and/or updated in Biotics along with the associated information including location, species population status and habitat condition. The Waterbird Nesting Colony dataset was updated with 2013 flight survey data and several natural communities were added into Biotics. Noteworthy element occurrence records added into the LNHP database include the little dubiraphian riffle beetle (*Dubiraphia parva*) and the river redhorse (*Moxostoma carinatum*). There were two records

of the little dubiraphian riffle beetle (*Dubiraphia parva*) entered into Biotics, which were the first records entered into the database for this species. There was one record of the river redhorse entered into Biotics. This species was previously listed as extirpated in the state, but was recently rediscovered in the Ouachita River.

In addition to adding new element occurrences and updating existing records, the data section was heavily involved with the revision of the state WAP. During FY 2013-2014, WAP committee members began the process of developing Conservation Opportunity Areas (COAs) for inclusion in the WAP. These COAs will provide high priority focal areas for conservation and restoration activities in Louisiana. Data from multiple sources pulled together and considered contributing factors in the development of the COAs include urbanization data, existing protected lands, and species of conservation concern. Fine-scale watershed-based distribution maps were created for all birds, reptiles, amphibians and mammals and used as key components in the development of the COAs.

The Biotics database is used daily by LNHP staff to review construction activities and development projects planned by government and private entities throughout the state. These activities range from small to large-scale projects including residential, commercial and industrial development and the development of

TABLE 3.

Grant	Citation
T-75	Alford, J. B. 2014. Multi-scale assessment of habitats and stressors influencing stream fish assemblages in the Lake Pontchartrain Basin, USA. <i>Hydrobiologia</i> , 738(1), 129-146.
T-92	Brown, K. M., & Daniel, W. M. 2014. The population ecology of the threatened inflated heelsplitter, <i>Potamilus inflatus</i> , in the Amite River, Louisiana. <i>The American Midland Naturalist</i> , 171(2), 328-339.
T-92	Daniel, W. M., & Brown, K. M. (2013). Multifactorial model of habitat, host fish, and landscape effects on Louisiana freshwater mussels. <i>Freshwater Science</i> , 32(1), 193-203.
T-57	Holcomb, S. R., & Carr, J. L. (2013). Mammalian Depredation of Artificial Alligator Snapping Turtle ( <i>Macrochelys temminckii</i> ) Nests in North Louisiana. <i>Southeastern Naturalist</i> , 12(3), 478-491.
T-55	Kang, S. R., & King, S. L. (2013). Seasonal comparison of aquatic macroinvertebrate assemblages in a flooded coastal freshwater marsh. <i>Open Journal of Ecology</i> , 3, 94.
T-55	Kang, S. R., & King, S. L. (2013). Effects of Hydrologic Connectivity on Pond Environmental Characteristics in a Coastal Marsh System. <i>Southeastern Naturalist</i> , 12(3), 568-578.
T-97	Martin, N. H., & Taylor, S. J. (2013). Floral preference, flower constancy, and pollen transfer efficiency of the ruby-throated hummingbird ( <i>Archilochus colubris</i> ) in mixed arrays of <i>Iris nelsonii</i> and <i>Iris fulva</i> . <i>Evolutionary Ecology Research</i> , 15(7), 783-792.
T-65	Owen, T. M., & Pierce, A. R. (2013). Hatching Success and Nest Site Characteristics of Black Skimmer ( <i>Rynchops niger</i> ) on the Isles Dernieres Barrier Island Refuge, Louisiana. <i>Waterbirds</i> , 36(3), 342-347.
T-41	Pickens, B. A., & King, S. L. (2013). Microhabitat Selection, Demography and Correlates of Home Range Size for the King Rail ( <i>Rallus elegans</i> ). <i>Waterbirds</i> , 36(3), 319-329.
T-65	Raynor, E. J., Pierce, A. R., Owen, T. M., Leumas, C. M., & Rohwer, F. C. (2013). Short-Term Demographic Responses of a Coastal Waterbird Community After Two Major Hurricanes. <i>Waterbirds</i> , 36(1), 88-93.

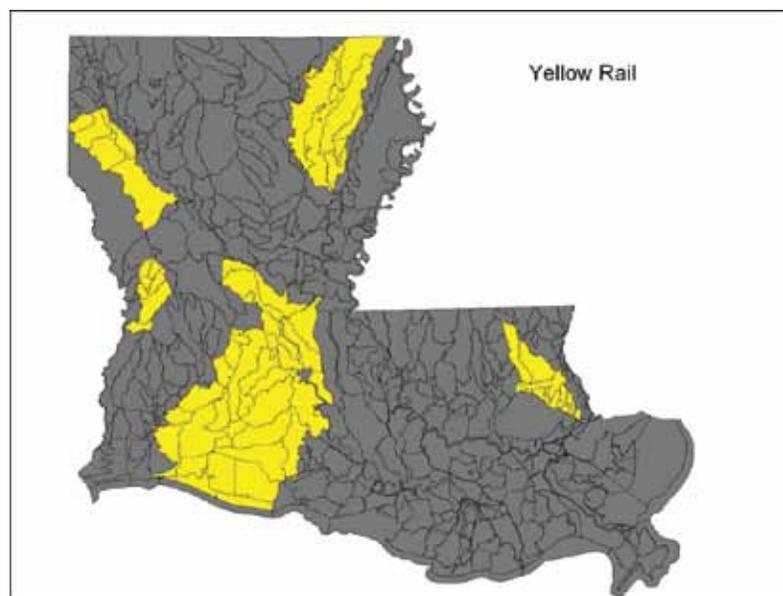


FIGURE 3. The above map depicts all of the sub basins identified for yellow rail. The sub basins include areas where yellow rail currently occur and have occurred in the past. These sub basins also include areas where yellow rail may occur, based on satellite imagery and expert opinion.

pipelines and roads. These activities repeatedly threaten RTE species and natural habitats across the state, and the LNHP is tasked with reducing and limiting these threats as much as possible.

Throughout the year, government and private entities will request species and habitat reviews for projects occurring in Louisiana. These reviews are collectively referred to as private consultant projects. The requesting organization submits a description of the proposed project to LNHP and a query of the LNHP database is run against the proposed project area. The results of the query show species of conservation concern and natural communities within one mile of the project area. A comment letter is submitted to the requesting organization identifying potential impacts to LNHP tracked species, communities and critical habitats. The letter also indicates the presence of scenic rivers, state or federal parks, wildlife refuges and WMAs occurring within 400 meters of the project area.

LNHP receives Coastal Use Permits submitted to LDWF by LDNR. Coastal Use Permits are required for commercial, residential and oil and gas projects occurring within Louisiana’s Coastal Zone. LDNR houses a subset of the LNHP database, allowing LDNR to flag Coastal Use Permits that occur near LNHP tracked species. These flagged Coastal Use Permits are forwarded to LNHP biologists for review. As with private consultant reviews, comments regarding potential impacts to RTE species, critical habitats, natural communities and species of concern are generated. The presence of scenic rivers, state or federal parks, wildlife refuges and WMAs within the project area are also included in the comment letter. The LNHP’s comments, along with comments from other programs within LDWF, are consolidated and an agency wide letter is submitted to LDNR.

LNHP also reviews USACE permits and permits from other regulatory agencies. These reviews are collectively referred to as internal reviews due to the fact they are received by LNHP from other departments within LDWF.

In FY 2013-2014, LNHP staff conducted 1,401 project reviews which included 452 private consultant project reviews, 860 new or modified Coastal Use Permits, and 89 internal project reviews.

The LNHP Database Section processed a total of 29 digital data requests for private consultants, nonprofit organizations, universities and government agencies, an increase of 38

percent from FY 2012-2013. The digital data request involves large scale projects. The requesting organization submits a description of the proposed project to LNHP, and a query of the LNHP database is run against the proposed project area. The results of the query show species of conservation concern and natural communities within a predetermined distance stated in the project request letter. A comment letter is submitted to the requesting organization identifying potential impacts to LNHP tracked species, communities and critical habitats, along with point and/or polygon data and associated species information. The information provided by the LNHP is applied to land use decisions, environmental impact assessments, resource management, conservation planning, endangered species reviews, research, and education.

In addition to data agreements produced for public and private entities, the Database Section worked in-house with the Seismic Section on 14 large-scale seismic and micro-seismic projects occurring throughout the state, an increase of 27 percent from FY 2012-2013. These projects were reviewed by LNHP and comments were submitted to the Seismic Section indicating potential impacts of these projects to LNHP tracked species and natural communities.

**PROJECTS**

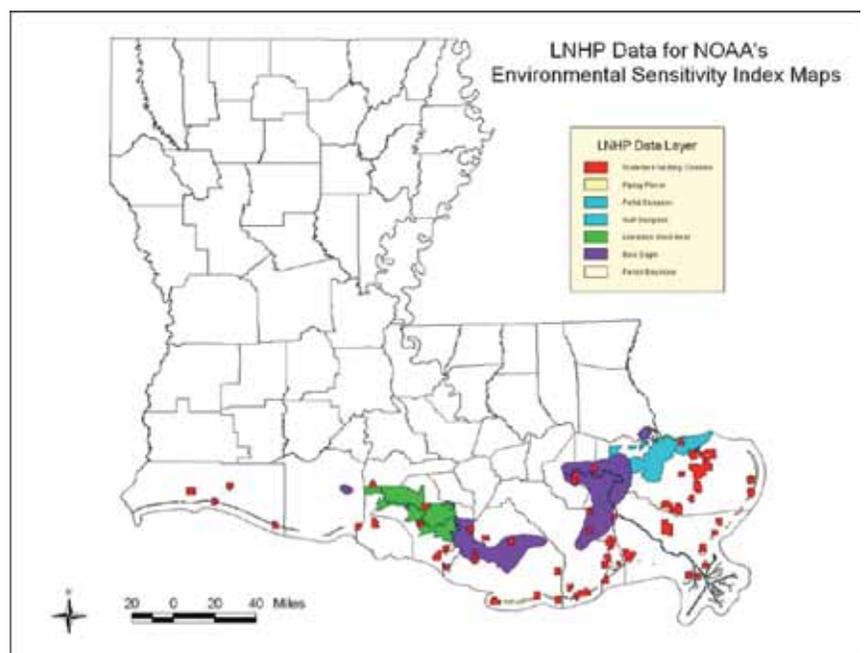
- The conversion of Biotics 4 - a client based software - to Biotics 5 - a fully integrated web-enabled platform for tabular and



Nicole Lorenz presenting the LNHP Data Explorer at NatureServe’s 2014 Biodiversity Without Boundaries conference in New Orleans, La.

spatial data management. The conversion involved administrative tasks for both tabular data and spatial data.

- Tabular data tasks included:
  - Updating Biotics to the most recent version
  - Running Quality Control Procedures
  - Cleaning up the database - Database Integrity Check and other Quality Control tasks
  - Providing the database to Nature-Serve
- Spatial data tasks included:



**FIGURE 4.** Buffered LNHP data layers provided to NOAA for inclusion in the Office of Response and Restoration Environmental Sensitivity Index maps.

- Providing managed layer shapefiles
- Preparing and providing layers for use in spatial calculations within Spatial Calculations geodatabase
- Identifying reference map layers needed
- Confirming source and format of hosted map services
- Preparing Map Document (.mxd) and geodatabase containing reference layers to be hosted by NatureServe
- Worked on updating content information on the website
- Continued working on the SWG Scenic Rivers project (T-84)
- Worked on the Section 6 Online Review Tool Project:
  - Worked on ArcView Layers for Review Tool
  - Provided comments, edits, and information to NatureServe on Louisiana's Review Tool demo site
  - Presented Louisiana's Review Tool at NatureServe's 2014 Biodiversity Without Boundaries
- Partnered with NOAA through Research Planning, providing data for inclusion in NOAA's Environmental Sensitivity Index maps. These maps are available for NOAA's Office of Response and Restoration website for oil spill response and planning. The focal area for this project was limited to Louisiana's coastal zone and the final product included information on Louisiana black bear, gulf sturgeon, pallid sturgeon, bald eagle, piping plover and 2011 waterbird nesting colonies.

## BOTANY/ECOLOGY SECTION

The main responsibilities of the Botany/Ecology Section include:

- Determining which plant species and natural communities (habitats) are rare in Louisiana.
- Collecting, organizing and distributing information on rare plants and natural communities.
- Conducting botanical inventories and ecological assessments on various properties.
- Interacting with landowners and managers to promote conservation of native plants and natural communities.
- Coordinating the Natural Areas Registry Program.
- Providing plant identification services to LDWF staff, natural resources professionals with other organizations, and the public.
- Coordination with the Louisiana Master Naturalist Program.

## PLANT IDENTIFICATION

Botany/Ecology staff members routinely perform plant identifications to assist others. Customers have included other LDWF biologists, natural resources professionals outside LDWF, students, and Louisiana citizens. In many cases this work involves identifying plants from images or specimens provided. Plant identification assistance is also provided in the field. For example, Botany/Ecology staff recently assisted LDWF technical services biologists with deer browse surveys and habitat assessments, and regularly assist the LDWF Forestry Section with herbaceous plant identification in growth monitoring plots on WMAs. Botany/Ecology staff members also provide plant identification training in the field upon request.

## COASTAL PRAIRIE RESEARCH AND STEWARDSHIP

Coastal prairie historically occupied ca. 2.5 million acres situated between the pine flatwoods and marsh in southwestern Louisiana. Coastal prairie owes its existence to harsh soils that inhibit forests, and frequent fire. Less than 1 percent of this prairie remains today, the vast majority having been converted to mechanized agriculture (mainly rice). As a result of this habitat loss, many grassland wildlife species are imperiled, and some have been extirpated from the state. The last tracts of unplowed coastal prairie are found in the cattle country in the Lake Charles area where they are being utilized as rangeland (native grassland which is grazed by cattle). LDWF is working cooperatively with three ranches to implement stewardship on these prairies. Threats that LDWF is addressing include woody encroachment and fire exclusion. To date LDWF has implemented chemical brush control on 270 acres of rangeland prairie. In early 2014, 850 acres among the two best remaining prairies were burned by a crew consisting of LNHP, Wildlife Division and Rockefeller Refuge staff. Another ca. 1,000 acres of remnant prairie will be burned in 2015.

In addition to fire-for-effect stewardship, LNHP is also conducting a long-term field experiment involving cattle exclusion and fire. The objective of this research is to determine the recovery potential of an unplowed but heavily grazed prairie. The cattle enclosures will provide a useful reference for comparison to grazed areas, and will also assist the landowner with grazing management decisions. The coastal prairie research and stewardship project is taking LNHP into the fascinating science of range management. Grazing is a natural part of prairie, and the long term goal is to maximize the habitat



**LEFT:** Prescribed burning on coastal prairie. **RIGHT:** Coastal Prairie in Calcasieu Parish. This photo was taken in October 2014, the result of a May 2014 prescribed burn.

quality of coastal prairie rangelands by promoting and implementing stewardship and by positively influencing prairie-compatible grazing regimes.

**NATURAL AREAS REGISTRY**

The Louisiana Natural Areas Registry was created by the Legislature in 1987 to honor citizens who voluntarily protect elements of Louisiana’s Natural Heritage on their properties. When a property is enrolled in the Natural Areas Registry, LNHP biologists work with the landowner to address concerns and assist with management goals. During this fiscal year two new properties were enrolled in the Natural Areas Registry, totaling 316 acres. Enrollment of these two sites brings the total number of active Natural Areas to 117, capturing 48,609 acres. Eleven Natural Areas received biological surveys this year, and technical assistance was provided to seven Natural Area landowners. A significant accomplishment this year was the return of the Natural Areas newsletter. This publication was redesigned and renamed “Bluestem,” after an important group of grasses that dominate Louisiana’s prairies and pine grasslands. This publication had been dormant since the departure of the Natural Areas coordinator in 2012. This publication will resume a quarterly schedule in 2015. Coordination duties are now assigned to two LNHP biologists. The Natural Areas Registry is gaining steam, and will be operating fully by next fiscal year.

**EDUCATION/OUTREACH**

Botany staff delivered numerous presentations for conferences, club meetings, university courses and technical training courses. Time was also dedicated to volunteering at outreach events such as festivals and symposiums.

**SCIENTIFIC CONFERENCE PRESENTATIONS**

Restoration potential of a heavily grazed prairie remnant in coastal Louisiana. Society for Range Management 67th Annual International Meeting. Orlando, Fla. Feb. 12, 2014.

Saving the prairie: a progress report on LDWF’s coastal prairie research and stewardship initiative. LDWF Wildlife Division Research and Management Symposium. Baton Rouge, La. May 27, 2014.



**TOP:** LNHP’s Sairah Javed presenting Natural Areas Registry Certificate for Delacroix Preserve Natural Area in Orleans Parish. **CENTER:** Cooter’s Bog Natural Area on Kisatchie National Forest. **BOTTOM:** Stir the Pot Festival at Palmetto Island State Park.

Balancing immediate conservation action with long-term research-based planning in the Louisiana coastal prairie. State of the Prairie Conference. Ft. Worth, Texas. May 30, 2014.

**ZOOLOGY SECTION:  
ENDANGERED SPECIES ACT  
SECTION 6, REPTILE  
AND AMPHIBIAN  
PROGRAM,  
NONGAME  
BIRD PROGRAM  
AND PERMITS  
COORDINATION**

LNHP administered federal aid grants for species of special concern through the Endangered Species Act Section 6 Program, Multi-state SWG, and participated in Louisiana’s SWG Program. Section 6 projects included the following species: Louisiana pearlshell mussel, Louisiana pine snake, gopher tortoise, ringed map turtle, manatee, piping plover, sea turtles, and the ivory-billed woodpecker. Section 6 Cooperative Agreements were renewed between LDWF, USFWS and NOAA.

Section 6 funds allowed staff to work on a multitude of RTE species issues including:

- Coordinated with USFWS to develop ranking maps for threatened and endangered species through the Wetland Reserves Program.
- SEAFWA committee to address At Risk species in the southeast.
- LNHP continued to partner with USFWS and USDA-NRCS on Endangered Species Act coordination.
- Prescribed burning of public and private properties.
- White-nose syndrome coordination and response plan.
- Conservation genetics of Louisiana pine snakes (*Pituophis ruthveni*).
- Louisiana pine snake detection using camera traps.
- Partnering with state and federal wildlife agencies to assess the status of the northern long-eared bat rangewide

- Gopher tortoise habitat improvement and burrow occupancy rate.
- Partner with Weyerhaeuser for gopher tortoise status and potential habitat restoration on Ben's Creek property.
- Louisiana pearlshell mussel population trends and long-term monitoring protocol.
- Louisiana pearlshell mussel conservation coordination with federal and parish partners.
- Joint project with Texas Parks and Wildlife Department for Louisiana pine snake research and monitoring.
- Ringed map turtle trapping was conducted on the Pearl River to determine the status of the population.
- The manatee sighting database was maintained and staff responded to stressed/dead manatees when reported.
- Surveys of the quality of Louisiana's beaches as habitat for shorebirds and sea turtles.

## GOPHER TORTOISE

LNHP is partnering with other states in the tortoise's range on the Gopher Tortoise Range-Wide Conservation Strategy to prioritize threats to the species and implement action items. LNHP staff coordinated and completed gopher tortoise burrow scope surveys at Sandy Hollow WMA, private lands and pipeline/powerline rights-of-way in Washington, St. Tammany and Tangipahoa parishes. All data are currently being analyzed and will provide an accurate population estimate and distribution for gopher tortoises in the state.

LNHP staff has been focused on improving habitat on approximately 600 acres of private lands and 3,700 acres on Sandy Hollow WMA through burning, herbicide and/or mechanical treatment with the Multi-state Sandhills/Upland Longleaf Restoration grant. The first phase of this work is expected to be completed in the spring of 2015. LNHP will continue to build a partnership with private landowners to survey new properties and assist with habitat restoration efforts to increase the amount of quality habitat for tortoises. The LNHP tortoise biologist is very active in developing partnerships with private industry and participation on multi-state committees pertaining to gopher tortoise management, research and conservation.

"Waif" tortoises (tortoises from unknown areas picked up by citizens and brought to LNHP) are becoming an increasing issue. LNHP is working with other states in the gopher tortoise's range as part of a "waif" tortoise working group to

develop a program to address these issues. Currently all of these tortoises are required to be tested for the presence of upper respiratory tract disease and then are acclimated in holding pens at Sandy Hollow WMA before release.

## LOUISIANA PINE SNAKE

The Louisiana pine snake (*Pituophis ruthveni*) will be assessed for listing on the federal list of threatened and endangered species in 2017. The decline of this species is largely due habitat destruction and fire suppression. The majority of these snakes reside on industrial forest lands and the LNHP has been actively working with the timber industry to increase habitat quality by facilitating controlled burning through various grant programs. The LNHP is also working actively with our federal partners to develop forest management practices that bolster the pine snake population and are compatible with timber production. This will allow the private industry to enter into Candidate Conservation Agreements with Assurances for the pine snake and possibly preclude the need to place it on the Endangered Species List.

Below are several federally funded research projects that are underway aimed at producing information needed for population monitoring and recovery:

- Use of camera traps to detect Louisiana pine snake
- Use of detection dogs to detect Louisiana pine snake
- Louisiana pine snake habitat preferences
- Louisiana pine snake population genetics
- Louisiana pine snake food habits
- Louisiana pine snake reintroduction feasibility

## ONGOING STATE WILDLIFE GRANT PROJECTS

Zoological projects funded through SWG included:

- Monitoring Avian Productivity and Survivorship Program
- Winter Bird Atlas
- Rusty Blackbird Surveys
- Breeding Bird Surveys
- Calcasieu Painted Crawfish Surveys
- Winter Plover Surveys
- Secretive Marsh Bird Callback Surveys
- Christmas Bird Counts
- Aerial Surveys for Colonial Nesting Waterbirds
- Aerial Surveys for Pre-Migration Roosts of Swallow-tailed Kites
- Rare, Threatened and Endangered Species and Natural Communities on LDWF WMAS and Refuges
- Multistate Sandhills/Upland Longleaf Restoration Project

## ALLIGATOR SNAPPING TURTLE

The alligator snapping turtle (*Macrochelys temminckii*) has experienced significant population declines throughout its range due to multiple factors, including harvest pressures (Sloan and Lovich 1995). The alligator snapping turtle is listed as vulnerable by the International Union for Conservation of Nature and is listed under Appendix III of CITES (CITES 2006, IUCN2007). It is a Species of Conservation Concern (S3) in the state of Louisiana (LNHP 2014), and is listed as a Species of Greatest Conservation Need in the Louisiana Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan, Lester et al. 2005). A determination of whether or not to list the alligator snapping turtle as threatened under the Endangered Species Act is scheduled for 2017 by USFWS. Efforts are currently underway in Louisiana to gather sufficient data to preclude listing. Commercial harvest of this



**LEFT:** Gopher tortoise hatchling. **RIGHT:** Louisiana pine snake trapping in Bienville Parish.



**LEFT:** Alligator snapping turtle pond at Monroe Hatchery. This pond houses 3-year-old headstarted turtles. **RIGHT:** Indoor raceways at AST facility in Monroe. Turtles are kept indoors for the first two years after hatching.

species has been banned since 2004 in Louisiana, although recreational take is still allowed within the state. It appears that the greatest threat to alligator snapping turtle populations in the state is the lack of juvenile recruitment. This is in large part due to predation of nests and hatchlings, primarily by imported red fire ants (*Solenopsis invicta*) and raccoons (*Procyon lotor*) (Holcomb and Carr 2011, Holcomb and Carr 2013). Since 2012, LDWF has operated a headstart facility for alligator snapping turtles at the Monroe hatchery facility. The purpose of this facility is to ensure a reliable source of turtles for release to supplement populations in the wild. By headstarting these animals in captivity, survival rates should increase significantly from the low rates (2.4-21.9 percent) estimated for hatchlings in a north Louisiana study (Bass 2007), as the headstarted animals will be too large for many potential predators. Release locations will be determined from data generated from one recently completed (T-106) and one ongoing (T-305) SWG. The objectives of the alligator snapping turtle project is to headstart hatchling alligator snapping turtles at the Monroe Fish Hatchery for three years per cohort, with the goal of providing a minimum of 50 turtles for release each year beginning in 2015, collect growth data for a subset of turtles per cohort, and conduct food preference studies to maximize production of headstarted turtles. The supplementation of depleted wild populations in Louisiana will hopefully offset the apparent lack of natural recruitment occurring in the wild. This project will also provide life-history data for the review of alligator snapping turtles as an endangered species by USFWS potentially helping to preclude the need to list the alligator snapping turtle under the Endangered Species Act.

## PUBLICATIONS

Steen, D. A., C. J. W. McClure, J. C. Brock, D. C. Rudolph, J. B. Pierce, J. R. Lee, W. J. Humphries, B. B. Gregory, W. B. Sutton, L. L. Smith, D. L. Baxley, D. J. Stevenson, and C. Guyer. 2013. Snake co-occurrence patterns are best explained by habitat and hypothesized effects of interspecific interactions. *Journal of Animal Ecology*: 83:286-295.

Steen, D. A., D. J. Stevenson, J. C. Beane, J.D. Wilson, M. J. Aresco, J. C. Godwin, S. P. Graham, L. L. Smith, J. M. Howze, D. C. Rudolph, J. B. Pierce, J. R. Lee, B. B. Gregory, J. Jensen, S. H. Stiles, J. A. Stiles, N. H. Nazdrowicz, and C. Guyer. 2013. Terrestrial movements of the red-bellied mudsnake (*Farancia abacura*) and rainbow snake (*F. erythrogramma*). *Herpetological Review*: 44(2):208-213.

Steen, D. A., C. J. W. McClure, W. B. Sutton, D. C. Rudolph, J. B. Pierce, J. R. Lee, L. L. Smith, B. B. Gregory, D. L. Baxley, D. J. Stevenson, and C. Guyer. 2014. Copperheads are abundant where kingsnakes are not: relationships between the abundances of a predator and one of their prey. *Herpetologica*: 70(1):69-76.

## NONGAME BIRD PROGRAM AND PERMITS COORDINATION

### NONGAME AVIAN SURVEYS

The Nongame Bird section, currently consisting of one full-time biologist, is responsible for directing research, monitoring and conservation needs of all nongame birds in our state, as well as providing peer-review for scientific and layman products. Louisiana's diverse avifauna - more than 470 species in total - includes

more than 400 nongame species. The bulk of the Nongame Ornithologist's job is coordinating or participating in scaled-down monitoring that feeds into national or regional datasets; surveys include U.S. Geological Survey's (USGS) Breeding Bird Surveys, Christmas Bird Counts, LSU's Summer and Winter Bird Atlases, Swallow-tailed Kite Pre-migration Roost Surveys, Mid-winter Bald Eagle Surveys, Piping Plover International Censuses, Secretive Marsh Bird Callback Surveys, Waterbird Nesting Colony Surveys, the Institute for Bird Populations' Monitoring Avian Productivity and Survivorship Program, the Rusty Blackbird Blitz, and others. Geographically expansive and long-term bird projects, crucial for the conservation and management of these species, have benefitted greatly from LDWF's financial commitment to nongame birds and have been matched by federal aid grant opportunities such as the SWG program. SWGs have contributed, in part, to the majority of the projects above; and with such funding, 100 percent of USGS's Breeding Bird Survey routes in Louisiana were assigned to active observers for the second year in a row. During Christmas Bird Counts, LNHP biologists observed state-rare Henslow's sparrows, Sprague's pipits and sandhill cranes (2000+ individuals) in the Cajun prairie region. Results from other Christmas Bird Counts in the region continue to highlight the critical need of preserving rice cultivation and culture for both the human and bird communities of the region. During this fiscal year, the Nongame Ornithologist discovered the fourth nest record of Swainson's hawk in Louisiana.

In early June 2014, biologists with LNHP surveyed waterbird colonies throughout southeastern Louisiana. More than 100 colonies were surveyed via rotary-wing; 65 of those were considered active colonies in 2014. Data from the 2014 surveys have not been quality assured/quality controlled yet, but, tentatively, brown pelicans (16,000 nesting pairs detected), sandwich terns (more than 14,000 nesting pairs), royal terns (more than 9000 nesting pairs), black skimmers (more than 5500 nesting pairs), and laughing gulls (more than 5500 nesting pairs) were the most abundant nesting species. Interestingly, the laughing gull population appears to be suffering a significant decrease; the aerial count was down by 60 percent over 2013 data. This dramatic decrease could be an artifact of not including key colonies such as the Chandeleur Islands and Breton in the surveys due to budgetary constraints, but also may not be so easily explained. LNHP will continue to monitor colonial waterbirds to aid in calculating population indices to assist in detecting such changes. As in the past, one of the large-

est and most species-rich colonies persists on LDWF-managed property - Raccoon Island in the Isle Dernieres chain. Eight colonial waterbird species were detected on Raccoon Island in 2014 and represented over 11,500 nesting pairs of birds.

### NONGAME AVIAN CONSULTATIONS

In addition to field data collection, the Nongame Ornithologist provides reviews, comments and data for various entities including USFWS, Joint Ventures, Landscape Conservation Cooperatives, species- or guild-specific working groups, environmental consultants, the public, and others. As the nongame bird technical representative for LDWF, the Nongame Ornithologist provides official comments on Federal Registry notices concerning nongame birds to the Mississippi Flyway Council. The Nongame Ornithologist acted as a consultant on a television series on threatened and endangered species filmed by Louisiana Public Broadcasting. The most exciting bird news in Louisiana and the rest of the Gulf region during this period was the formation of the Gulf of Mexico Bird Monitoring Working Group upon which the Nongame Ornithologist serves. This collaborative, comprehensive network of federal, state, academic and NGO partners, undoubtedly, will be a major driving force in bird monitoring and research in our region in the coming years, and representation by LNHP on such committees ensures that Louisiana's needs are well articulated and met.

### NONGAME AVIAN OUTREACH

Outreach to multiple end-users of all ages is a means that is particularly relevant in conservation of birds; there is no wildlife group with as

dedicated a fan base as birds. As such, LNHP has promoted public birding and bird banding activities whenever possible. The Neotropical Migratory Songbird Tour at Sherburne, the Grand Isle Migratory Bird Festival, the Nature-Serve conference's Grand Isle birding field trip, National Hunting and Fishing Day, and the Yellow Rails and Rice Festival in Thornwell are all partially staffed by LNHP biologists. In addition, the Louisiana Wildlife and Fisheries Foundation auctions birding tours led by the Nongame Ornithologist each year as part of its fundraising ventures. Swallow-tailed kite educational outreach stickers were produced, and several hundred were distributed this fiscal year. During this period, more than 200 technical phone calls and more than 900 technical e-mails were fielded by the Nongame Ornithologist.

### SCIENTIFIC COLLECTING PERMITS AND OTHER PERMITS

Scientific Collecting Permits, Eagle Nest Take Permits and Interstate Bird Travel Permits are also housed within the Nongame Bird Program, and issuance is the responsibility of the Nongame Ornithologist after consultation with specialized zoologists. Scientific Collecting Permits are utilized by many researchers from bird banders to mussel surveyors. During FY 2013-2014, 95 Scientific Collecting Permits were issued to academic institutions, museums, consultants, private individuals and others. Interstate Bird Travel Permits are issued to those bringing wild (otherwise, protected, migratory) birds into the state for educational demonstrations; two such permit letters were issued during this period. Eagle Nest Take Permits are issued on very rare occasions - when nests are in dangerous locations for birds or the public. No permits were issued in FY 2013-2014. All

Bald Eagle nest removal must also be permitted through USFWS and is usually performed outside nesting season and for emergency purposes only. Mitigation is typically required to offset the loss of nests, eggs and young.

## AMPHIBIAN AND REPTILE PROGRAM ACTIVITIES

### FIELD SURVEYS

General field surveys were conducted to determine population trends, diversity and relative abundance of amphibians and reptiles at sites, including surveys of sites that had not previously been studied. Thirty one field days, plus incidental observations, resulted in the location of 1,392 individuals of 55 species (37 percent of the state total). Surveys included four private lands, three state parks and the following WMAs: Maurepas Swamp, Pearl River, Rockefeller and Sherburne.

Two surveys targeted the Webster's salamander (*Plethodon websteri*) at the only known Louisiana site. Assisted by staff from USGS and our Mississippi counterpart, LDWF was able to confirm that the area remains intact, and that the salamanders are successfully reproducing there.

LDWF routinely receives calls from concerned citizens about venomous snakes in and around the Capitol Lake area in Baton Rouge. As a result of the high public interest, annual surveys are conducted for venomous snakes each year. This year's survey resulted in the usual count of zero venomous snakes, and a count of 54 harmless snakes.



**LEFT:** Working wetlands provide critical habitat for nesting birds such as this black-necked stilt. **CENTER:** White-tailed kite is a species of conservation concern in Louisiana due to extreme rarity. Nesting pairs are rarely located in the state, but wintering individuals like the one pictured are regularly observed. **RIGHT:** Clapper rails are a common species of secretive marsh bird. These two juveniles were photographed along a callback survey route.

Jeff Boundy was contracted by LSU Press to write and illustrate a field guide to Louisiana amphibians and reptiles. Field surveys incorporated filling gaps in needed photographs, and by the end of the fiscal year over 40 percent of the species accounts had been completed.

### LOUISIANA AMPHIBIAN MONITORING PROGRAM

Louisiana Amphibian Monitoring Program (LAMP) volunteers contribute their time to help states and USGS to assess frog and toad population trends. Data are collected using a calling survey technique, in which volunteers identify local amphibian species by their unique breeding vocalizations or calls. LAMP volunteers made 54 runs on 21 routes, and documented 19 of Louisiana's 33 frog and toad species. The LDWF State Herpetologist chaired the annual LAMP meeting at the USGS National Wetlands Research Center in Lafayette.

### RESTRICTED SNAKE PERMITS

The number of Restricted Snake Permits, issued for the possession of large constrictors and venomous snakes, increased from 77 to 97 during the fiscal year.

### LICENSES

Commerce in reptiles and amphibians was made possible by the purchase of 287 resident and one non-resident Amphibian and Reptile Collector Licenses, and 38 resident and 41 non-resident Amphibian and Reptile Wholesale/Retail Dealer licenses. Total license revenue was \$27,895.

### PUBLICATIONS AND REPORTS

J. Boundy. 2013. Review of: J. Beane et al. Amphibians and reptiles of the Carolinas and Virginia. *Herpetological Review* 44:528-529.

V. Wallach, K. Williams and J. Boundy. 2014. *Snakes of the World - a catalogue of living and*

extinct species. CRC Press, Boca Raton. xx-vii+1209 pp.

J. Boundy. 2013. Louisiana Herpetofaunal Surveys: New baseline data, re-surveys and establishment of permanent monitoring sites. Final Report to U. S. Fish & Wildlife Service, Atlanta. 212 pp.

J. Boundy. 2013. Re-surveys for the Alligator Snapping Turtle in southeastern Louisiana, including trap data for other turtle species. Final Report to U. S. Fish & Wildlife Service, Atlanta. 35 pp.

## OIL SPILL RESPONSE & ASSESSMENT

Program Manager - Jon J. Wiebe  
Biologist Supervisor - Steven Pearson, PhD  
Biologist Supervisor - Laura Carver

### OVERVIEW

The Oil Spill Response and Assessment Program documents/evaluates biological and ecological impacts associated with spills throughout Louisiana. These efforts have been significantly enhanced by programmatic reorganization in which additional trained personnel (spill response and assessment) and associated resources are being dedicated to not only address current needs, but enhance/develop integrated means to define injury (short and long-term) as well as restore the state's natural resources. Program personnel continue to accomplish these efforts in collaboration with a variety of LDWF programs and Federal and State Natural Resource Trustee agencies.

### RESPONSE

Due to the temporal nature of oil spills, wildlife responders receive/renew extensive training (ex. LDWF Sampling Protocols, HAZWOPER) in order to rapidly, safely and efficiently document wildlife and associated habitat injury as well as recover live, oiled wildlife for rehabilitation. Collectively this information and actions are critical elements for trustees to develop potential preassessment and/or damage as-

essment as well as scale future restoration activities.

### NRDA ACTIVITIES

Program personnel continue to develop/evaluate injury assessment studies (previous and current oil spills) in collaboration with state and federal trustees. Information generated from these studies may be utilized to populate wildlife (REA) and/or habitat (HEA) injury models, thereby providing trustees with insight as to the scope of the overall injury. Additionally, these studies may be utilized to develop a restoration plan that outlines alternative approaches to speed the recovery of injured resources and compensate for their loss or impairment from the time of injury to recover.

### LONG-TERM MONITORING

During FY 2013-2014, the State of Louisiana, with assistance from LDWF and other state trustee agencies (Louisiana Oil Spill Coordinator's Office [LOSCO], the Louisiana Coastal Protection and Restoration Authority [CPRA], Louisiana Department of Environmental Quality [LDEQ], and Louisiana Department of Natural Resources [LDNR]) entered into negotiations with BP in an effort to provide certain shoreline segments, which are experiencing ongoing *Deepwater Horizon* oil spill impacts, a period of extended monitoring and remediation. LDWF staff participated in several meetings and was essential to the technical working groups. In

the spring of 2014 an agreement was reached and a 24-month monitoring effort began. The agreement provides participating agencies reimbursement for their participation in the program and provides up to 24 months of monitoring and remediation for 48 segments throughout our coast.

Since the spring of 2014, LDWF staff has remained heavily involved in the continuing effort, and staff has filled roles as the Long-Term Monitoring Lead Coordinator and Field Representatives. We provided comments and recommendations on various aspects of the monitoring program during its development and assisted in the drafting of numerous related documents. Staff met with Louisiana and BP to resolve issues that arose and successfully scheduled the first round of surveys. Participating LDWF field biologists working in conjunction with Louisiana's trustee agencies (LOSCO, CPRA, LDEQ and LDNR) and BP, observed and documented oil residue on affected shorelines, made recommendations on remediation/treatment, monitored the subsequent remediation/treatment conducted by BP, and worked to ensure that associated impacts to wildlife and habitat were minimized.

### NRDA AND RESTORATION ACTIVITIES

Office of Wildlife personnel continue to work collaboratively with state and federal natural resource trustees to evaluate the potential

impacts of the *Deepwater Horizon* oil spill on Louisiana's natural wildlife resources. Within the Office of Wildlife, program staff from Coastal Operations, Natural Heritage, Waterfowl, Fur and Marsh Management, Veterinary Services and Rockefeller Refuge has participated in Technical Working Groups for avian and other wildlife resources. Program personnel

continue to focus on assessment activities to evaluate potential injuries to natural resources from the *Deepwater Horizon* oil spill and have worked with state trustees on monitoring proposed early restoration projects that may be constructed prior to the completion of the full damage assessment.

## LDWF RESEARCH ACTIVITIES

Program Manager - Jon J. Wiebe  
Biologist Supervisor - Steven Pearson, PhD

### RESEARCH ACTIVITIES

Ecosystem research allows for a greater understanding of wildlife resources which can be valuable for assessing impacts to our natural resources in future spills or for other needs of the department. Our program conducted two studies on diamondback terrapin population and nesting habitats.

### POPULATION STATUS OF DIAMONDBACK TERRAPINS (*MALACLEMYS TERRAPIN*) IN LOUISIANA AND THE INTERACTION OF CRAB FISHERIES ON POPULATION VIABILITY

Steven Pearson, Will Selman, Beau Gregory, Wade Hardy, James Haynes, Sergio Merino, Casey Wright and Jon J. Wiebe

#### Overview

LDWF Office of Fisheries is interested in the potential impact commercial blue crab (*Callinectes sapidus*) fisheries may have on diamondback terrapin (*Malaclemys terrapin*) populations within state waters. Current knowledge of this species' population and abundance within Louisiana is limited. LDWF is currently implementing at step-wise work plan:

#### Objectives

1. Determine diamondback terrapin distribution and abundance throughout coastal Louisiana.
2. Develop bio-statistical modeling component to assist in ascertaining Louisiana terrapin stock status.

### EVALUATION OF DIAMONDBACK TERRAPIN (*MALACLEMYS TERRAPIN*) NESTING HABITAT AND REPRODUCTIVE PRODUCTIVITY THROUGHOUT COASTAL LOUISIANA

Steven Pearson, Will Selman, Beau Gregory, Wade Hardy, James Haynes, Sergio Merino, Casey Wright and Jon J. Wiebe

#### Overview

The work plan "Population Status of Diamondback Terrapins (*Malaclemys terrapin*) in Louisiana and the Interaction of Crab Fisheries on Population Viability" documents terrapin abundance and distribution, a priority species research initiative as identified within the state's WAP, throughout coastal Louisiana. Several physiological and ecological factors may influence these select endpoints including reproductive productivity as well as threats/interactions which potentially limit reproductive productivity (i.e., nest depredation, coastal

erosion). LDWF has been implementing the following work plan (2012-2015):

#### Objectives

1. Delineate terrapin nesting habitat throughout coastal Louisiana.
2. Document/evaluate select metrics of terrapin reproductive productivity (i.e., fecundity, egg morphometrics, hatchability, hatchling emergence, and nest depredation).
3. Describe terrapin nest characteristics (i.e., GPS position, nest age, nest elevation, slope of nest and vegetative presence) throughout coastal Louisiana.

### SERVICE PROGRAM

Our program continues to assist other LDWF programs as well as other natural resource agencies. These efforts are principally geared to addressing ephemeral needs (i.e., availability of trained personnel and associated resources) for partner agencies. Some examples are shown in *Table 4*.

TABLE 4.

Department Program	Years	Program Leads	Department Collaborators	Outside Program Collaborators	Projects
Coastal Operations	2013 - 2014	Dr. Steven Pearson	Cassidy Lejeune Shane Granier Lance Campbell	N/A	<ul style="list-style-type: none"> <li>Waterfowl Bag Checks</li> <li>Remote Sensing (Evaluation of Colonial Waterbird Reproductive Productivity as well as Habitat Restoration)</li> </ul>
Natural Heritage	2011 - 2014	Dr. Steven Pearson	Amity Bass Michael Seymour Jeff Boundy, PhD	Richard DeMay - BTNEP	<ul style="list-style-type: none"> <li>Marshbird Surveys</li> <li>Shorebird Surveys</li> <li>Terrapin Surveys</li> </ul>
Office of Fisheries	2014	Dr. Steven Pearson	Julia Lightner Mark Schexnayder Marty Bourgeois	Tim Osborn - NOS Rad Trascher - CCA	<ul style="list-style-type: none"> <li>Derelict Trap Removal</li> <li>Terrapin and Fisheries By-catch Evaluation</li> </ul>
Federal Program	Years	Program Leads	Collaborators	Outside Programs	Projects
United States Geological Survey	2013-2017	Casey Wright	Hardin Waddle, PhD Rob Dobbs Kate Spear	N/A	Shorebird (Piping Plover), Macroinvertebrate and Habitat Evaluation on Isle Derneries (Whiskey, Trinity and Raccoon Islands)

## COASTAL OPERATIONS PROGRAM

The Coastal Operations Program's two primary responsibilities include management of coastal WMAs and refuges and oil spill response and damage assessment. The Coastal Operations Section is responsible for the stewardship of 11 coastal WMAs and refuges: Atchafalaya Delta WMA, Biloxi WMA, Isle Dernieres Barrier Islands Refuge, Lake Boeuf WMA, Marsh Island Refuge, Pass-a-Loutre WMA, Pointe-aux-Chenes WMA, Salvador WMA, State Wildlife Refuge, St. Tammany Refuge and Timken WMA. Management of coastal properties encompasses the oversight of all activities on these areas and includes marsh management activities and wetland restoration. The Coastal Operations Program oversees and operates heavy equipment (excavators, bull dozers, tugboat, barges, etc.) to aid with restoration and management on coastal properties. The oil spill section of the Coastal Operations Program is responsible for responding to oil spills throughout the state and conducting damage assessment impacted sites. All damage assessment efforts are used to seek restoration from the responsible parties to restore the damages that resulted from the spill.

The 2013 hurricane season was relatively uneventful. As a result, only one small storm impacted Coastal Operations' coastal WMAs and refuges. Tropical Storm Karen impacted the southeast portion of Louisiana on Oct. 6, 2013. The storm made landfall in Plaquemines Parish and only caused minimal impacts. Pass-a-Loutre WMA sustained some damage to submerged aquatic vegetation (approximately 20 percent loss) and barrier island beach habitats. Most of the coastal WMAs and refuges only experienced an extreme high tide event as a result of the storm.

Heavy equipment maintenance and upgrades continued this fiscal year. The renovation of one 80-foot deck barge was completed in August 2013. The project included replacing the entire deck, replacing all four corners, replacing nine sheets of thin steel, one brace repair, four new man holes, new anodes, and new paint job. A second significant repair this fiscal year was the replacement of the lower section of boom on Coastal Operations' dragline after it was damaged during a restoration project. Major repairs were also performed to one bulldozer that was vandalized while at Atchafalaya Delta WMA. Finally, Coastal Operations initiated the purchase of a small "truckable" push boat to help move barges in shallow water. A contract was awarded to a shipyard in Panama City, Fla., to build

the vessel. It will be completed during the early part of next fiscal year.

Similar to last fiscal year, the Coastal Operations Program continued to allocate significant time to address staffing issues. Coastal Operations experienced turnover of a few field employees and had multiple employees on extended leave due to medical issues. The program manager of Coastal Operations also changed this fiscal year. D. Todd Baker was promoted from Coastal Operations Program Manager to a Biologist Director in Baton Rouge. Cassidy Lejeune was promoted to replace Todd Baker as the new Coastal Operations Program Manager. Lance Campbell, formerly of the Alligator Management Program, was also hired as a Biologist Manager to assist with management activities on multiple areas in the southwest. Overall, Coastal Operations Program had a successful year and completed projects throughout the state despite personnel changes in the program. Coastal Operations strives to provide excellent recreational opportunity, conserve coastal marsh habitats, and implement restoration projects to improve habitat conditions for a wide suite of wildlife species.

### WATERFOWL

The 2013-2014 Waterfowl Season was from Nov. 9, 2013 - Jan. 19, 2014 on coastal WMAs. Coastal Operations staff conducted hunter participation/harvest surveys on 11 days during the season on four coastal WMAs (Atchafalaya Delta, Pass-a-Loutre, Pointe-aux-Chenes, and Salvador WMAs). An estimated 5,224 duck hunters visited the WMAs during the 11 survey dates and averaged 1.9 ducks per attempt. Hunters also harvested 3,315 coots, 200 gallinule, 82 mergansers, 20 snow/blue geese and five speckled belly geese. The Limited Access Areas (LAAs) continued to be the most successful hunting locations on their respective WMAs, with the exception of Salvador WMA.

### TEAL SEASON

The 2013-2014 Teal Season was from Sept. 14-29. Coastal Operations staff conducted hunter participation/harvest surveys on four days during the season on four coastal WMAs (same as above). An estimated 1,670 teal hunters visited the WMAs this year during the four days that waterfowl bag checks were performed. These hunters harvested an estimated 1,160 teal for a success of 0.7 teal per hunter effort.

### DEER

Self-clearing permits and hunter check in of harvested deer revealed that 3,200 hunter efforts were expended to harvest 196 deer dur-

ing the 2013-2014 hunting season on Atchafalaya Delta, Pass-a-Loutre, Pointe-aux-Chenes, and Salvador WMAs. This equates to a success of one deer for every 16.3 efforts. Eighty-five percent of the effort and 93 percent of the harvest was on Atchafalaya Delta WMA.

### HOGS

According to self-clearing permits and hunter interviews, approximately 810 hunter efforts were successful in removing 180 hogs for a success of one hog per 4.6 efforts. These statistics are for Pass-a-Loutre, Pointe-aux-Chenes, and Salvador WMAs. Ninety-nine percent of the effort and harvest was on Pass-a-Loutre WMA. An additional six hogs were reported harvested from Atchafalaya Delta WMA during the 2013-2014 hunting season. Hog harvest at Atchafalaya Delta most always occurs while pursuing other species such as deer and rabbits. Hunters reported an interest in harvesting hogs during roughly 2,000 hunts on Atchafalaya Delta WMA.

## COASTAL OPERATIONS' WMAS AND REFUGES

### ATCHAFALAYA DELTA WMA

Area Biologists -  
David LeBlanc & Lance Campbell

Atchafalaya Delta WMA is the largest WMA in the state at 137,000 acres and is located in southern St. Mary Parish. The WMA is owned by the state and has been managed by LDWF since 1978 under a lease agreement with the Louisiana State Lands Office. The habitat is dominated by fresh tidal marshes and extensive shallow water flats. This WMA enjoys a diverse range of ecotypes from broad upland ridge habitat to brackish marshes.

One significant challenge Coastal Operations faced this year was responding to a vandalism case at Big Island of Atchafalaya Delta WMA. Two pieces of equipment (a John Deere bulldozer and Kubota UTV) were stolen and sunk in the mud by a mischievous teenager. The vandalism cost LDWF time and money to resolve. The total cost was approximately \$20,000 to retrieve and repair the equipment. Most of the expense costs were associated with the rental of a bulldozer and the use of Coastal Operations' tugboat and barges to retrieve the sunk equipment. Coastal Operations staff worked closely with LDWF Enforcement Division, St.



**LEFT:** Bow hunter with deer. **RIGHT:** Youth deer hunter. (Atchafalaya Delta WMA)



**LEFT:** Youth duck hunter. (Atchafalaya Delta WMA) **RIGHT:** Installing new mooring sign.



Youth hunt group photo. (Atchafalaya Delta WMA)

Mary Parish Sherriff Office and the 16th Judicial District Attorney to resolve issues related to the vandalism case.

House Bill 376 was passed by the State Legislature and signed into law by Governor Jindal in 2013. The new law established a new houseboat mooring program on Atchafalaya WMA which included a bid system for five-year leases and the collection of fees for lottery permits. The new program was implemented in July 2013. All available lease sites (40 percent of available pilings) were issued to the public, and bids accepted ranged from \$350 to \$4,000 per year. The remaining 60 percent of the available mooring areas were issued by computerized lottery drawing. Fees were also collected for lottery permits, ranging from \$300 to \$500. A total of 68 houseboat permits (lease and lottery) were Issued for the 2013-2014 hunting season. Coastal Operations collected \$50,177.00 as a result of the new houseboat mooring program. The fees collected were deposited into a houseboat mooring account that will be made available for future maintenance of mooring sites. In tandem with issuing houseboat permits for the 2013-2014 hunting season, Coastal Operations staff performed some maintenance and improvements to the Log Island Pass Mooring Area. Numerous pilings were installed on the north bank of Log Island Pass to provide more opportunities and to compensate for the closure of a mooring area in Catfish Pass. Staff also began collecting permit data and developing plans to perform additional maintenance during next fiscal year.

WMA staff continued to work closely with USACE on multiple issues related to the maintenance of the lower Atchafalaya River Navigation Channel. Due to limited budget, USACE did not award any dredging/beneficial use contracts for the Bay or Bar channels between July 2013 and June 2014. However, Coastal Operations staff did coordinate with USACE personnel about selecting locations for beneficial use projects to create linear marsh islands in the Bay Channel and bird nesting islands in the Bar Channel. Coastal Operations staff helped select three locations (Linscombe, Gary and Spoonbill islands) for future Bay Channel dredging and one location (Aves Island) for future Bar Channel dredging. Dredg-

ing operations will resume next fiscal year. This year Coastal Operations staff also coordinated with USACE personnel about options for the use of large rocks/boulders from the de-authorized Demonstration Channel Alignment Structure project in the Bar Channel. LDWF staff hopes to obtain the rocks from USACE as a donation and hopes to use the rocks beneficially to create or maintain rock shoreline protection projects on coastal properties.

Coastal Operations staff assisted LDWF Minerals Management Staff with coordinating oil and gas activities at Atchafalaya Delta WMA. One of the major oil/gas activities this year was preparing for a 3D seismic survey on the east side of the WMA. Staff attended meetings and provided guidance in anticipation of the survey. The survey was initiated in June 2014 and will be ongoing through a majority of next fiscal year. Other mineral activities included reviewing proposals and conducting site visits for proposed well locations and pipelines. Several new wells were drilled on the WMA. A majority of the new oil and gas exploration occurred in the vicinity of the Wax Delta.

Staff continued to maintain facilities, campgrounds and Big Island to a high standard this year. One of the greatest accomplishments was needed maintenance on Big Island. Staff maintained shooting lanes as done annually, but also initiated significant repairs to the main road. An excavator and a bulldozer were used to elevate, shape and level the road to improve access during wet conditions, particularly for youth hunt events. The road repairs will be completed during next fiscal year.

Staff continues to support a wide variety of research projects by granting access permits, providing lodging, and assisting with logistics and information. Example projects are:

- United States Geological Survey (USGS) initiated a project to monitor/measure sediment transport, deposition, and trapping efficiency in marshes at the Wax Delta.
- LSU and University of Texas continued with their National Science Foundation "Delta Observatory" Project designed to improve modeling and forecasting of delta growing processes that can support restoration and resource management.
- Coastal Operations staff continued to coordinate with Coastal Estuary Services regarding monthly monitoring at Coast-wide Reference Monitoring System sites on Atchafalaya Delta WMA.

Recreational use of the WMA totaled approximately 21,880 visitors, and total rainfall for the year was 37 inches.

**Hunting Statistics**

**Teal Season**

Hunter success during the 2013 Teal Season was poor. The average kill per effort was 0.7 teal per hunter during the four dates that staff conducted hunter surveys. This average was slightly lower than the 2012 season.

**Waterfowl Season**

During the 11 waterfowl bag checks conducted, an estimated 2,320 hunters averaged 2.2 ducks per hunter. Success in the WMA's LAAs continue to outpace the WMA average. Hunter success within the LAAs ranged from was 3.4 ducks per hunter effort, while success outside the LAAs was 2.1 ducks per effort. The top three species harvested on the WMA were green-wing teal (31 percent), blue-wing teal (27 percent), and gadwall (12 percent). Also harvested were 1,690 coots, 20 gallinule, 10 mergansers, 10 snow geese, and five speckled belly geese.

**Deer Season**

Archery Season	
Efforts	2,520
Harvest	173 deer (97 bucks, 76 does)
Success	1 deer/13.7 efforts
Youth Hunts	
Youth Participants	30
Efforts	60
Harvest	10 deer (5 buck, 5 does)
Success	1 deer/6 efforts
Total Season	
Efforts	2,490
Harvest	183 (102 bucks, 81 does)
Success	1 deer/13.6 efforts

**Hog Season**

As stated earlier, an estimated six hogs were harvested from Atchafalaya Delta WMA during the 2013-2014 hunting season. Hunters reported an interest in harvesting hogs during roughly 2,000 deer or rabbit hunts on Atchafalaya Delta WMA.

**Alligator Season**

A total of 240 alligator tags were issued to Atchafalaya Delta commercial (210 tags) and

lottery (30 tags) alligator hunters for the 2013 season. A total of 237 tags were filled. LDWF generates operating budget as a result of alligator harvests on coastal WMAs.

**BILOXI WMA**

Area Biologist - Shane Granier

Biloxi WMA is owned by the Biloxi Marsh Land Co. and has been managed by LDWF since 1957. This 35,644-acre WMA located in St. Bernard Parish is dominated by brackish smooth cordgrass and black needle rush. Along its southern boundary is Bayou Loutre which was the historic path of the Mississippi River. This WMA has very diverse habitat from low saline marshes in the northeast to freshwater ridges in the south.

Coastal Operations staff posted a vast majority of the boundary of the WMA during this fiscal year. Several employees participated in a week long effort to install new boundary signs during August 2013. Approximately 331 boundary signs were installed along the perimeter of the WMA.

**ISLES DERNIERES REFUGE**

Area Biologists -  
Tyson Crouch & Lance Campbell

This refuge is a series of barrier islands in Terrebonne Parish including Raccoon Island, Whiskey Island, Trinity Island, East Island and Wine Island. This refuge has been managed by LDWF since 1992, and ownership of the islands was transferred to LDWF in 2000. The refuge is comprised of beach, dune and salt marsh habitat and home to one of the largest colonial water bird nesting colonies in Louisiana (Raccoon Island).

Isle Dernieres Barrier Islands Refuge is experiencing some of the highest shoreline erosion rates in coastal Louisiana. As a result, Coastal Operations managers are constantly pursuing funding for large scale restoration projects for the refuge. This fiscal year, two project proposals were created for Raccoon and Wine islands to construct additional rock breakwaters, install rock groins for trapping sediment, and create/nourish 400+ acres of barrier island habitat. These proposals were created as part of an interagency effort with USFWS and USDA-NRCS to pursue Federal Funds (Breux Act and/or Restore Act) for restoration of the islands.

Among smaller scale future restoration projects, Coastal Operations coordinated with the Coalition to Restore Coastal Louisiana to develop a sand fence and shoreline protection

project and site selection for future planting projects, all to be implemented later in 2014.

Various restoration projects were implemented this year including:

- The annual Coalition to Restore Coastal Louisiana/Nicholls University/LDWF planting project. Approximately 4,050 smooth cordgrass plugs and black mangrove seedlings were planted as part of the project. These plugs were distributed among Racoon, Whiskey and Trinity islands. Black mangrove propagules were also collected to aid in future planting projects.
- Dr. Henry Utomo, of the LSU AgCenter, conducted multiple seedings of PolyC15 smooth cordgrass within the fill area of the TE-48 project. These seedings were experimental and included hand seeding and aerial seeding from a crop duster airplane.

The refuge was host to multiple research projects including:

- Nicholls University continued breeding water bird research involving black skimmers and tern species.
- University of Louisiana - Lafayette conducted research on brown pelicans and mammalian predators.
- Tulane University accessed the refuge while conducting a brown pelican radio telemetry project.
- The USGS accessed the refuge to conduct piping plover surveys and prey base monitoring as part of an extension from research starting in 2012.

During a survey for rare plants on Trinity Island, staff from the Louisiana Natural Heritage Program documented multiple species of rare plants including *Canavalia rosea*, otherwise

known as beach bean or baybean. This discovery may be the first confirmed documentation of the plant in Louisiana.

In an attempt to minimize herbivory to existing habitat and planting projects, Coastal Operations staff removed nearly 60 nutria from Racoon Island this year.

### LAKE BOEUF WMA Area Biologist - Shane Granier

Lake Boeuf WMA is an 802-acre WMA located in Lafourche Parish just south of Lake Boeuf. This WMA is dominated by cypress/tupelo swamp and has an extensive freshwater marsh dominated by bull tongue and maiden cane.

Coastal Operations staff accomplished a couple of projects at the WMA this fiscal year. Projects included the mowing of the ridge and trimming of woody growth in preparation for hunting season, improvements to the self-clearing permit station, and installation of boundary signs along the perimeter of the WMA. Approximately 50 percent of the boundary was posted this fiscal year.

A new regulation was implemented this year at Lake Boeuf WMA. Deer hunting regulations were changed to allow the public to hunt deer until 1/2 hour past official sunset. The old regulation only allowed deer hunting until 12p.m. (noon).

Self-clearing permits revealed that approximately 30 unsuccessful attempts were made to harvest deer this year.



Barrier islands aerial seeding project. (Isles Dernieres Refuge)

### MARSH ISLAND REFUGE Area Biologists - Tyson Crouch & Lance Campbell

Marsh Island Refuge is a 76,664-acre refuge located in southern Iberia Parish. The refuge was donated to the state in 1920 making it one of the oldest and largest refuges in Louisiana. The refuge was donated to LDWF by the Russell Sage Foundation which was established by Margaret Olivia Sage in honor of her late husband. The donation came with a strict set of management stipulations which are audited annually by the Russell Sage Foundation Committee.

As stated above, the Russell Sage Foundation is involved in the management of the refuge. This year, Coastal Operations staff and Office of Wildlife Administrators hosted a meeting and field trip with members of the Russell Sage Foundation. Participants included Dr. Sheldon Danzinger who was appointed the new president of the Russell Sage Foundation in 2013. Discussions included previous and current



LEFT: Barrier islands mangrove planting project. RIGHT: Barrier island planting project participants. (Isle Dernieres Refuge)



**LEFT:** Bird island construction photo. **RIGHT:** Bird island. (Marsh Island Refuge)

projects, management activities and numerous other activities. Members of the foundation were also shown public use areas, impounded waterfowl units and various restoration projects, past and present.

“Design Development” documents for the Marsh Island FEMA Consolidation Project were put together by the architect firm MBSB Group. After comments and revisions, these plans were submitted to Facility Planning and Control in anticipation of going out to bid in the fall of 2014. A Capital Outlay proposal also was created for the Marsh Island “Master Plan.” This plan is designed to upgrade and replace most of the remaining infrastructure not covered by FEMA (the bulkhead surrounding the headquarters island, elevating the island containing the headquarters, fuel tank platform, and generator shed). The FEMA Consolidation Project is scheduled to be under construction in 2015. Coastal Operations staff hopes to have both of these projects completed within a five year time frame.

The Iberia Parish Coastal Impacts Assistance Program Projects to construct marsh terraces in Lake Tom and Lake Sand were completed this year. The purpose of these terraces was to not only create new marsh habitat, but also to facilitate the stabilization of the northern shorelines of the lakes. Immediately following the construction of the terraces and before they could be fully planted with smooth cordgrass plugs, an unexpected benefit occurred on the new emergent marsh: the occupation by many nesting pairs of black skimmers, black-necked stilts and various tern species. Once all hatch year birds were fledged, the plantings were completed.

Multiple restoration projects are in the planning stages, underway, or in the monitoring stages on the refuge:

- **Marsh Island Chenier Restoration Project:** Funded by the Coastal Protection and Restoration Authority’s (CPRA) Coastal Forest Conservation Initiative, this project is designed to restore chenier habitat, via the planting of tree species such as live oak and hackberry, historically found on

the refuge. A site visit was conducted to develop an estimate and project details to promote this restorative effort.

- **Bayou Platte Bird Island Project:** This project is funded through a \$150,000 match grant from the National Fish and Wildlife Foundation/Shell Marine Habitat Program. Restoration (elevation lift, acreage increase and limestone cap) began on the bird islands in Bayou Platte in an attempt to increase the nesting productivity that has been lost through the years primarily due to subsidence and erosion. Earth work was postponed during the summer due to the occupancy by many nesting colonial water birds. The target goal of breeding bird pairs between the two islands was 550. However, surveys this year indicated approximately 2,000 breeding pairs of colonial water birds using the islands before construction was even completed.
- **LA-39 Coast-wide Vegetative Planting Project:** Last year, CPRA planted nearly 10,000 smooth cordgrass, black needle rush, and California bulrush plants along the bay shore between Michel Point and Joe Aucoin Point to stabilize soils and slow erosion. Unfortunately, this year’s monitoring indicated that survival was nearly zero percent, mostly due to flooding stress immediately following the planting.
- **TV-21 East Marsh Island Marsh Creation Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Project:** This previously completed project entered its second year of monitoring and several levee breaches were located. An O&M (maintenance) project was developed by CPRA and the contractor, Professional Construction Services, was selected to handle the repairs. LDWF staff attended a pre-construction meeting to further



*Bird nesting on Platte Island. (Marsh Island Refuge)*

discuss repair details with the contractor that include shoreline repairs, degrading of dikes and the removal of a timber mat plug.

- USDA-NRCS, Iberia Parish Soil and Water Conservation District, and LDWF conducted a collaborative effort to plant 10,000 plugs of smooth cordgrass on the shorelines of Lake Sand and Lake Hawkins.
- Coastal Operations' heavy equipment operators repaired breaches at the Gordy Dam, Joe Aucoin Canal and sections of the Belly Dam Canal to assist in regaining functionality of one of the refuge's water management units.
- The first full year of the newly implemented nutria harvest program was conducted this year. The six selected hunters were put on three-year leases to harvest nutria from the refuge and were allowed to hunt/trap from January through March. In those three months, these hunters harvested approximately 8,340 nutria.
- Through the use of prescribed fire, refuge staff burned approximately 2,000 acres this year.

Refuge staff posted and maintained boundary signs throughout the year and continued to maintain the headquarters, grounds, facilities and public use areas.

Recreational use of the refuge by fishermen totaled approximately 12,595 visitors, and rainfall for the year was 28 inches.

## PASS-A-LOUTRE WMA

Area Biologist - Shane Granier

Technician Supervisor - Trebor Victoriano

Pass-a-Loutre WMA is 115,000 acres and was established in 1921 by an act of State Legislature. It was designated as a "state shooting ground" which was the precursor to today's WMA. It is Louisiana's oldest WMA and one of the first in the country. Pass-a-Loutre WMA was Governor John Parker's response to public outcry that the best hunting areas were all being leased by wealthy hunters, and that the common man did not have quality hunting opportunities. The WMA is dominated by freshwater Roseau cane marsh and fringed by a brackish vegetation community. The WMA lies within the Mississippi River Delta in Plaquemines Parish.

The Pass-a-Loutre WMA Headquarters is a commonly used facility for multi-day field meetings and educational events. This year the facility hosted multiple events including but not limit-



**LEFT:** Planting project with airboat. **RIGHT:** Planting project. (Marsh Island Refuge)



**LEFT:** LDWF Tugboat used for Bayou Platte Restoration Project. **RIGHT:** Breach repair. (Marsh Island Refuge)

ed to an Arctic Goose Joint Venture meeting to discuss management plans for arctic geese and their habitats, a USFWS meeting with the Federal Office of Management and Budget to review program needs and budgets, and a multi-day meeting with Ducks Unlimited (DU) and LDWF staff to discuss current events in waterfowl management. The facility also hosted the LDWF cadet academy's 2014 fish identification clinic and multiple university field trips as part of college course requirements. Coastal Operations staff provided logistical support, housing, and information about Pass-a-Loutre WMA for these events.

Pass-a-Loutre WMA is only accessible via boat and requires a fleet of boats to successfully manage the day to day operations. This fiscal year, Coastal Operations staff replaced the WMA's 36-foot crewboat "Canvasback" with a new 40-foot pilothouse deck boat powered by outboard engines. The crewboat was over 20 years old and a bit antiquated. The new vessel was purchased from Lifeyme Boats of Jonesville, La., and was deployed at Pass-a-Loutre in January 2014. This vessel is the primary vessel used to traverse the Mississippi River and haul personnel, equipment and supplies to and from the Pass-a-Loutre Headquarters.

A small dredge project was completed this year on Pass-a-Loutre WMA that resulted in 15 acres of marsh creation/nourishment. The project was mitigation associated with oil exploration by Castex near Southeast Pass. A contractor, Coastal Dredging, used a small cutter head dredge to excavate material from Pass-a-Loutre and hydraulically pump it into broken marsh near Swanson's Ditch. This project was associated with the drilling of a new oil/gas well on the WMA.

Pass a Loutre WMA has historically been a hotspot for mineral exploration and production. This year was consistent with past years. Many projects were under construction during this fiscal year such as construction and maintenance of production facilities, drilling of new wells, plug and abandonment projects to remove decommissioned infrastructure, etc. Pass-a-Loutre staff assisted with planning and permitting associated with these projects.

As per the request of the public, a houseboat mooring program was created for Pass-a-Loutre WMA this year. The program was developed to mimic the Atchafalaya Delta WMA program, but on a much smaller scale. The program included bid sites and lottery sites for the moor-

ing of five houseboats. The bid opening and lottery drawing will be held in July 2014. Fees will be collected for all permits issued.

Coastal Operations staff continued to coordinate with USACE related to maintenance dredging operations in the lower Mississippi River federally authorized navigation channels. During this fiscal year, USACE used the Pass-a-Loutre Hopper Dredge Disposal Area while dredging Southwest Pass. No mining operations were conducted this year in the Hopper Dredge Disposal Area which resulted in additional shoaling of Pass-a-Loutre. LDWF and LDNR notified USACE that this activity was “non-consistent” with Louisiana’s Coastal Resources Program again this year. Coastal Operations staff also coordinated with USACE about future plans for beneficial use activities and disposal protocols associated dredging the Mississippi River and South Pass. USACE has requested that a dredge material placement plan be developed for Pass-a-Loutre WMA. Coastal Operations staff created a map illustrating possible disposal locations on the WMA to initiate the plan.

There are a few restoration projects that were implemented or designed this year including the following:

- **MR-09 Delta-Wide Crevasse CWPPRA Project:** An O&M (maintenance) contract was issued to a dredge contractor by CPRA to use remaining MR-09 maintenance funds to cleanout existing crevasses and/or create new crevasses within the project area. Three passes were enhanced on Pass-a-Loutre WMA as part of this project. They were called the North Sawdust Bend Crevasse, South Pass Campground Crevasse, and the Johnson Pass Crevasse. The project was completed in May 2014.
- DU initiated the design of two crevasse projects in coordination with Coastal Operations staff. Field surveys were conducted to create permit plats to apply for Coastal Use/Clean Water Act Sect. 404 permits. Once permitted, the project will be “shovel ready” and funding may be available from North American Wetlands Conservation Act (NAWCA) to implement the project. One crevasse is located adjacent to the Pass-a-Loutre Headquarters and the second is off of South Pass.
- Coastal Operations staff continued to coordinate repairs to the Freshwater Reser-

voir Water Management Unit adjacent to Dennis Pass. The project is in the design phase and FEMA funds will be used to return the impoundment to a functional state.

The second year of LDWF’s cooperative endeavor with USFWS to implement the Pass-a-Loutre Aerial Hog Eradication Project was successfully implemented this year. The harvest took place in March 2014 via the assistance of Jesuit Bend Helicopters and LSU Renewable Natural Resources Department staff. This project is being conducted to determine the impacts of hog herbivory on coastal marshes of the WMA. Based on data collected in 2013 and this year’s effort, results indicate that aerial hog eradication can create significant measurable improvements in habitat conditions in coastal marshes of Plaquemines Parish. A total of 65 hogs were harvested as a result of a week’s effort. The technique for removing the hogs is shooting from a helicopter with ground support from airboats.

Improvements and maintenance to the WMA facilities continued this year. Some of the larger projects underway or completed are as follows:

- Staff successfully planted the dove field located just off of Cadro pass behind the campground. Staff also maintained shooting lanes and planted food plots for deer season. Approximately one mile of additional trails was created this year.
- Effort was put towards boundary posting of the WMA and LAA this year.
- Campground improvements were accomplished which included upgrades to self-clearing permit stations, signage, picnic tables, etc.
- Significant repairs were initiated to the interior of the Pass-a-Loutre Headquarters. A faulty design of the bathrooms’ showers resulted in water damage in multiple rooms.
- Natural gas service was restored to the WMA Headquarters.

Several research/monitoring projects are underway on the WMA including the following:

- Mottled Duck Hybridization Study (LSU)
- Hog Enclosures and Vegetative Response (LSU)
- Wildlife Utilization/Response to Different Restoration Techniques Crevasses vs. Terraces (LSU)
- Fisheries Research and WMA Monitoring (Loyola University)
- Deer Tagging Project (survival, movement, home range) (LDWF)



Photos of campground improvements. (Pass-a-Loutre WMA)



Staff installing signs and repairing permit station. (Pass-a-Loutre WMA)

- Wilson's Plover Monitoring Project (nesting success, hog depredation, nesting utilization of beach habitat) (LDWF)

Coastal Operations staff continued to closely coordinate with Plaquemines Parish about management issues. Two important topics addressed this year were the re-opening of Port Eades and hurricane evacuation plans for lower Plaquemines Parish. Coastal Operation staff met with the managers of Port Eades regarding WMA rules and regulations and to suggest a cooperative approach to managing both entities. Coastal Operations staff met with Plaquemines Parish emergency preparedness personnel to provide input on the development of a hurricane evacuation plan.

WMA staff banded waterfowl on the WMA this year including 70 black-bellied ducks and 23 mottled ducks. Staff also assisted with logistical support for data collection for the state's summer bird atlas on Pass-a-Loutre WMA.

The headquarters recorded 731 visitors this year. Recreational use of the WMA was estimated to be 20,225 visitors. Total rainfall for the year was 39 inches.

### Hunting Statistics

#### Teal Season

During the four bag checks conducted an estimated 65 hunters harvested 230 teal for an average success of 3.5 teal per hunter.

#### Waterfowl Season

An estimated 430 hunters used the WMA during the 11 waterfowl bag check dates averaged 3.4 ducks per hunter effort. The LAA averaged 3.8 ducks per hunter effort. The top



**LEFT:** Staff planting dove field. **RIGHT:** Dredging of MR-09 crevasse. (Pass-a-Loutre WMA)



three species harvested were blue-wing teal (47 percent), gadwall (24 percent), and green-wing teal (9 percent). Hunters also harvested 80 coots, five mergansers, and five snow/blue geese.

#### Deer Season

Self-clearing permits revealed that 221 hunter efforts were made to harvest four deer (all bucks). This equates to one deer per 55 efforts.

#### Hog Season

Hunter interviews and self-clearing permits recorded 790 hunter attempts which resulted in the harvest of 179 hogs for a success of one hog for every 4.4 hunts.

#### Alligator Season

A total of 380 alligator tags were issued to Pass-a-Loutre commercial (350 tags) and lottery (30 tags) alligator hunters for the 2013 season. A total of 379 tags were filled. LDWF generates operating budget as a result of alligator harvests on coastal WMAs.

## POINTE-AUX-CHENES WMA

Area Biologists -  
Jarrod Galloway & Shane Granier

Pointe-aux-Chenes WMA is a 33,488-acre WMA located in southern Terrebonne and Lafourche parishes. It was purchased from the Exxon Company in 1968 at a cost of \$21 per acre and marked the first purchase of marsh land by the Wildlife and Fisheries Commission. It was purchased along with Salvador WMA. The habitat of this WMA is primarily brackish and intermediate marsh dominated by smooth cordgrass and wire grass. Point Farm is a 1,000-acre bottomland hardwood ridge that is also located on the WMA.

Coastal Operations staff allocated time this fiscal year to coordinating hurricane repairs at Pointe-aux-Chenes WMA. Two projects coordinated were the Pointe-aux-Chenes/DU levee repair and the Point Farm ditch cleaning efforts. Both of these projects were the result of FEMA claims and were approved to go to



**LEFT:** Mottled duck banding. **CENTER:** Collecting blood samples for mottled duck research. **RIGHT:** Trip with the U.S. Coast Guard for spill response. (Pass-a-Loutre WMA)

construction. These projects will be completed next fiscal year.

A few regulation changes were implemented this year for Pointe-aux-Chenes WMA. Historically, all night time activity was prohibited on the WMA. This year the regulation was modified to allow for night time fishing on Island Road. This is the only portion of the WMA where night time activity is allowed. WMA regulations were also changed to clarify fishing regulations related to shrimp harvest and to make self-clearing permits mandatory for all activities on Point Farm.

Pointe-aux-Chenes personnel attended meetings and site visits to discuss options and details for the acceptance of property that could be donated and incorporated into the WMA. Staff coordinated with representatives from Ecological Restoration Services regarding the donation of approximately 300 acres of mitigation land established as a result of the Bayou Corne Sink Hole. Staff also coordinated with the Conservation Fund regarding an inholding near Grand Bayou that was eligible for donation. These projects are in the early stages of development and more progress is expected next year.

Coastal Operations staff continued to coordinate with adjacent landowners, USACE, LDWF Enforcement Division, and Lafourche Parish Government regarding in-holding access issues in the vicinity of St. Louis Canal. Coastal Operations staff helped resolve issues regarding bridge clearance/elevation for the Grand Bayou Boat Launch, a proposal for a gate across St. Louis canal, and requests for use of LDWF's boat launch at night.

Several restoration projects were completed or were in the planning phase this year. The following list contains some of the larger projects:

- **Terrebonne Levee and Conservation District Mitigation Terraces:** The Terrebonne Levee and Conservation District continued to building terraces in the Point-aux-Chenes/DU unit and just south of the Montegut Unit. These terraces are built as mitigation for wetland impacts from several levee projects. There are a few hundred acres of terraces being built and planned for construction this year.
- **CWPPRA Restoration Projects:** The Island Road Marsh Creation and Nourishment CWPPRA Project was awarded Phase I engineering and design funding this year. If funded, this project would be beneficial to the WMA. The Madison Bay Marsh Creation and Terracing Project and Grand Bayou Freshwater Enhancement Project were unfortunately not awarded Phase II funding during the 2013 Technical Committee Meeting. Coastal Operations staff assisted USDA-NRCS with the selection of sites for planting marsh vegetation as part of the LA-39 Coast-wide Vegetative Planting CWPPRA Project.
- LSU AgCenter's Coastal Roots Program provided for the planting of 500 persimmon trees at Pointe-aux-Chenes WMA. St. Martin's Episcopal School from Metairie, La., planted the trees.
- DU and LDWF initiated surveys at Point Farm to create plans and obtain permits to construct a moist soil unit on the lower end of the farm. After the project plans are developed, funding will hopefully be obtained to construct the project.
- Dr. Utomo of the LSU AgCenter conducted some small scale plantings of the terraces

in the Pointe-aux-Chenes Unit. This planting effort was part of Dr. Utomo's PolyC15 smooth cordgrass research.

- Coastal Operations staff coordinated with representatives from Restore the Earth Foundation for the planning of a 1,000-acre cypress tree restoration project in the eastern portion of the Montegut Unit.

There have been several significant flood protection projects completed or under construction on the WMA. The Terrebonne Levee and Conservation District continued an aggressive campaign to upgrade and improve many levee systems for the local communities that run through Pointe-aux-Chenes WMA. Some of the accomplishments of the Terrebonne Levee and Conservation District in conjunction with LDWF include:

- Construction of the J-2 Reach of "Morganza to the Gulf" hurricane protection levee continued this fiscal year. This section of levee stretches from Montegut to the J-1 levee constructed a few years ago. The alignment falls along the southern boarder of the Montegut Management Unit and it crosses the northern portion of the Pointe-aux-Chenes Management Unit. The first lift of the levee was completed in January 2014.
- Construction of a replacement water control structure for the Montegut Management Unit continued as well. The structure being replaced is the western most structure.
- An "environmental" structure was installed in the Morgana to the Gulf levee that crosses the Pointe-aux-Chenes/DU Unit. The structure was installed to allow water exchange between the northern and southern portions of the unit.



**LEFT:** New water control structure. **RIGHT:** Staff working on water control structures. (Pointe-aux-Chenes WMA)



**LEFT:** Dove hunters. **CENTER:** Youth deer hunter. **RIGHT:** Salinity data collection. (Pointe-aux-Chenes WMA)

Coastal Operations staff also coordinated with South Lafourche Levee District this fiscal year regarding Reach K of the Morganza to the Gulf hurricane protection levee. Staff worked with South Lafourche Levee District to further the development of a mitigation plan for the proposed flood protection levee from Grand Bayou Marina to the northern boundary of the WMA. The plan consists of constructing terraces within the Grand Bayou Unit of the WMA. South Lafourche Levee District will initiate levee construction within the next two years and mimic what has been done by the Terrebonne Levee and Conservation District in Terrebonne Parish.

A few significant projects LDWF has completed or are underway include the following:

- Staff renovated self-clearing permit stations and installed new signage in preparation for hunting season.
- Staff put forth considerable effort preparing Point Farm for deer and dove hunting. This work consisted of planting dove fields and maintaining access/shooting lanes for deer hunting.
- Staff continued with routine maintenance and improvement to the Pointe-aux-Chenes WMA Headquarters.

Staff attempted to band mottled ducks on multiple occasions during the summer months. A total of 55 ducks were banded at Pointe-aux-Chenes WMA.

Visitor use of the headquarters was 260 visitors. Most of these were by Enforcement Division. Recreational use of the WMA was estimated at 70,600 users. Total rainfall for the year was 72 inches.

## Hunter Statistics

### Teal Season

During the four bag checks conducted an estimated 910 hunters averaged 0.5 teal per hunter effort.

### Waterfowl Season

During the 11 waterfowl checks conducted for the season an estimated 2,250 hunters had an average success of 1.5 ducks per hunter attempt. The top three species harvested were green-wing teal (36 percent), blue-wing teal (31 percent), and gadwall (14 percent). Hunters also harvested 1,465 coots, 140 gallinule, 63 mergansers, and five snow/blue geese. Hunters using the Montegut LAA continued to have better success. The LAA averaged 3.0 ducks per hunter while the rest of the WMA averaged 1.5 ducks per hunter.

### Deer Season

Thirty-one reported bow hunt efforts and 31 youth hunt efforts resulted in the harvest of one deer (buck).

### Squirrel Season

An estimated 40 efforts were made averaging 1.4 squirrels per effort.

### Rabbit Season

An estimated 14 efforts were made averaging 0.3 rabbits per hunt.

### Dove Season

Self-clearing permit data revealed that seventeen hunter efforts resulted in the harvest of 154 doves for an average of 9.1 doves per effort. Additionally, 135 hunters participated in opening day of Dove Season where Coastal Operations staff conducted bag checks. Hunter success was 3.7 doves per hunter on that day.

### Hog Season

Five hunters were unsuccessful at harvesting a hog.

### Alligator Season

A total of 227 alligator tags were issued to Pointe-aux-Chenes commercial (200 tags) and lottery (27 tags) alligator hunters for the 2013 season. A total of 177 tags were filled. One commercial trapper failed to fill tags and trapping privileges were revoked. LDWF generates operating budget as a result of alligator harvests on coastal WMAs.

## SALVADOR/TIMKEN WMAs

### Area Biologists - Jarrod Galloway & Shane Granier

Salvador WMA is a 35,121-acre WMA located in southern St. Charles Parish. It was purchased from Exxon in 1968 at a cost of \$21 per acre, and marked the first purchase of marsh land by the Wildlife and Fisheries Commission. It was purchased along with Pointe-aux-Chenes WMA. This WMA is a freshwater marsh dominated by bull-tongue and maiden cane. Just to the east of Salvador is the 3,920-acre Timken WMA. It is owned by the New Orleans City Park Improvement Association and has been leased to LDWF since 1995. Both of these WMAs are currently the beneficiary of one of the largest restoration projects in the state. The Davis Pond freshwater Diversion Project diverts freshwater from the Mississippi River into the northern portion of Salvador WMA then drains into Lake Cataouatche.

A significant regulation change was implemented this year for Salvador WMA. An experimental nighttime activity season was established to allow for nighttime fishing and frogging from June through August. Self-clearing permit data from June 2014 revealed that approximately 170 people went frogging and they caught an average of 7.5 frogs per vessel.

Coastal Operations staff based at Pointe-aux-Chenes WMA continued to maintain the facilities and equipment at Salvador WMA. Staff routinely visited the WMA headquarters to perform needed work such as yard maintenance, generator repairs and service, building repairs and improvements, and repairs to docks and the boatshed. Staff also allocated time to purchasing materials and supplies needed to re-post the boundary of the WMA. The boundary posting effort is scheduled for next fiscal year.

An estimated 15,900 recreational users visited the WMAs this year.

**Hunting Statistics**

**Teal Season**

During the four bag checks conducted this year an estimated 130 hunter efforts resulted in an average harvest of 0.7 teal per hunter.

**Waterfowl Season**

During the 11 waterfowl bag checks conducted this season an estimated 225 hunters averaged 0.4 ducks per hunter effort. The Davis Pond diversion outfall area averaged 0.5 ducks per hunter and the LAA averaged 0.9 ducks per hunter. The top three duck species harvested were blue-wing teal (59 percent), green-wing teal (11 percent), and northern shoveler (11 percent). Hunters also harvested an estimated 80 coots, 40 gallinule, and four mergansers.

**Deer Season**

Self-clearing permit data showed that 209 hunter efforts were made to harvest eight deer (seven bucks and one doe). Hunter success was one deer per 26 efforts.

**Hog Season**

Self-clearing permits revealed that 15 hunter efforts were made and one hunter was successful at harvesting one hog.

**Alligator Season**

A total of 486 alligator tags were issued to Salvador commercial (456 tags) and lottery (30 tags) alligator hunters for the 2013 season. A total of 483 tags were filled. LDWF generates operating budget as a result of alligator harvests on coastal WMAs.

**ST. TAMMANY REFUGE**  
Area Biologist - Shane Granier

St. Tammany Refuge is a 1,310-acre refuge located on the north shore of Lake Pontchartrain in St. Tammany Parish. The refuge was purchased by the state in 1935 from the Great Southern Lumber Co. The refuge is managed

in cooperation with the USFWS along with Big Branch National Wildlife Refuge.

Coastal Operations coordinated with USFWS and CPRA regarding access to St. Tammany Refuge for O&M (maintenance) work for the Goose Point/Point Platte Marsh Creation CWPPRA Project. A small portion of the project was on the refuge and the project was completed in 2009. Coastal Operations staff also issued an airboat permit which allowed for access for survey work.

**STATE WILDLIFE REFUGE**  
Area Biologists -  
Tyson Crouch & Lance Campbell

State Wildlife Refuge is a 13,000-acre refuge located in southern Vermilion Parish. It was donated to the state in 1911 by Mr. Edward McIlhenny and Mr. Charles Ward to be managed as a wildlife refuge. This is the oldest refuge in the state and one of the oldest in the country.

USDA-NRCS, in coordination with Coastal Operations staff, designed and proposed a shoreline protection project (between Redfish Point and Headquarters Canal) to be potentially selected as a CWPPRA project as part of a critical section of eroded shoreline on the bay shore of the refuge.

The DU proposed Tom's Bayou Water Control Structure project that is being funded by NAW-CA remained in the design phase during this fiscal year. Coastal Operations staff continued to coordinate with DU and other agencies to advance the project, but the project had to be revised. The proposed water control structure was not satisfactory to National Marine Fisher-

ies Service and an alternate style structure had to be selected. Following the revision, a collaborative effort from DU and LDWF obtained elevation and water depth data for the development of permit plats. Upon completion, these permit plats will be submitted to obtain a Coastal Use permit before proceeding with implementation of the project.

Coastal Operations staff participated in an annual operations and maintenance inspection trip of the Lake Portage Land Bridge CWPPRA Project (TV-17). The project has successfully maintained itself over the years and there are no current plans for any modifications or repairs.

Water depths and GPS coordinates were collected as part of a set of permit plats seeking to dredge Lake Fearman to improve public access. Access has become limited and this dredging effort is needed to reopen the historic channel.

LDWF staff completed considerable repair work, upgrades, and maintenance to the facilities of the refuge. These works included replacing the camp's outdoor plumbing, exterior painting, installation of a portable building/shed, installation of a standby generator, and other necessary building and grounds projects.

An estimated 8,225 recreational users visited the refuge this year.

**OIL SPILL SECTION**  
Biologists: Laura Carver & Clint Perkins

The oil spill section monitors and responds to reports of oil spills throughout Louisiana. This section works with federal and state trustees



Staff maintaining weir. (State Wildlife Refuge)

within the incident command structure to minimize impacts to wildlife and sensitive wildlife habitat when oil spills occur. In the event that wildlife is impacted by oil, they also take measures to recover the affected animals and have them treated and later released. In addition to immediate response activities, this section works with other federal and state trustees to assess the impacts that a spill has on wildlife through the Natural Resource Damage Assessment (NRDA) process and develop a restoration plan to be funded by the party responsible for the spill to compensate the public for the injured natural resources.

This year the oil spill section received thousands of reports of oiling from the National Response Center and Louisiana State Police. Staff reviewed the reports daily to assess which spills posed a significant impact to wildlife. For many of the spills, staff simply coordinated with other responding agencies to gain further information on the necessity of a response action. For others, staff became actively involved in response efforts and represented LDWF at spill locations and in incident command centers. Staff also participated in numerous drills to better prepare for future spills.

In addition to actively monitoring reports and responding to spill, staff completed various training sessions and coordinated with various state trustees for spill response planning purposes. Below are highlights from this year:

- Staff continued to participate in U.S. Coast Guard Geographic Response Plan development with both Sector New Orleans and Morgan City. These plans identify sensitive sites throughout the area to assist in spill response actions. During this fiscal year, the New Orleans plan was finalized and the Morgan City plan was drafted.
- Staff attended multiple Sector New Orleans Area Committee meetings this year.
- Staff participated in Stone Energy and Castex Energy oil spill response drills and training workshops.
- Staff created a professional services contract with The Response Group to develop a Louisiana Wildlife Response Plan. Staff also initiated the development of a contract with Wildlife Response Services for emergency wildlife rehabilitation services.
- Staff participated in habitat equivalency analysis training and other miscellaneous training at Louisiana Oil Spill Coordinator's Office.
- Coastal Operations had representation at the 2014 International Oil Spill Conference in Savannah, Ga.



*Oil impacts to southern leopard frog.*



**LEFT:** Oiled alligator. **RIGHT:** Release of rehabilitated alligator.



**LEFT:** Oiled turtle. **RIGHT:** Staff rehabilitating oiled snake.

### CASE SPECIFIC NRDA AND RESPONSE WORK

Staff worked diligently this year with other trustee agencies to assess natural resource damages and respond to significant releases that were not associated with the *Deepwater Horizon* oil spill:

- Coastal Operations continued to assist with logistics and monitoring regarding an experimental capping strategy to stop a continuous release from 2005.
- Staff reviewed and commented on a proposal from the U.S. Forest Service to use additional funds from a past NRDA case to further red-cockaded woodpecker habitat creation and restoration on Kisatchie National Forest.
- Staff participated in an effort to close out three pending NRDA cases (Lake Grand Ecaille, Mosquito Bay and Little Lake) where the responsible parties agreed to cash settlements. The funds will be coupled with ongoing restoration in the Lake Hermitage area.
- Besides the three listed above, staff continued to assist with roughly 27 pending cases.

### RESPONSE

Coastal Operations staff were involved in approximately 35 spills that required active “hands on” response this fiscal year. Impacts occurred in all types of habitats from coastal marshes to upland forests. Below are examples of several spills that staff were involved in that are not confidential:

- **Bayou Sorrel Spill:** This spill occurred In January 2013, but required monitoring throughout this fiscal year. Approximately 100 barrels of oil were released into an area of bottomland hardwoods and cypress swamp.
- **Jena Oil Spill:** This incident was a release of 75 barrels of crude oil and 100 barrels of salt water from a tank battery that impacted a small inland creek.
- **Breton Sound Spill:** This spill was a release of seven barrels of crude oil from an offshore platform.
- **South Block Spill:** There were multiple releases from a facility In South Block resulting in over 20 barrels of oil contamination in brackish marsh near the facility.
- **Lake Long Spill:** This spill was the release of an unknown amount of crude oil from a

2-inch transfer line. It resulted in impacts to freshwater marsh south of Lake Long.

- **Mississippi River Spill:** A barge collision in the Mississippi River resulted in the release of 750 barrels of light crude oil.
- **Colquitt Spill:** This incident was the release of 400 barrels of crude oil from an 8-inch pipeline In Claiborne Parish. Numerous oiled animals were recovered, captured, and rehabilitated as a result of field reconnaissance efforts by LDWF staff.
- **Octave Pass Spill:** This spill was the release of 100+ barrels of crude oil from a flow line on Delta National Wildlife Refuge in Plaquemines Parish. Coastal Operations staff worked with USFWS regarding wildlife response and habitat assessments for this incident.

## ALLIGATOR PROGRAM

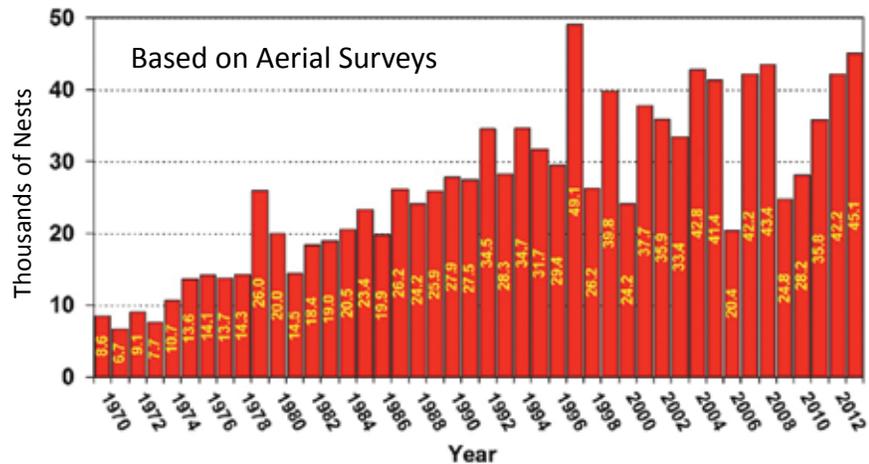
Louisiana’s Alligator Management Program consists of two complex segments: research/management of the wild population and a statewide farm/ranch program. The program is funded by alligator industry generated revenues (alligator hide tag fees, shipping label fees, alligator hunting license fees, alligator hide severance taxes, and other alligator related fees).

### WILD ALLIGATOR PROGRAM

Inventory methods, harvest regulations, tagging and reporting requirements, and a complex computer program are continually upgraded to regulate and monitor a sustainable-use alligator management program in Louisiana. Annual coast-wide alligator nest surveys are conducted to index alligator populations and to establish harvest quotas in coastal Louisiana. During summer 2013 we estimated that 45,069 alligator nests were present in the coastal marsh habitats an increase of 7 percent from 2012 (*Figure 5*).

Wild alligator harvest quotas are established to correlate harvest with alligator population density and distribution. Alligator harvest tags are allocated to individuals who either own or lease land that is consid-

**FIGURE 5. LOUISIANA COASTAL MARSH ALLIGATOR NEST PRODUCTION (1970-2013)**



ered alligator habitat. Digital landowner and survey information are combined with the latest aerial photography images to allow for an accurate assessment/classification of each participant's property. The majority of the lands enrolled in the wild alligator harvest program have been entered in the GIS system for property ownership and habitat assessment.

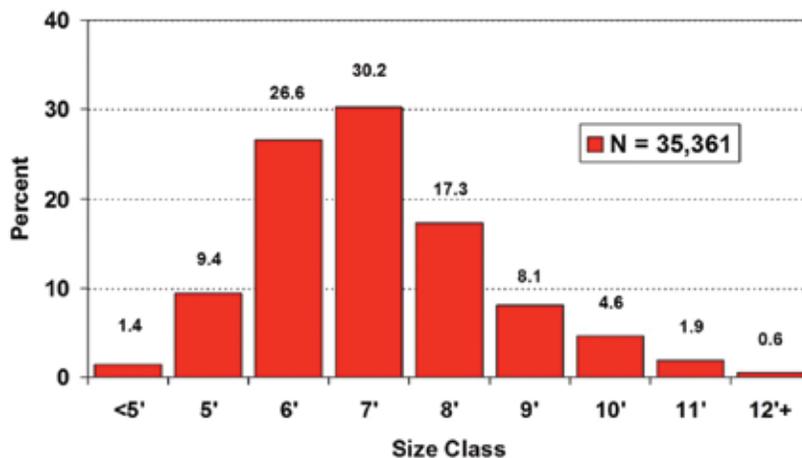
In September 2013, the annual wild alligator harvest produced 35,361 alligators, which averaged 7.5 feet in total length and had an estimated value of over \$13.4 million. Beginning in late winter 2008 and continuing into spring and summer of 2009, the worldwide economic recession significantly impacted world trade in raw and tanned alligator skins and manufactured products. Price and demand for wild and farm-raised alligator skins dropped precipitously during this period. The drop in price and demand coincided with the economic recession and with tanners implementing stricter quality standards. During 2010, 2011 and 2012 demand and price for both wild and farm-raised alligators began to recover; that recovery has continued into 2013. It is anticipated that price for wild alligators harvested in 2014 will remain stable as compared to 2013. Adult-sized alligators (those 6 feet and larger) comprised the majority of the harvest (*Figure 6*).

LDWF provided additional alligator harvest opportunities for the general public by continuing its lottery alligator harvest program. In 2013 the lottery alligator harvest program provided opportunities for 341 alligator hunters to harvest 879 alligators. Lottery alligator harvests were conducted on 43 public areas (WMAs and public lakes) throughout the state.

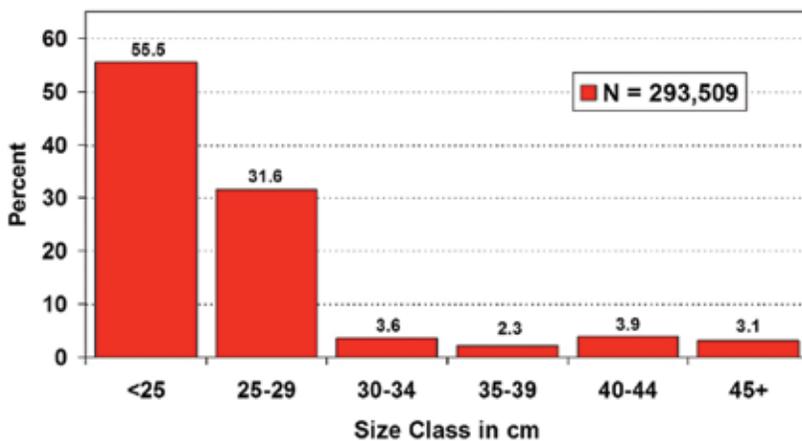
### FARM ALLIGATOR PROGRAM

The December 2013 statewide farm/ranch inventory totaled 663,411 alligators, up from 565,036 alligators in December 2012, and was approaching the record 731,909 in December 2008. The decline in 2012 was due in large part to the worldwide economic recession, and to farmers voluntarily limiting their egg collections significantly in summer 2009; then collecting about half the usual amount in 2010 (205,261 eggs) as markets and demand slowly improved. Market conditions continued to improve in 2012-2013 as both skins and meat were in high demand, and in 2011 with farmers collected 353,176 wild alligator eggs yielding 300,546 hatchlings. In 2012 farmers continued to build their inventories collecting 413,648 eggs yielding 349,514 hatchlings, while in 2013 farmers collected 498,285 wild alligator eggs which produced 432,386 hatchlings. During the 2012 tag year (September 2012 through August 2013) 293,509 farm alligators were harvested (*Figure 7*). During the 2013 tag year (September 2013 through December 2013) a total of 100,608 farm alligators were harvested, averaging 25.4 cm belly width (4.17 feet in length) (*Figure 8*). An estimated 394,000 farm-raised alligators were harvested during the FY 2013-2014. Because the program transitioned from a tag assignment year based on the September harvest to a calendar year assignment, two tag years were documented in this report, 2012 and 2013. The total estimated value of these alligators was \$86.7 million.

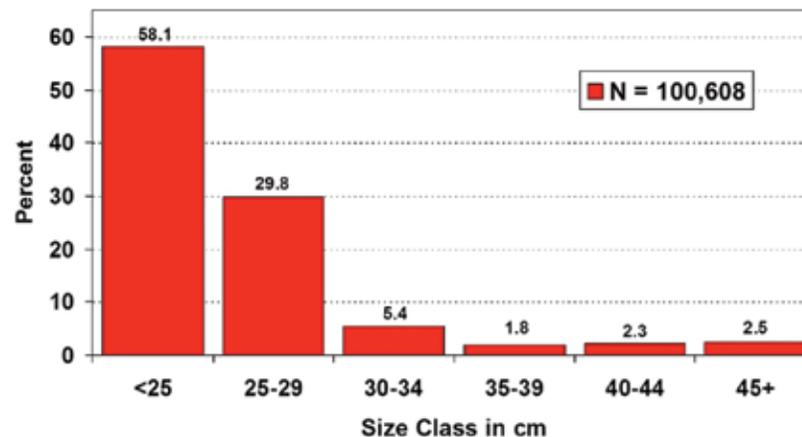
**FIGURE 6. LOUISIANA WILD ALLIGATORS HARVESTED (2013 REGULAR HARVEST SKIN LENGTHS)**



**FIGURE 7. LOUISIANA FARM ALLIGATORS HARVESTED (2012 SKIN BELLY WIDTHS)**



**FIGURE 8. LOUISIANA FARM ALLIGATORS HARVESTED (2013 SKIN BELLY WIDTHS)**



Farmers participating in the wild alligator egg collection program are required to return 12 percent of the eggs hatched as 4-foot alligators, which compensates the wild alligator population for the collection of eggs. The remaining animals can be sold by the farmer. During FY 2013-2014, a total of 38,349 farm-raised alligators were released to the wild. All released alligators were measured, marked, tagged and sexed. Survival of farm-released alligators appears to be similar to wild alligators. Re-trapped alligators were harvested in September 2013, and data on size class and sex ratio collected. Data evaluation continues on survival rates of the farm-released alligators.

Program staff members routinely communicate with various alligator industry participants including trappers, farmers, landowners and dealers. Information is provided regarding wild alligator and alligator egg harvests, harvest statistics and management recommendations. Staff routinely visits alligator farms providing recommendations on alligator husbandry and culture. Numerous requests for information are handled each year.

## NUISANCE ALLIGATOR PROGRAM

LDWF manages a statewide nuisance alligator control program. The nuisance program is designed to remove problem alligators in order to avoid potential human/alligator conflicts. Through the process of nuisance alligator hunter appointments and annual renewals, LDWF maintains a statewide network of qualified nuisance alligator hunters. Nuisance alligator complaints are phoned into various LDWF offices, where complaints are recorded and then forwarded to a nuisance alligator hunter in the vicinity of the complaint. Nuisance hunters respond promptly and catch and remove the alligator as deemed necessary. Hunters are allowed to harvest the nuisance alligator and to process the meat and skin of the alligator for commercial sale. This process provides for immediate response to problem alligators and for payment to the nuisance alligator hunter, thereby minimizing the program operating costs to the department.

During FY 2013-2014, a total of 60 nuisance alligator hunters were enrolled in the program; annually the nuisance hunters respond to several thousand complaints and harvest approximately 1,500 alligators.

## RESEARCH ACTIVITIES

The following list provides a summary of the various research and monitoring projects that the alligator program staff conducted and/or participated in during FY 2013-2014.

### MONITORING

#### 1. Evaluation of Survival, Growth and Reproduction in Farm-Released Alligators -

This activity involves numerous projects related to survival analysis, growth and reproductive success (farm-released vs. native wild). Due to the recent reduction of the 14 percent release rate to 12 percent, it is imperative to monitor survival closely. The 12 percent return rate started with the 2007 permits (releases "due" in 2009). Information on size class frequency distribution of wild alligator populations and susceptibility to harvest is provided annually to enhance survival estimates. Although some growth information has been published we plan to evaluate growth rates in more detail; we now have "re-traps" that were captured over 20 years since release, and this is undoubtedly one of the largest mark-recapture projects currently in progress. Staff from the LSU Department of Experimental Statistics assists with annual evaluation of survival and growth based on farm "re-traps" recovered in September harvests. In the future, we plan to have contractors from LSU's School of Renewable Natural Resources provide input as to analyses on this project, possibly involving a graduate student project.

#### 2. Coast-Wide Nest Survey -

The annual coastal nesting survey is essential for monitoring our alligator population, and is used annually to determine wild alligator and wild alligator egg harvest quotas (for the adult harvest each September as well as egg ranching quotas). This is an integral part of our required "finding of no detriment" needed to achieve export authorization by the USFWS.

#### 3. Evaluation of Statewide Harvest Program -

We continue to analyze size class frequency distribution, average size, sex ratios, etc. for alligators harvested each year. During the 2013 wild season staff collected sex ratio data on 14,206 alligators (69.7 percent males, 30.3 percent females) which represented a significant

percentage of the total alligators harvested. This project, coupled with coastwide nest survey provides critical information regarding the status of the wild alligator population. Data generated from these projects provides the basis for evaluating the impact of our current harvest strategies and for establishment of annual wild harvest quotas.

#### 4. Evaluation of Alligator Nest Density -

LDWF biologists work with cooperating alligator farmers to gain access to their GPS data from annual egg collections. This data will facilitate comparisons between our coastwide nest survey and estimates of nest density as recorded by the farmer during egg collections. Some farmers have advised staff of reduced nest production on selected wetlands; close review of this nesting production data will allow us to evaluate nest distribution and density changes over time.

#### 5. West Nile Virus (WNV) -

LDWF, in conjunction with LSU School of Veterinary Medicine (LSUSVM), continues to monitor occurrence of WNV on alligator farms in Louisiana. Initial mortality related to WNV occurred in fall/winter 2003. Aggressive mosquito control on farms has reduced on farm mosquito populations and seems to have reduced the incidence of WNV in recent years. However, 2012 turned out to be the worst year on record for human cases of WNV in Louisiana and in the United States. During FY 2012-2013 we continued to have expertise from staff at LSUSVM available if needed to collect samples from farm alligators to monitor for any health concerns, provide diagnostics as needed, and assist with other health surveillance parameters.

After several years of research, development and testing, a WNV vaccine was developed, gained conditional approval by the USDA, and became available to farmers in October 2011 from the Boehringer-Ingelheim Company. The vaccine requires two, 0.5 ml injections into the tail of the alligator (a two to four week interval between injections is recommended). The cost is \$2.50 per injection or \$5 per animal. Work continues on development of a single dose vaccine. Several farmers have taken advantage of this new proactive technology to prevent WNV in captive hatchling and yearling alligators.

## 6. Best Management Practices -

LDWF and the LSUSVM in conjunction with the Louisiana Alligator Farmers and Ranchers Association developed a document entitled "Best Management Practices for Louisiana Alligator Farming." The document was distributed in June 2011 and details recommended practices to ensure animal welfare of captive reared alligators in Louisiana, including egg collection, hatching, rearing, release to the wild and euthanasia. This document was updated and distributed in January 2013 as new information regarding euthanasia was investigated, and will be updated as any pertinent topic to alligator farming becomes available. The intent of this document is to ensure that licensed alligator farms/ranches are employing humane methods of working with alligators. Through industry contributions, Dr. Nevarez at LSUSVM has evaluated the most appropriate methods of euthanasia for alligators and demonstrations were made at industry meetings.

## 7. Alligator Research Facility -

After several years of planning and fund raising by industry personnel, construction began on an alligator research facility at LSU's AgCenter Aquaculture Research Station. Funding for facility construction was provided purely by monetary donations from alligator industry participants including alligator farmers, wetland landowners, tanners, feed manufacturers, alligator hunters and other interested parties. The building will be available to house alligators of various sizes for projects related to all phases of alligator husbandry. LDWF staff has worked closely with alligator producers and feed manufacturers to provide input to identify and prioritize research goals and secure long term funding sources for facility operation. The LSU AgCenter has established an Alligator Research Fund to receive additional donations for funding various research projects. Facility completion was set for fall 2013 with plans to stock with hatchlings and initiate research projects thereafter. An article on the new facility and research done on varying levels of protein in diets (and how much can be utilized) was published by Dr. Reigh and associates in the Summer 2013 issue of "Louisiana Agriculture." Dr. Reigh and Ms. Millie Williams also published their results on amino acid availability and selected plant products and fish meal for

American alligators in the scientific journal "Aquaculture" in 2013. Hatchlings were provided to Dr. Reigh by LDWF from eggs collected and incubated at Rockefeller Refuge for continued nutrition studies to benefit the alligator farming industry.

## CONTRACTS

### 1. Diagnostic Services (LSUSVM - Dr. Nevarez) -

Dr. Nevarez is contracted to provide diagnostic services as needed for the alligator industry. Farmers may consult with Dr. Nevarez at any time for assistance with any alligator husbandry or disease issue. Our staff often assists with logistics and transport of alligators/samples to LSUSVM in Baton Rouge for evaluation. Periodic health surveillance of farm released alligators is conducted to monitor health status of farm alligators released to the wild. Dr. Nevarez and pathologists at LSUSVM have also assisted with necropsy and research findings for publications co-authored with LDWF alligator program staff members; including case reports of a large fibrosarcoma and a fibromyxoma in wild alligators.

### 2. LSU Experimental Statistics -

The LSU Department of Experimental Statistics is under contract to provide technical statistical expertise for numerous alligator projects; most importantly the evaluation of survival of farm-released alligators, population trends from nesting survey data, and more recently with hide grade/length correlations. Assistance is being provided with refining statistical analyses of growth comparisons of farm-released and native wild alligators. Discussions continued this fiscal year to transition to new statisticians with the LSU School of Renewable Natural Resources due to the pending retirement of the current contract statistician and research associate.

### 3. Nutrition Research (LSU AgCenter, Aquaculture Research Station) -

A detailed research project entitled "Effects of Dietary Protein on Alligator Growth and Air/Water Quality of Production Systems" was undertaken after being listed as a high priority area requiring further knowledge to improve farm production while minimizing costs (avoid feeding excess protein that might go unutilized). The investigators (Dr. Robert Reigh and Dr. Greg Lutz) are evaluating various com-

mercially available feeds with protein levels ranging from 37 percent to 55 percent protein in order to evaluate food conversion rates and water and atmospheric ammonia levels; so as to advise alligator farmers as to the optimum dietary regime available while avoiding toxic ammonia buildup in commercial sheds. Preliminary results showed the 41 percent to 55 percent protein diets were not significantly different in their effects on alligator body weight or chest girth, but the 37 percent protein diet did show significantly lower body weight at the end of the feeding trial. Another study entitled "The effect of dietary energy-to-protein ratios for compounded alligator diets" was initiated as well. As noted above, Dr. Reigh and his research associate also published a manuscript in the scientific journal "Aquaculture" entitled "Amino acid availability of selected plant products and fish meal for American alligator (*Alligator mississippiensis*)" to evaluate the use of corn grain, soybean meal, soy protein concentrate, wheat gluten and menhaden fish meal for alligator feeds. Digestibility studies continue to aid farmers in their farm management; industry support from feed manufacturers at Cargill have been instrumental in this process.

### 4. Electrical Immobilization (Smith-Root, Inc.) -

LDWF contracted with Smith-Root, Inc., to conduct a study entitled "Evaluation of Pulsed Electric Field Technology to Immobilize Farm-Raised Alligators." Recent concerns regarding the handling and euthanasia of reptiles in commercial operations overseas has led the Louisiana alligator industry to evaluate their husbandry and harvesting practices. The recent demand for larger alligator hides has led to an increase in the number of alligators being raised to over 5 feet in length. This creates a new challenge for restraining these animals for evaluation of hide quality and euthanasia. Although electrical immobilization has been well investigated in fish, little work has been done with this technology for alligator immobilization. In order for this technique to be deemed acceptable, a number of studies have to be performed to ensure their humane application. The pilot study was done in late November 2012 to determine applicability of electro-immobilization equipment for alligators and initial results were promising. Numerous tests were done

evaluating vertical and horizontal placement of electrode probes; threshold responses of alligators to AC, pulsed bipolar, and pulsed DC waveforms; voltage gradient and exposure times to induce immobilization; and the effects of temperature on the resulting immobilization. The contractors provided a detailed report entitled "Evaluation of pulsed electric field technology to immobilize farm-raised alligators." Further studies were conducted in November and December 2013 to determine if electrosedation is suitable to assist farmers in safe handling of larger alligators, rather than just prior to euthanasia; blood samples for stress hormone analyses and EEGs will evaluate manual restraint vs. electrosedation.

## OTHER RESEARCH

We published several abstracts and full papers this year, including records on alligator nests being used by other reptiles (ground skinks, river cooters and speckled king snakes). We co-authored a paper on stem cell niche and replacement of teeth in alligators which was published in the Proceedings of the National Academy of Sciences; this year we learned it was selected for the Publication Award in the Basic Sciences category by the Louisiana Association of Professional Biologists. We also co-authored an abstract on alligator blood viscosity and hematocrit presented by a graduate student at the Society for Experimental Biology meetings in Valencia, Spain in July 2013. In January 2014, five abstracts we co-authored were presented at talks and posters at the Society for Integrative and Comparative Biology meetings in Austin, Texas. In April 2014, five abstracts we co-authored were presented at talks and posters at the Experimental Biology meetings in San Diego, Calif., and were published in the FASEB journal. We had several abstracts on our research and management programs accepted for presentation at the Crocodile Specialist Group meeting held in Lake Charles in May 2014; and two papers were prepared for the meeting Proceedings.

We published a five-year study of wild hatching sex ratios in the journal *Southeastern Naturalist* this fiscal year. We also published two "Notes" on unusual alligators harvested in the 2013 autumn season (barnacles on an alligator, and an unusually large alligator with mistaken gender).

We co-authored a paper in the *Journal of Comparative Physiology* with physiologists at University of North Texas on chronic hypoxia in embryonic alligators.

We continued to support and collaborate with post-doctoral research associates with their work on numerous projects. Associates from several universities (University of North Texas, University of California at San Bernardino, University of Missouri, University of California San Francisco, UCLA, Slippery Rock University, George Mason University, University of Tennessee, and University of Georgia) were hosted at Rockefeller in 2013-2014 to collect additional samples for several studies. Several collaborators made presentations with LDWF staff as co-authors at meetings as listed above.

We conducted a study on the effects of feral swine on alligator nests; including a detailed survey of all Louisiana alligator ranchers. This was accepted and published in the *Southeastern Naturalist* in 2012, and an updated manuscript was being prepared to summarize results from 2011, 2012 and 2013; this presentation was made at the Crocodile Specialist Group meeting in Lake Charles in May 2014.

We previously assisted a graduate student from California with his research on use of stable isotopes to determine alligator diet (non-invasive); the manuscript remains in review.

We also assisted a PhD student from University of Tennessee with alligator specimens for her research involving molecular techniques and bacterial community diversity in the gastrointestinal tract. We submitted an abstract co-authored with her to the 7th Congress of the International Symbiosis Society which was accepted for presentation at the conference held in Krakow, Poland in July 2012; her work continued into 2013-2014 as she works on manuscripts from her dissertation. We co-authored a paper she led on the alligator gut microbiome published in *Scientific Reports*.

This year we co-authored a manuscript on frugivory and possible seed dispersal by crocodilians published in the *Journal of Zoology*, as well as a paper on canebrake fauna published in another journal. We also co-authored a paper on comparison of metabolic substrates in alligators and several birds of prey published in the journal *Zoology*.

In summer 2013 and June 2014 we made collections of a series of embryos for further collaborative studies. We collected and preserved these embryos for research teams.

One staff member is serving on a graduate student committee; we also have several manuscripts currently in press or in review; and we serve as manuscript reviewers for numerous

scientific journals and review several papers each year.

Our research efforts have been hampered in large part by lack of holding facilities for alligators. We had a small functioning laboratory, but the tremendous physical plant losses due to Hurricane Rita in 2005 and Hurricane Ike in 2008 have limited our progress. This lab was a shared room in the maintenance workshop and is now not usable due to repairs to the shop. Our biological staff constructed a cover/awning to the semi-repaired holding tanks, which has helped. Initial work done to supply adequate heat to holding tanks was completed in spring 2009 and minor repairs continued this fiscal year. Frequent water lines breaks occur and holding tanks leak continuously; and temperature control is sporadic and inconsistent. We met several times again this year to discuss schematic drawings for a new lab and holding facility.

## OTHER ACTIVITIES

Alligator program staff assisted with filming for Louisiana Public Broadcasting's series "Alive! In America's Delta" with a segment entitled "Alligator: King of the Bayou" which was broadcast several times this fiscal year and was well received.

Alligator program staff attended the Crocodile Specialist Group conference in Lake Charles La., in May. Several staff members presented talks on various aspects of LDWF's alligator management program. Rockefeller and Alligator Program staff hosted the post-meeting field trip held at Rockefeller Refuge. Guests participated in a variety of activities, including measuring, tagging, notching and determining the sex of young alligators, and releasing the marked juvenile alligators to the wild while on airboat tours through marshes adjacent to the refuge headquarters. Tours also included viewing of alligator holding facilities as well as a brief helicopter tour over Rockefeller Refuge.

## PUBLICATIONS/ COOPERATIVE RESEARCH

The following scientific papers were published from approximately July 2013 to June 2014:

Elsy, R. M. and J. Nevarez. 2013. *Alligator mississippiensis* (American Alligator). Report of a large fibrosarcoma in a wild alligator. *Herpetological Review*. 44(3)503-504.

Elsy, R.M., J. Nevarez, J. Boundy, and R. W Bauer. 2013. Case report of a massive fibromyxoma

in an American alligator (*Alligator mississippiensis*). Southeastern Naturalist. 12(4):N31-34.

Elsy, R. M., W. Selman, R. King, M. Miller, and S. G. Platt. 2013. *Alligator mississippiensis* (American Alligator). Nests used by other reptiles in coastal Louisiana. Herpetological Review. 44(4):659-660.

Keenan, S. W., A. S. Engel, and R. M. Elsey. 2013. The alligator gut microbiome and implications for ancestral archosaur symbioses. Scientific Reports. 3:2877 DOI:10.1038/srep02877.

Kohl, Z. F., R. M. Elsey, and D. A. Crossley. 2013. The ontogeny of blood viscosity and hematocrit in the American alligator, *Alligator mississippiensis*. (Abstract). Society for Experimental Biology meeting. Valencia, Spain, July 3-6, 2013.

Platt, S.G, R. M. Elsey, H. Liu, T.R. Rainwater, J. C. Nifong, A. E. Rosenblatt, M. R. Heithaus, and F. J. Mazzotti. 2013. Frugivory and seed dispersal by crocodilians: An over-looked form of sauromachory? Journal of Zoology. 291:87-99.

Platt, S. G., T. R. Rainwater, R. M. Elsey, and C. G. Brantley. 2013. Canebrake fauna revisited: additional records of species diversity in a critically endangered ecosystem. Bamboo Science and Culture. 26(1):1-12.

Crossley, D. A. II, R. M. Elsey, and J. Eme. 2014. (Abstract). Cardiovascular regulation in embryonic American alligators during chronic exposure to reduced environmental oxygen. Presentation at SICB meeting. Austin, Texas. January 2014. 74.1.

Crossley, D. A., et al. 2014. (Abstract). Differential vascular perfusion in response to bouts of acute hypoxic exposure in embryonic American alligators. Submitted for consideration for presentation at SICB meeting. Austin, Texas. January 2014.

Elsy, R. M., and J. W. Lang. 2014. Sex ratios of wild American alligator hatchlings in Southwest Louisiana. Southeastern Naturalist 13(2):191-199.

Elsy, R. M., R. King, J. C. Nifong, and M. G. Frick. 2014. *Alligator mississippiensis* (American Alligator). Epibiosis. Herpetological Review. 45(1) 118-119.

Elsy, R. M., R. King, K. M. Gribbins, D. E. Like, and V. Lance. 2014. Large presumptive female *Alligator mississippiensis* (American Alligator). A case of mistaken identity. Herpetological Review. 45(1):119-120.

Elsy, R. M. 2014. Effects of feral swine (*Sus scrofa*) on alligator (*Alligator mississippiensis*) nests in Louisiana: A three year summary. Presented at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Finger, J. W. Jr., M. T. Hamilton, B. S. Metts, R. M. Elsey, T. Glenn, and T. D. Tuberville. 2014. (Abstract). The effects of coal fly ash on the immune system of the American alligator (*Alligator mississippiensis*). Poster presentation at the Interdisciplinary Toxicology Retreat, University of Georgia. April 10, 2014.

Gross, B. A., M. Venegas-Anaya, R. D. Bradley, R. M. Elsey, R. E. Willis, and L. D. Densmore, III. 2014. (Abstract). Experimental design for morphological and genetic preservation of museum specimens for the American alligator (*Alligator mississippiensis*). Poster presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Hamilton, M. T., J. W. Finger, Jr., B. S. Metts, R. M. Elsey, T. Glenn, and T. D. Tuberville. 2014. (Abstract). The effects of dietary exposure to coal fly ash contaminated prey on the immune system of the American alligator (*Alligator mississippiensis*). Poster presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Joneson, J. R., R.M. Elsey, and T. Owerkowicz. 2014. (Abstract). Tenotomy of the caudofemoralis longus muscle elicits changes in muscular but not skeletal morphology in the American alligator. Presentation at SICB meeting. Austin, Texas. January 2014. 110.5.

Joneson, J. R., A. C. Medina, R.M. Elsey, and T. Owerkowicz. 2014. (Abstract). Investigating the function of the caudofemoralis lungus (CFL) muscle and musculoskeletal plasticity in American alligators (*Alligator mississippiensis*). Poster presentation at the Experimental Biology meetings, April 26-30, 2014, San Diego, California. The FASEB Journal. 28(1):Supplement 919.9.

King, R. and R. M. Elsey. 2014. Louisiana's nuisance alligator program. (Abstract). Presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Kohl, Z. F., R. M. Elsey, and D. A. Crossley, II. 2014. (Abstract). Differential vascular perfusion in response to bouts of acute hypoxic exposure in embryonic American alligators. Presentation at SICB meeting. Austin, Texas. January 2014. 74.3.

Kohl, Z., K. Tate, R. M. Elsey, and D. Crossley II. 2014. (Abstract). Blood flow distribution following adrenergic blockade and nitric oxide production inhibition in embryonic American alligators, *Alligator mississippiensis*. Presentation at the Experimental Biology meetings, April 26-30, 2014, San Diego, California. The FASEB Journal. 28(1):Supplement 879.4.

Kohl, Z., R. M. Elsey, and D. Crossley II. 2014. (Abstract). The ontogeny of physical components of blood in the American alligator, *Alligator mississippiensis*. Presentation at the UNT-UAEM Integrative Biology Workshop May 9, 2014.

Lance, V., R. M. Elsey, and P. Trosclair, III. 2014. (Abstract). Sexual maturity in the American alligator. Presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Linscombe, J., L. Campbell, E. Mouton. 2014. (Abstract). Alligator population monitoring in Louisiana. Presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Lujan, S.L., T. Owerkowicz, R. M. Elsey, J. W. Hicks, and K. M. Middleton. 2014. (Abstract). Acute and chronic alterations in atmospheric oxygen do not alter femoral biomechanics in *Alligator mississippiensis*. Presentation at SICB meeting. Austin, Texas. January 2014. P3.144.

Membrano, N., R. M. Elsey, and T. Owerkowicz. 2014. (Abstract). The effects of eggshell removal on embryonic skeletal development in the American alligator (*Alligator mississippiensis*). Presentation at the Experimental Biology meetings, April 26-30, 2014, San Diego, California. The FASEB Journal. 28(1):Supplement 921.7.

Mouton, E. C. Jr., R. M. Elsey, L. Campbell, and J.T. Linscombe. Louisiana's Alligator Management Program. 2014. (Abstract). Presentation at the 23rd Working Meeting of the Crocodile Specialist Group, Lake Charles, Louisiana. May 2014.

Sweazea, K. L., J. P. McMurtry, R. M. Elsey, P. Redig, and E. J. Braun. 2014. Comparison of metabolic substrates in alligators and several birds of prey. Zoology. 117:253-260.

Vasconcellos, D., T. Owerkowicz, J. Eme, J. Blank, R. M. Elsey, and J. Hicks. 2014. (Abstract). Osteoderm accretion as proxy for whole body growth in the American alligator. Poster presentation at the Experimental Biology meetings, April 26-30, 2014, San Diego, California. The FASEB Journal. 28(1):Supplement 1161.3.

Yang, J., T. Owerkowicz, R. M. Elsey, and Lien, C. 2014. (Abstract). Cardiac regenerative capacity of the American alligator. Presentation at the Experimental Biology meetings, April 26-30, 2014, San Diego, California. The FASEB Journal. 28(1):Supplement 87.5.

## ALLIGATOR ADVISORY COUNCIL

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The Alligator Advisory Council monitors and addresses many issues concerning the alligator industry at local, national and international levels. The council supports husbandry and disease research, addresses public concerns regarding animal welfare, engages in international conservation and trade issues, and develops markets for sustainable Louisiana products.

The council contributed to and participated in the 23rd Working Group meeting of the International Union for Conservation of Nature Crocodile Specialist Group meeting, which was hosted by Louisiana and McNeese State University. The conference was attended by 363 delegates from 38 countries. This meeting yielded \$50,000 in pledges to support sustainable use efforts for crocodilians world-wide, modeled after Louisiana's program.

The council led a petition to extend the sunset clause for AB2075, which allows the sale of alligator and crocodile products within the state of California. Both California's Assembly and Senate passed the measure with 70 percent in favor. The council worked closely with the California Retailers Association, the Beverly Hills Chamber of Commerce, the International Union for Conservation of Nature Crocodile Specialist Group, and the Louisiana Congressional delegation to support this bill.

The council has worked to develop humane harvest guidelines approved by the American Veterinary Medical Association and the World Health Organization. Best Management Practices for crocodilians have now been adopted by Australia, Louisiana, Zimbabwe and Zambia.

Several issues associated with alligators and crocodilians were addressed at the Convention on International Trade in Endangered Species (CITES). The electronic permitting system, which substantially saves time and reduces permit costs for alligator farmers and dealers making frequent international shipments, continues to be a priority. The council also focused on issues such as non-detriment findings, monitoring, best management practices,

compliance reviews, and enhancing ethical standards for husbandry, harvest and humane practices.

LDWF worked closely with Louisiana Public Broadcasting to develop a documentary film on LDWF's alligator management program. The film aired this year.

The Alligator Advisory Council worked with the LSU School of Human Ecology to promote the use of lower grade alligator skins. Several LSU alumni have incorporated grade-3 alligator leather into their fashion lines. LSU student garments were showcased at Fashion Week New Orleans in March 2014. Students from the Beijing Institute of Fashion Technology also worked with grade-3 alligator leather and showcased their products at the Beijing Fashion Week. The use of lower grade alligator was promoted in China, Europe and Hawaii by LSU School of Human Ecology faculty.





# Office of Fisheries

## MISSION

The purpose of the Fisheries program is to manage living aquatic resources and their habitat, to support the fishing industry, and to provide access, opportunity and understanding of the Louisiana aquatic resources to the state's citizens and others beneficiaries of these sustainable resources.

## OBJECTIVES

- To provide high quality fishery management information through effective data collection, analysis and information sharing.
- To be an effective, efficient steward of our renewable aquatic resources.
- To provide and enhance recreational fishing experience through improved access, opportunity and public awareness.
- To maintain a sustainable and economically viable fisheries environment.
- To create a work environment in which all Fisheries staff are enabled and empowered to achieve the office's goals and objectives.

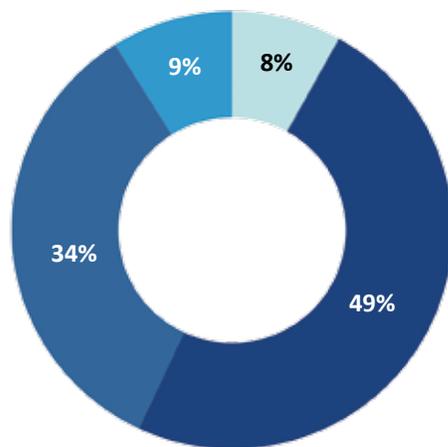
## ORGANIZATION

The Office of Fisheries structure is comprised of the following sections:

- Marine Fisheries - to manage the marine (saltwater) fisheries resources of the state.
- Inland Fisheries - to manage the inland (freshwater) fisheries resources of the state.
- Fisheries Management - to provide technical and scientific research in support of fisheries management.
- Fisheries Oversight - to provide guidance and assistance to Louisiana's valuable commercial fishing industries.
- Fisheries Extension – to provide fishery management information to the recreational fishing sector through hatcheries, improved fishing and boating access, aquatic outreach and volunteer activities.

## FISHERIES FUNDING

**FISHERIES FUNDING SOURCES  
(APPROPRIATED FUNDING)**



- Federal Funds
- Statutory Dedications
- Self-Generated Funds
- Interagency Transfer Funds

The Statutory Dedications utilized by the Office of Fisheries are primarily the Conservation Fund and the Artificial Reef Trust Fund. The Conservation Fund is funded primarily by license revenue and oil and gas revenue from Louisiana Department of Wildlife and Fisheries (LDWF) property. The Conservation Fund is a general funding source used to fund invasive aquatic plant, marine fisheries monitoring and research and general office operations. The Artificial Reef Trust Fund is funded through donations from oil and gas companies. Oil and gas companies donate one half of the realized savings over a traditional onshore removal of obsolete offshore oil and gas offshore structures. The Artificial Reef Trust Fund is used to fund the building and monitoring of inshore, nearshore and offshore artificial reefs, research related to species utilizing artificial reef structures, operations of the Artificial Reef Program, and other research and monitoring needs of the department.

The Federal funds used by LDWF come from various federal entities, such as U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), and Gulf States Marine Fisheries Commis-

sion (GSMFC). The funds from the USFWS are primarily from federal assistance in the Sport Fish Restoration Program. The funds are dedicated to marine and freshwater monitoring, research, management and boating access, aquatic education, and aquatic outreach. The funds from NOAA represent various grants that are utilized to collect offshore fisheries independent data and commercial fisheries dependent data, and to provide assistance to the commercial fishing industry for recovery related to hurricanes. The funds from GSMFC represent various grants that are utilized to collect recreational and commercial fisheries dependent data.

Interagency transfer funds are provided by other state agencies and used to fund various projects. These projects include fisheries monitoring associated with freshwater diversions, oil spill response and damage assessment, and oil spill restoration projects.

The self-generated funds are provided by other non-governmental entities and are used to fund various projects. These projects include fisheries monitoring following the *Deepwater Horizon* oil spill and funding for marine mammal stranding response and mapping.

## ONGOING MONITORING OF 2010 DEEPWATER HORIZON OIL SPILL

Response and recovery efforts related to the 2010 *Deepwater Horizon* oil spill continued throughout FY 2013-2014. As one of the primary state agencies involved in oil spill response, LDWF staff continued to respond to reports of residual oiling from the spill, participated in response and recovery efforts of marine mammals and sea turtles, participated in the ongoing Natural Resource Damage Assessment (NRDA), and worked to ensure that the seafood harvested in open waters tested at acceptable levels for public consumption according to standards set by the U.S. Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA). LDWF also conducted enhanced fisheries monitoring to better manage fisheries in the wake of the spill.

### FISHERIES CLOSURES

During FY 2013-2014, portions of state waters located around Grand Terre Island and Bay Jimmy, within the Barataria Basin, remained closed to all recreational and commercial fishing except for recreational and charter boat angling. In July 2013, waters seaward a distance of one-half mile from the shoreline of East Grand Terre Island were closed to all commercial and recreational fishing except for recreational and charterboat angling due to the discovery and removal of tar mats in intertidal and subtidal waters, some of which were outside of the existing closure area. In December 2013, commercial and recreational fishing closures extending seaward 1 mile from the shoreline between Caminada Pass westward to Belle Pass were reduced to one-half mile. Portions of state waters within the Mississippi River Delta also remain closed to commercial fishing. These areas were still closed at the end of FY 2013-2014.

### ENHANCED RESOURCE MONITORING

In response to the *Deepwater Horizon* oil spill, Fisheries biologists not only continued existing independent sampling efforts but also enhanced those efforts in order to both monitor fisheries resources and to document trends in Louisiana saltwater fisheries. Monitoring efforts are divided into three components: inshore, nearshore and offshore monitoring. The information gathered through enhanced monitoring is used to better manage these species in light of the oil spill.

Inshore monitoring takes place in the shallower areas around the coast where normal depths are from 1 to 30 feet. Sampling gear in this area includes: seines, trammel nets, gill nets, trawls, dredges and square meters. Nearshore monitoring takes place in offshore waters of the Gulf of Mexico, where normal depths are from 30 to 240 feet, and the habitat consists of many of Louisiana's commercially and recreationally important species. Nearshore monitoring is conducted in the three designated zones off Louisiana's coast: Eastern Zone, Central Zone and Western Zone. Offshore monitoring is conducted by LSU to monitor the biological communities at artificial reef sites. The research has focused on video and acoustic methods. LSU is currently analyzing the data and this project will conclude in June 2015.

### MARINE MAMMAL AND SEA TURTLE STRANDING AND RESCUE PROGRAM

The LDWF Marine Mammal and Sea Turtle Stranding and Rescue Program is the first responder to all marine mammal and sea turtle strandings in Louisiana. The Office of Fisheries continues to receive and investigate all reports of live and dead marine mammals and sea turtles.

Fisheries biologists work closely with our federal counterparts and staff at NOAA - National Marine Fisheries Service (NMFS) and USFWS to investigate the cause of strandings and deaths, following established protocols while maintaining all evidence collected under a formal Chain of Custody Form, as required by the Oil Pollution Act (33 U.S.C. § 2701 et seq.) NRDA process. All sea turtle carcasses are recovered for a necropsy. In April 2014, LDWF entered a Memorandum of Understanding with the LSU School of Veterinary Medicine: Louisiana Animal Disease Diagnostics Laboratory in which space in their new BSL-3 Laboratory is available for use to LDWF for necropsies on marine mammals.

LDWF also responds to all live marine mammal and sea turtle stranding calls on Louisiana's coast and may aid in recovery, transport and release. In June 2014, LDWF and Audubon released three rehabilitated sea turtles back into the Gulf of Mexico off of the Louisiana coast.

Since the onset of the *Deepwater Horizon* oil spill through Dec. 19, 2014, more than 836 live and dead sea turtles, including incidental captures, have been responded to by LDWF, as well as over 579 live and dead marine mammals.

Currently, the northern Gulf is enduring the longest and largest marine mammal Unusual Mortality Event in the history of the Gulf of Mexico, beginning in February 2010 (*Figure 2*). A Unusual Mortality Event is defined as "a stranding that is unexpected, involves a significant die-off of any marine mammal population and demands immediate response" (NOAA).

### TISSUE TESTING FOR SEAFOOD SAFETY

Following the *Deepwater Horizon* oil spill, state and federal officials worked to address seafood safety concerns about the consumption of fish from Gulf of Mexico waters. While fisheries closures implemented in both state and federal waters were aimed at preventing seafood products that may have come into contact with oil from the *Deepwater Horizon* oil spill from entering the market, additional measures were undertaken in order to ensure that the seafood being harvested in waters off Louisiana's coast met the thresholds set by the FDA for safe seafood consumption.

In May 2010, LDWF began collecting, testing and analyzing seafood tissue samples for polyaromatic hydrocarbons coast-wide on a regular, ongoing basis. In March 2011, LDWF combined its efforts with the Louisiana Department of Health and Hospitals (DHH), Louisiana Department of Agriculture and Forestry (LDAF) and Louisiana Department of Environmental Quality (DEQ) to create The Louisiana Seafood Safety Plan, which calls for collection and testing of samples from inshore species, nearshore reef fish and pelagic species, in addition to corresponding water and sediment samples. The samples were collected, transported and tested based on protocols agreed upon by the FDA, EPA and the Gulf states.

As of Nov. 1, 2013, 3,500 tissue samples of crabs, finfish and shrimp from coastal Louisiana have been tested for hydrocarbon contamination, along with corresponding sediment and water samples in many cases.

On Nov. 1, 2013, three-year funding for this project concluded. *Table 1* provides the results of sampling to date. All samples tested below the FDA-established levels of concern, for safe seafood consumption.

## EARLY RESTORATION OYSTER HATCHERY

The new oyster hatchery is being constructed pursuant to the Phase I *Deepwater Horizon* Oil Spill NRDA Early Restoration Plan as part of the Louisiana Oyster Cultch Project. The Louisiana Oyster Cultch Project involves the placement of 850 acres of oyster cultch onto six locations on the public oyster seed grounds and the construction of this oyster hatchery adjacent to the LDWF Marine Lab on Grand Isle capable of producing 1 billion eyed larvae per season to offset injuries to oysters in coastal Louisiana as a result of the *Deepwater Horizon* oil spill.

This state-of-the-art oyster hatchery will soon be completed, and the hatchery is expected to produce oyster larvae in 2015 to serve as a means for corrective action on recent cultch plants, if needed, and further enhance oyster production on the public oyster seed grounds. LDWF hatchery staff has been collaborating with Louisiana SeaGrant in the construction of algal and larval tank systems.

## LOUISIANA MARINE FISHERIES ENHANCEMENT, RESEARCH AND SCIENCE CENTER

During the 2013-2014 fiscal year, LDWF staff worked with the *Deepwater Horizon* NRDA trustees to incorporate the Louisiana Marine Fisheries Enhancement, Research, and Science Center project into Phase III of Early Restoration. This work included attending public meetings, developing the preliminary programming efforts, and creating the Phase III Early Restoration Plan and Early Restoration Programmatic Environmental Impact Statement. The objective of this restoration project is to help compensate for the loss of recreational fishing services resulting from the spill by constructing facilities to enhance recreational fishing experiences through aquaculture, and promote environmental and cultural stewardship, education, and outreach. This project will develop facilities at two sites with the shared goals of fostering collaborative multi-dimensional research on marine sport fish and bait fish species. LDWF is the lead agency for planning, implementation, construction, operation, and monitoring of this project.

**TABLE 1. Tissue testing results – inception to completion.**

Month/Year	Atchafalaya & Vermilion Teche	Barataria	Calcasieu Sabine	Pontchartrain	Terrebonne	Nearshore
<b>FISH SAMPLES</b>						
February 2011	n/a	n/a	n/a	n/a	n/a	2
March 2011	7	7	1	6	7	14
April 2011	7	7	6	7	4	17
May 2011	5	7	6	6	7	22
June 2011	7	7	6	5	3	43
July 2011	7	7	4	7	6	27
August 2011	7	7	6	7	6	33
September 2011	6	7	5	7	7	38
October 2011	7	7	3	7	7	18
November 2011	6	7	6	7	7	7
December 2011	7	7	3	7	6	18
January 2012	7	7	4	8	7	20
February 2012	7	7	5	8	6	14
March 2012	6	7	6	8	7	34
April 2012	6	7	4	8	5	28
May 2012	6	7	6	7	7	26
June 2012	7	6	4	7	5	24
July 2012	7	7	4	7	7	24
August 2012	7	6	3	2	5	24
September 2012	7	7	5	8	6	21
October 2012	7	7	7	7	7	27
November 2012	6	7	4	8	6	12
December 2012	7	5	6	6	7	9
January 2013	6	7	6	5	6	7
February 2013	6	7	5	6	5	8
March 2013	7	7	5	8	4	58
April 2013	6	6	5	8	4	74
May 2013	6	7	3	5	5	39
June 2013	7	7	5	10	7	11
July 2013	6	6	6	9	2	76
August 2013	6	7	6	7	4	n/a
September 2013	7	7	5	7	4	n/a
October 2013	6		2	6	6	n/a
<b>Total</b>	<b>209</b>	<b>211</b>	<b>152</b>	<b>221</b>	<b>182</b>	<b>775</b>
<b>SHRIMP SAMPLES</b>						
March 2011	1	1	n/a	1	1	n/a
April 2011	2	1	1	1	1	3
May 2011	1	1	1	1	1	19
June 2011	1	1	1	1	1	22
July 2011	1	1	n/a	1	1	23
August 2011	1	1	n/a	1	1	19
September 2011	1	1	n/a	1	1	5
October 2011	1	1	n/a	1	1	29
November 2011	1	1	1	1	1	11
December 2011	1	1	1	1	1	10
January 2012	1	1		1	1	22
February 2012	1	1	1	1	1	20
March 2012	1	1	1	2	1	14
April 2012	1	1	1	1	1	18
May 2012	1	1	1	1	1	18
June 2012	1	1	1	2	1	1

Month/Year	Atchafalaya & Vermilion Teche	Barataria	Calcasieu Sabine	Pontchartrain	Terrebonne	Nearshore
<b>SHRIMP SAMPLES cont.</b>						
July 2012	1	1	n/a	2	1	20
August 2012	1	1	n/a	n/a	1	17
September 2012	1	1	n/a	1	1	11
October 2012	1	1	1	1	1	n/a
November 2012	1	1	1	3	n/a	20
December 2012	1	1	1	1	1	13
January 2013	1	1	1	1	n/a	n/a
February 2013	1	1	1	1	n/a	10
March 2013	1	1	n/a	2	1	n/a
April 2013	1	1	1	n/a	1	6
May 2013	1	1	1	n/a	1	1
June 2013	1	1	1	2	1	9
July 2013	1	1	n/a	3	1	11
August 2013	1	1	n/a	2	1	n/a
September 2013	1	1	n/a	2	n/a	n/a
October 2013	1	n/a	n/a	1	n/a	13
<b>Total</b>	<b>33</b>	<b>31</b>	<b>18</b>	<b>40</b>	<b>27</b>	<b>365</b>

<b>CRAB SAMPLES</b>						
March 2011	1	1	n/a	1	1	n/a
April 2011	1	1	n/a	1	1	n/a
May 2011	1	1	1	n/a	1	n/a
June 2011	1	1	n/a	1	1	n/a
July 2011	1	1	n/a	1	1	n/a
August 2011	1	1	1	1	1	n/a
September 2011	1	1	1	1	1	n/a
October 2011	1	1	n/a	1	1	n/a
November 2011	1	1	n/a	1	n/a	n/a
December 2011	1	1	n/a	1	1	n/a
January 2012	1	1	n/a	2	1	n/a
February 2012	1	1	n/a	1	1	n/a
March 2012	1	1	n/a	1	1	n/a
April 2012	1	1	n/a	1	1	n/a
May 2012	1	1	1	1	1	n/a
June 2012	1	1	1	1	1	n/a
July 2012	1	1	n/a	1	1	n/a
August 2012	1	n/a	n/a	n/a	n/a	n/a
September 2012	1	1	n/a	1	1	n/a
October 2012	1	1	n/a	1	1	n/a
November 2012	1	1	1	1	n/a	n/a
December 2012	1	n/a	1	1	n/a	n/a
January 2013	1	1	n/a	1	n/a	n/a
February 2013	1	1	n/a	1	n/a	n/a
March 2013	1	1	1	1	1	n/a
April 2013	1	1	n/a	1	n/a	n/a
May 2013	1	1	1	1	1	n/a
June 2013	1	1	1	1	1	n/a
July 2013	1	1	1	2	1	n/a
August 2013	1	1	n/a	1	1	n/a
September 2013	1	1	n/a	2	1	n/a
October 2013	1	n/a	1	2	1	n/a
<b>Total</b>	<b>32</b>	<b>29</b>	<b>12</b>	<b>34</b>	<b>25</b>	<b>0</b>

## NRDA ACTIVITIES

Since the *Deepwater Horizon* oil spill, Office of Fisheries staff has worked in coordination with state and federal trustees on a NRDA. Over the last year, LDWF staff provided technical assistance and logistical support for assessment activities and participated in long-term and early restoration planning efforts. LDWF also worked to implement two Early Restoration projects including the Louisiana Oyster Cultch project and the Louisiana Marine Science and Research Center. Preliminary programming and planning were underway for the Louisiana Marine Science and Research Center.

## EARLY RESTORATION EFFORTS

In April 2011, BP committed to fund up to \$1 billion for Early Restoration of natural resources in the Gulf of Mexico from the impacts of the *Deepwater Horizon* oil spill prior to the completion of the NRDA. As a part of this process, following agreement between BP and the NRDA trustees and public review and comment, the Louisiana Oyster Cultch project was funded through the Early Restoration process. The project calls for the construction of six oyster cultch plants and an oyster hatchery to restore oyster resources injured as a result of the spill. The cultch plants were constructed in 2012 and 2013 in various areas of the Louisiana coast. A thorough evaluation of oyster density on each plant is scheduled for July 2014. Construction of the oyster hatchery is substantially complete, and the facility is expected to be operational in summer 2015.

On April 1, 2013, the notice to proceed was given to start the construction of the NRDA oyster hatchery on Grand Isle. The new hatchery building is intended to help augment oyster production on the early restoration cultch plants. The structure will be similar construction to the adjacent LDWF Marine lab facility including pre-stressed concrete piles, floor decking and wall panels, and standing seam metal roofing. Construction is ongoing at this time.

## RESOURCE MANAGEMENT

Louisiana's fisheries resources benefit all constituent groups in Louisiana, across the Gulf Coast and throughout the nation. The Louisiana Constitution of 1974 provides the framework to protect and enhance habitat and to ensure sustainable commercial and recreational fisheries. Fisheries biologists collect the basic ecological data needed to efficiently and effectively manage fisheries resources to benefit all constituent groups.

LDWF is responsible for managing Louisiana's fisheries and maintaining healthy fish populations and habitat for the benefit of Louisiana's residents and visitors of both today and tomorrow. Responsible fisheries management starts with sound, scientific information about fish populations and the ecosystems in which they live, as well as the fisheries that harvest them. LDWF biologists use a variety of methods to gather this information, including examining fishermen's catch (fishery dependent data) and conducting scientific studies (fishery independent data).

### MONITORING

Monitoring fisheries, both fresh and saltwater, is a crucial component of resource management. Important biological data is collected specific to each type of sampling. In addition, hydrological data (conductivity, salinity and water temperature) are collected with each biological sample, as are wind direction and speed. The information gathered during monitoring efforts, such as fisheries independent sampling, gives biologists and administrators the information essential to manage each fishery appropriately; openings, closures, limits and emergency actions are based upon monitoring data.

### SHRIMP SAMPLING

The long-term objectives of the shrimp fishery research program are to assess and monitor shrimp stocks and to evaluate shrimp fishery impacts on other fisheries and protected species. Each species requires an annual assessment of the condition of the stock, the fishery and sectors of the economy that are impacted by changes in either. The assessments are also needed so that LDWF can determine whether or not a stock is overfished.

Inshore and offshore shrimp sampling continued during FY 2013-2014. In inshore waters, 248 6-foot and 1,735 16-foot trawl samples were collected. In state offshore territorial wa-

ters, 270 20-foot trawl samples were collected. Information crucial to setting the closing dates of the 2013 spring inshore shrimp season, opening dates of the 2014 spring inshore shrimp season, opening and closing dates of the 2013 fall inshore shrimp season, and the closing and reopening of shrimping in portions of state territorial waters in 2013 and 2014 was collected using these sampling procedures.

### OYSTER SAMPLING

Management of the public oyster grounds and reservations relies heavily upon data gathered through a comprehensive biological monitoring program. Nearly 500 square-meter samples are collected each July, and approximately 3,100 dredge samples are collected during each calendar year. In February 2014, replication for the dredge sampling program decreased from three replicate samples per station to two per station.

Square-meter data is used to measure the annual oyster stock size and for yearly oyster season recommendations by the Office of Fisheries. Dredge data is used to monitor the overall health of the oyster resource during the year and to assess recruitment of new age classes of oysters into the population. Field biologists also gather hydrological data on public oyster areas and develop harvest and fishing effort estimates by conducting boarding report surveys of oyster boats.

### Annual Oyster Stock Survey

The 2013 oyster stock survey results indicated an increase (+38 percent) in statewide oyster resource availability on the public oyster seed grounds, although stocks still remain well below the long-term average. The overall statewide oyster stock assessment for 2013 showed approximately 1.7 million barrels of oysters (seed-size and market-sized oysters combined) available.

### Sustainable Oyster Shell Stock Modeling

Under contract and through collaboration with LDWF, a research team led by Dr. Tom Soniat at the University of New Orleans (UNO) continued working with LDWF to test a sustainable oyster shell stock model for the public oyster areas of Louisiana. This computerized model provides guidance for fisheries management with the goal of conserving the oyster reef base. Oyster stock assessment sampling in 2013 provided model input data such as estimates of reef mass (grams per square-meter)

and size-frequency of oysters. Utilizing additional data on oyster growth, mortality and estimated commercial harvest rates, the model estimates the amount of oyster harvest that can be allowed while preserving the reef mass. The model was tested for the second consecutive year in Hackberry Bay during the 2012-2013 oyster season. The model indicated that 675 barrels of seed and 1,085 sacks of market oysters could be harvested without detriment to the existing reef mass. Based on the model guidance, the oyster season was closely monitored and closed once these harvest thresholds were met. Although model guidance was produced for all other public oyster areas, only the commercial harvest season for Hackberry Bay was modified.

### Vessel Monitoring System

In an effort to better manage public oyster beds, the Office of Fisheries has implemented the Vessel Monitoring System (VMS) Pilot Program, which requires oyster vessels fishing on public seed grounds to have a VMS provided by the Office of Fisheries. VMS is a GPS system that uses satellites to indicate where a vessel is located at all times, providing valuable data on fishing effort by location. By covering costs associated with the purchase, installation and operation of VMS, important information can be gathered through the pilot program, and recommendations can be made to the Louisiana Wildlife and Fisheries Commission (LWFC) regarding greater utilization of this public resource.

Roughly 320 VMS units have been installed on permitted oyster vessels. A detailed analysis of the VMS continued through FY 2013-2014, and LDWF intends to use the data to develop advanced fishing effort models to assist in public seed ground stock assessments.

The project is being funded through a Federal Community Development Block Grant in cooperation with the Office of Community Development. During FY 2013-2014, the grant was extended by a year, taking this to a three-year project. Through the extension, funds were awarded to UNO to utilize the VMS data collected to assist in the development of a shell stock budget model for potential use as a management tool. Work on this model has been ongoing throughout FY 2013-2014, and results are expected next year.

**Oyster Hatchery and Research**

LDWF has continued its involvement and collaboration with Louisiana SeaGrant at the existing oyster hatchery on Grand Isle. LDWF staff assisted with oyster larvae production. A portion of the hatchery-produced larvae raised at the existing hatchery were either used by LDWF for setting on shell as part of a remote setting project, or for deploying in the western part of the state (Figure 1).

Beginning in the summer of 2014, hatchery-produced, spat-on-shell deployments were performed as a remote setting pilot project to test the efficacy of building reefs using hatchery-raised spat. As larvae were produced

by the hatchery, LDWF staff set competent pediveliger larvae on whole oyster shell. This spat set on whole oyster shell were deployed onto a public oyster reef and cultch plant site at Hackberry Bay. The spat were monitored for growth and survival at Month 1 and 2, post deployment, and will continue to be monitored for up to two years.

In addition to deploying spat-on-shell, hatchery-produced larvae were deployed in Calcasieu Lake at the Mid-Lake sampling location in the western part of the state. By June 30, 2014, approximately 49 million hatchery-produced oyster larvae were deployed.

**Remote Setting Program**

Since the 2010 *Deepwater Horizon* oil spill, Louisiana’s public oyster seed grounds have experienced significantly lower levels of successful oyster reproduction (oyster spat set). Spat set is a key indicator of the overall oyster population’s stability because it shows the recruitment of young oysters into the population. In response, LDWF developed the Remote Setting Program to increase oyster production levels through the following activities:

- Stockpiling of cultch material.
- Deploying and subsequently “seeding” cultch material with oyster larvae.
- Setting oyster larvae onto cultch material.
- Placing set material into on-shore tanks that can be used for future deployments.

LDWF is working closely with Plaquemines Parish on the Remote Setting Program and is utilizing Buras Boat Harbor as the program’s work site. Site improvements and the construction of work areas and the remote setting tanks are currently in the approval and permitting phase. Construction on the site will begin mid to late FY 2014-2015. Funding for the project comes from LDWF, CPRA and a Community Development Block Grant through Plaquemines Parish.

LDWF is also collaborating with the Coalition to Restore Coastal Louisiana to collect and stockpile oyster shell at the Buras site. Oyster shell is the material of choice for setting larval oysters. This program began during FY 2013-2014 and the coalition began delivering shell to the Buras site for storage.

One component of the Remote Setting Program is designed deploy cultch material to certain pre-selected sites using contracted private oyster vessels. Beginning in December 2012, properly equipped oyster vessels were loaded with material using an aggregate conveyor at the Buras facility. Between four different sites, 6,149 tons of material were deployed. Vessel owners were compensated \$50 per ton and \$6 per mile for participating in the program. This portion of the program targeted the Hackberry Bay, Black Bay and Bay Gardene areas. Deployment of material through this program has been closed; however, monitoring of the sites where deployment occurred for oyster development is ongoing.

**Remote Setting Program numbers as of FY 2013-2014**

<b>Total Contracts Completed</b>	20
<b>Total Material Deployed</b>	6,149 tons
<b>Total Cost of Material</b>	\$205,911.75
<b>Total Payments Invoiced</b>	\$342,024.40



New LDWF Oyster Hatchery in Grand Isle, La.



FIGURE 1. Larvae and/or spat deployment locations in public oyster areas of Louisiana 2011-2014.

## MARINE FINFISH SAMPLING

The primary objective of the Finfish Program is to make rational recommendations for the management of coastal finfish stocks based on a database of scientific information. The information in the database is collected through fishery independent and dependent sampling. The fishery independent monitoring program is an ongoing collection of data by fisheries biologists in the field conducting surveys designed to sample coastal waters in an objective manner. The surveys collect information based on geographic ranges independent of commercial or recreational fishing operations.

Three gear types are used coast-wide to sample various year classes of estuarine-dependent fish:

1. A bag seine is used to sample young of the year and provide information on growth and movement. More significantly, these samples provide information on the forage species and ecological components of marsh-edge and shoreline habitats throughout the coastal zone. Seine samples are taken quarterly during the first month of the quarter.
2. A gill net is used to sample juvenile, sub-adult and adult fish. It provides information on relative abundance, year class strength, movement and gonad condition. Gill net samples have been collected semi-monthly from April through September, and monthly from October through March using a strike net technique.
3. A trammel net is used to sample juvenile and sub-adult fish. It provides information on relative abundance, standing crop and movement. Trammel net samples are taken monthly from October through March.

During FY 2013-2014, the fishery-independent finfish sampling program collected 935 (101 percent) gill net samples, 404 (92 percent) seine samples, and 263 (97 percent) trammel net samples for a 98 percent overall completion rate. Gill net sampling exceeded targets, while seine and trammel sampling were slightly below targets due to changes in sampling methodology. Sample information for FY 2013-2014 includes a re-design in fishery-independent finfish monitoring sampling frequency based upon internal statistical analysis following a period of expanded sampling due to the *Deepwater Horizon* oil spill.

## FRESHWATER FINFISH SAMPLING

Freshwater fisheries resources are monitored and managed through various sampling methods. In FY 2013-2014, biologists estimated relative abundance, age, growth and mortality, size class structure, species composition, and genetics of sportfish populations in addition to physiochemical characteristics of the water on 145 lakes, rivers and streams. Sampling sites on inland lakes, reservoirs and rivers are pre-determined and selected to represent available aquatic habitats within the various water bodies. Sampling protocol is standardized to the extent possible to allow for comparison of data over time.

One means of freshwater sampling is through electrofishing. Samples are collected in both spring and fall to provide a measure of population trends including abundance, size, distribution, age structure and genetic composition. A total of 783 stations were sampled for 314 hours of timed electrofishing during the fiscal year. Sampling included largemouth bass and crappies in the spring and fall, with forage samples of all species also collected in the fall.

Seine samples are also taken to determine fish community relative abundance and young-of-the-year recruitment of popular sport fishes.

Seventy-eight seine hauls were made during the fiscal year.

Entanglement and trap net webbing are also fished in a standardized manner to collect crappies, catfishes and sunfishes. A total of 306 gill net samples were taken on various lakes and rivers, while 290 lead net and hoop net samples were fished during the fiscal year.

Mini biomass samples (one-day rotenone) were taken in the coastal freshwater marshes as a means to measure species diversity and abundance. Coastal districts cooperatively made 32 biomass samples in FY 2013-2014.

Larval fish samples used to determine the extent of the Asian carp invasion in Louisiana waters was initiated in the spring and summer of 2013. Asian carp populations are continuing to expand and invade United States waters. Ichthyoplankton (drift) nets were used to capture and assess Asian carp in the early life history stages (larvae) in Louisiana waters. By documenting the presence/absence of Asian carp larvae we will have information to assist in determining the leading edge of expansion. Thirty-five waterbodies and 65 stations were sampled, and 739 larval collections were taken in FY 2013-2014.

**TABLE 2.** Largemouth genetics analyses on selected Louisiana lakes and rivers during FY 2013-2014.

LAKE/RIVER	SAMPLE #	% NATIVE	% HYBRID	% FLORIDA	TOTAL % FL GENOME
Anacoco Lake	105	67.6%	26.7%	5.7%	32.4%
Atchafalaya Basin	450	94.9%	5.1%	0%	5.1%
Caney Creek Reservoir	189	16.4%	61.4%	22.2%	83.6%
Caddo Lake	269	64.3%	29.7%	6%	35.7%
Calcasieu River	126	89.7%	10.3%	0%	10.3%
Iatt	113	85.8%	12.4%	1.8%	14.2%
Ivan Lake	52	80.8%	9.6%	9.6%	19.2%
Lake Bruin	149	91.9%	7.4%	0.7%	8.1%
Mermentau River	8	87.5%	12.5%	0%	12.5%
Nantachie Lake	80	66.25%	32.5%	1.25%	33.75%
Red River Pool 1	103	81.6%	12.6%	5.8%	18.4%
Red River Pool 2	127	86.6%	11.8%	1.6%	13.4%
Red River Pool 3	155	89%	11%	0%	11%
Red River Pool 4	139	92.1%	7.20%	0.7%	7.9%
Red River Pool 5	145	71.7%	25.5%	2.8%	28.3%
Rockefeller Refuge	28	57.2%	21.4%	21.4%	42.8%
University Lake	34	17.6%	67.7%	14.7%	82.4%

Special largemouth bass age, growth and mortality studies continued on 11 water bodies during FY 2013-2014, while crappie age, growth and mortality studies continued on seven lakes. The extensive data collected will be used in consideration of existing and proposed harvest regulations. Genetic analyses of largemouth bass populations were completed on 17 waterbodies statewide, with final number sampled and results presented in *Table 2*.

### COMMERCIAL HARVEST

Louisiana produces nearly one-quarter of the seafood in the continental United States. Louisiana comes in second only to Alaska in terms of commercial fishing production and is home to three of the top six commercial fishing ports in the country. Seventy-eight percent of the seafood production in the Gulf of Mexico comes from Louisiana shrimpers, crabbers, oyster harvesters and fishermen. Nearly 13,000 commercial fishermen and over 1,500 seafood dealers/processors and brokers register each year to provide the nation with fresh seafood.

LDWF utilizes the Trip Ticket Program to collect commercial seafood statistics. Through this program, commercial landings data are collected on a trip basis from wholesale/retail seafood dealers, crab shedders and commercial fishermen holding fresh products licenses. There were over 190,000 commercial fishing trips reported last year producing in excess of 130 million pounds of seafood.

Beginning in May 2000, a computerized electronic trip ticket program was developed and made available to dealers. To date, roughly 200 dealers use the computerized program to submit their trip ticket data. Trip ticket information has been used:

- to enhance the accuracy of stock assessments conducted by state and federal fishery management agencies.
- to extend certain inshore shrimp seasons providing additional economic opportunity to fishermen.
- to develop a crop insurance program for oyster growers.
- to estimate damages from hurricanes Katrina and Rita in 2005.

Along with the collection of commercial landings data, LDWF also conducts trip interviews of commercial fishermen to gather detailed information about a specific fishing trip. The federally funded program focuses on species of greatest state and federal interest.

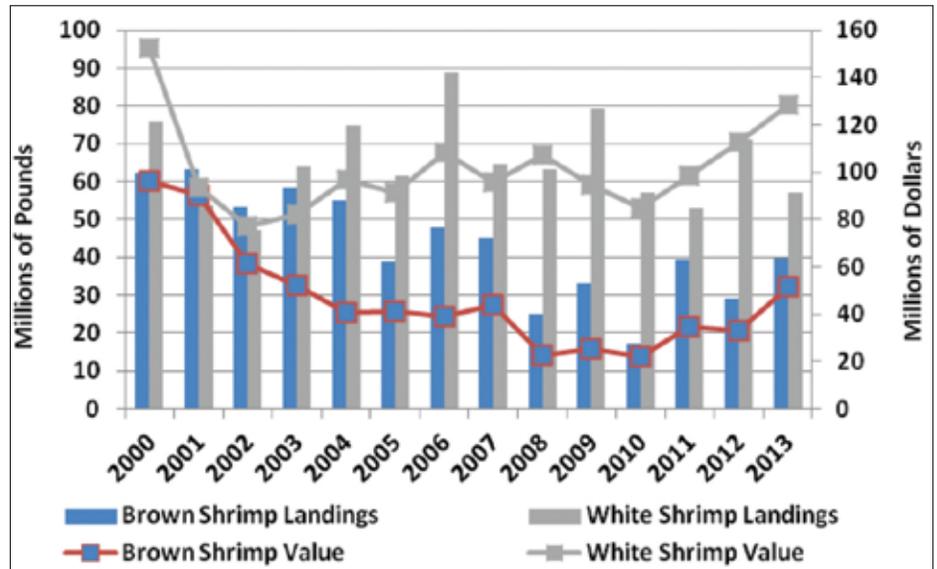


FIGURE 2. Annual white and brown shrimp landings and value (Source: LDWF trip ticket data).

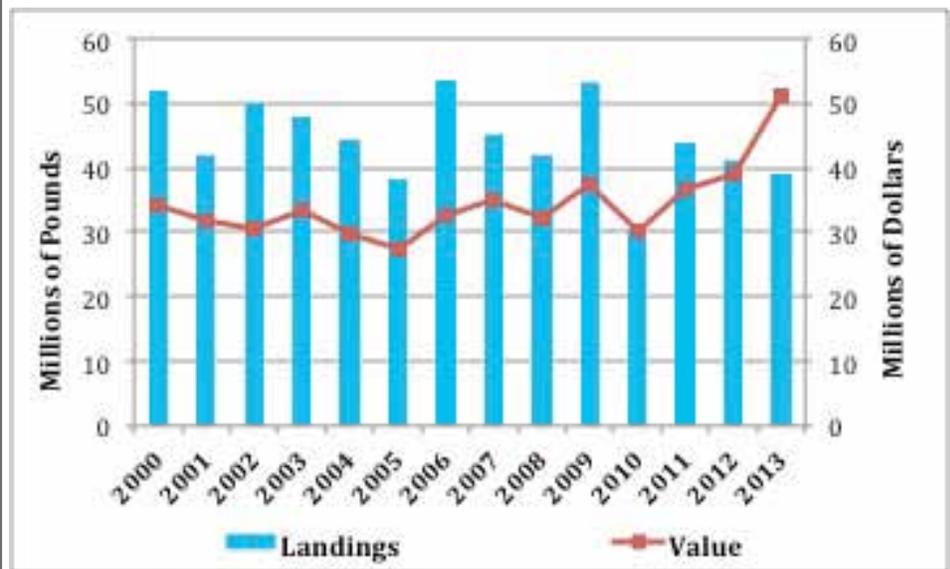


FIGURE 3. Annual blue crab dockside landings and values (source: LDWF trip ticket data).

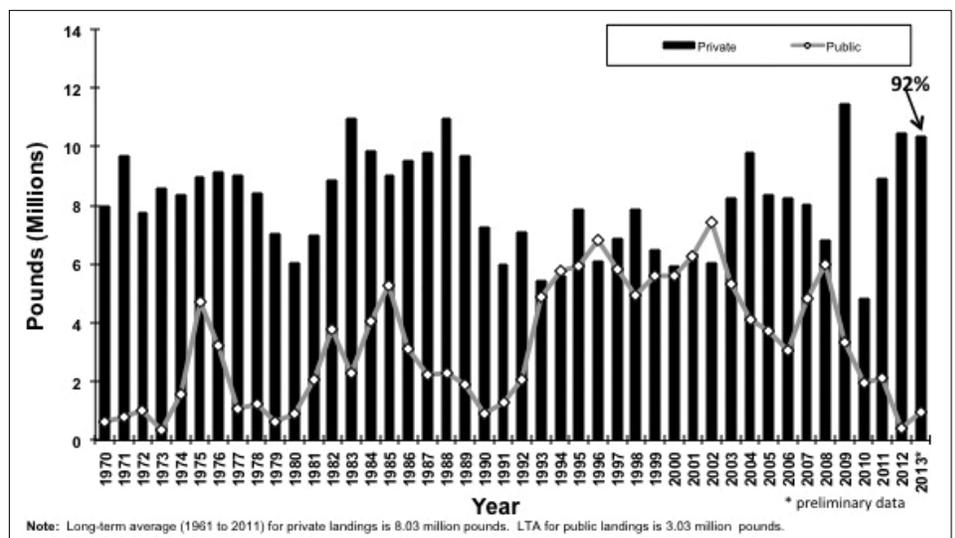


FIGURE 4. Historical Louisiana oyster landings from private oyster leases and public oyster areas.

Shrimp are the state's most valuable fishery. In 2013, total shrimp landings measured approximately 98.8 million pounds (all species combined/heads on weight) and had a dockside value of \$181.3 million, the third highest annual value on record. Brown shrimp landings comprised approximately 40 percent of 2013 landings. White shrimp landings in 2013 measured nearly 56.9 million pounds (heads-off) weight. Although landings of both brown and white shrimp were below the 2000-2013 annual average, dockside values were considerably above annual averages (Figure 2).

Louisiana commercial blue crab landings for 2013 totaled approximately 39 million pounds and had a record dockside value of approximately \$51.3 million. Louisiana led all states in blue crab landings in 2013 (Figure 3).

Louisiana regularly leads the nation in the production of oysters and continues to account for approximately one-third of the nation's oyster landings. Among Gulf of Mexico states, Louisiana consistently ranks first in landings, accounting for over 50 percent of all oysters landed (Figure 4).

Louisiana commercial freshwater finfish landings for FY 2013-2014 totaled approximately 12 million pounds and included common species such as alligator gar, blue catfish, channel catfish, flathead catfish, freshwater drum, buffalo, bowfin, carp and gizzard shad. Total dockside value of these species was approximately \$5 million. Wild caught crawfish landings in Louisiana for 2013 was 19,873,339 lbs. with a dockside value of \$16,631,188.

## RECREATIONAL HARVEST

At the end of 2013, LDWF ceased monitoring recreational fisheries through the Marine Recreational Information Program. LDWF now monitors recreational fisheries through its own LA Creel Program and inland creel surveys. The LA Creel Program uses dockside interviews of recreational anglers to determine catch and a telephone survey to determine fishing effort. The Marine Recreational Information Program, formerly the Marine Recreational Statistics Survey, in cooperation with NMFS and GSMFC, uses dockside interviews of recreational anglers to determine catch, and a telephone survey to determine charter fishing effort.

During the last half of 2013, fisheries biologists conducted approximately 2,703 interviews of recreational fishermen along Louisiana's coast. There were an estimated total of 2,629,296 angler trips taken. Approximately 400 charter ves-

sels were monitored with an estimated 57,541 charter angler trips during this time. LDWF started the LA Creel program in January 2014. In the first six months of the program, fisheries biologists conducted 4,996 interviews, representing 13,080 anglers and 517 charter captains. Approximately 800 charter captains were monitored with a total of 2,558 charter angler trips taken during the first half of 2014.

Creel surveys put the fisheries biologist in direct contact with the fishermen. Information collected includes species sought and species caught, distance traveled, time fished, number caught and released, and length and weight measurements of all freshwater fish harvested. Seven recreational creel surveys were conducted on inland waters during FY 2013-2014. These lakes and rivers include the Atchafalaya Basin, Lake Bruin, Lake Henderson, Calcasieu River, Iatt Lake, Red River and Vernon Lake.

During FY 2013-14, fisheries biologists conducted 1,160 interviews of 2,035 recreational anglers on freshwater lakes and rivers. Fishing trips averaged four hours in length and anglers caught an average of 2.33 fish per trip.

## ASSESSMENT

Fisheries management involves sampling, analysis and development of recommendations to renovate and enhance fish populations. Information collected is used to evaluate the status of the fisheries through stock assessments, monitoring trends and evaluating the benefits of regulations.

### STOCK ASSESSMENT

#### Marine

The Red Snapper Quota Monitoring Program was successfully completed during the latter half of 2013, and red snapper landings estimates were continually calculated by the stock assessment section. The Red Snapper Quota Monitoring Program served as a template for the development of a new statewide recreational saltwater angler survey (LA Creel). The stock assessment section played a major role in the design and implementation of LA Creel and continues to provide landings estimates and make protocol adjustments as needed. The LA Creel statistical protocol is available (citation in "Reports").

A stock assessment of striped mullet in Louisiana waters was developed and presented to LWFC for transmittal to the Louisiana Legislature in February 2014. This assessment uses a statistical catch at age model to estimate an-

nual time-series of spawning stock biomass and fishing mortality rates. Current status of the stock is determined with estimates of the reproductive potential of the resource. The final report (citation in "Reports") is available.

An update stock assessment of blue crab in Louisiana waters was completed and used in the ongoing Marine Stewardship Council Sustainability Certification Program of the Louisiana blue crab resource. This assessment uses a stage-structured model to estimate annual time-series of spawning stock biomass and fishing mortality rates. Current status of the stock is determined with estimates of the reproductive potential of the resource. The final report (citation in "Reports") is available. Staff also participated in a benchmark Gulf-wide blue crab stock assessment through the GSMFC's Gulf Data, Assessment and Review process. This assessment used a modification of the most recent Chesapeake Bay blue crab stock assessment model as a base model to estimate time-series of juvenile and adult abundance, fishing mortality rates, and maximum sustainable yield related reference points. The final report is available at <http://www.gsmfc.org/publications/GSMFC%20Number%20215.pdf>.

Fisheries management staff continued work on stock assessments of black drum, sheepshead and southern flounder in Louisiana waters. These assessments will use statistical catch at age models to estimate annual time-series of spawning stock biomass and fishing mortality rates. Current status of these stocks will be determined with estimates of the reproductive potential of each respective resource. Final reports will be available February 2015. Preliminary results of the black drum stock assessment were presented at the 2014 LA Chapter-American Fisheries Society Meeting (citation in "Presentations").

#### Reports

Beck, S. G. Decossas, J. Shepard. 2014. Recreational Statistics Program: LA Creel Landing Statistics. Louisiana Department of Wildlife and Fisheries.

West, J., J. Adriance, K. Lewis, and J.E. Powers. 2014. Assessment of Striped Mullet (*Mugil cephalus*) in Louisiana Waters. Louisiana Department of Wildlife and Fisheries.

West, J., H. Blanchet, M. Bourgeois, and J.E. Powers. 2014. Update Assessment of Blue Crab (*Callinectes sapidus*) in Louisiana Waters. Louisiana Department of Wildlife and Fisheries.

### Presentations

Davis, D., J. West, J. Adriance, and J. Powers. 2014. Status of the black drum (*Pogonias cromis*) stock in Louisiana waters. 2014 LA Chapter- American Fisheries Society Meeting, Thibodaux, La.

### Inland

Largemouth bass population dynamics and fishery characteristics were determined for 11 Louisiana waterbodies. Equilibrium age-structured population models were also developed to simulate each fisheries response to multiple size regulations. Results provide information to better understand the effects of current largemouth bass harvest regulations on their fisheries while also providing a baseline to compare future regulation change against. Final project reports are available (citations in "Reports") describing the status of each waterbody's largemouth bass population and fishery, as well as a comparison of population dynamics and fishery characteristics among all waterbodies included in this project. Project results were presented at the 2014 LA Chapter-American Fisheries Society Meeting (citation in "Presentations").

Crappie population dynamics and fishery characteristics were determined for eight Louisiana waterbodies. Equilibrium age-structured population models were also developed to simulate each fisheries response to multiple size regulations. Results provide information to better understand the effects of current crappie harvest regulations on their fisheries while also providing a baseline to compare future regulation change against. Final project reports are available (citations in "Reports") describing the status of each waterbody's crappie population and fishery, as well as a comparison of population dynamics and fishery characteristics among all waterbodies included in this project.

### Reports

Beck, S., and J. West. 2014. Caddo Lake Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Cross Lake Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

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Beck, S., and J. West. 2014. Old River Raccouri Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

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Beck, S., and J. West. 2014. Toledo Bend Reservoir Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

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West, J., D. Davis, and S. Beck. 2013. Black/Clear Lake Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., D. Davis, and S. Beck. 2013. Lake Cataouatche Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

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### Presentations

Beck S., J. West, D. Davis. Louisiana largemouth bass (*Micropterus salmoides*): population dynamics, fishery characteristics, and evaluation of size regulation effectiveness. American Fisheries Society: LA Chapter Meeting. Thibodaux, La.

## MANAGEMENT PLANS

### INLAND WATERBODY MANAGEMENT PLANS

Waterbody Management Plans are a compilation of lake description, history, authorities, synopsis of fisheries and vegetation sampling data, analyses, corrective measures needed, and recommended actions. During FY 2013-2014, the 21 management plans below were completed and approved. A total of 71 management plans are now available to the public on the LDWF website.

Waterbody management plans completed during FY 2013-2014 and available to the public on the LDWF website:

- Amite River
- Barataria Basin
- Bayou Lacombe
- Bayou Plaquemine
- Caddo Lake
- Cane River
- Cross Lake
- Dubuisson Lake
- Grand Bayou Reservoir
- Hodges Gardens

- Kincaid Lake
- Lafourche Lake
- Lake Fields-Lake Long
- Lake St. Joseph
- Mill Creek Reservoir
- Nantachie Lake
- Raccourci-Old River
- Saline Lake
- Tickfaw River
- Turkey Creek lake
- Verret-Grassy- Palourde Lakes

## MARINE FISHERY MANAGEMENT PLANS

LDWF began developing and updating new and existing fishery management plans to provide a mechanism to strategically implement science-based management recommendations for resolving fisheries issues. The goal of these plans is to ensure long-term conservation and sustainable use of these fisheries resources for the maximum environmental, social and economic benefit to the state and its citizens and visitors.

- LDWF has developed a document to guide the development of future fishery management plans with reference to applicable principles and standards of the United Nations Food and Agriculture Organization Code of Conduct for Responsible Fisheries.
- Work on a first draft of a revised pilot fishery management plan for Louisiana blue crab has continued and a final completion date was estimated to be October 2014.
- The fishery management plan will also be complemented by a United Nations Food and Agriculture Organization-based self-assessment.

## MANAGEMENT RECOMMENDATIONS

Through utilization of the previously mentioned recreational and commercial sampling techniques, fisheries managers then analyze the resulting data to develop recommendations to renovate and enhance fish populations. The information collected is used to produce recommendations for setting seasons and harvest limits and to monitor the species found in an area over time.

## SHRIMP MANAGEMENT

Greater flexibility in managing the shrimp resource is now provided through the use of a basin type management approach, as opposed to the historical zone approach. Louisiana's major estuarine basins include the Pontchartrain Basin, Mississippi River Basin, Barataria

Basin, Terrebonne Basin, Atchafalaya River Basin, Vermilion-Teche River Basin, Mermentau River Basin, Calcasieu Basin, and Sabine River Basin.

Based on analysis of historic data, as well as data generated from biological sampling conducted by fisheries biologists, the following shrimp management recommendations were made to the Secretary of LDWF and the LWFC. These measures were implemented during FY 2013-2014.

### Lake Pontchartrain Basin and Portions of Mississippi River Basins

#### 2013 - Spring Inshore Shrimp Season

**Opened** at 6:00 a.m. May 27, 2013 from the MS/LA state line westward to South Pass of the Mississippi River

**Closed** at 6:00 a.m. July 18, 2013 except for the following waters:

- That portion of Mississippi Sound beginning at a point on the Louisiana-Mississippi Lateral Boundary at latitude 30°09'39.6" N and longitude -89°30'00" W; thence southeasterly to a point at latitude 30°03'12" N and longitude -89°21'30" W; thence northeasterly to the most easterly point on Isle Au Pitre at latitude 30°09'20.5" N and longitude -89°11'15.5" W, which is a point on the double-rig line; thence northerly along the double-rig line to a point on the Louisiana-Mississippi Lateral Boundary at latitude 30°12'37.9056" N and longitude -89°10'57.9725" W; thence westerly along the Louisiana-Mississippi Lateral Boundary to the point of beginning.
- The open waters of Breton and Chandeleur sounds as described by the double-rig line.

#### 2013- Fall Inshore Shrimp Season

**Opened** at 6:00 p.m. Aug. 12, 2013 from the MS/LA state line westward to South Pass of the Mississippi River.

**Closed** at official sunset Jan. 13, 2014 except in the following areas:

- The open waters of Breton and Chandeleur sounds as described the double-rig line in R.S.56:495.1(A)2.

#### 2014 - Spring Inshore Shrimp Season

**Opened** at 6:00 a.m. June 2, 2014 from the MS/LA state line westward to South Pass of the Mississippi River.

**Closed** at 6:00 a.m. July 15, 2014 except for the following waters:

- That portion of Lake Borgne seaward of a line extending one-half mile from the shoreline
- That portion of Mississippi Sound north of a line beginning at 30 degrees 05 minutes 00.0 seconds north latitude and -89 degrees 30 minutes 00 seconds west longitude; thence southeasterly to a point on the western shore of Three-Mile Pass at 30 degrees 03 minutes 00 seconds north latitude and -89 degrees 22 minutes 23 seconds west longitude; thence northeasterly to a point on Isle Au Pitre at 30 degrees 09 minutes 20.5 seconds north latitude and -89 degrees 11 minutes 15.5 seconds west longitude, which is a point on the double-rig line as described in R.S. 56:495.1(A)2
- The open waters of Breton and Chandeleur sounds as described by the double-rig line.



FIGURE 5. 2013 Spring Shrimp Season Opening Map.



FIGURE 6. 2013 Fall Shrimp Season Opening Map.



FIGURE 7. 2014 Spring Inshore Shrimp Season Opening Map.

**Western Mississippi River, Barataria, Terrebonne, Atchafalaya River and Vermilion-Teche River Basins**

**2013 – Spring Inshore Shrimp Season**

**Opened** at 6:00 a.m. May 13, 2013 from the eastern shore of Bayou Lafourche westward to the western shore of Vermilion Bay and Southwest Pass at Marsh Island

**Opened** at 6:00 a.m. May 20, 2013 from the eastern shore of South Pass of the Mississippi River westward to the eastern shore of Bayou Lafourche

**Closed** at 6:00 a.m. July 4, 2013 from the eastern shore of Bayou Lafourche to the Atchafalaya River except for the following waters:

- That portion of state inside waters within the Terrebonne Basin bounded by the following coordinates: south of 29 degrees 15 minutes 00 seconds north latitude from -90 degrees 18 minutes 00 seconds west longitude westward to -90 degrees

34 minutes 00 seconds west longitude, and south of 29 degrees 07 minutes 00 seconds north latitude from -90 degrees 34 minutes 00 seconds west longitude westward to -90 degrees 50 minutes 30 seconds west longitude

**Closed** at 6:00 a.m. July 6, 2013 from the Atchafalaya River westward to the western shore of Vermilion Bay and Southwest Pass at Marsh Island

**Closed** at 6:00 a.m. July 18 in the remaining portion of the Terrebonne Basin

**2013 – Fall Inshore Shrimp Season**

**Opened** at 6:00 a.m. Aug. 12, 2012 from the Atchafalaya River westward to the western shore of Vermilion Bay and Southwest Pass at Marsh Island.

**Opened** at 6:00 p.m. Aug. 12, 2013 from South Pass of the Mississippi River westward to the Atchafalaya River

**Closed** at official sunset Dec. 18, 2013 from the eastern shore of South Pass of the Mississippi River westward to the western shore of Vermilion Bay and Southwest Pass at Marsh Island

**2014 - Spring Inshore Shrimp Season**

**Opened** at 6:00 a.m. May 26, 2014 from the eastern shore of South Pass of the Mississippi River westward to Freshwater Bayou Canal.

**Closed** at one-half hour after sunset July 3, 2014 from the Atchafalaya River westward to the western shore of Freshwater Bayou Canal.

**Closed** at one-half hour after sunset July 15, 2014 from the eastern shore of South Pass of the Mississippi River westward to the Atchafalaya River.

**Mermentau, Calcasieu and Sabine River Basins**

**2013 - Spring Inshore Shrimp Season**

**Opened** at 6:00 a.m. May 27, 2013 from the Atchafalaya River westward to the LA/TX state line.

**Closed** at 6:00 a.m. July 9, 2013 from the western shore of Freshwater Bayou Canal westward to the LA/TX state line.

**2013 – Fall Inshore Shrimp Season**

**Opened** at 6:00 a.m. Aug. 12, 2013 from the Atchafalaya River westward to the LA/TX state line.

**Closed** at official sunset Dec. 18, 2013 from the Atchafalaya River westward to the LA/TX state line.

**2014 – Spring Inshore Shrimp Season**

**Opened** at 6:00 a.m. June 2, 2014 from the western shore of Freshwater Bayou Canal westward to the LA/TX state line.

**Closed** at 6:00 a.m. July 21, 2014 from the western shore of Freshwater Bayou Canal westward to the LA/TX state line.

**Offshore Shrimp Seasons**

**Closed** at official sunset Dec. 18, 2013 in the following waters:

- That portion of state outside waters extending a distance of 3 nautical miles seaward of the inside/outside shrimp line from the Atchafalaya River westward to Freshwater Bayou Canal at -92 degrees 18 minutes 33 seconds west longitude.

**Closed** at official sunset Jan. 13, 2014 in the following waters:

- That portion of state outside waters extending a distance of 3 nautical miles seaward of the inside/outside shrimp line from the northwest shore of Caillou Boca at -90 degrees 50 minutes 27 seconds west longitude westward to the Atchafalaya River.

**Opened** at 6:00 a.m. April 29, 2014 in the following waters:

- That portion of state outside waters, south of the inside/outside shrimp line from the northwest shore of Caillou Boca at -90 degrees 50 minutes 27 seconds west longitude westward to the Atchafalaya River.

**Opened** at 6:00 a.m. May 26, 2014 in the following waters:

- That portion of state outside waters extending a distance of 3 nautical miles seaward of the inside/outside shrimp line from the Atchafalaya River westward to Freshwater Bayou Canal at -92 degrees 18 minutes 33 seconds west longitude.

## BLUE CRAB MANAGEMENT

Management of the blue crab fishery strives for the maintenance of the stock while providing for long-term benefits to the fishery. Key objectives of management include:

- Conservation, restoration and enhancement of habitat essential to blue crabs.
- Reductions in juvenile blue crab incidental mortality, wasteful harvesting practices within the fishery, and conflicts among crab fishermen and other user groups.
- Enhancement of social and economic benefits derived from resource use.
- The assessment of biological, social and economic impacts of existing and proposed fisheries management regulations affecting the fishery.

These objectives are met via licensing, record keeping and reporting requirements, minimum size limit, time, gear and area restrictions.

### Crab Bycatch Study

Louisiana's annual commercial blue crab landings typically exceed 40 million pounds and averaged 44.5 million pounds from 2000-2013. However, there have been notable decreases including reductions related to hurricanes Katrina and Rita in 2005 and in the years since the 2010 *Deepwater Horizon* oil spill. Average annual blue crab landings since 2010 have fallen below the 2000-2013 average by 13 percent.

Work has continued with a survey designed to collect and analyze data on incidental bycatch in the Louisiana crab trap fishery with special emphasis on diamond back terrapins (*Malaclemys terrapin*) and to collect and analyze blue crab sex, stage and size frequency distribution. From December 2012 through May 2014, a total of 4,944 trap sets were made. Thirty species of finfish and invertebrates were captured

and documented as bycatch in sampling events conducted coastwide, including two diamond-back terrapins; one each in the Terrebonne and Vermilion/Teche River basins. In comparison of total blue crab catch (9,576) with total bycatch (902), an average of 10.6 crabs was captured with each bycatch individual. The Pontchartrain Basin accounted for the highest crab catch among basins, and the Terrebonne Basin led all in blue crab catch rate, averaging 1.32 crabs per trap soak hour. The Terrebonne Basin accounted for highest bycatch number; however, the percentage of bycatch to blue crab catch (12.1 percent) ranked lower than the level documented in the Barataria Basin (13 percent), third lowest among basins and was lower than the coastwide average of 9.5 percent. The Sabine River Basin had the lowest bycatch number as well as the lowest percentage of bycatch to blue crab catch (4.5 percent) among all basins.

## OYSTER MANAGEMENT

Oysters provide both important economic and ecological benefits to Louisiana. They act as barometers for the overall health of the ecosystem, providing forage and shelter habitat for a variety of fish and invertebrate species. Oysters improve water quality through filter-feeding activities, affect estuarine current patterns, and may provide shoreline stabilization. Due to their economical and ecological importance, wise management of the public oyster resource is critically important to ensure that this valuable species continues to thrive in Louisiana's coastal areas.

The Office of Fisheries Mollusc Program is responsible for the oyster resource on nearly 1.7 million acres of public oyster seed reservations, public seed grounds and public oyster areas.

Seed grounds are designated by the LWFC and include a large continuous area east of the Mississippi River as well a portion of the Vermilion/Cote Blanche/Atchafalaya Bay system. Seed reservations and the public oyster areas of Calcasieu and Sabine lakes are designated by the legislature. LDWF manages four seed reservations, including one east of the Mississippi River (Bay Gardene), one in the Barataria Bay system (Hackberry Bay), and two in Terrebonne Parish (Sister Lake and Bay Junop).

State laws mandate that LDWF open the oyster season on Louisiana public seed grounds on the first Wednesday following Labor Day of each year and close these areas no later than April 30 of each year. However, the LWFC is authorized to extend the season beyond April 30, provided sufficient stocks are available for harvest. The Secretary of LDWF may close seasons on an emergency basis if oyster mortality occurs. The Secretary can also delay the season or close certain areas where significant spat catch has occurred with good probability of survival, or if an excess amount of shell in oyster loads occurs. Management practices often use rotational openings of the four oyster seed reservations in alternating years. A law change during the 2008 Louisiana Legislative Session requires that the public grounds only be opened to the taking of seed oysters between the first Wednesday following Labor Day and the second Monday in October, as well as for harvesting seed oysters.

In FY 2013-2014, the oyster season on most of the public grounds opened on Oct. 15, 2013 (Table 3). The season again produced low amounts of harvest as oyster availability was generally low statewide. Based on harvest estimates from fishermen interviews on the water, the public oyster areas produced approximately 133,000 barrels of oysters (seed and market-size oysters combined) during the season (one barrel = two sacks). Sister Lake, however, showed strong harvest levels with approximately 86,000 sacks of market-size oysters har-

**TABLE 3. 2013-2014 Oyster Season Dates**

PUBLIC OYSTER AREA	SEASON OPENING	SEASON CLOSURE
Primary Public Oyster Seed Grounds east of the Mississippi River, including Lake Borgne	Oct. 15, 2013	April 30, 2014
Hackberry Bay Public Oyster Seed Reservation	Oct. 15, 2013	Oct. 20, 2013
Barataria Bay & Little Lake Public Oyster Seed Grounds	Sept. 4, 2013	April 30, 2014
Deep Lake and Lake Tambour Public Oyster Seed Grounds	Sept. 4, 2013	April 30, 2014
Sister Lake Public Oyster Seed Reservation	Oct. 15, 2013	Oct. 25, 2013
Vermilion/East and West Cote Blanche/Atchafalaya Bay Public Oyster Seed Grounds	Sept. 4, 2013	April 30, 2014
West Cove portion of Lake Calcasieu	Nov. 1, 2013	April 30, 2014
Bay Gardene, Bay Junop, Lake Chien, Lake Felicity, East side of Calcasieu Lake, and Sabine Lake	Season Remained Closed	

vested, accounting for over 65 percent of the total public ground harvest of market oysters. Calcasieu Lake in southwestern Louisiana also produced a large share of the total harvest, as fishermen took approximately 36,000 sacks of market-size oysters.

## MARINE FINFISH MANAGEMENT

The primary objective of the finfish program is to make rational recommendations for the management of coastal finfish stocks based on a database of scientific information. The information in the database is collected through fishery-independent and fishery-dependent sampling.

The following management recommendations were made to the Secretary of LDWF and LWFC and implemented during FY 2013-2014:

### July 2013

- Commercial king mackerel season opened on July 1 at 12:01 a.m., concurrent with a federal opening.
- Commercial fisheries for small coastal sharks and large coastal sharks re-opened July 1 following an annual seasonal closure from April 1 - June 30.
- Commercial fishery for large coastal sharks closed on July 19 at 11:30 p.m.

### August 2013

- The LWFC adopted a Notice of Intent at its August meeting to modify regulations requiring a free Offshore Recreational Landings Permit to remove reporting requirements for yellowfin tuna. Further modifications also exempted persons on a charter for-hire vessel from being required to obtain a Recreational Offshore Landing Permit if the captain of the vessel is in possession of the permit. Public comments on the Notice of Intent were accepted until Sept. 5, 2013.
- The LWFC adopted a Notice of Intent at its August meeting to modify harvest regulations for reef fish. Modifications include a closed season for the commercial and recreational harvest of gray triggerfish from June 1 - July 31 of each year, adjustment of the shallow water grouper closed season to be only in waters seaward of 20 fathoms, establish a two fish limit on gray triggerfish, establish a 10 fish limit on vermilion snapper, establish a 12 fish commercial gray triggerfish limit, establish a 2,000 pound trip limit for commercially harvested greater amberjack, and remove requirements for use of a venting

tool. Public comments on the Notice of Intent were accepted until Sept. 5, 2013.

- The LWFC adopted a Notice of Intent at its August meeting to establish regulations for the recreational and commercial harvest of tripletail. Proposed regulations would enact an 18 inch total length recreational and commercial minimum size limit, establish a 100 pound commercial trip limit, and establish a five-fish recreational bag and possession limit. Public comments on the Notice of Intent were accepted until Sept. 5, 2013.

### October 2013

- Louisiana opened the season for the recreational harvest of red snapper on Oct. 1, 2013, consistent with a federal season.
- Louisiana closed the season for the recreational harvest of red snapper on Oct. 14, 2013, consistent with a closure in federal waters.
- Louisiana closed the season for the recreational harvest of gray triggerfish on Oct. 15, 2013, consistent with a closure in federal waters.
- Commercial fishery for the harvest of striped mullet with a strike net opened on Oct. 22, 2013.

### November 2013

- Louisiana reopened the commercial season for the harvest of king mackerel from Nov. 1-2, 2013 consistent with a reopening in federal waters.

### December 2013

- Commercial fishery for the harvest of spotted seatrout closed on Dec. 31, 2013.

### January 2014

- Commercial fishery for small coastal sharks opened at 12:01 a.m. on Jan. 1, 2014.
- Commercial fishery for non-sandbar large coastal sharks opened at 12:01 a.m. on Jan. 1, 2014.
- All Louisiana waters closed to the commercial harvest of striped mullet with a mullet strike net on Jan. 20, 2014.
- 2013-2014 commercial king mackerel season was set consistent with federal season.
- Commercial fishery for spotted seatrout opened on Jan. 2, 2014.

### February 2014

- The annual stock assessment for striped mullet was presented to the LWFC for transmittal to the Louisiana Legislature.

- Louisiana opened the weekend-only state water only season for the recreational harvest of red snapper on Feb. 21, 2014 with a two-fish bag and possession limit.

### April 2014

- Louisiana waters closed to the recreational and commercial harvest of all sharks on April 1, 2014, consistent with a state closed season.
- Louisiana modified the state water only recreational red snapper season to be open every day until further notice on April 10, 2014.

### May 2014

- Louisiana closed the season for the recreational harvest of gray triggerfish on May 1, 2014 consistent with a closure in federal waters.

### June 2014

- Louisiana closed the season for the commercial harvest of large coastal sharks on June 30, 2014.

## FRESHWATER FINFISH MANAGEMENT

Revisions were made to regulations for several freshwater species including the following:

- Black bass size and creel limits changed on Black Bayou Reservoir (Bossier), Chicot Lake, Cross Lake, Lake Rodemacher (CLECO), and Vernon Lake. from eight fish daily, 14-17 inch protected slot limit, to 10 fish daily, no minimum length.
- On Spanish Lake (Iberia Parish) the black bass regulations changed from eight fish daily, 16-21 inch protected slot limit, to 10 fish daily, no minimum length.
- In the coastal zone of Louisiana, the possession limit for black bass was changed from 20 fish per person to 30 fish per person, subject to provisions.
- Changes were made to catfish regulations on boundary waters with Texas, Caddo Lake, Sabine River and Toledo Bend Reservoir. On blue and channel catfish, the regulations changed from 50 fish daily in the aggregate, with no more than five fish greater than 20 inches total length, to 50 fish daily in the aggregate, with no more than five fish greater than 30 inches total length.
- Gear regulations changed on three Mississippi River oxbows: False River, Lake Bruin and Lake Providence. A special recurring gill net season was extended to include the month of October to further benefit these waterbodies by potentially removing excess rough fish that are causing water quality issues.



*Grand Isle Fisheries Research Lab*

- A commercial fishery was implemented on Spanish Lake (Iberia Parish) to remove an excess of rough fish that are causing water quality problems in the lake.

## FISHERIES RESEARCH

### GRAND ISLE LABORATORY

The Fisheries Research Lab is located in Grand Isle on the shore of Barataria Bay, one the richest estuarine complexes in the Gulf of Mexico. While fisheries research is conducted throughout the state, the Fisheries Research Lab is the heart and primary location of research for the Office of Fisheries. This ideal location allows for the research and monitoring of many of Louisiana's key recreational and commercial marine species including offshore species that are just a short boat ride away. The Fisheries Research Lab also provides fisheries biologists with the ability to develop and conduct additional research projects, collecting vital information for the management of Louisiana's aquatic resources. Along with being a home-base for fisheries research projects, the lab also serves as a place that public, state and federal partners

can utilize, as well as other entities engaged in fisheries research, management, enforcement, coastal restoration and marine education.

### Pelagic Research Program

The LDWF Pelagic Research Program made substantial advancements in FY 2013-2014 and continues to move forward with sampling and electronic tracking technology to study the ecology, movements, distribution and habitat preferences of several key species in order to improve the data available to fisheries managers in the region.

### Electronic Tagging Program

#### Yellowfin Tuna

Pop-up satellite archival tags (PSAT) and internal archival tags (IA) are being used to study the movements and habitat preference of yellowfin tuna. PSATs record light-level, water temperature and depth data. At a pre-programmed time the tag pops off the animal, floats to the surface, and transmits the stored data through the Argos tracking system. Deployments for PSAT tags are typically limited to 12 months due to battery capabilities. IA tags

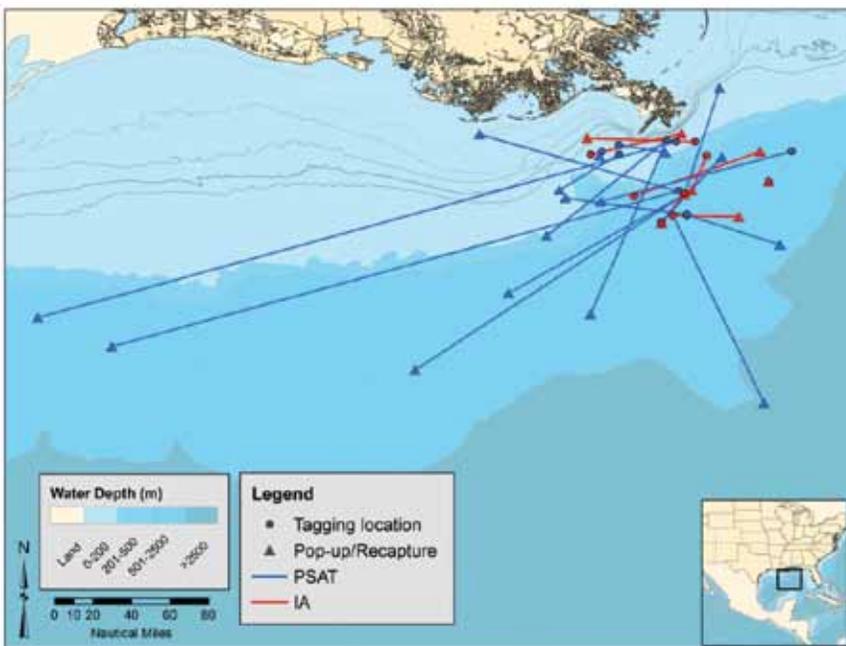
record light level, internal and external temperature and depth data. The key distinction is that these tags are surgically implanted inside the abdomen of the fish, therefore requiring a recapture for data acquisition, and battery life can be anywhere between five to 10 years.

Yellowfin tuna for this study were captured using rod and reel on LDWF vessels in the waters adjacent to the Mississippi River Delta. After being carefully netted with a large landing net, tuna were placed on a V-shaped cradle. A hose was placed in the mouth of the fish in order to irrigate the gills and a chamois was used to cover the eyes and mouth. Curved fork length was measured. PSAT tags (Microwave Telemetry X-tag) were attached at the base of the second fin. For IA tag implantation, a 2.5-cm incision was made through the skin and the muscle on the ventral side of the fish. A piercing needle was used to make a secondary hole, 1.5 cm distal from the incision and to guide the fiber-optic light stalk from the tag out of the secondary hole. The body of the tag was placed into the abdominal cavity, and the wound was closed with two stitches. A conventional green and white streamer tag was placed at the base of the second dorsal fin denoting a 'high dollar reward' for return of the internal tag. Tuna were released back into the water in less than three minutes.

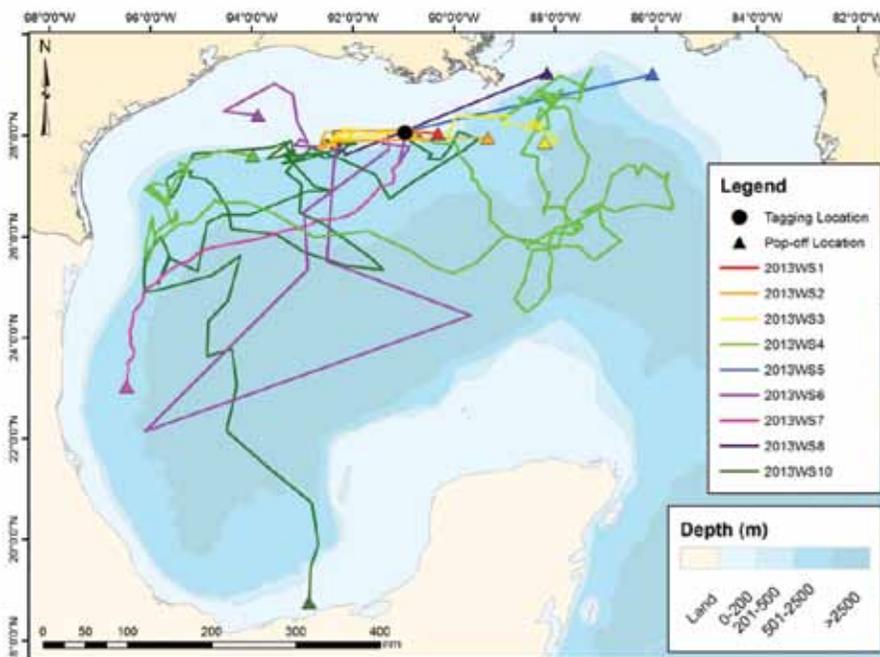
PSAT tag deployments began in 2012, and during FY 2013-2014, 15 yellowfin tuna were successfully tagged with PSATs. In order to increase tag retention, PSATs are only attached to tuna over 120cm curved fork length, and a new attachment method has been implemented. This new attachment methodology utilizes a hollow needle to thread a 15 cm section of 300 lb. monofilament through the pterygiophores at the base of the second dorsal fin; the monofilament is crimped with a stainless steel sleeve into a yoke so that the PSAT tag



*Pop-off satellite archival tag (PSAT) attached to a yellowfin tuna using a monofilament 'yoke' attachment methodology.*



**FIGURE 8.** Net displacement of yellowfin tuna tagged with electronic tags during FY 2013-2014. Note the difference in the fisheries-independent PSAT ‘pop-offs’ versus the fishery dependent internal archival (IA) tag recaptures.



**FIGURE 9.** Dispersal of whale sharks from the 2013 Ewing Bank aggregation documented with towable SPOT tags and PSATs.



*A Scalloped Hammerhead being fitted with a satellite tag*

remains above the midline of the body just behind the second dorsal fin, resulting in a strong attachment in better hydrodynamic position. IA deployments began in July of 2013, and 106 IA tags have been deployed to date. Because of the size of these tags, they can be implanted in much smaller tuna, allowing the inclusion of two whole age classes into the electronic tagging study. Any legal sized yellowfin tuna (27-inch FL) can be fitted with an IA tag. The average size to date for yellowfin tuna tagged with PSATs is 135.9cm curved fork length (range 120-151cm) and 102.9cm curved fork length for IA tags (range 66-132cm). Of the 15 PSATs deployed, 12 communicated successfully after popping off and six have been physically recovered, allowing for removal of the archived data set and reuse of the tag. Eleven IA tags have been recovered and return to date, with deployment times ranging from five to 388 days at large, for a total of 1,863 deployment days and an average time at large of 169.4 days. While this is just the second full year of the program, the improvements in PSAT attachment and the success of the IA tag program have made the LDWF yellowfin tuna tagging program the most successful to date in the entire Atlantic Basin (Figure 8).

**Coastal and Pelagic Sharks**

In cooperation with several regional partners, LDWF studies the movements and habitat use of several species of coastal and pelagic sharks in the northern Gulf of Mexico. During FY 2013-2014, significant progress was made with respect to projects on three species: whale, scalloped hammerhead and blacktip sharks.

Whale sharks are being studied in the northern Gulf of Mexico by LDWF biologists and partners at the University of Southern Mississippi - Gulf Coast Research Laboratory and NOAA-Pascagoula. When whale sharks are encountered, biologists attach electronic tags, take tissue samples for DNA analysis, record unique spot pattern which can be used as natural tags, and collect sightings from both aerial surveys and volunteer reportings. In the summer months, large aggregations (10 to 100+) of whale sharks occur at Ewing Bank (approximately 120 miles southwest of the Mississippi River Delta) and have been documented feeding on the eggs of recently spawned bonita or “little tunny.” During the June 2013 aggregation, five pop-up satellite archival tags and five satellite position only tags (SPOT) were deployed, resulting in tracks ranging from six to 183 days and a total distance traveled of 42 to 6,109 km (Figure 9). Maximum depth from archival data was over 1,900 meters. Additionally, 13 submissions to the photo identification library resulted in the addition of four newly identified individuals and two mark-recaptures. Aerial support estimated 24



*A large female blacktip shark is released with a Desert Star SeaTag attached as part of a research project to estimate post catch and release survival in the recreational fishery.*



*An Atlantic tarpon makes one final jump as the LDWF tagging boat approaches to attach a satellite tag to the fish.*

total sharks in the area of the encounter. On July 10, 2014, aerial support identified a region adjacent to Ewing Bank with an estimated total abundance of 62 whale sharks. LDWF biologists were able to deploy 14 satellite tags (11 PSAT, three SPOT) and submit 36 spot pattern photographs. Of the photo-ID submissions, 10 were newly marked individuals and three were mark-recaptures. Tag data analysis is still pending as six PSAT are scheduled to report data on July 10, 2015.

The scalloped hammerhead shark is a species of global conservation concern given its recent listing as “Endangered” by the International Union for the Conservation of Nature and Natural Resources Red List of Threatened Species. LDWF has attached fin-mounted SPOT tags to scalloped hammerhead sharks adjacent to the Louisiana coast since 2012. Tagging efforts in

FY 2013-2014 have resulted in a total sample size of 19 scalloped hammerhead sharks tagged through directed efforts by the LDWF field team as well as LDWF and NOAA Southeast Area Monitoring and Assessment Program (SEAMAP) bottom longline surveys. Because of the high resolution of SPOT tag location estimates, location data is being compared with oceanographic observations to develop refined descriptions of scalloped hammerhead habitat use that will be critical for future management efforts for this over-fished species.

Blacktip sharks were also fitted with electronic tags in FY 2013-2014. Fifteen blacktip sharks were fitted with Desert Star SeaTags to determine post catch and release survival. Blacktip sharks were tagged off the coasts of Texas, Louisiana and Mississippi by field teams from Texas A&M University at Galveston, LDWF and the University of Southern Mississippi - Gulf Coast Research Laboratory. Though data analysis is still in progress, preliminary results were used to submit a much larger regional research proposal to the Saltonstall-Kennedy Grant Program.

#### **Atlantic Tarpon**

In coordination with the Louisiana Saltwater Series sponsored 2013 tarpon tournament, LDWF biologists worked with tarpon anglers to conduct a pilot study on the electronic tagging of adult tarpon in Louisiana waters. Even though the tournament was cancelled and rescheduled several times, five boats participated in the event, resulting in the tagging of four tarpon with both towable SPOT and PSAT tags. Tracks and preliminary data were presented to the Louisiana Tarpon Club at their annual meeting. Preliminary results also indicated that tarpon were good candidates for PSAT tagging, collaboration with local fishing clubs was pro-

ductive, and that this research should continue in order to examine connectivity among regional tarpon stocks and explore decline in the historical recreational fishery.

#### ***Research Species Sampling***

The Pelagic Research Program is responsible for collecting biological samples from four species designated in LA Creel as “Group 3” or “Research Species.” These species are yellowfin tuna, blackfin tuna, wahoo, and tripletail. They were selected based on scientific interest and regional data deficiency.

The yellowfin tuna sampling project was initiated by LDWF in 2012 and entails LDWF biologists collecting samples from recreational ports in Venice. Curved fork length is measured, and gonads, stomachs, muscle tissue and fin clips are collected. During FY 2013-2014, 358 yellowfin tuna were sampled. Most samples were collected from all fish; however, at times during cleaning the target sample is ruined or mutilated and cannot be used. Fin clips for DNA were only taken from reproductively mature fish during the spawning season. Since the samples were opportunistically collected from the recreational fishing community, all fish were above the minimum size limit of 27 inches. The samples are delivered to the University of Southern Mississippi - Gulf Coast Research Laboratory, where investigations into feeding ecology, genetic population structure and reproductive biology are being conducted. Otoliths are being housed at LDWF’s Age and Growth Lab in Baton Rouge where preliminary attempts to age tropical tunas are being conducted.

In addition, young-of-the-year tunas were targeted by LDWF vessels during routine fieldwork. These young-of-the-year tuna (yellowfin, blackfin and skipjack tunas) were collected as part of the Atlantic-wide sourcing project conducted at Texas A&M - Galveston and funded by LDWF. LDWF is responsible for collecting these young-of-the-year tuna from the north-central Gulf of Mexico, while Texas A&M - Galveston coordinates collection of young tunas from other sites throughout the Atlantic basin including Africa, Brazil, Panama, U.S. and British Virgin Islands, Dominican Republic and Venezuela. Otoliths were removed from young-of-the-year tuna for trace element and stable isotope microchemistry to establish natal signatures from which stock discriminations may be based in future years.

Dock sampling of wahoo, blackfin tuna and tripletail was initiated in January 2014. Age has been determined for 47 of the 70 wahoo, and



*A young-of-the-year yellowfin tuna collected from the northern Gulf of Mexico. Otoliths from these young-of-the-year tuna are being used to develop “natural tags” that may allow for Atlantic-wide stock discriminations.*

the dorsal spines collected with the otoliths will be sectioned as a secondary aging structure for possible age validation. Tuna otolith daily growth marks are being identified, and vertebral samples are being taken as an alternate aging structure. A workshop on ageing tropical tunas is planned for February 2015 and will greatly accelerate this work. Tripletail age and growth will also be investigated during FY 2014-2015.

Female reproductive samples for blackfin tuna and wahoo were collected primarily in winter and early spring months and were processed histologically in the Fisheries Research Lab. A blackfin tuna ovary collected in June was the only spawning-capable ovary obtained during this fiscal year. Blackfin tuna ovaries were collected in particularly small numbers due to

the skewed 4:1 male to female sex ratio, and female reproductive histology samples indicate more concrete evidence of spawning than males. Future collection methods have been adjusted to better obtain reproductive samples for wahoo and blackfin tuna in the summer spawning months.

**Southeast Area Monitoring and Assessment Program**

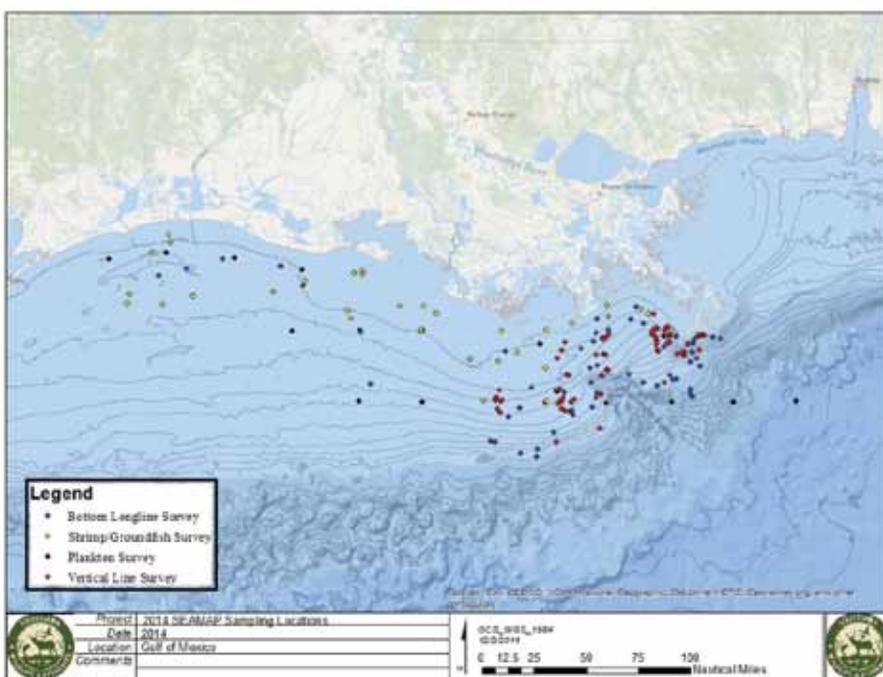
The Southeast Area Monitoring and Assessment Program (SEAMAP) is a cooperative state, federal and university program designed for the collection, management and dissemination of fishery-independent biological and environmental data of the coastal waters (state and EEZ) off the southeastern United States, Caribbean the and northern Gulf of Mexico. Since 1981, SEAMAP has collected data on fish

stocks that are managed by either state or federal governments. Louisiana takes part in four components of the SEAMAP program: shrimp/groundfish, ichthyoplankton, bottom longline, and vertical line. The surveys are conducted by teams of five to nine Fisheries biologists who collect, process and enter data. In addition, all surveys collect environmental parameters including a water column profile, primarily using a conductivity/temperature/depth rosette at each station along with the collection of water samples from bottom, middle and surface depths for chlorophyll measurements.

**SEAMAP Shrimp/Groundfish Survey**

The SEAMAP Shrimp/Groundfish Survey collects information to characterize shrimp and groundfish assemblages west of the Mississippi River using a SEAMAP standardized 42-foot trawl in nearshore waters along the Louisiana coast. Louisiana’s seven historic ichthyoplankton stations are also sampled during this survey to provide information on the occurrence, abundance and geographical distribution of eggs, larvae and juvenile fishes and invertebrates, with 60-cm bongo nets and 1x2m neuston nets. Ichthyoplankton samples are field processed and transferred to the NMFS Pascagoula Laboratory for transshipment to the Polish Sorting and Identification Center.

Shrimp/Groundfish surveys are conducted during the summer and fall, and stations are selected from the SEAMAP randomized sampling grid. At least 24 trawl stations are selected



**FIGURE 10.** Stations sampled in 2014 during each of Louisiana’s four SEAMAP surveys: Shrimp/Groundfish, Plankton, Bottom Longline, Vertical Line.



**TOP:** Groundfish surveys allow fisheries biologists to monitor the biodiversity of waters off the Louisiana Coast. **BOTTOM:** LDWF Biologists collect samples from the groundfish trawl to be sorted and identified.



*Bongo nets are dropped through the water column to collect plankton samples.*

by LDWF for each survey. Additional stations are added as feasible. Species are identified, counted, measured, weighed and recorded; these data are submitted to the SEAMAP data management system, and near-real time data are transmitted to NMFS as required.

In 2014, LDWF did not participate in the summer survey due to vessel unavailability. LDWF did participate in the fall survey and completed 26 shrimp/groundfish stations, ranging from latitude 28°42' to 29° 39' and longitude -89° 40' and -93° 51'. The depths sampled ranged from 4-39 meters. All seven historic plankton stations were sampled during this survey, with locations ranging from latitude 28°29' to 29° 00' and longitude -89° 29' to -91° 30'.

#### **SEAMAP Ichthyoplankton Survey**

SEAMAP Ichthyoplankton Surveys are conducted biannually to provide information on the occurrence, abundance and geographical distribution of the eggs and larvae of spring spawning fish, particularly Atlantic bluefin tuna, and of fall spawning fish, particularly king and Spanish mackerel, lutjanids and sciaenids.

Ichthyoplankton sampling is conducted in conjunction with the NMFS SEAMAP Spring and Fall Ichthyoplankton Surveys, and stations are selected from the NMFS ichthyoplankton grids. Sampling is conducted using 60-cm bongo nets and 1x2m neuston nets. Ichthyoplankton samples are field processed, preserved and transferred to the NMFS Pascagoula Laboratory for transshipment to the Polish Sorting and Identification Center. All station information is sent to the SEAMAP Data Manager. During 2014, 25 stations were sampled during the spring and fall surveys (between the latitudes 28°29 and 29°32, longitudes 88°30 and 93°59).

#### **SEAMAP Bottom Longline Survey**

The SEAMAP Bottom Longline Survey collects information on the abundance and distribution of elasmobranchs and bottom feeding species with standard 1 nautical mile longline sets. Stations are generated in coordination with the NMFS, in which bottom longline stations are proportionally allocated by longitude and depth based on the width of the continental shelf. The annual stations are divided with the intent of sampling the entire Louisiana coast

once per season (spring, summer, fall) during the months of April through September. All species are recorded, counted, measured for length(s), weighed, and sexed (sharks). Sharks are tagged with dart, T-bar, and/or satellite tags prior to their release to collect biological and life history information. Otoliths and female ovaries of selected reef species are removed and processed. In 2014, 51 bottom longline stations were sampled, landing 1,166 individuals (84.8 percent elasmobranchs). A total of 377 sharks were tagged and released.

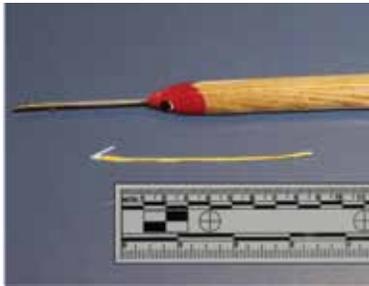
#### **SEAMAP Vertical Line Survey**

The SEAMAP Vertical Line Survey is conducted monthly from May to October to collect information on the spatial and temporal distribution of commercial and recreational reef species off the Louisiana coast using commercial vertical line (bandit) gear. The sampling universe is divided into three equidistant longitudinal zones (Eastern zone: 89.00°– 89.39°, Central zone: 89.40°– 90.19°, and Western zone: 90.20°– 91.00°) and each is sampled three times during the sampling season. Sampling stations are drawn from a pre-established station universe with predetermined depth ranges and structure types, ranging in depth from 60 to 360 feet. The stations roughly consist of 23 percent artificial reefs, 3 percent natural bottom, and 74 percent petroleum production platforms.

The data collected for each fish includes the size of the hook on which it was caught, total length, total weight and sex. Otoliths and female ovaries are removed and processed in the lab for age and growth. In 2014, 101 vertical line stations were sampled, landing 824 fish, of which 757 were red snapper (92 percent).



**LEFT:** A tiger shark is immobilized in a sling to be measured, tagged, and eventually released. **CENTER:** Like tree rings, otoliths, or the earbones of fish, can be used to determine the age of individual fish. **RIGHT:** LDWF biologist drops line for Vertical Line Survey.



**FIGURE 11.** The two types of tags and applicators used in the tag retention study - dart-tip anchor tag (left top) and T-bar anchor tag (left bottom).



**FIGURE 12.** Proper application of the dart-tipped anchor tag (above) and T-bar anchor tag (below)



### Tag Evaluation Study

The Office of Fisheries is currently involved in a long-term cooperative marine fish tagging program. This study compares the effectiveness of tag types for popular species in Louisiana. This particular study builds on a six-month experiment undertaken in a controlled recirculation system at the Fisheries Research Lab in FY 2012-2013, which compared the survival and retention rates of sub-legal (less than 12 inches) and legal-sized (more than 12 inches) spotted seatrout tagged with either a T-bar or dart-tipped external anchor tag. Results found that survival was high (93 percent), with an overall tag retention rate of 77 percent, and no significant differences by tag type or size class.

The tag evaluation study is now being expanded into a field trial to obtain results on reported recapture rates for the two tag types. In FY 2013-2014, supplies were obtained to assemble experimental tagging kits, and staff began recruiting anglers to participate in the tag evaluation study. Working together with our elite taggers (those that tag over 100 fish per year through the cooperative tagging program), biologists will tag large numbers of red drum and spotted seatrout. The goal is to evaluate if the T-bar tag results in more reported recaptures than the traditional dart-tip tag for smaller fish (8-16 inch red drum and/or spotted seatrout), and to determine if our cooperating volunteer anglers have a preference for one applicator/tag over another.

### Assessment of Fish Assemblages on Artificial Structures in the Northern Gulf of Mexico

This study assesses fish assemblages and encrusting communities on artificial substrates found in the northern Gulf of Mexico. Objectives are to characterize assemblages on and around these structures, map vertical and horizontal distributions, estimate relative abundance, and document species diversity at the selected sites. Data is collected at three replicate standing structures. Platforms with similar design, relative isolation from other man-made or naturally occurring structural influences, and located within 50 miles of the Fisheries Research Laboratory were selected. Observations were conducted quarterly, weather permitting, using scientific divers to survey each structure in 15-foot depth increments, from the surface to a depth of 105 feet. Video footage and still photographs are used to both support and supplement diver observations. This study provides a better understanding of the fish assemblages associated with artificial structures, facilitating further research into individual species' relationships with artificial reefs and the suitability of these structures as habitat for stock enhancement for target species. During FY 2013-2014, one member of the dive survey team obtained Advanced Open Water Certification, increasing our ability to survey deeper depth increments. Scientific divers completed 31 dives during eight days of sampling. Project site surveys for Quarters 1 and 2 were com-

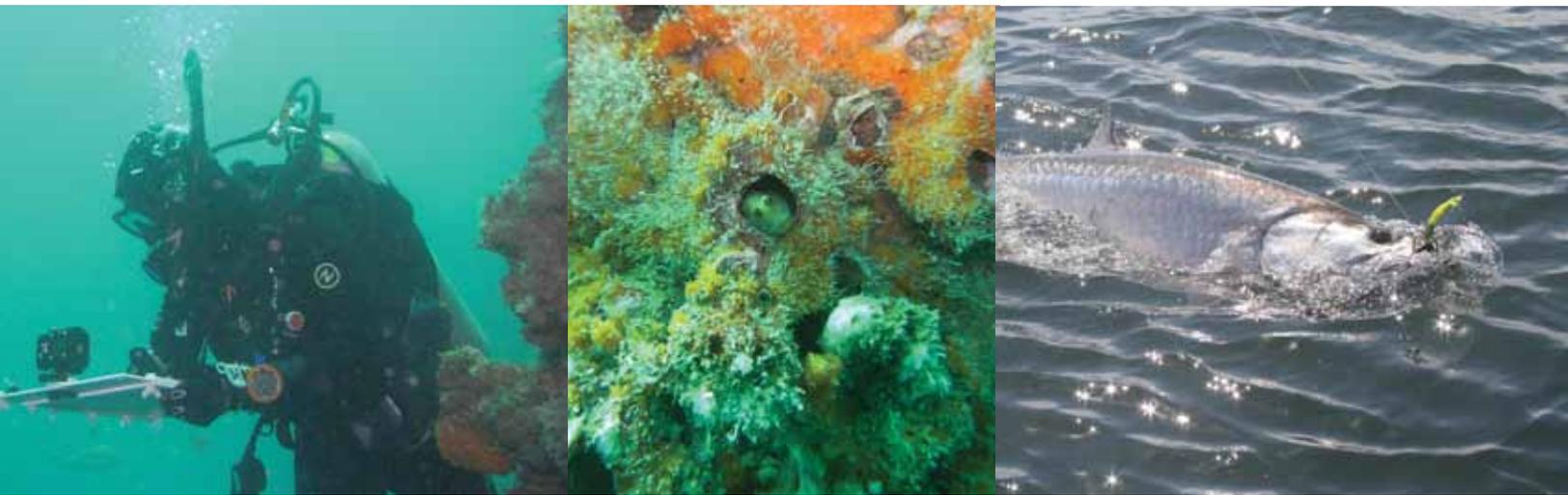
pleted with a total of 100 species documented via roving diver surveys with supporting photo and video data.

### Tarpon DNA Tagging

The Tarpon DNA Tagging Project calculates the geographic range of the Atlantic tarpon using DNA fingerprinting techniques. The project also yields valuable information relating to recapture rates and migratory paths and allows biologists to analyze the movement and survival rates in what is primarily a catch-and-release fishery. Survival rates are determined by tracking tarpon using a DNA fingerprint and recapture data obtained from sampling tarpon DNA. The project also tracks movement of tarpon using DNA tagging instead of standard internal dart tagging practices. LDWF provides kits and instruction information to volunteer recreational anglers. Once collected, the samples are sent to the Fisheries Research Lab where the data is recorded, and the samples are then sent to a contact at the Florida Wildlife Research Institute for DNA analysis. A total of six tagging kits were distributed during FY 2013-2014 with 56 DNA samples returned. Since 2011, 173 kits have been distributed.

### Characterizing the Use of Green-Stick Fishing Gear in the Northern Gulf of Mexico

The primary objective of this study is to characterize the catch and bycatch of green-stick fishing gear when used to target Atlantic tunas,



**LEFT & CENTER:** Video footage and still photographs are used to both support and supplement diver observations of fish assemblages on artificial structures. **RIGHT:** Tarpon DNA tagging.

particularly yellowfin tuna, in the northern Gulf of Mexico. The pelagic longline is the primary gear type used to target commercially valuable tuna species in the northern Gulf of Mexico. This gear is known to have a high bycatch to catch ratio, which includes the taking of sea turtles, marine mammals, sharks and billfish. Greenstick gear was developed in order to reduce the taking of non-target species, but the efficiency of the gear has not been empirically tested in the northern Gulf of Mexico, where a large commercial yellowfin tuna fishery exists. The data collected thus far will help state and federal fishery managers gain a better understanding of the gear's ability to reduce bycatch while maintaining economically viable target catch rates.

Data collection focuses on reporting the features that contribute to the gear's success (or lack thereof) at catching target tuna species.

Catch condition and release condition data are also collected to help evaluate the gear's ability to target commercial species and provide lower incidental bycatch mortality.

During FY 2013-2014, three separate sampling trips were conducted in open waters, over deep water canyons and around oil and gas production platforms. Three species of commercially valuable tuna have been captured using the green-stick including yellowfin (seven individuals), blackfin (three individuals), and bigeye tuna (one individual), over a total of 14 active fishing hours. Other commercially valuable species captured include mahi mahi (one individual). All fish captured were hooked in the jaw. With the exception of two individuals, all undersized and non-target species were released alive and in good condition. Non-target species include little tunny, skipjack and almaco jack.

Fisheries biologists continue to report results to the Highly Migratory Species Division at NOAA in St. Petersburg, Fla. Additional sampling trips are planned for the spring of 2015.

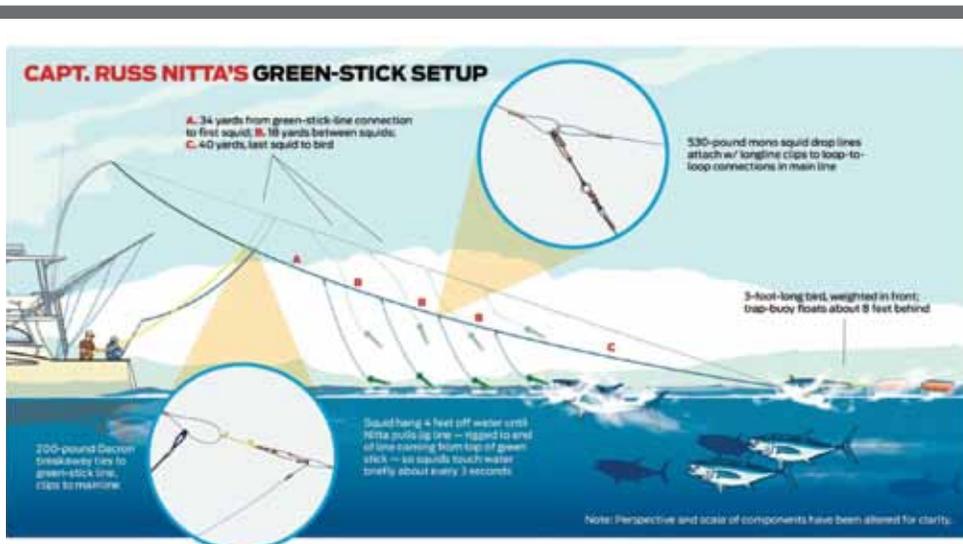
### Multispecies DNA Sampling Project

This ongoing study assesses the presence of multiple spawning stocks separated by restricted gene flow of cobia, greater amberjack, red drum and red snapper in the northern Gulf of Mexico via DNA extracted from fin clips. A minimum of 20 samples was needed for each species from eight sites (Figure 14). Red drum were split into sub-adult inshore (less than 600mm total length) and adult offshore (more than 600mm total length), because juveniles inhabit estuaries and move offshore as adults, returning to estuaries only to spawn.

Samples were collected from October 2013 to October 2014 from recreational, commercial and charter fisherman, as well as fisheries-independent sampling trips, and through collaboration with other Gulf states fisheries departments and universities. Species, location, standard length and collection method were recorded for each sample, and a pectoral fin clip was taken and stored in 95 percent ethanol. All but seven of the 40 site-species sampling units were completed.

### Juvenile Drum Population Assessment Study

Fisheries Research Lab biologists are currently involved with a population assessment study targeting juvenile red drum and black drum in the Barataria and Terrebonne Bay basins. This project is run in conjunction with assessment studies being performed by Coastal Study Area scientists. This project's goal is to determine if any improvements in sampling gear are need-



**FIGURE 13.** Description of a typical 'green-stick' rig. (illustration courtesy of Dave Shepherd, Sportfishing Magazine)

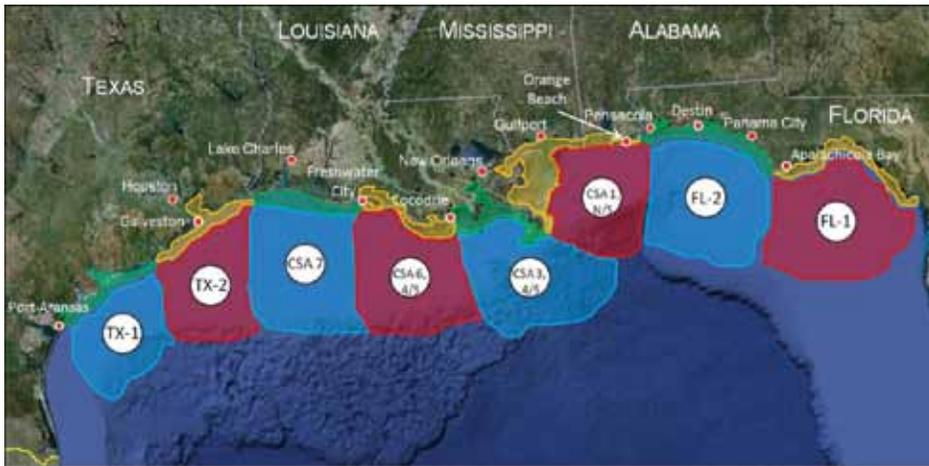


FIGURE 14. The eight study sites for the Multispecies DNA Sampling Project.

TABLE 4. The final sample tallies for all sites and species in the Multispecies DNA Sampling Project.

SITE	COBIA	GREATER AMBERJACK	RED DRUM (inshore)	RED DRUM (offshore)	RED SNAPPER	TOTAL
TX-1	20	23	44	0	50	137
TX-2	34	49	33	51	49	216
CSA-7	21	21	22	25	50	139
CSA-6	34	28	68	20	46	196
CSA-3	48	50	92	30	50	270
CSA-1	57	22	93	39	50	261
FL-2	57	45	0	0	50	152
FL-1	0	0	74	5	0	79
<b>Total</b>	<b>271</b>	<b>238</b>	<b>426</b>	<b>170</b>	<b>345</b>	<b>1,450</b>

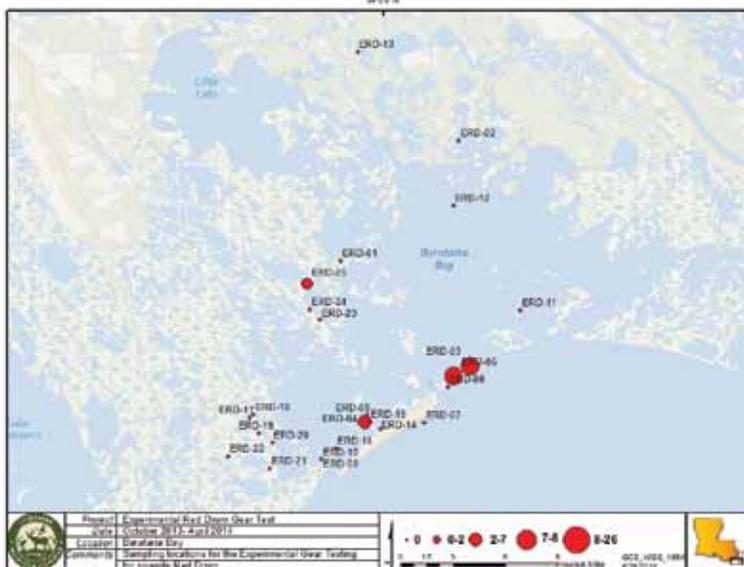


FIGURE 15. Catch Rates for juvenile Red Drum utilizing experimental gear during 2013-2014 sampling season.

ed. Biologists will determine the viability of current Coastal Study Area sampling sites in regards to overall catch and number of target species captured in comparison to sites selected by Fisheries Research Lab biologists. They will also determine the capture effectiveness of current Coastal Study Area sampling gear in comparison to experimental sampling gear developed and tested by Fisheries Research Lab biologists. Gear effectiveness will be determined by the quantity of 1-to-3-year-old red and black drum captured in each gear type.

Sampling began in the winter of 2013-14 and is currently in progress. Since the inception of this project, 148 juvenile drum have been captured (97 red drum and 51 black drum). The sampling season runs from November to April, with sampling conducted weekly (weather permitting). Lengths and weights of all captured species are recorded and archived.

**PUBLICATIONS**

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Fenton J, Ellis JE, Falterman B, Kerstetter D. (2014a) Habitat utilization of blackfin tuna, *Thunnus atlanticus*, in the north-central Gulf of Mexico. Environmental Biology of Fishes, 97(12).DOI: 10.1007/s10641-014-0347-3

Hoffmayer, E. R., Franks, J. S., Driggers III, W. B., McKinney, J. A., Hendon, J. M., & Quattro, J. M. (2014). Habitat, movements and environmental preferences of dusky sharks, *Carcharhinus obscurus*, in the northern Gulf of Mexico. Marine Biology, 1-14. DOI: 10.1007/s00227-014-2391-0.

Hoolihan JP, Wells RJD, Luo J, Falterman B, Prince ED, Rooker JR (2014b) Vertical and Horizontal Movements of Yellowfin Tuna in the Gulf of Mexico. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science, 6:1, 211-222, DOI: 10.1080/19425120.2014.935900



LEFT: LDWF biologists pull up trammel net for red drum sampling. CENTER: Juvenile red drum being measured after capture in trammel nets. RIGHT: LDWF biologists with red drum.

## PRESENTATIONS

Brown-Peterson, N.B., J.S. Franks, D.M. Gibson, C. Marshall. Aspects of the reproductive biology of yellowfin tuna, *Thunnus albacares*, in the northern Gulf of Mexico. 67th Gulf and Caribbean Fisheries Institute Conference, November 2014, Barbados. (Presentation and extended abstract in Conference Proceedings).

Falterman, B and J McKinney. Electronic tagging yellowfin tuna in the Gulf of Mexico. NASA NOAA HMS Climate Workshop, December 2014, Miami, FL.

Falterman, B. Electronic tagging of Atlantic tarpon in Louisiana coastal waters. University of New Orleans Invitational Tarpon Workshop, January 2014, New Orleans LA.

Franks, J.S., N.B. Peterson, D.M. Gibson, E Sailant, L. Antonio, C. Marshall. Gulf of Mexico yellowfin tuna project: University of Southern Mississippi Research Components. Reproductive biology, feeding ecology and conservation genetics. NASA NOAA HMS Climate Workshop, December 2014, Miami, FL.

Lang E, G Fitzhugh, S Theberge. (2014) Fecundity pattern of gray triggerfish, *Balistes capricus*. Southern Division of the American Fisheries Society Spring Meeting, Charleston, South Carolina.

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McKinney JA, Hoffmayer ER, Franks JS, Hendon JM, Driggers WB. (2013). Seasonal habitat use of whale sharks in the northern Gulf of Mexico, USA 2003 - 2013. PeerJ PrePrints 1:e93v1. <http://dx.doi.org/10.7287/peerj.preprints.93v1>. Third International Whale Shark Conference. Atlanta, GA, October 6-9.

E.R. Hoffmayer, J.A. McKinney, J.S. Franks, J.M. Hendon, and W.B. Driggers. (2013). Whale Shark aggregations in the Northern Gulf of Mexico, USA 2003 – 2013. PeerJ. DOI:10.7287/peerj.preprints.85v1 Third International Whale Shark Conference. Atlanta, GA, October 6-9.

## OTHER RESEARCH

### ACOUSTIC TELEMETRY TAGGING

LDWF is involved in a collaborative research project using acoustic receivers and transmitters to study movement patterns of important species in Lake Pontchartrain. Ninety acoustic receivers are deployed throughout various habitats in Lake Pontchartrain, and data is recorded from passing tagged fish. The receiver array is used to cooperatively track spotted seatrout tagged by LSU, red drum and bull sharks tagged by UNO, and sturgeon tagged by USFWS and USACE. A total of 211 spotted seatrout were implanted with acoustic transmitters and released, including 132 during FY 2013-2014 (71 in fall 2013; 61 in spring 2014). Data are downloaded regularly from all receivers and will be analyzed to determine the movements, residency and habitat preferences of these important species.

### LOUISIANA COOPERATIVE MARINE SPORT FISH TAGGING PROGRAM

The Louisiana Cooperative Marine Sport Fish Tagging Program is a collaborative initiative between the Office of Fisheries, the Coastal Conservation Association (CCA) of Louisiana, universities and non-profit organizations.

One of the main goals of the program is to maintain a volunteer marine fish tagging program. Participating in the Tagging Program offers anglers a unique opportunity to act as citizen scientists, working alongside biologists for a common goal - to improve our understanding of marine fish movements, patterns of habitat use, and estimates of population size. The program's success can be attributed to a dedicated base of volunteer anglers who serve as citizen scientists by tagging fish and providing valuable data that can be difficult and expensive to obtain by other means. Fish tagging is an exciting and rewarding way for anglers to give back to the resource they treasure. Information obtained through fish tagging is useful for fisheries management and conservation.



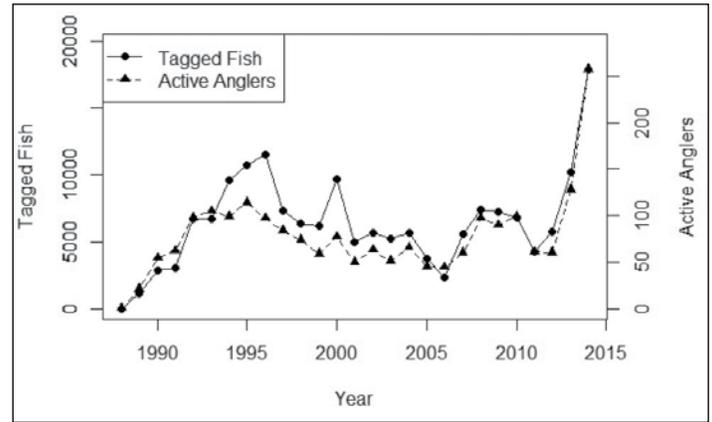
**FIGURE 16.** Surgical procedure for implanting acoustic transmitter in spotted seatrout.

Dedicated volunteer anglers are essential to the success of any tagging study. In FY 2013-2014, the tagging program was promoted at CCA and LDWF events across coastal Louisiana. Anglers interested in participating in the tagging program can submit an application by phone, mail, email, Facebook message or in person. CCA or LDWF personnel will collect this information and assign the angler a unique ID number, tagging kit and 10 starter tags. A marked increase in angler participation occurred during FY 2013-2014, partially due to program promotion using the social media outlet Facebook. The “Tag Louisiana” Facebook page, which has over 800 friends, provides a quick and easy means of communication between anglers and program administrators. Volunteer anglers can share the program’s Facebook page with their friends and post pictures of their fish tagging efforts. Continued maintenance of the program’s Facebook page has fostered a sense of camaraderie between volunteer anglers and researchers, while also increasing interest and awareness for the tagging program.

**Tagging Program Statistics**

The Tagging Program experienced a significant increase in participation from Year 9 (FY 2012-2013) to Year 10 (FY 2013-2014). Six hundred twenty two anglers tagged at least one fish. Active participants (tagged at least 10 fish per year) in the Tagging Program more than doubled from 128 to 258, and there was a 75.1 percent increase in total number of fish tagged from 10,252 to 17,955 (Figure 17). Program totals since the program’s inception by CCA of Louisiana in 1988 are 175,285 fish tagged, of which 157,792 were target species (red drum, spotted seatrout or yellowfin tuna). Reported recaptures reached over 5,000, and 6,460 total anglers have participated by tagging a fish or reporting a recapture.

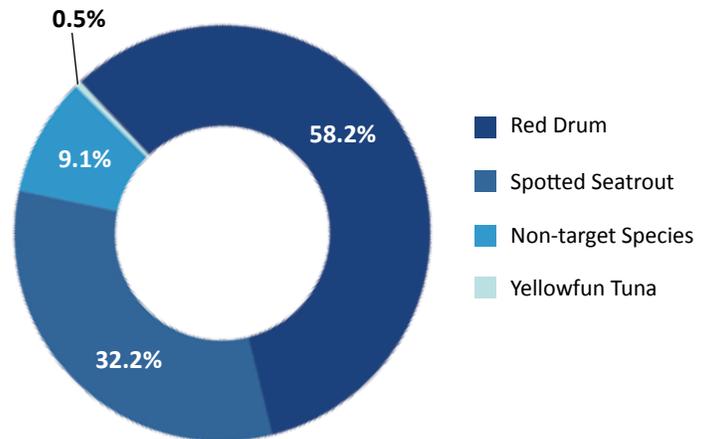
Of the 17,955 fish tagged during Year 10, 10,450 were red drum, 5,781 were spotted seatrout, 93 were yellowfin tuna, and 1,631 were non-target species (Table 5). Fish were tagged and recaptured throughout the Gulf of Mexico, in every Gulf state from Texas to Florida, with the majority occurring in Louisiana (Figure 18). During Year 10, 1,027 fish were reported as recaptured. This includes fish that were tagged in Year 10 as well as fish that were tagged prior to Year 10. Of the 1,027 reported recaptures, 778 were red drum, 175 were spotted seatrout, two were yellowfin tuna, and 72 were non-target species (Table 5, Figure 19). While red drum and spotted seatrout were captured and recaptured throughout coastal Louisiana, the central region of the state, between Lake Calcasieu and Terrebonne Bay, shows less participation in the Tagging Program (Figures 20 & 21). Whether this is due to lack of information about the program, or lower regional population, is unclear. Yellowfin tuna were only caught



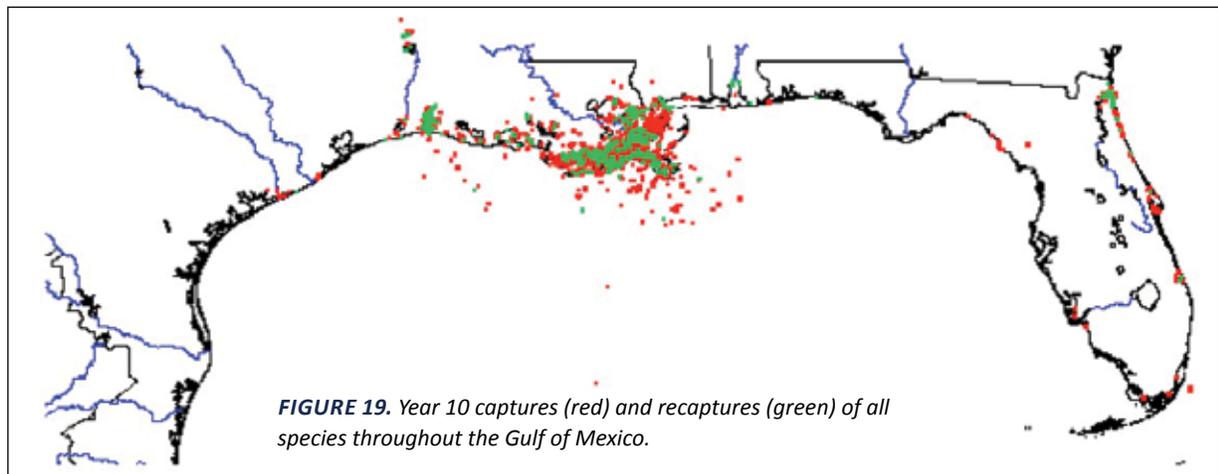
**FIGURE 17.** CCA of Louisiana and LDWF Tagging Program’s history since the inception of the program in 1988 to 2014. Active anglers are those that have tagged at least 10 fish per year.

**TABLE 5.** Red drum and spotted seatrout time-at-large (number of days from tagging date to recapture date) for fish recaptured during Year 10.

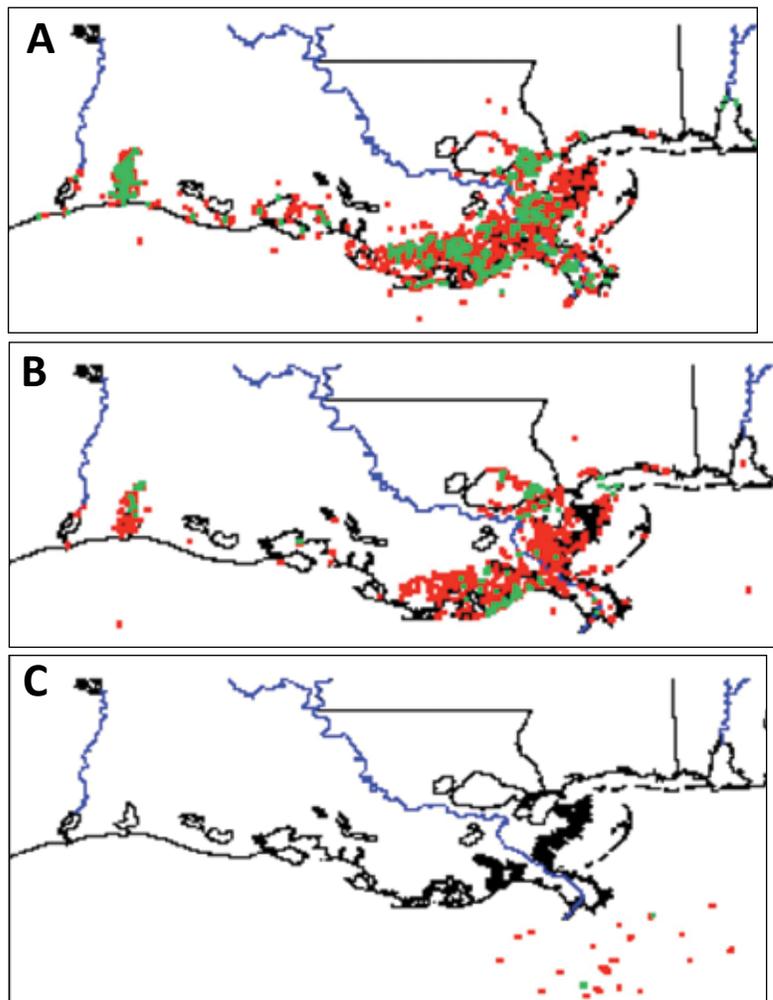
SPECIES	TAGGED IN YEAR 10	RECAPTURED IN YEAR 10
Red Drum	10,450	778
Spotted Seatrout	5,781	175
Yellow Tuna	93	2
Non-target Species	1,631	72
<i>Total</i>	<i>17,955</i>	<i>1,027</i>



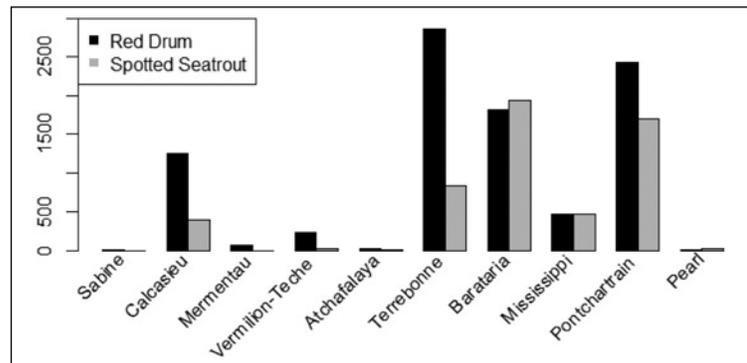
**FIGURE 18.** Percentages of red drum, spotted seatrout, yellowfin tuna and non-target species tagged by biologists and volunteer anglers during Year 10.



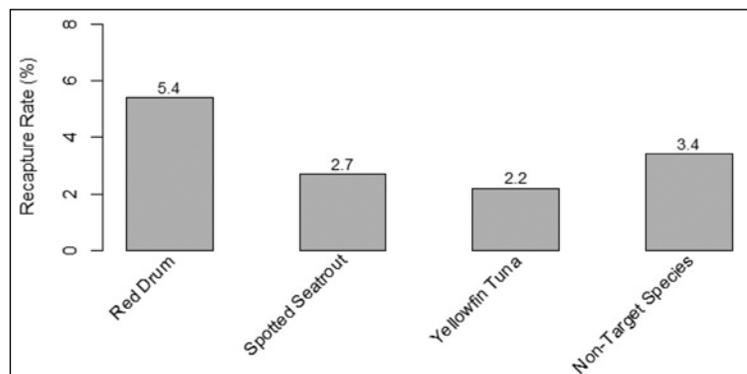
**FIGURE 19.** Year 10 captures (red) and recaptures (green) of all species throughout the Gulf of Mexico.



**FIGURE 20.** Year 10 captures (red) and recaptures (green) of red drum (A), spotted seatrout (B) and yellowfin tuna (C) in Louisiana.



**FIGURE 21.** Captures per Louisiana coastal basin for red drum and spotted seatrout during Year 10. Basins are listed from west to east.



**FIGURE 22.** Recapture rates for red drum, spotted seatrout, yellowfin tuna and non-target species tagged in Year 10.

in the eastern region of the state, surrounding the mouth of the Mississippi River (Figure 20). Tagging Program efforts for Year 11 are to increase knowledge and program participation across the state for all target species.

Recapture rates for red drum tagged during Year 10 were twice as high as recapture rates for spotted seatrout (Figure 22). The Louisiana Saltwater Series (LASS) is attributed with increased red drum recapture rates. The Tagging Program's overall red drum recapture rate before the LASS series began was 2.9 percent, and since the tournament's inception, it has increased to 5.7 percent.

Efforts are being made by LDWF to increase the spotted seatrout recapture rate as well. In looking at recapture rates from 2004 to present (the period that LDWF has been involved with the Tagging Program), a majority of the trout recaptured are of the same size class as they were originally tagged (Figure 23), which leads one to conclude that tagging may be affecting growth or mortality, or the tags are not staying in place over time. Ongoing studies continue to investigate growth, mortality and tag retention rates in spotted seatrout when using dart tags (currently used by the Tagging Program) compared to an alternative t-bar tag, which the manufacturer claims are better suited for small fish, sized 16 inches or less. Laboratory studies have observed promising results, and the Tagging Program is entering the field portion of these trials beginning in Year 11.

Of the 1,027 reported recaptures during Year 10, 776 fish contained GPS information for both capture and recapture locations (570 red drum, 149 spotted seatrout and two yellowfin tuna). Decreased costs in GPS devices, as well as the use of the tagging website and mobile app, have allowed anglers to provide the Tagging Program with improved location data. When anglers enter data using the mobile app while fishing, their location is automatically logged, or if they enter their data after a fishing trip (using either the website or the app), they can select their fishing location on a map and GPS coordinates will autofill. This allows LDWF to gather information about fish movement over time and habitat usage.

Red drum and spotted seatrout recaptured during Year 10, for the most part, did not travel far from their original tagging location. Over 32.8 percent of red drum and 29.5 percent spotted seatrout were recaptured less than 0.25 mile from their capture location; 55.6 percent of red drum and 47.7 percent of spotted seatrout were recaptured less than 1 mile from their capture location; and 87.5 percent red drum 85.9 percent spotted seatrout were recaptured within 5 miles of their capture location (Figure 24). There was no significant correlation between distance traveled and time. Days-at-large for red drum ranged from 0 to 1,260 days, with a mean of  $112 \pm 6$  days. The longest at-large red drum for Year 10 was originally tagged in November of 2010 and recaptured in April 2014, only 4.4 miles away from its original location. Days-at-large for spotted seatrout ranged from one to 363 days, with a mean of  $58 \pm$

5 days (Table 6). Of these recaptured fish, only 32.3 percent of red drum and 16.1 percent of spotted seatrout were re-released back into the water with the tag still intact. The Tagging Program is working to improve this aspect of the project by increasing angler knowledge of the benefits of data received from the Tagging Program and offering incentives for reporting and releasing tagged fish.

Only two yellowfin tuna were recaptured during Year 10. One traveled 15 miles in 156 days, and the other 50.5 miles in 16 days. Neither tuna was released.

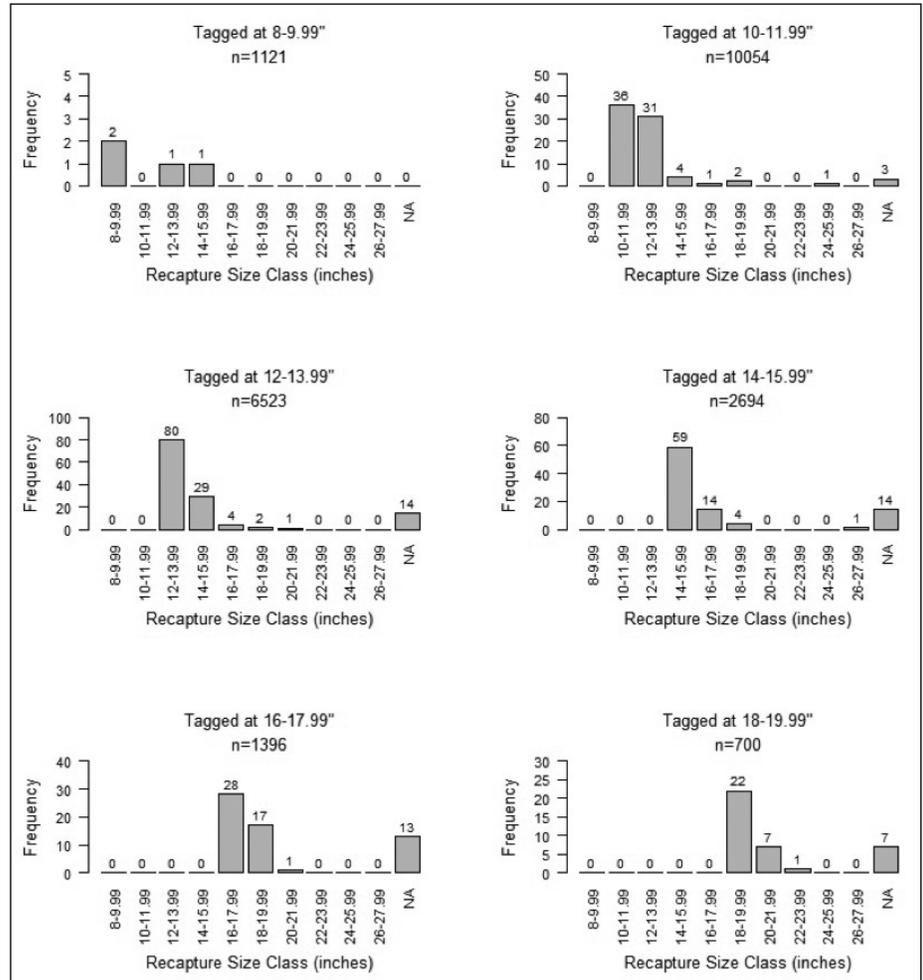


FIGURE 23. Capture and recapture size classes of spotted seatrout tagged from 2004 to present, the time period which LDWF has been involved with the Tagging Program.

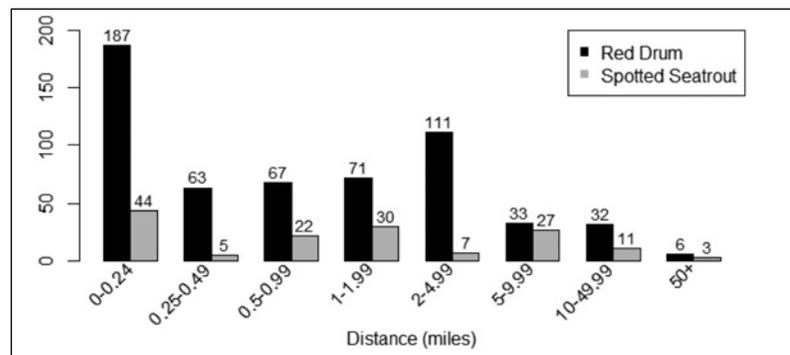


FIGURE 24. Distance traveled in miles by red drum (A) and spotted seatrout (B) recaptured during Year 10.

TABLE 6. Red drum and spotted seatrout time-at-large (number of days from tagging date to recapture date) for fish recaptured during Year 10.

SPECIES	MINIMUM	MAXIMUM	MEAN (±SE)
Red Drum	0	1,260	112 ± 6
Spotted Seatrout	1	363	58 ± 5

## FISHING ACCESS AND OPPORTUNITY

Louisiana is nationally recognized by anglers and fisheries professionals as a premier sport fishing destination. The Office of Fisheries strives to create, enhance and restore our state's inventory of public boating and fishing access sites. Access sites, including marinas, boat launches and fishing piers, serve as doorways to our state's natural resources.

### ACCESS

In a cooperative effort, LDWF assists local government entities requesting financial assistance in the development and construction of boating and fishing access facilities. This program covers both freshwater and saltwater projects, and may include the construction of boat ramps, parking areas, docks, bulk heading and fishing piers. One boating access project was completed in FY 2013-2014. An additional seven projects are in the planning or construction stage. One fishing access project is in the planning or construction stage.

### BOATING ACCESS PROJECTS COMPLETED

- **Boggy Bayou Boat Launch** - The proposed project includes installation of a 30-foot gangway and a new 60-foot floating dock on either side of the existing boat ramp, parking area improvements, additional lighting, and a picnic area.

### BOATING ACCESS FACILITIES PLANNED OR UNDER CONSTRUCTION

- **Bonnabel Boat Launch** - Project plans include renovating the existing four lane boat ramp.
- **Forsythe Point Public Boat Ramp** - Project plans include installing a floating dock with walkway, two fish cleaning stations and improving the existing parking area and lighting.
- **Port O'Bistineau Landing** - Project plans include an extension of the existing boat ramp by 60 feet to provide convenient access to Lake Bistineau during times of low water levels. Plans also include renovations to existing structures at the facility and expansion of the parking area.
- **Slidell Municipal Marina, BIG-P, Tier II** - Project plans include upgrading an existing facility to include accommodations for boats greater than 26 feet.
- **Leeville Public Boat Launch** - Project includes constructing a 42-vehicle aggregate parking area, two 30-foot wide

concrete ramps, vinyl sheet piling, and a 27-foot wide access road with 20 additional parking spots.

- **New Iberia City Park Enhancement** - Project includes upgrading parking, boat ramp and dock facilities.
- **West End-Breakwater Drive Boat Launch** - Project includes renovating the existing two lane boat ramp and parking area.

### FISHING ACCESS FACILITIES PLANNED OR UNDER CONSTRUCTION

- **St. Tammany Fishing Pier Phase II** - Project includes constructing amenities and additional wooden crossovers to connect the existing Phase I Twin Span fishing pier.

### NUISANCE AQUATIC VEGETATION

Control of nuisance plant species is also necessary to provide access to many public waterways. Aquatic vegetation management efforts are designed to ensure that the natural environment and human interests are mutually protected.

Our natural resources are constantly under attack from invasive species posing a threat to healthy habitats and access opportunities for the public. The flagship of these initiatives is our Aquatic Plant Control Program, which strives to provide the public with safe and usable fishing and boating access. Left unchecked, invasive plants have the potential to completely inundate the state's abundant freshwater lakes, making them inaccessible and threatening the natural habitat of our valuable aquatic resources. Aggressive treatment of affected waters continued in FY 2013-2014 in an ongoing effort to restore and improve the aquatic habitat and the natural balance of plants and fish.

The Aquatic Vegetation Management Plan format was created for lakes that do not have an

approved LDWF Waterbody Management Plan to provide a lake description, basic information, a listing of lake authorities, historical vegetation control information, current aquatic plant status, and recommendations for control. These documents are used as a guide for aquatic plant control, and as a source of recommendations and information to provide to the lake authorities and the public. In FY 2013-2014, the Aquatic Plant Control Program completed 70 Vegetation Management Plans for Louisiana public waterbodies.

In FY 2013-2014, herbicides were applied to 79,795 acres of nuisance aquatic vegetation to provide boating and fishing access in lakes and waterbodies throughout the state. The majority of these efforts included control of 39,925 acres of water hyacinth, 25,574 acres of giant salvinia, 4,804 acres of alligator weed, and 2,890 acres of common salvinia. In addition, approximately 594,800 adult giant salvinia weevils and 28,400 adult common salvinia weevils were stocked into water bodies throughout Louisiana.

Another method used for control of aquatic vegetation includes water level fluctuations. Natural water systems benefit from high springtime water levels and lower water levels in the fall. Benefits include aquatic vegetation control and a healthier fish population. For impounded waters, partial dewaterings (typically called drawdowns) are often conducted to induce similar benefits. These drawdowns also provide the opportunity for improvements to shoreline properties. Drawdowns were conducted on eight inland reservoirs in FY 2013-2014 (*Table 7*).

In recent years, aquatic plant control biologists have shifted efforts towards identifying and utilizing all effective plant control methods available. Integrated pest management involves combining the effects of chemical,

**TABLE 7. Drawdowns conducted in FY 2013-2014.**

LAKE NAME	PURPOSE OF DRAWDOWN	DATES
Bundick Lake	bottom oxidation; vegetation control; property repairs	Fall/Winter
Bussey Lake	lake renovation	Summer 2013 - completion
Cheniere Lake	bottom oxidation; vegetation control	Fall/Winter
Chicot Lake	bottom oxidation; vegetation control	Fall/Winter
Eunice City Lake	bottom oxidation; vegetation control	Fall/Winter
Lake Bistineau	bottom oxidation; vegetation control	Summer/Fall
Lake Louis	bottom oxidation	Fall/Winter
Saline Lake	bottom oxidation; vegetation control	Summer/Fall/Winter

mechanical and biological control methods to manage nuisance species more effectively and efficiently. The long-term benefits and cost efficiency provided by the integrated pest management strategy allows LDWF to effectively manage the aquatic vegetation infestations throughout Louisiana's public waterbodies.

### Maintaining Community Fishing Opportunities

Waters available and accessible to the public for recreation and fishing are often unavailable in big cities and urban areas. For this reason, those ponds and lakes that are available can experience increased use during the summer months. At Joe Brown Park in New Orleans, summer camps rely on the lagoon system in the park for fishing and canoeing. In June 2014, park personnel reached out to the LDWF for help with the excessive vegetation growing in the lagoons. Upon investigation, LDWF biologists discovered that the pond was almost 100 percent covered with coontail (*Ceratophyllum demersum*) and duckweed (*Lemna spp.*). Since the lagoons were utilized on a daily basis, it was necessary to choose control methods that would work quickly and have few water use restrictions. After much discussion, it was decided that this would be a good opportunity to use the contact herbicide Clipper™ (active ingredient flumioxazin) as a subsurface treatment.

The Joe Brown Park lagoons are comprised of approximately 6.5 acres of surface water. There are two main lagoons that are connected by a narrow canal that passes under a bridge. To prevent fish kills, it was decided to treat each area separately, with a three week delay between applications. A floating plant control boom was placed in the canal to prevent duckweed from moving between treated and untreated areas.

Both applications were highly effective in the first few days post treatment. Most duckweed was necrotic within a couple of days after treatment and coontail lost buoyancy and became necrotic within five days after treatment. At 10 days after treatment, the majority of the plant material was eliminated and only a small quantity of decaying duckweed was visible on the water surface (Figure 25). At 14 days after treatment, very little plant material was observed, and it was estimated that the efforts resulted in at least a 95 percent reduction of the duckweed and coontail.

The subsurface Clipper™ application was ideal for this situation. The applications required less than three hours to complete and were concluded by mid-morning each day. With no recreational use restrictions following the application, the ponds were never off limits to the

summer camps, and positive results were visible within five days. At 14 days after treatment, each section was almost completely cleared of the nuisance vegetation, and canoeing and other aquatic recreation resumed unabated. In this instance, Clipper™ provided a quicker in-water treatment alternative to systemic herbicides such as fluridone and penoxsulam which can take from four to eight weeks to produce results.

### Terrebonne Marsh Water Hyacinth Control

For many years, the U.S. Army Corps of Engineers (USACE) Removal of Aquatic Growth Program was responsible for water hyacinth control in the freshwater marshes located in the Terrebonne Basin. In 2010, the Removal of Aquatic Growth Program lost its funding, and its plant control efforts had completely ceased by the end of the year. Since that time, LDWF has assumed the responsibility of maintaining boating access in this area. This vast coastal freshwater area fills with water hyacinths each year, and main bayous can be completely blocked by the vegetation if it is left untreated. These plants inevitably get deposited into the public bayous and canals by tidal action and changes in wind direction. When large rafts of water hyacinths form blockages in the canals, it impedes both recreational and commercial



**FIGURE 25.** Pre-treatment, five days after treatment, and 10 days after treatment results of a 250 ppb subsurface Clipper™ application in the first area treated at Joe Brown Park in New Orleans, La.



*Controlled, replicated experiments to compare the efficacy of different herbicides and herbicide mixtures on giant salvinia. These experimental tanks are located at the LSU Aquaculture Research Station.*

activities. In order for the Aquatic Plant Control Program to maintain open canals and bayous in the Terrebonne marsh, herbicide applications usually begin in April and continue into December. In FY 2013-2014, LDWF treated 14,134 acres of hyacinth in the Terrebonne marsh. These concentrated efforts have been successful in providing both recreational and commercial use to the public throughout the year.

#### **Evaluation of Giant Salvinia Control Methods**

Since 2006, giant salvinia has spread to waters throughout much of Louisiana. As a result, identifying and implementing all efficient and effective control methods for this invasive aquatic weed has been a priority for the Aquatic Plant Control Program. Introduction and establishment of giant salvinia weevils, a species-specific biological control, has been a major focus of the program since that time. In recent years, LDWF has evaluated the effectiveness of several mechanical control devices including The WaterMower, bucket boats, mashers, harvesters and weed cutters. Unfortunately, mechanical control options typically are slower, more labor intensive and more expensive than LDWF's current giant salvinia control approach, which includes herbicide applications, water level manipulation and weevil establishment. Although herbicide applications remain a major part of the salvinia control efforts, the Aquatic Plant Control Program continues to search for more effective and cost efficient chemicals available for use in aquatic systems. Since 2012, LDWF has worked closely with USACE and LSU AgCenter weed scientists to explore the effectiveness of new herbicides and also to test the potential of mixtures of herbicides and the effects of different surfactants. This research includes controlled, replicated experiments as well as field evaluations

of mixtures that show potential for more cost efficient control. These efforts will continue to develop as new herbicides become available and could lead to more effective control of giant salvinia in the future.

### **FISHING OPPORTUNITY**

Louisiana's fishery resources, including habitat, benefit all of Louisiana's constituent groups within the state and across the Gulf Coast. Habitat stewardship and resource management provide opportunities for the public to access these natural resources.

#### **INLAND LAKES AND PONDS**

The Eunice City Lake Project was completed and included a full renovation of the lake/facilities.

In 2000, a train accident caused significant damage to the lake's shoreline. After subsequent litigation, funding was made available for improvements including:

- Replacement of the water control structure
- Grilling stations for family picnics
- Swimming area
- New boat mooring area
- Boat ramp improvements
- Boat mooring dock & fishing pier
- Decorative entrance gate

#### **ARTIFICIAL REEFS**

The Louisiana Artificial Reef Program (LARP) was created by Act 100 of the 1986 Louisiana Legislature within LDWF. Act 100 also required the formation of the Artificial Reef Development Council, development of an Artificial Reef Plan, and establishment of the Artificial Reef Trust Fund.

The Artificial Reef Development Council is comprised of the Secretary of LDWF, the LSU Executive Director of the School of the Coast

and Environment, and the Executive Director of SeaGrant, or their designees. The council is charged with providing guidance on policy, procedural matters, site selection and allocation of funds to LARP. The Office of Fisheries administers and manages LARP in accordance with the National Artificial Reef Plan, Louisiana Artificial Reef Development Plan, pertinent regulations, laws, and budget allocation.

The Louisiana Artificial Reef Plan was developed and implemented in November 1987. The plan outlines the siting, permitting and monitoring requirements of LARP. The plan centers on nine artificial reef planning areas and the conversion of oil and gas platforms in permanent marine hard-bottom habitat. The program also includes Special Artificial Reef Sites, deepwater reefs and inshore artificial reefs. LARP works closely with stakeholders, public and private conservation groups, and appropriate regulatory agencies when developing, maintaining and monitoring Louisiana's artificial reefs.

In FY 2013-2014, LARP enhanced 12 offshore reefs with 12 oil and gas platforms and received \$3.8 million in donations from oil company participation. In addition, the Laketown Pier Reef was created on Lake Pontchartrain from quarry limestone. LARP also began planning a reef to replace the "Pickets" structures, a popular trout-fishing destination scheduled for decommissioning in 2014.

Rigs-to-Reef remains a large component of LARP. Due to recent policy changes by the Bureau of Safety and Environmental Enforcement, the regulatory body responsible for offshore oil and gas structures, LARP is examining options to expand its current plan to address the removal of nearshore oil and gas structures and identifying incentives for increased oil company participation.

LARP has been expanding its inshore reef program by incorporating appropriate materials of opportunity. Recycled concrete and reclaimed oyster shell are being pursued for inshore reef development across the state.

#### **Important Figures for FY 2013-2014**

- 75 Total established offshore artificial reef sites
- 48 planning area reefs
  - 19 special artificial reef sites
  - 8 deepwater reefs

Offshore structures converted to permanent habitat

- 350 platform jackets
- 8 drill rig legs
- 12 oil and gas structures deployed

- 32 established inshore reefs
- created Laketown Pier Reef
- created Cypremort Point II Reef

## FRESHWATER FISH HATCHERY PROGRAM

The Louisiana Hatchery Program partners with local, state and federal agencies to produce and stock freshwater fish to start or enhance statewide sport fisheries, to hasten the recovery of fisheries affected by natural or man-made disasters, and to produce threatened or endangered species, if necessary. Fish are requested annually by Inland Fisheries according to the LDWF’s “Resource Enhancement through Stocking” guidelines. The program also provides support services for outreach and education activities that introduce or encourage sport fishing.

### FISH STOCKING

This year, in partnerships with the USFWS Natchitoches National Fish Hatchery, the City of Shreveport’s Cross Lake Fish Hatchery, LDWF’s Rockefeller State Wildlife Refuge, LDWF’s Aquatic Plant Control Program, the Red River Waterway Commission, and the Cheniere Brake Lake Association, LDWF hatcheries reared and/or released over 5.6 million fish in 65 water bodies around the state. *Table 8* provides comprehensive list of fish stocked in Louisiana’s waters during FY 2013-2014.

### HATCHERY AND FISHERIES OUTREACH/EDUCATION

The hatchery program continued to provide support for departmental education and outreach programs. Support includes providing fish and/or fish transportation for community fishing and outreach events, spawning demonstrations/workshops, and hatchery presentations and tours. The hatchery program transported 2,500 pounds of catfish for U.S. Forest Service fishing derbies and 2,800 pounds of catfish for Fort Polk fishing derbies. Hatchery biologists assisted private pond owners with technical advice and pond water quality testing.

### LOUISIANA PEARLSHELL MUSSEL RESEARCH

The federally endangered Louisiana pearlshell mussel is only found in Grant and Rapides parishes in pine forest streams. Since the species is federally listed and not much is known about its life history, the USFWS is tasked with defining its basic life cycle requirements. As is true with many other mussel species, the Louisiana pearlshell mussel reproduces by releasing larval mussels into the water in the

very near vicinity of host fish. The larval mussels (glochidia) attach to host fish gills and grow for a period of time before detaching as metamorphosed mussels (transformers) and falling to the stream bottom where they begin to live and grow. Previous studies to determine which species of fish were host fish were conducted at the USFWS’ Natchitoches National Fish Hatchery but were unsuccessful. One theory of why the fish could not be infested with mussels at the Natchitoches National Fish Hatchery was that the species may require soft water for host fish attachment, and the water at the Natchitoches National Fish Hatchery is relatively hard. Streams where the mussels are found often have very soft water, similar to the water supply at LDWF’s largest hatchery, Booker Fowler Fish Hatchery. As part of LDWF’s fish production Memorandum of Understanding with USFWS, LDWF was asked to assist with the research by providing space, water and daily care of the animals and equipment during a host study at Booker Fowler Fish Hatchery. As a result of the spring 2014 study, USFWS documented six species of fish that produced metamorphosed Louisiana pearlshell mussels after infestation, with the primary host identified as the redspot darter (*Etheostoma artisiae*). *Table 9* summarizes the study results.

### INVESTIGATIONAL NEW ANIMAL DRUG PROGRAM PARTICIPATION

LDWF hatcheries continued to participate in the USFWS National Investigational New Animal Drug Program. This program provides “a means through which federal, state, tribal and private agencies or organizations located throughout the United States are 1.) allowed to use certain critical drugs necessary to maintain

the health and fitness of aquatic species under Investigational New Animal Drug exemptions, and 2.) contribute important drug efficacy and safety data needed to support the future approval of new drugs for use in aquatic species.” (<http://www.fws.gov/fisheries/aadap/programPDFs/NIP%20Standards%20April%202011.pdf>)

### HATCHERY PROGRAM PROFESSIONAL DEVELOPMENT

One or more biologists representing the LDWF’s hatchery program attended the following annual meetings in FY 2013-2014:

- Louisiana Chapter of the American Fisheries Society
- Louisiana Association of Professional Biologists
- Southern Division of the American Fisheries Society
- Louisiana Wildlife Federation

One or more hatchery biologists are a member of the following aquaculture groups:

- Southern Division of the American Fisheries Society Aquaculture Technical Committee
- American Fisheries Society Fish Culture Section
- Southern Division of the American Fisheries Society Hatchery List Serve

Hatchery presentations were given by the hatchery biologists at the following meetings/events in FY 2013-2014:

- Louisiana/Texas Border State Fisheries Meeting
- Louisiana/Mississippi Border State Fisheries Meeting

**TABLE 9. Fish species and LPM transformers produced during 2014 Host Trials at Booker Fowler State Fish Hatchery.**

FISH SPECIES	# FISH INOCULATED	# TRANSFORMERS PRODUCED	# TRANSFORMERS/ FISH	% TOTAL TRANSFORMERS
Striped Shiner	79	14	0.2	9%
<b>Redspot Darter</b>	<b>17</b>	<b>97</b>	<b>5.7</b>	<b>65%</b>
Redfin Shiner	4	5	1.3	3%
Blackspot Topminnow	20	0	0	0%
Creek Chubsucker	5	18	3.6	12%
Brown Madtoms	7	0	0	0%
Pirate Perch	1	0	0	0%
Longear Sunfish/ Bluegill	20	17	0.85	11%
<b>TOTAL</b>		<b>148</b>		<b>100%</b>

*Table from “Host Study for the Louisiana Pearlshell Mussel Margaritifera hembeli 2014”, by Tony Brady (USFWS) and Angela Williamson (UNO), unpublished data.*

## FISH STOCKING BY WATERBODY

7/1/2013 - 6/30/2014

TABLE 8.

WATERBODY	SPECIES	SIZE	NUMBER
Anacoco Lake	Florida Largemouth Bass Threadfin Shad	Fingerlings Fingerlings	32,035 16,865
Bayou D'Arbonne Lake	Florida Largemouth Bass	Fingerlings	299,413
Bayou DeSiard	Triploid Grass Carp	Adults	1,000
Bayou Teche	Florida Largemouth Bass	Fingerlings	14,930
Black Bayou & Black Bayou Reservoir	Florida Largemouth Bass	Fingerlings	11,591
Black Bayou Lake (Caddo Parish)	Triploid Grass Carp	Adults	11,681
Black Lake & Clear Lake	Triploid Grass Carp	Adults	424
Black River Lake	Florida Largemouth Bass	Fingerlings	17,400
BREC Pond - Black Water	Channel Catfish	Fingerlings	170
BREC Pond - Burbank	Channel Catfish	Fingerlings	81
BREC Pond - Doyles	Channel Catfish	Fingerlings	20
BREC Pond - Flanacher	Channel Catfish	Fingerlings	20
BREC Pond - Forest Park	Channel Catfish	Fingerlings	30
BREC Pond - Oak Villa	Channel Catfish	Fingerlings	58
BREC Pond - Palomino	Channel Catfish	Fingerlings	20
BREC Pond - Perkins	Channel Catfish	Fingerlings	30
BREC Pond - Sherwood	Channel Catfish	Fingerlings	54
BREC Pond - Zachary	Channel Catfish	Fingerlings	58
Bundicks Lake	Florida Largemouth Bass Florida Largemouth Bass	Fingerlings Phase 2 Fingerlings	15,624 9,350
Caddo Lake & James Bayou	Florida Largemouth Bass	Fingerlings	151,037
Caney Lake Lower (Kisatchie National Forest, Webster Parish)	Florida Largemouth Bass	Fingerlings	1,138
Caney Lake Upper (Kisatchie National Forest, Webster Parish)	Florida Largemouth Bass	Fingerlings	714
Cheniere Brake Lake	Florida Largemouth Bass	Phase 2 Fingerlings	2,000
Chicot Lake	Florida Largemouth Bass Florida Largemouth Bass Triploid Grass Carp	Fry Fingerlings Adults	224,400 28,074 600
Cocodrie Lake	Florida Largemouth Bass	Fingerlings	65,705
Corney Lake (Kisatchie National Forest, Claiborne Parish)	Florida Largemouth Bass	Fingerlings	15,135
Cotile Lake	Florida Largemouth Bass Triploid Grass Carp	Fingerlings Adults	20,196 1,000
Crooked Creek Lake	Florida Largemouth Bass	Fingerlings	2,400
Cross Lake	Florida Largemouth Bass	Fingerlings	119,909
Cypress Bayou Reservoir	Florida Largemouth Bass	Fingerlings	42,815

WATERBODY	SPECIES	SIZE	NUMBER
Eunice City Lake	Bluegill	Fingerlings	521,987
	Florida Largemouth Bass	1-year-old	1,337
	Florida Largemouth Bass	Adults	105
	Redear Threadfin Shad	Fingerlings	235,575 6,144
False River	Florida Largemouth Bass	Phase 2 Fingerlings	6,006
Fullerton Lake (Kisatchie National Forest, Vernon Parish)	Triploid Grass Carp	Adults	30
Grand Bayou Reservoir	Florida Largemouth Bass	Fry	766,200
	Florida Largemouth Bass	Fingerlings	46,540
Henderson Lake	Triploid Grass Carp	Adults	25,023
Indian Creek Reservoir	Florida Largemouth Bass	Fry	29,400
	Triploid Grass Carp	Adults	55
Ivan Lake	Florida Largemouth Bass Threadfin Shad Threadfin Shad	Fingerlings Adults Fingerlings	8,390 1,400 12,692
Kepler Creek Lake	Triploid Grass Carp	Adults	1,500
Lacassine Pool	Florida Largemouth Bass	Fingerlings	140,379
Lake Arthur & Mermentau River	Paddlefish Paddlefish	Fry Fingerlings	292,922 816
Lake Bistineau	Florida Largemouth Bass	Fingerlings	288,266
Lake Bruin	Florida Largemouth Bass Hybrid Striped Bass	Fingerlings Fingerlings	10,101 10,825
Lake Concordia	Florida Largemouth Bass	Fingerlings	21,412
Lake Fausse Point	Florida Largemouth Bass	Fingerlings	80,304
Lake Killarny	Florida Largemouth Bass	Fingerlings	10,368
Lake St. John	Florida Largemouth Bass	Fingerlings	43,784
Martin Lake	Florida Largemouth Bass	Phase 2 Fingerlings	3,700
Mermentau River	Florida Largemouth Bass	Fry	266,400
Millers Lake	Triploid Grass Carp	Adults	12,000
Nantachie Lake	Florida Largemouth Bass	Fingerlings	14,504
	Florida Largemouth Bass	Phase 2 Fingerlings	8,936
	Florida Largemouth Bass	1-year-old	810
Poverty Point Reservoir	Florida Largemouth Bass	Fingerlings	21,072
Red River Pool 1	Florida Largemouth Bass	Phase 2 Fingerlings	8,000
Red River Pool 2	Florida Largemouth Bass	Phase 2 Fingerlings	8,000
Red River Pool 3	Florida Largemouth Bass	Fingerlings	8,000
Red River Pool 4	Florida Largemouth Bass	Fingerlings	8,000
Red River Pool 5	Florida Largemouth Bass	Phase 2 Fingerlings	8,000
Rockefeller Refuge	Alligator Gar	Fingerlings	225
	Alligator Gar	1-year-old	43
	Florida Largemouth Bass	Fingerlings	66,773
Saline Lake	Triploid Grass Carp	Adults	2,080
Spring Bayou	Florida Largemouth Bass	Fry	575,400
	Florida Largemouth Bass	Fingerlings	43,132
	Triploid Grass Carp	Adults	20,000
Toledo Bend Reservoir	Florida Largemouth Bass	Fingerlings	821,948
Turkey Creek Lake	Florida Largemouth Bass	Fingerlings	62,072
Vernon Lake	Florida Largemouth Bass	Fingerlings	42,032
Waddill Pond	Channel Catfish	Adults	137
Woodworth Outdoor Education Center	Channel Catfish	Fingerlings	68
Zemurray Park Pond	Bluegill	Adults	1,150
<b>TOTAL</b>			<b>5,670,020</b>

For Non- Florida Largemouth Bass: Fry < 0.25"; Fingerlings = 1- <12"; 1-Yr Old - 1 year old in age (length varies); Adult - sexually mature (length varies)

Florida Largemouth Bass: Fry < 0.25"; Fingerlings = 2 to 3"; Phase 2 Fingerlings = 3"+; 1-Yr Old - 1 year old in age (length varies); Adult - sexually mature (length varies)

## FISHERIES OUTREACH AND EDUCATION PROJECTS

### OUTREACH

The Aquatic Outreach and Education Programs are designed to inform the public about the programs and projects currently underway in the Office of Fisheries. Through outreach efforts including boat shows, school programs, community events and outdoor-related festivals, staff reached over 100,000 Louisiana citizens in FY 2013-2014.

The Fisheries Extension staff conducted fishing workshops and youth events, several of which included scout troops. These events focused on Sport Fish Restoration projects and providing a hands-on fishing experience.

LDWF staff also worked effortlessly to gain the interest of women who are new to the outdoors and desire to learn about fishing. A partnership between LDWF and Cabela's afforded many women an opportunity to attend a one-day Women's Fish Tagging Workshop to provide women with the tools to be confident enough to fish on their own. Upon completion of the one-day workshop, participants were entered into a lottery drawing for an opportunity to attend a Women's Fishing Weekend in Grand Isle.

In addition, LDWF hosted four Family Fish Fests throughout Louisiana. Family Fish Fests provide youth and families with exciting activities such as fishing, fish tagging, fish aging, fish identification, casting instruction, seining, cast netting, knot tying and more. All participants in attendance receive applicable literature and products ranging from regulations to rods and reels.

Our fisheries biologists also work collaboratively with communications personnel to create promotional and educational material detailing research and fieldwork on a variety of topics relating to the conservation and management of fish, hatchery production, non-indigenous aquatic nuisance species, and other aquatic resources.

This fiscal year, staff utilized several educational resources including a casting inflatable, mobile touch tank, mobile aquariums and LDWF's mascot, Robbie the Redfish.

### LOUISIANA SALTWATER SERIES

The Louisiana Saltwater Series (LASS) was created by the Louisiana Wildlife and Fisheries Foundation to promote the conservation of Louisiana's saltwater sport fish resources. LASS, the Office of Fisheries and the Louisiana Wildlife and Fisheries Foundation strive to enhance the resource while providing a competitive opportunity for avid fishermen and newcomers alike. The events are also used to encourage participation in the Louisiana Cooperative Marine Sport Fish Tagging Program. Data collected from the tournament entries serves as a valuable tool for Fisheries biologists to better understand the life history and habitat of these popular sport fish. LDWF biologists staff each tournament.

The 2014 LASS was a great success, with 1,051 redfish tagged and released from Lake Charles to Slidell (*Table 10*).

Staff from the Audubon Aquarium of the Americas attend many of our tournaments to provide supplemental fish tagging, presenting the unique opportunity to release large numbers of fish at one time and location. Aquarium staff also provide technical support and information to the anglers regarding best fish handling practices.

### CRAB TRAP REMOVAL

The removal of derelict crab traps from fishing grounds reduces navigational risks to boaters and threats to public safety while reducing mortality of incidental species captured in traps, potentially increasing the number of crabs available for harvest by preventing crab mortalities in abandoned, out-of-use traps.

In January 2014, the LWFC ratified a final rule authorizing a temporary crab trap closure and derelict crab trap cleanups.

A derelict crab trap clean-up was conducted over a 10-day period in a portion of western Terrebonne Parish from February 15-24, 2014. Volunteers, LDWF staff, members of the commercial and charterboat fishing industry, Louisiana SeaGrant and Nicholls and LSU faculty and students assisted in retrieving more than 1,000 abandoned crab traps.

Together, over 20 boats and 100 man days of effort were logged during the cleanup effort, resulting in the removal of nearly 1,100 abandoned and derelict crab traps.



**LEFT:** The new Robbie the Redfish mascot has made appearances at several outreach events this year, including Family Fish Fests, the New Orleans City Park Fishing Clinic, Big Bass Rodeo, and National Hunting and Fishing Day festivities. **CENTER:** The mobile touch tank is eye-catching and practical, providing a centerpiece to draw in the public as well as serving as a teaching tool for fish identification of native fish and invasive species in Louisiana. **RIGHT:** At the Women's Fish Tagging Workshop, put on by LDWF and Cabela's, women participated in hands-on activities pertaining to fishing, including learning how to tag a fish and the importance of the Cooperative Marine Sportfish Tagging Program.

**TABLE 10.** Red Drum (*Sciaenops ocellatus*) tagged and recaptured during FY 2012-2013 LA Saltwater Series Tournaments.

DATE	LOCATION	TEAMS REGISTERED	REDFISH TAGGED	REDFISH RECAPTURED
Aug. 10, 2013	Delta Marine (Empire)	48	209	11
Oct. 18-19, 2013	Venice Marina (Venice)	45	140	11
March 8, 2014	Boudreaux's (Cocodrie)	49	49	16
April 4, 2014	Calcasieu Point Landing (Lake Charles)	34	70	12
May 3, 2014	The Dock (Slidell)	48	165	29
June 28, 2014	Sweetwater Marina (Delacroix)	58	120	7



LDWF vessel full of abandoned crab traps.

**TABLE 11.** Number of crab trap closures and numbers of trap removed annually.

YEAR	AREA	DATES	TRAPS
2004	Upper Terrebonne Bay Estuary	Feb. 28 - March 14	6,676
	West Vermilion Bay	May 14-22	218
	Total		6,894
2005	Sabine Lake	Feb. 18-27	4
	Breton Sound Estuary	Feb. 26 - March 13	1,941
	Middle Terrebonne Bay Estuary	March 5-20	2,437
	East Vermilion Bay/ West Cote Blanche Bay	May 16-22	241
	Total		4,623
2006	Southwest Terrebonne Bay Estuary	March 4-13	2,935
2007	East Lake Pontchartrain	Feb. 24 - March 5	774
	Upper Barataria Bay Estuary	March 3-12	724
	Total		1,498
2008	Upper Terrebonne Bay Estuary	Feb. 23 - March 2	1,234
2009	Terrebonne Bay Estuary	N/A	788
2010	Upper Barataria Bay Estuary	Feb. 27 - March 7	477
2011	Western Plaquemines Parish	Feb. 26 - March 5	1,100
2012	St. Bernard/ Plaquemines Parish	Feb. 25 - March 5	1,961
	Terrebonne Parish	March 17-26	747
	Total		2,708
2013	Plaquemines Parish	Feb. 16-25	492
	St. Bernard Parish	March 9-18	411
	Total		903
2014	Western Terrebonne Parish	Feb. 15-24	1,063
<b>2004-2014 Overall</b>			<b>24,223</b>



**FIGURE 26.** Map of derelict crab trap closures and cleanups since 2004.

## COMMERCIAL SEAFOOD PROGRAMS

One of the main objectives of the Office of Fisheries is to maintain the viability of Louisiana's fishing industries through programs that protect native resources and provide technical assistance to the industry, including recovery from natural and manmade disasters.

In addition, the Office of Fisheries is pursuing several initiatives for Louisiana's commercial fishing industry including a seafood certification program, a seafood technology and equipment program, and a professionalization program that aims to create a more informed and efficient industry. Programs to collect and recycle used oyster shell and concrete to create artificial oyster and fishing reefs are also being developed in coordination with the Coalition to Restore Coastal Louisiana.



### SEAFOOD CERTIFICATION

In 2009, LDWF reprogrammed grant money from a NOAA grant to fund certification programs for Louisiana's seafood industry. The overarching plan for a broad certification program included five key components: seafood origin/quality certification; seafood sustainability certification; industry professionalization; electronic traceability; and seafood marketing.

The goal of the Louisiana Wild Seafood Certification Program is to increase demand for wild-caught Louisiana seafood. By creating an origin based brand, LDWF, in cooperation with DHH and the LDAF, has the ability to communicate to the consumers that the seafood they are consuming is caught by a licensed Louisiana fisherman, landed in Louisiana, and processed by a Louisiana processor through the entire supply chain. The ability to create a national brand that can be sought out by chefs, consumers, distributors and retail chains will increase the demand and thereby prices for the Louisiana seafood fishery.

Several changes and developments to the program were implemented during FY 2013-2014 including the transition to an online application process as well as supply chain verification through invoice validation. Also introduced was a product registration requirement - retail packages possessing the program's logo have to be registered with LDWF. Before applying, applicants must also participate in a 45-minute training video available through the program's website. Once permitted, participants are given access to a participant portal where they may access program logo files and verify participation of their supply chain in the Louisiana Wild Seafood Certification Program. Additionally, program participants are eligible for grant funds through the Seafood Technology and Equipment Program to assist them in increasing product quality and complying with program regulations.

As of FY 2013-2014 there were a total of 115 permitted seafood businesses participating in the program with 40 applications pending.

The program's first two years focused on building program interest among seafood dealers and processors within Louisiana. The next phase of implementation will focus on the retailer and consumer aspects of the program with an emphasis on creating demand for products bearing the Louisiana Wild Seafood Certification Program logo.

The goal of a seafood sustainability program is to manage Louisiana fisheries in a way that provides for today's needs without damaging the ability of the species to reproduce. Many retailers worldwide have been under increasing pressure to "prove" the seafood they are sourcing is from sustainable fisheries. Similar requirements are beginning to be made by U.S. retailers, including Wal-Mart, Target and Krogers, to name a few.

LDWF is seeking mainstream certifications for major fisheries, such as those offered by the Marine Stewardship Council. In March 2012, Louisiana's blue crab fishery became the first blue crab fishery in the world to receive MSC sustainability certification. The Office of Fisheries will continue the upkeep required for certification, including completion of a coastwide crab trap bycatch study that began in January 2013, sponsoring a diamondback terrapin population assessment, and meeting the annual conditions set by the Marine Stewardship

Council standards. During FY 2013-2014, LDWF began development of a blue crab fishery management plan and preparing for its second Marine Stewardship Council surveillance audit schedule to occur in August 2014. The audit is scheduled to be conducted by Intertek Fisheries Certification.

In addition to Marine Stewardship Council certification, the Office of Fisheries is also investigating development of its own sustainability certification. The Office of Fisheries has partnered with the Audubon Commission to develop a sustainability certification program specifically for the Gulf states, similar to those developed for Alaska and Iceland.

During FY 2013-2014 we continued our working relationship with Audubon Nature Institute through a three-year contract to begin leading our Gulf-wide third-party sustainable seafood certification program. Pre-assessments for Louisiana blue crab and oyster and Gulf red snapper according to the Food and Agriculture Organization of the United Nations (FAO)-based RFM certification program began during this fiscal year.

LDWF is directly engaging FAO and other international partners in developing best management practices for small-scale, multispecies coastal fisheries. Partners from FAO, Australia, Brazil and Mexico have joined a Gulf of Mexico Working Group. The hope and expectation is that these best practices will provide the basis for a new FAO Technical Guidelines for Gulf of Mexico fisheries and similar fisheries around the world. The first working group meeting was scheduled to take place in July 2014.

We are continually vetting our program with seafood buyers to ensure our program will have market acceptance once developed. LDWF has engaged national retail organizations in intense dialogue concerning their sustainable seafood needs and desires.

We also continued the process of developing robust fisheries management plans for our major fisheries and began working on a FINFO site in cooperation with GSMFC. We expect to have the blue crab management plan completed early in FY 2014-2015, and will begin developing a shrimp management plan.



FIGURE 27. Screenshot of a working draft of the FINFO website.

## FINFO

In cooperation with GSMFC and other Gulf states, FINFO is a web-based portal for information about the science and management of Gulf fisheries; the objective is to provide seafood buyers with easy to understand, science-based information about the responsible management of Gulf fisheries and sustainability of Gulf seafood.

## COMMERCIAL SEAFOOD INDUSTRY PROFESSIONALIZATION

The primary goal of the Industry Professionalization Program is to create a better-informed and more efficient commercial fishing industry. The program provides ongoing education opportunities for fishermen and industry participants to receive the most relevant and up-to-date information pertaining their industry.

The Office of Fisheries continues to work with Louisiana SeaGrant at LSU to develop a curriculum for a professionalization program that covers a variety of topics including fishing/boating regulations and requirements, food quality and safety practices, advanced gear technology, business planning and marketing, seafood industry economics, and vessel safety.

In January 2014, LDWF and SeaGrant entered into a formal contract to develop educational materials including training videos, multiple fact sheets, in-person training sessions (referred to as dock days), a refrigeration demonstration project, and an annual fisheries summit to be held beginning in April 2015.

The initial videos to be produced include:

- How to be a commercial fisherman
- How to be a seafood dealer and processor
- Seafood business and finance
- How to be crab fisherman

An LDWF developed training video titled “Best Practices for Producing High Quality Seafood in Louisiana” premiered at LSU SeaGrant’s Seafood Academy in April 2014. This video covers proper refrigeration, sanitation and chemical use during the handling and processing of various types of seafood.

## SEAFOOD TECHNOLOGY AND EQUIPMENT PROGRAM

Over the past few years the Office of Fisheries has been developing various forms of gear modernization programs that have culminated into a broad overarching program that assists all aspects of the commercial fishing industry, from the acquisition of new, more advanced

equipment for the vessel, all the way to the processing plant.

Phase 1 of the Seafood Technology and Equipment Program developed was the Oyster Refrigeration Program, launched in October 2012. Phases 2 and 3 of this program were launched during FY 2013-2014. Phase 2, the Health Compliance Program, assists docks and processors participating in the Louisiana Wild Seafood Certification Program with meeting their health permit requirements, a requirement to participate in the certification program. Qualified participants are eligible to receive grant funding for 50 percent (maximum of \$20,000) of the cost upgrades and/or repairs required to obtain or maintain their DHH permit.

Phase 3 was a refrigeration program for shrimp vessels, very similar to the oyster vessel program released in Phase 1. The shrimp program reimbursed grant recipients for 50 percent of refrigeration and associated electrical equipment. The maximum reimbursable amount for this program was increased to \$30,000.

### OYSTER REFRIGERATION PROGRAM NUMBERS FY 2012-2013

Total Applicants Received	428
Applications Approved for Payment	67
Applications Awaiting Inspection	17
Vessels Approved for Purchase	28
Total Payments Made	\$862,495.30

## TASK FORCES

The Office of Fisheries has three active task forces: Shrimp, Oyster and Crab. The task forces memberships are currently housed under LDWF, and cooperation between the task forces and the Office of Fisheries is essential as we move forward with the continued management of Louisiana’s natural resources.

### SHRIMP TASK FORCE

During FY 2013-2014 the Shrimp Task Force met on Aug. 6, 2013, Jan. 14, 2014, and April 3, 2014. The Shrimp Task Force Management Subcommittee met on Aug. 27, 2013 and Feb. 13, 2014. Agenda items discussed included:

- Legislation for Serviceable Crab Trap Law
- Agency protocol for setting of seasons
- Recommendations for Fall 2013 shrimp season
- Outreach on skimmer size law
- Shrimp Task Force resolution opposing additional sediment versions or modifications to existing diversion projects

- Shrimp Refrigeration Grant program for processors and docks in Louisiana Certified Seafood Program
- Sustainability/TED legislation; repealing 56:57.2
- Gulf wide seafood certification program
- Gullfishinfo.org
- Outreach events in Washington, D.C.
- Shrimp Strategic Plan
- Monterey Bay Aquarium's rating of Louisiana shrimp
- Funding for Seafood Promotion and Marketing Board salaries

### CRAB TASK FORCE

The Crab Task Force continued to work with the Office of Fisheries in FY 2013-2014 toward improving the Louisiana crab fishery. The task force met on July 11, 2013, March 25, 2014, and June 5, 2014. The Crab Task Force legislative committee met on March 31, 2014. Agenda items discussed included:

- Placement of artificial reef sites
- Increasing escape rings in traps
- Professionalism program for crab fishermen
- Serviceable crab trap law
- Derelict crab trap program funding
- Funding for Seafood Promotion and Marketing Board salaries
- Immature female crab harvest
- MSC resolution

### OYSTER TASK FORCE

In FY 2013-2014 the Oyster Task Force met on July 30, 2013, Sept. 17, 2013, Nov. 12, 2013, Jan. 7, 2013, Feb. 10, 2013, April 8, 2014, and June 3, 2014. The Legislative Committee met on Feb. 4, 2014. Agenda items discussed included:

- Weights and measures of shell stock containers in commerce
- Diversion environmental impact study
- Sustainability program
- Oyster stock assessment/season recommendations
- Tracking oyster tag colors on trip tickets
- Ipad application for oyster leases
- Washington, D.C. marketing events
- VMS
- Professionalism program
- Artificial reef placement
- Poaching and theft from oyster leases
- FDA harvest rules

The Oyster Task Force also continued their marketing efforts including the Task Force's annual trip to Washington, D.C., where they sponsor the "Let the World be Your Oyster" reception and "Louisiana Alive," which draws members of the congressional delegation, staff and media, and provides an excellent platform to educate others on the importance of the Louisiana oyster industry. The Oyster Task Force also sponsored Oysters Jubilee in New Orleans, and members attended the Interstate Shellfish Sanitation Conference and the National Fisheries Institute Conference.



## SOCIOECONOMIC RESEARCH AND DEVELOPMENT

The Socioeconomic Research and Development (SRD) Section was established in 1992 and currently resides in LDWF Office of Fisheries. The duties and responsibilities of the section are:

- To recommend, conduct and coordinate economic research studies pertaining to wildlife and fisheries resources of Louisiana and the Gulf region.
- To present research findings at appropriate professional and scientific meetings, and publish results in departmental publications and peer-reviewed scientific journals.
- To provide information and support to other sections and divisions within LDWF, as well as agencies outside LDWF, assisting them in accomplishing research

needs, management tasks and short- and long-term objectives.

- To represent LDWF and Louisiana on various study groups, task forces and committees established to study, manage and improve wildlife and fisheries resources at the local, state, regional and national levels.
- To administer and implement special programs.
- To perform other activities as directed by LDWF's appointing authorities.

With assistance from the various program managers within the offices of LDWF, the SRD Section prepares Fiscal and Economic Impact Statements that accompany the Notices of Intent for rules and regulations considered for

adoption by the LWFC. During FY 2013-2014, Fiscal and Economic Impact Statements were developed and published along with the Notices of Intent in the Louisiana Register.

The following programs, projects and surveys were conducted in FY 2013-2014.

### SURVEYS

#### GULF SEAFOOD PROCESSOR AND DEALER ECONOMIC SURVEYS

In collaboration with the GSMFC, NOAA and state agencies in Alabama, Florida, Mississippi and Texas, the SRD staff designed a seafood processor survey and a dealer survey in the

spring of 2011 to collect economic information from seafood processors and dealers operating in the Gulf of Mexico region. The purpose of these surveys is to provide policy-makers, trade associations and others involved in this industry with a better understanding of how this sector works and how important the seafood purchasing, processing, wholesaling and distribution industry is to local and regional economies throughout the Gulf region. An in-person survey of seafood processors was initiated in the summer of 2011 and completed in 2012. A mail seafood dealer survey began January 2012 and was completed in October. As of June 2013, 161 completed surveys were received. A follow-up survey of dealers who did not respond to the seafood dealers survey was mailed to 239 seafood dealers in May 2013. This effort was continued in the summer of 2013. Analysis of the seafood processor survey data and seafood dealers survey will be completed by fall of 2013. Results will be submitted to the GSMFC. Results of the survey were published by the GSMFC in June 2014.

### **ECONOMIC SURVEY OF THE GULF OF MEXICO INSHORE SHRIMP FISHERY**

Gulf of Mexico shrimp are harvested commercially from “inshore” state waters (waters within the jurisdictional boundaries of the individual states) and from “offshore” federal waters. This study examines the economic performance of active commercial shrimp harvesters who primarily operated in inshore waters of western Florida, Alabama, Mississippi, Louisiana and Texas throughout 2012. The data collection was designed by GSMFC and LDWF to track the economic status and performance of vessels holding a state shrimp license for harvesting shrimp in the Gulf. Throughout the spring of 2012, 1,557 shrimpers were randomly selected, stratified by state from a population of individuals holding a state shrimp harvesting license for the Gulf. After two mailings and a reminder postcard, 410 surveys were returned as of June 30, 2013. Results of the survey were published by the GSMFC in June 2014.

### **SURVEY OF RECREATIONAL SHRIMPERS IN THE NORTHERN GULF OF MEXICO**

The SRD staff working with the GSMFC and other relevant state agencies designed a survey of recreational fishermen who held licenses granting the privilege to harvest crabs in Alabama, Mississippi and Louisiana. In January 2014, a survey was mailed to 3,122 individu-

als who held recreational crab licenses: 441 in Alabama, 2,460 in Louisiana, and 221 in Mississippi. The survey yielded a response rate of 48.9 percent. Results of the survey were published by the GSMFC in June 2014.

### **SURVEY OF NATIONAL HUNTING AND FISHING DAY PARTICIPANTS**

On Sept. 28, 2013, LDWF held a public event in observation of National Hunting and Fishing Day at Waddill Wildlife Refuge in Baton Rouge. Personnel from the SRD Section collected exit surveys of 348 participants in this event. Results of this survey were completed and sent to the LDWF Public Information Section in October 2013.

### **SURVEY OF LOUISIANA SALTWATER SERIES FISHING TOURNAMENT PARTICIPANTS**

LDWF organized a series of saltwater fishing tournaments in 2013 and 2014. The SRD Section assisted personnel with the design of an on-line survey of participants in the tournaments held on April 5, May 3, and June 28, 2014.

### **SURVEY OF LOUISIANA RECREATIONAL OFFSHORE LANDINGS PERMIT HOLDERS**

The SRD staff conducted an on-line survey of all 13,552 individuals who held a Recreational Offshore Landings Permit (ROLP) and provided a usable e-mail address on the topic of regional management of the red snapper fishery in the Gulf of Mexico. The survey registered 4,832 responses for a response rate of 35.7 percent.

## **PUBLICATIONS, REPORTS AND PRESENTATIONS**

Isaacs, Jack C. “Economics of the Nature Based Tourism Sector.” Coastal Eco/Agri-Tourism Workshop, Lake Charles, LA. February 11, 2014.

Isaacs, Jack C. “Gulf Seafood Industry Study.” Louisiana Fisheries Summit. Houma, LA. March 12, 2014.

Miller, Alexander, and Jack Isaacs. “2012 Economic Survey of Gulf of Mexico Inshore Shrimpers.” Louisiana Chapter of the American Fisheries Society Meeting, Nicholls State University, Thibodaux, LA, May 29-30, 2014.

Tabarestani, Maryam, Jack Isaacs, and Alex Miller. “Gulf of Mexico inshore recreational shrimping survey, 2014.” Presentation at Louisiana Chapter of the American Fisheries Society Meeting, Nicholls State University, Thibodaux, LA, May 29-30, 2014.

Miller, Alexander, and Jack Isaacs. An Economic Survey of the U.S. Gulf of Mexico Inshore Shrimp Fishery: Descriptive Results for 2012. Gulf States Marine Fisheries Commission. Ocean Springs, MS. June 2014.

Miller, Alexander, Ebenezer Ogunyinka, and Jack Isaacs. An Economic Baseline and Characterization of U.S. Gulf of Mexico Dockside Seafood Dealers. Gulf States Marine Fisheries Commission. Ocean Springs, MS. June 2014.

Miller, Alexander, Maryam Tabarestani, and Jack Isaacs. A Survey of Recreational Shrimpers in the Northern U.S. Gulf of Mexico. Gulf States Marine Fisheries Commission. Ocean Springs, MS. June 2014.

Miller, Alexander, and Jack Isaacs. An Economic Baseline and Characterization of U.S. Gulf of Mexico Seafood Processors. Gulf States Marine Fisheries Commission. Ocean Springs, Mississippi. June 2014.

Bharadwaj, Latika, David Lavergne, and Ebenezer Ogunyinka. “Commercial Seafood Dealers in Louisiana: 2000 – 2009.” Fall, 2013.

Bharadwaj, Latika, David Lavergne, and Ebenezer Ogunyinka. “Louisiana Commercial Crab Dealers: Analyzing Point of First Sales Data for the Louisiana Commercial Crab Sector: 2000 – 2009.” Fall, 2013.

Bharadwaj, Latika, David Lavergne, and Ebenezer Ogunyinka. “Louisiana Commercial Freshwater Finfish Dealers: Analyzing Point of First Sales Data for the Louisiana Commercial Finfish Sector: 2000 – 2009.” Fall, 2013.

Bharadwaj, Latika, David Lavergne, and Ebenezer Ogunyinka. “Louisiana Commercial Oyster Dealers: Analyzing Point of First Sales Data for the Louisiana Commercial Oyster Sector: 2000 – 2009.” Fall, 2013.

Bharadwaj, Latika, David Lavergne, and Ebenezer Ogunyinka. “Louisiana Commercial Saltwater Finfish Dealers: Analyzing Point of First Sales Data for the Louisiana Commercial Finfish Sector: 2000 – 2009.” Fall, 2013.

Bharadwaj, Latika, David Laverigne, and Ebenezer Ogunyinka. "Louisiana Commercial Shrimp Dealers: Analyzing Point of First Sales Data for the Louisiana Commercial Shrimp Sector: 2000 – 2009." Fall, 2013.

## REPRESENTATION ON TASK FORCES, STUDY GROUPS AND COMMITTEES

During FY 2013-2014, SRD staff members represented LDWF on the following task forces, study groups and committees:

- GSMFC Disaster Recovery Program Committee
- GSMFC FIN Social/Economic Work Group
- Louisiana Blue Crab Task Force

- Louisiana Shrimp Task Force
- Louisiana Recreational Saltwater Fishing Task Force
- Louisiana Wild Crawfish Task Force
- *Deepwater Horizon* Oil Spill Human Use Trustees Technical Work Group
- Socioeconomic Scientific and Statistical Committee (Socioeconomic SSC) of the Gulf of Mexico Fishery Management Council
- Technical Advisory Committee for the US-FWS's National Survey of Fishing, Hunting and Wildlife-Associated Recreation.

## GULF OF MEXICO FISHERIES MANAGEMENT COUNCIL

The Gulf of Mexico Fishery Management Council is responsible for the management of commercial, recreational and for hire fishing activities in the Exclusive Economic Zone (EEZ), Gulf waters from the state territorial sea out to 200 miles offshore. The council prepares Fishery Management Plans and amendments to these plans. Methods of regulation include quotas, size limits, bag limits, seasons, trip limits and other tools that fisheries managers employ to control both recreational and commercial harvests.

The head of each state's fisheries division has a seat on the council along with representatives from the fishing industry. Louisiana's seat is assigned to Assistant Secretary Randy Pausina. His designee for council issues is Myron Fischer, who is delegated to act in his behalf. In addition to the council seat, Office of Fisheries employees participate in advisory roles on various panels and committees: Outreach, Data Collection; Habitat Protection; and Scientific and Statistical Committees for red drum, mackerel, reef fish, shrimp, and socioeconomic. In addition, LDWF biologists are part of the

SEDAR pool, a panel assigned to producing the council's stock assessments.

A list of the council's Fisheries Management Plans include: Reef Fish, Coastal Migratory Pelagic, Red Drum, Shrimp, Lobster, Stone Crab, Coral, Aquaculture, and Essential Fish Habitat. The council meets five times a year to work on amendments regarding these Fisheries Management Plans.

Louisiana is considered a leader in the council's fishery management process with creative and out-of-the-box methodologies.

## GULF STATES MARINE FISHERIES COMMISSION

The Gulf States Marine Fisheries Commission (GSMFC), a compact among the five Gulf states, is charged with promoting better utilization of the marine fisheries including finfish, shellfish and anadromous species through the development of programs for the promotion and protection of these fisheries while preventing any waste of these resources.

Fisheries biologists and economists participate in a number of GSMFC programs and initiatives including Aquatic Invasive Species, Interjurisdictional Fisheries, Fisheries Information Network, and economics programs, as well as providing their expertise in the development of management recommendations. Additionally, Fisheries biologists serve on a number of GSMFC Technical Coordinating Sub-Committees including Data, SEAMAP, Habitat, Artificial Reef, Outreach, and species-specific committees and working groups. Fisheries' biologists

were present at meetings and discussions pertaining to the various SEAMAP programs. Louisiana moved for the creation of a SEAMAP Vertical Line workgroup after much discussion about current protocol. The motion passed and biologists are currently reviewing and making recommendations to improve the Vertical Line protocol. In addition, LDWF biologists participated in the creation of fishery management plans for Gulf menhaden and blue crab.





