



LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES 2014-2015 ANNUAL REPORT



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2014-2015 ANNUAL REPORT

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

DIVISION ADMINISTRATORS

Scott Longman, Fisheries

Kenneth Ribbeck, Wildlife

Robert Love, Coastal & Nongame Resources

Col. Joey Broussard, Enforcement

Commission for fiscal year 2015-2016

WILDLIFE AND FISHERIES COMMISSION

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Bart R. Yakupzack, Vice-Chairman

Edwin "Pat" Manuel

Billy Broussard

Ronald "Ronny" Graham

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Julie Hebert

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LOUISIANA DEPARTMENT OF WILDLIFE & 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 & 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 the Wildlife Division, Coastal & Non-game Resources Division, Habitat Section and Minerals Management Section.

➔ **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; Natural Heritage Program; Oil Spill Response; Natural Resource Damage Assessment; Alligator Program; Alligator Advisory Council; and Coastal Operations Program.

➔ **MINERALS MANAGEMENT & HABITAT SECTIONS**

Minerals Management is responsible for ensuring that mineral activities on all LDWF properties are carried out in a manner that is compatible with the environment and wildlife management area and refuge goals and objectives. By administering regulatory programs or by coordinating with state and federal regulators, Habitat Section seeks to ensure that any adverse impacts to fish and wildlife resources, in particular wetlands, streams and riparian areas, are avoided, minimized and/or mitigated appropriately.

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



When I was asked to serve as Secretary of the Louisiana Department of Wildlife and Fisheries in 2007, I considered it a great honor. In fact, it was my dream job.

Growing up in north Louisiana, fishing and hunting, I enjoyed all Louisiana, the Sportsman's Paradise, had to offer. That love affair grew as an adult.

Now with my time at an end as Secretary, I can truly say it has been an unforgettable, rewarding experience. And that's because of the people of LDWF, which, I believe, is the finest agency in the state of Louisiana.

Last fiscal year (2014-2015) was a good way for my tenure to come to an end. It was a year of many accomplishments and solid progress on projects vital to the mission served by LDWF.

The LDWF Enforcement Division started construction on a new training academy and emergency response facility designed to further develop existing training infrastructure. It will not only serve the training needs of local, parish and marine enforcement agencies but also will provide a facility for boating safety course instruction.

The Enforcement Academy graduated its 28th class of cadets in February with 15 graduates. In May, the 29th class began training with seven cadets graduating in November.

More than 800,000 customers were serviced by the Office of Management and Finance as in excess of 2.6 million recreation hunting, fishing, trapping and non-consumptive use licenses were issued. OMF also handled 206,000 boat registration/title transactions while maintaining more than one million records on watercraft.

Thanks to the outstanding work by our team at LDWF, along with U.S. Geological Survey, U.S. Fish and Wildlife Service and the University of Texas, the USFWS proposed in May removal of the Louisiana black bear from the Endangered Species Act because of its recovery. A final rule is expected sometime in 2016.

The Archery in Louisiana Schools program, part of the National Archery in the Schools Program, continued to grow. A total of 112 schools and an estimated 22,500 students participated in the program. Teams and individuals from five Louisiana schools competed in the NASP World Tournament in July in Nashville. Benton Elementary and Middle schools brought home world champion trophies.

The Whooping Crane Reintroduction Program in Louisiana continues to make strides. Survival of the cranes within the 2011-2014 cohorts is high (70-75 percent survival). And increased nesting activity was noted in the spring of 2015 with four pairs nesting.

The development of the LA Creel program, which provides us with near real-time recreational harvest monitoring, the extension of state water boundaries, regional management actions at the Gulf Council and other outreach to the private recreational and charter fishing sectors are tools the agency has used to prove that the state is better suited to manage recreational fisheries. At the end of 2014, it was estimated that almost 2.2 million recreational angler trips were taken thanks to LA Creel data.

LDWF continues to work to develop new and updated fishery management plans to strategically implement science-based management recommendations.

Part of that work is the LDWF leading collaborative research in lakes Pontchartrain and Borgne to study movements and habitat preferences of several fish species using acoustic telemetry technology.

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

It has been my pleasure to work with the talented workforce at LDWF. I will certainly miss it and wish everyone the very best in the years to come. Keep up the great work.

Robert 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.

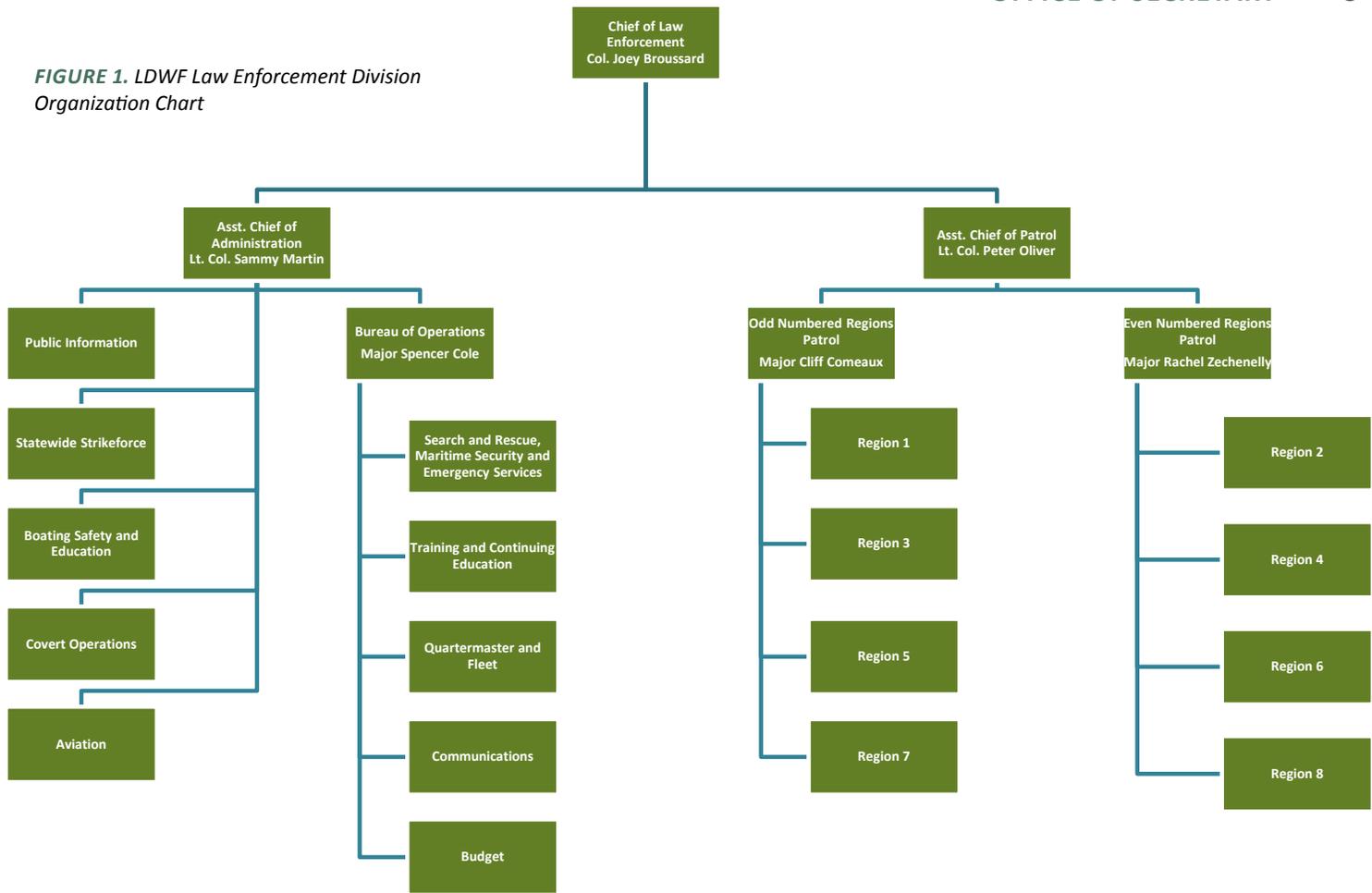
The Law Enforcement Division is responsible for enforcing laws as provided for in the:

- 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 297,675 patrol hours in FY 2014-2015: 214,881 on land and 82,794 on water. Agents made 721,540 contacts with the public, the majority of whom were in compliance with state and federal wildlife and fisheries regulations. LDWF-LED agents issued 11,488 criminal citations and 5,977 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

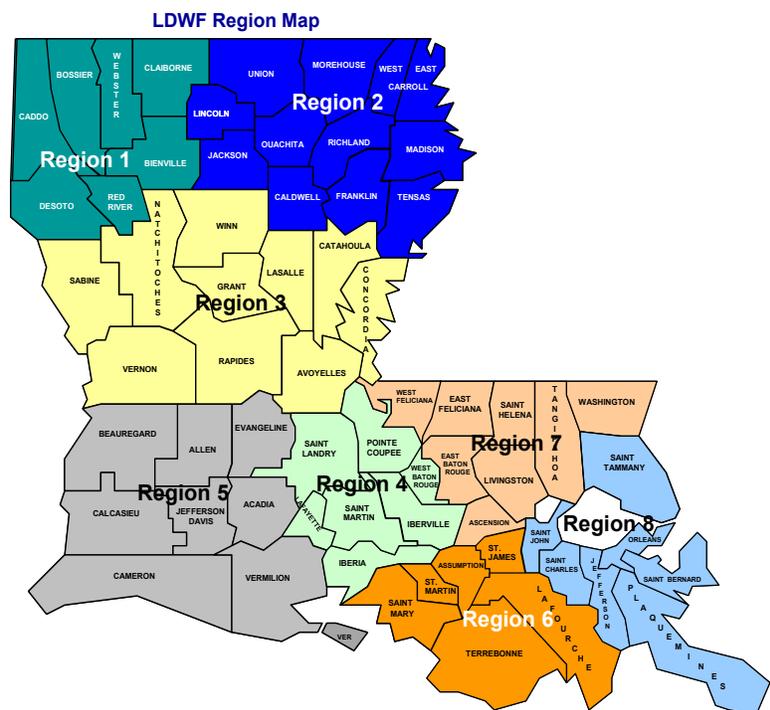


ORGANIZATIONAL STRUCTURE & PERSONNEL

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 are 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 who serves as policy and procedure administrator; one over the odd-numbered regions who is also the safety coordinator; and one over the emergency services, training, support and budget sections.

The LDWF Enforcement Division headquarters staff works out of Baton Rouge headed by Col. Joey Broussard who was promoted to the head position in July 2014. Col. Broussard, a native of Pointe Coupee Parish, graduated from the LDWF cadet academy in 1991, receiving his POST certification from LSU, and has been an agent for over 24 years. Col. Broussard replaces the recently retired Jeff Mayne, who served the department for 23 years, completing his last year of service as colonel.

FIGURE 2. Enforcement Division Regions





Col. Joey Broussard

The Enforcement Division is divided into eight enforcement regions (Figure 2) and one statewide strikeforce region. Each numbered enforcement region is composed of two or three multi-parish districts. 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 adminis-

trative staff, six communications officers and two pilots. The actual number of filled positions (as of January 2016) is 235.

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 areas (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 235,545 public contacts during the course of 71,220 patrol hours dedicated to boating enforcement, education and accident investigation in FY 2014-2015. Of those hours, 54,278 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 2014-2015, LDWF-LED agents issued 61 citations for careless and reckless operation of a vessel and 63 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 (NASBLA). 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 2014-2015, 8,821 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 83,827 students.

Lt. Col. Sammy Martin took over as the State Boating Law Administrator for Louisiana. Lt. Col. Martin has over 33 years of experience in the Enforcement Division. This position is the highest level of Louisiana's Boating Program and plays a role in coordinating with the state's

legislature and Coast Guard on improving boating laws.

Sgt. Clay Marques is the new Boating Education Coordinator. This position reports directly to the Boating Law Administrator and is responsible for the overall supervision, planning, coordination, monitoring and continued development of the program. The coordinator is also responsible for administration, record-keeping and other duties necessary to keep the program successful.

LDWF-LED remained committed in marketing and promotion of boating education courses by creating special events and activities for students attending courses.

LDWF participated in "Safe Boating Week" in Louisiana from May 16-22. LDWF Enforcement Division agents were out in full force as always during the week to perform boating safety checks and driving or operating a vessel while intoxicated (DWI) patrols.

LDWF sponsored two summer day camps for children 12 to 16 years old at the Waddill Outdoor Education Center in Baton Rouge. The camps were held from June 22-26 and again from July 20-24. Each camp was completely free of charge and allowed participants to receive their official boater and hunter education certifications. A total of 23 children received their boating and hunting education certificates during the camps.

LDWF certified 211 boaters statewide after their third "Boating Education Lagniappe Day" on May 2. Boating Education Lagniappe Day ran from 9 a.m. to 5 p.m. at eight locations





across the state and consisted of the NASBLA boating education course, food and drinks, giveaways and door prizes, all free of charge to the public.

LDWF once again participated in NASBLA's Operation Dry Water from June 26-28, 2015. During Operation Dry Water, agents stepped up patrols looking for operators of vessels who were impaired or under the influence of alcohol or drugs. During that weekend, agents made five boating under the influence cases and issued 68 safe boating citations.

Louisiana participated in the NASBLA "Spring Aboard" national marketing campaign to promote opportunities for boaters to enroll in a boating education course.

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 completed its five-year update of the Search and Rescue Emergency Support Function Annex Plan to the State Emergency Operations Plan.

Search and rescue teams from LDWF, Grant Parish Sheriff's Office and the Louisiana Air National Guard rescued 113 people from a flooded area in Grant Parish on June 14, 2015. The search and rescue teams were alerted around 5 a.m. about stranded citizens following a private land levee breach on the Red River at Louisiana Mudfest just south of Colfax. Louisiana Mudfest is a private company that hosts all-terrain vehicle mud rides. The majority of the Louisiana Mudfest property was submerged with quickly rising water leaving over 100 people stranded on a portion of high ground. LDWF supplied eight agents with seven vessels and the Louisiana Air National Guard provided air support. The Grant Parish Sheriff's Office assisted with coordinating the rescues and helping people onto boats. A total of 113 people and three dogs were rescued by 10:30 a.m.

Two LDWF agents helped save a 3-year-old boy from drowning in a swimming pool at a residence on the Amite River Diversion Canal in Livingston Parish on May 10, 2015. The agents were on vessel patrol when they were flagged down by a woman from a dock near her residence. The woman told them that a 3-year-old boy was found face down in her pool a few minutes ago. The agents raced to the pool about 25 yards from the dock and found the child lying on the ground next to the pool not breathing. The agents began to perform the chin lift, head tilt maneuver. The child then let out a gasp of air that prompted the agents to lay the child on his side to promote more breathing. The agents were able to keep the child breathing until some volunteers from the Fifth Ward Fire Department showed up with oxygen for the child. The LDWF agents and fire department personnel were able to keep the child breathing on oxygen until Acadian Ambulance paramedics arrived shortly thereafter. The child was then airlifted to Our Lady of the Lake Hospital in Baton Rouge. The child was admitted into the Pediatric Intensive Care Unit and is expected to make a full recovery.

AGENT TRAINING PROGRAM

LDWF-LED began construction on a new training academy and emergency response facility. This project will support the mission of the LDWF-LED agent training, continuing education, boating safety and waterway enforcement activities, specialized enforcement training the agency provides to other state and local law enforcement, and will support the states lead emergency support function agency for search and rescue response and maritime security. This project will also further develop existing training infrastructure to maximize benefits for LDWF-LED and aids in the support of training needs of local, parish and marine enforcement agencies and provides a facility to meet the needs for providing boating safety course instruction.

The LDWF-LED in-service training program is conducted in three phases and consists of "annual in-service," "spring firearms" and "fall firearms." The in-service training is necessary in order to meet federal and state training requirements and to advance individual officer capability.

Annual in-service is usually around 40 hours and consists of 10 training sessions conducted over a 10-month period. During these sessions, agents receive training in firearms, defensive tactics/use of force, officer survival, legal, first aid, and electives. Spring and fall firearms training sessions focus on firearms qualification and training.

The LDWF Law Enforcement Academy graduated its 28th class of cadets into the ranks of LDWF enforcement division agents in February with 15 graduates. Each class of cadets endures six months of intensive physical and academic training at the academy. 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.

The LDWF Law Enforcement Academy also started their 29th class in May 2015, which graduated in November with seven cadets.

LDWF-LED now has two simunition instructors and nine advanced law enforcement rapid response training instructors.

At the end of 2014 LDWF-LED completed certifying all agents to carry ECW's (tasers).

At the end of 2014 LDWF-LED completed certifying agents in advanced roadside impaired driving enforcement (ARIDE).

Three LDWF agents were certified as drug recognition experts (DRE) bringing LDWF's total to eight DREs. LDWF-LED now has a DRE instructor and an instructor in training to bolster the LDWF DRE program.

The LDWF Maritime Security Response Team (MSRT) completed 40 hours of rural operations/patrol tracking training.

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 \$927,319 in FY 2014-2015 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 LADWF 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 2014, 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 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 initiated efforts within the state to establish a partnership between Domestic Nuclear Detection Office 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.

This year the steering committee completed a State PRND Concept of Operations Plan (CONOPS). LDWF-LED along with key partners of the steering committee completed agency Standard Operating Procedure Plans in accordance with the State CONOPS and also received specialized equipment and training. LDWF-LED and its partners are now working towards implementation and sustainment through beta testing/evaluation and training exercises.

PUBLIC INFORMATION

The LDWF-LED Public Information section does various media and public information related tasks. The public information section handles public emails, Facebook questions, media requests including setting up interviews, and gathering enforcement related information. The public information section also provides footage and photos to media outlets both in-state and nationally.

LDWF-LED issued 102 enforcement related press releases during FY 2014-2015. 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 important and unusual cases, enforcement division and agent achievements and awards won, and boating safety information.

LDWF-LED public information also produces videos for both external and internal use. The videos range from public service announcements, cadet recruitment, hunting and boating safety and cadet training.



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; and 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:

- Issued in excess of 2.6 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. Maintained license records for in excess of 70,000 lifetime licensees.
- 67,710 commercial licenses sold, representing 12,913 commercial fishermen, 2,755 business entities, 853 charter businesses, and various permits that generate in excess of \$4 million in revenue.
- 206,000 boat registration/title transactions that generated in excess of \$4.5 million in revenue. Maintained boat data in excess of 1 million records - 323,796 of which are actively registered.
- Made 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 2014-2015 this program certified a moveable property inventory which consisted of 10,025 items for a total acquisition cost of \$67 million. 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 approximately 590 fleet vehicles and 1,080 other licensed equipment.

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 15 employees who are responsible for all financial operations of LDWF. 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:

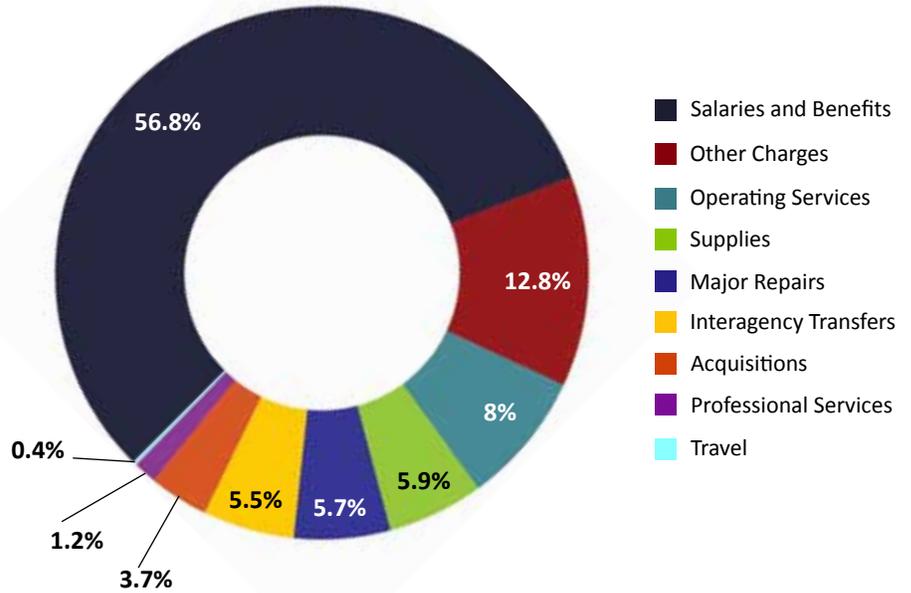
- budget and expenditure control and monitoring.
- federal grant tracking and reporting.
- preparation of all required financial reports.
- reviewing and processing professional and consulting contract payments.
- payment of all vendors.
- receipt and classification of various sources of revenue.
- fund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

During FY 2014-2015, the Fiscal Section staff:

- prepared four agency budgets consisting of five programs totaling \$215 million
- audited and processed 580 contract invoices payments with a total amount payable of \$17.6 million.
- processed 9,071 vendor invoice payments.
- audited and processed 27,104 purchasing card transactions.
- audited and processed 2,993 travel reimbursements.
- processed 568 checks through QuickBooks.
- warranted funds and prepared periodic reports for 138 federal grants.
- warranted funds and prepared periodic reports for 14 self-generated agreements.
- warranted funds and prepared periodic reports for 13 interagency agreements.
- deposited \$49.8 million in receipts from various sources on 635 pay in vouchers.

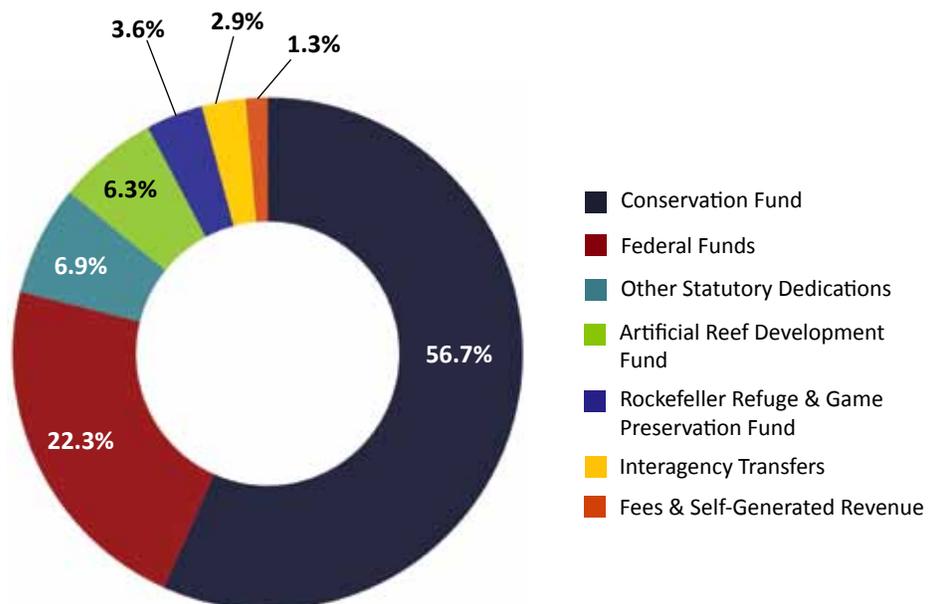
LDWF EXPENDITURES BY CATEGORY (FY 2014-2015)

Total Expenditures: \$129,306,376



HOW EXPENDITURES WERE FUNDED (FY 2014-2015)

Total Means of Financing: \$129,306,376



EXPENDITURES BY CATEGORY	
Salaries and Benefits	73,393,472
Other Charges	16,534,431
Operating Services	10,327,695
Supplies	7,673,168
Major Repairs	7,425,140
Interagency Transfers	7,099,428
Acquisitions	4,761,187
Professional Services	1,573,310
Travel	518,545
TOTAL	\$129,306,376

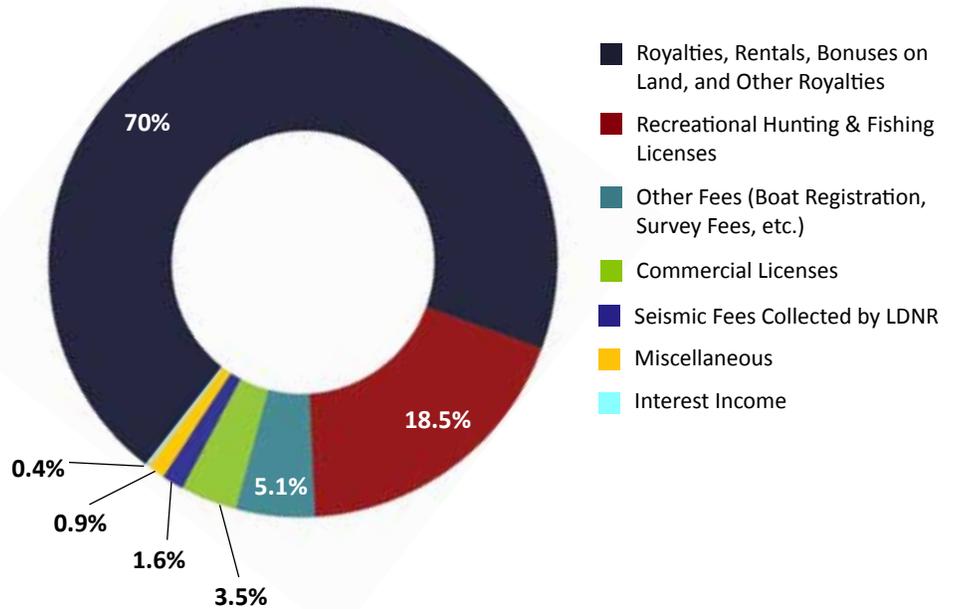
HOW EXPENDITURES WERE FUNDED	
Conservation Fund	73,253,190
Federal Funds	28,885,597
Other Statutory Dedications	8,905,551
Artificial Reef Development Fund	8,113,143
Rockefeller Refuge & Game Preservation Fund	4,681,844
Interagency Transfers	3,795,976
Fees & Self-generated Revenue	1,671,075
State General Fund	0
TOTAL	\$129,306,376

SOURCES OF REVENUE TO THE CONSERVATION FUND	
Royalties, Rentals, Bonuses on Land, and Other Royalties	71,039,312
Recreational Hunting & Fishing Licenses	18,755,921
Other Fees (Boat Registration, Survey Fees, etc.)	5,145,392
Commercial Licenses	3,533,574
Seismic Fees Collected by LDNR	1,603,672
Miscellaneous	917,908
Interest Income	408,284
TOTAL	\$101,404,063

EXPENDITURES BY PROGRAM	
Office of Fisheries	44,786,025
Office of Wildlife	44,051,328
Office of Secretary - Enforcement	29,612,304
Office of Management & Finance	9,501,824
Office of Secretary - Administration	1,354,895
TOTAL	\$129,306,376

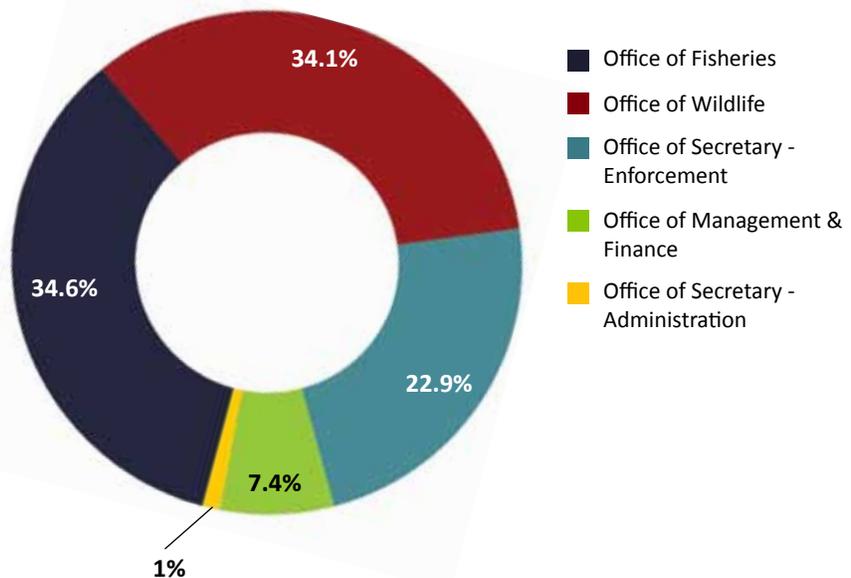
SOURCES OF REVENUE TO THE CONSERVATION FUND (FY 2014-2015)

Total Revenue: \$101,404,063



LDWF EXPENDITURES BY PROGRAM (FY 2014-2015)

Total Expenditures: \$129,306,376





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 statewide 2014-2015 deer season, 192,600 deer hunters harvested an estimated 139,900* white-tailed deer. The harvest sex ratio was 59 percent male and 41 percent female. The estimated number of harvest and hunters is derived from the Annual Mail Survey. The mail survey has been used since 1970.

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

Wildlife management area (WMA) hunters harvested 2,603 deer during the WMA managed deer hunts. LDWF staff collects biological data from deer harvested during the WMA managed deer hunts through mandatory deer checks at designated weigh stations. Total WMA managed deer hunt efforts were 26,545, which was the highest in the past five years. The number of deer harvested per effort on managed hunts continues to be higher than any other decade. In addition to the managed hunts, WMA hunters are able to pursue deer during the archery, bucks-only and primitive firearms seasons.



Antlered deer being tagged by a successful hunter.

Mandatory tagging and reporting of deer entered the seventh year in 2014. The reporting system tallied 48,298 deer, a decrease of 5.8 percent from the previous year, and still well below the base line year. The total reported harvest, including WMA managed hunts and Deer Management Assistance Program (DMAP) lands, was 65,081, down 5.6 percent from the last year. If harvest data is under-reported, LDWF biologists and managers cannot make accurate determinations on hunting success and deer population parameters by parish. There were 273,541 sets of deer and turkey tags issued in 2014-2015. Compliance appears to be stabilizing after declining each of the first five years of tagging. Comparisons are made each year to the mail survey. While improved

compliance is desired, parish specific harvest and deer sex data is being collected. Stabilization in reporting rates will provide managers valuable trend data.

DMAP provides detailed statewide harvest information while providing the largest known age sample of physical deer data. DMAP harvest was 14,348 deer. There were 701 cooperators with 1.58 million acres participating in the program. Enrollment was down 6 percent from the previous year. Critical habitat data was also collected in the form of browse surveys. A total of 78 browse surveys were conducted on properties enrolled in DMAP during 2014-2015. Browse availability and utilization is recorded and assessed on the browse transect survey. These indices provide managers an in depth look at the relationship between available browse resources and utilization on the landscape.

Deer harvest information from across the state was evaluated. Harvest data is assessed at the parish, deer management area and statewide level. Deer regulations are influenced by this evaluation. Harvest data for WMAs and DMAP cooperators are summarized in the Federal Aid W-55-26 Report. Additional analysis of DMAP and WMA harvest data is included when assessing statewide harvest trends and herd health.

Bucks harvested during 2014-2015 meeting minimum qualifications for the Louisiana Big Game Records Recognition Program were documented in the annual Deer Program report. A total of 47 bucks met the minimum qualification for the recognition program. In addition, 16 of the 47 bucks that met the recognition program requirements also qualified for the all-time State Record List. One buck qualified for the Boone and Crockett record book and

nine bucks harvested with bows qualified for Pope & Young. The Louisiana Big Game Records Recognition Program and State Record's List are available on the LDWF website.

In order to better manage Louisiana's white-tailed deer herd, several research projects are ongoing. Herd health collections and disease and parasite investigations continued on both private and public lands. Additional breeding data is also gathered during the collections. Breeding data from over 1,100 deer have been used to assign breeding chronology to all areas of Louisiana. This data has been critical for establishing season time frames within each deer management area. The third year of a fawn survival study wrapped up on Tensas National Wildlife Refuge. Researchers are studying fawn mortality in this project.

Serological tests for Bluetongue Virus, Epizootic Hemorrhagic Disease Virus, Leptispirosis, and Brucellosis were conducted for white-tailed deer. An additional 121 Chronic Wasting Disease samples were collected for analysis. The results and prevalence of the previously mentioned disease sampling will be covered in the wildlife disease section of this report.

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. However, a modified dove call count is being tested by several states, including Louisiana. Louisiana collected dove data along the es-

tablished dove call count survey routes. In addition to collecting data on mourning dove trends, data on white-winged and collared doves were collected. White-winged doves were detected on two of the 19 routes. Collared doves were detected on eight of the routes.

Dove hunting regulations for Louisiana in 2014-2015 were set at 90 days with a bag limit of 15 birds. A survey of resident license holders indicates that approximately 41,400 Louisiana hunters harvested approximately 763,700 doves during the 2014-2015 hunting season. An estimated 23,600 Eurasian collared-doves and 48,400 white-winged doves were also taken.

In addition to dove fields on 12 WMAs, LDWF leases property from private landowners for public hunting. This land is leased for public hunting on opening day only. In 2014, three fields totaling 772 acres were leased. During the opening day hunt, 504 hunters participated, bagging 786 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 1,223 doves during July-August 2014 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.



LEFT: Dove field preparation on Sandy Hollow WMA. **RIGHT:** Sunflower planting on Elbow Slough WMA.

Soil samples were collected at four dove fields at Sandy Hollow WMA to examine lead deposition rates within these fields by dove hunters. Soil samples were collected post-hunt (October 2012 & 2013), pre-field preparation (March 2013 & 2014), and post-field preparation (June 2013 & 2014). Five-hundred-seventy-six soil samples were collected and analyzed for lead pellets. Lead pellets within the dove fields was estimated to be 10,472 per ha on the top layer and 62,789 per ha to a depth of 1cm below the soil surface. For the wooded areas surrounding the dove fields the number of pellets per ha was estimated to be 34,382 per ha for the top layer and 152,471 per ha to a depth of 1cm below the soil surface.

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 - 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, 42 woodcock were captured and fitted with radio transmitters. Eighteen birds were after-hatch-year birds and 24 were hatch-year birds. Vegetation variables for flush and random locations differed, with woodcock selecting sites with more horizontal and overhead cover than was available at random locations.

LDWF participated in the USFWS Annual Woodcock Wing Bee in 2014. 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 3,900 Louisiana hunters harvested 18,800 woodcock during the 2014-2015 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 2014-2015 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 2014-2015. The 2014-2015 Game Harvest Survey was mailed to 16,401 (6 percent sample) residents who had purchased the license for the current year's hunting season (or had a lifetime license). Non-deliverables numbered 1,900. The survey questionnaires were completed and returned by 3,477 individuals before the cutoff date. The estimated harvest and hunter efforts for the 2014-2015 hunting seasons utilized 2,125 responses. According to the responses, the 2014-2015 basic license was not purchased by 117 respondents (ap-

proximately 6 percent). The procedures used to calculate the 2014-2015 estimates were the same as those used for the 2013-2014 harvest estimates. The 2014-2015 harvest estimates were extrapolated based on the current year's license sales of 255,673. 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 unknown number 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 2014 survey indicated an improved hatch in two of the five habitat regions over 2013 data. The North Mississippi Delta and Western Longleaf both experienced a slight increase in production from the previous year. The Northwest Loblolly/Shortleaf/Hardwood, Southeast Loblolly, and South Atchafalaya/Lower Mississippi Delta regions all exhibited decreases in production from 2013. Production was below the long-term (1994-present) average in all management regions.

The most recent turkey hunter survey estimated 20,700 turkey hunters harvested 4,300 wild turkeys during the spring of 2015. These numbers do not include youth and exempted hunters. The wild turkey population in Louisiana is estimated at about 50,000 to 60,000 birds.



LEFT: American woodcock banding on Sherburne WMA. **RIGHT:** Biologists preparing hen turkey for transport in our wild turkey restocking program.



LEFT: A bobwhite quail hunting party on Sandy Hollow WMA. **RIGHT:** A flock of geese in Louisiana.

LDWF is involved in several wild turkey research projects. LDWF supports a wild turkey research project on the Kisatchie National Forest, being accomplished through the University of Georgia, with additional support from the National Wild Turkey Federation. This project is investigating the movements of female wild turkeys and broods in relation to large scale prescribed burning. In addition, LDWF has also implemented a similar turkey research project on Peason Ridge WMA and supports a project on Barksdale Air Force Base to study female wild turkey movements and production in relation to habitat improvements. This work is being done in collaboration with LSU and the Department of Defense. 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 National Forest.

SQUIRRELS AND RABBITS

Small game populations and harvests are highly dependent on year to year habitat conditions. As a result, it is common to see more variation in populations and harvests of small game species when compared to other species from one year to the next. 2014-2015 harvest survey results indicate that there were approximately 87,000 squirrel hunters in Louisiana, which is an increase of 7.3 percent from 2013-2014. Total harvest estimates also slightly increased to 1,245,400 squirrels for 2014-2015. The number of rabbit hunters is estimated at 35,700 which is a slight decrease from the previous year. However estimated harvests increased 32.5 percent from the previous year to 350,500.

To expand small game hunting opportunity, LDWF has established Small Game Emphasis Areas on the following WMAs: Big Colewa Bayou, Bayou Macon, Bayou Pierre, Boeuf, Dewey Wills, Richard K. Yancey, Russell Sage, Sandy Hollow, Sherburne, and Walnut Hill. Within these WMAs on that portion designated as the Small Game Emphasis Area, small game hunting and training with dogs is allowed for extended periods of time throughout the season and year. Specific dates vary as hunting regulations indicate each year.

QUAIL

Statewide fall whistling counts were conducted on 42 randomly located routes and an additional six routes on LDWF WMAs and Kisatchie National Forest. Fall whistle counts did not differ among the five habitat types for 2014. All regions continue to exhibit significant long-term (1983-2014) 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.

A survey of resident license holders indicates that approximately 1,100 Louisiana hunters harvested 3,100 wild quail during the 2014-2015 season. Hunters were also asked about their harvest of pen-raised quail. About 1,400 hunters harvested over 30,900 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 Grants Program have

been implemented to promote management practices such as prescribed burning. LDWF is also partnering with the US Forest Service to assist in habitat management on a Quail Emphasis Area on Kisatchie National Forest to promote and develop quail habitat on approximately 4,000 acres.

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 2015 maintained traditional methods in all surveyed regions and indicated 3.83 million ducks and 346,000 geese wintered in coastal marsh and inland areas of the Mississippi Delta. This was 6 percent fewer ducks than 2014 and 2 percent below the most recent 10-year average. However, this was 61 percent fewer geese than in 2014 and only half of the most recent 10-year average. It was an unusual outcome because populations of ducks were far above average in November due to strong early cold weather pushing migrants into the state ahead of normal dates, and those populations remained above normal for December. Geese are only counted in northeast Louisiana prior to January; counts in that area were the highest since 2005 in November, but dropped off strongly in December and January. Contrary to 2014 when 733,000 scaup were estimated on lakes Maurepas, Pontchartrain and Borgne, only 23,000 were counted in 2015.

For the third consecutive year, 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 late (Nov. 27) and the latest closing date allowed by USFWS was as early as possible (Jan. 25), season dates established in the East and West Zones included only a five-day split for the second consecutive year, 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, 77,200 active duck hunters harvested 1.86 million ducks. This is about the same number of active duck hunters as in 2013-2014 and a 22 percent reduction in ducks harvested. The reduction in hunter numbers was likely unreasonable, especially when sale of resident duck licenses actually increased, so we suspect this year's estimates are similarly understated. USFWS has acknowledged there were problems with the 2013-2014 harvest survey, other Mississippi Flyway states reported similarly unreasonable declines in hunter numbers, and changes to those methods have yet to be implemented. LDWF's Big and Small Game Harvest Survey also estimated similar numbers of waterfowl hunters from last year. Despite higher population estimates of ducks on November and December aerial surveys, hunting success was higher mostly in the Coastal Zone, and success fell off quickly during a very warm December. Despite the decline from 2013-2014, the estimated harvest of 1.86 million ducks in Louisiana is still the highest of all states, as is the estimated 24.1 ducks killed per hunter during the season. Species composition in the 2014-2015 harvest included 25 percent gadwall, 20 percent green-winged

teal, 19 percent blue-winged teal, 7 percent mallard, 6 percent wood duck, and 6 percent shoveler. Scaup, ring-necked duck, mottled duck, pintail, wigeon, canvasback, and redhead comprised the remainder.

Louisiana goose hunters harvested 35,000 geese during the 2014-2015 waterfowl hunting season; another 5 percent decline from the previous year, further reinforcing concerns about Louisiana's declining goose harvests. This spring, breeding habitat conditions were again considered to be about average on arctic breeding grounds, and at least average reproduction was expected. The fall staging survey of white-fronted geese increased to over 1 million raising the three-year average to over 800,000, which is the threshold to allow liberal harvest regulations beginning in 2015. Strong populations of geese were seen in northeast Louisiana in November, but numbers fell sharply on December and January surveys. The total goose count on the January survey was the lowest in 10 years. Harvests of both snow geese and white-fronted geese declined slightly. The goose harvest was comprised of 58 percent white-fronted geese and 42 percent snow geese, which is the same composition of the 2013-2014 goose harvest. Federal harvest surveys picked up only 245 Canada geese in the sample of hunters.

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 associ-

ated with NAWMP. In FY 2014-2015, North American Wetland Conservation Act (NAWCA) project construction continued on Dewey Wills WMA. Development of a 3,007-acre greentree reservoir includes construction of a large canal gate, installation of several weirs and screw-gates, and elevating Hunt Road and an ATV trail. Construction should be complete during October 2015.

Prolonged high water levels minimized undesirable vegetative treatments on Catahoula Lake during FY 2014-2015. Planned bulldozing activities were not conducted due to wet conditions. Limited herbicide spraying and bush hogging activities were conducted on Catahoula Lake. Ongoing herbicide applications are planned for Sherburne's Des Ourses Swamp and North and South Farms during summer 2015. Many other mechanical, chemical and prescribed fire treatments were conducted on other WMAs to invigorate wetlands.

We developed a NAWCA grant application for Wham Brake seeking funding assistance to replace dilapidated water control structures and a large weir with newly engineered structures that will better enable shallow water management. Due to the size and complexity of the project, construction activities will be conducted in two phases; Phase 1 will be initiated in 2015 and Phase 2 during 2016. Future NAWCA grant applications are being developed for wetland enhancement on Boeuf, Pomme de Terre and Russell Sage WMAs.

WOOD DUCKS

During 2014-2015, LDWF banded 1,757 wood ducks. It was a substantial decline over last year's 2,489 and breaks a three-year run of banding over 2,400 wood ducks. LDWF banders had numerous frustrations including unpredictable changes in water levels due to summer rainfall, hogs, and even disturbance by black-bellied whistling ducks at bait sites, as well as other monitoring priorities for many of our field staff, all of which reduced effort and number banded this year. Pre-season rocket-netting accounted for 1,434 of the total bandings, and 323 hens were captured in nesting boxes. In addition, 3,404 black-bellied whistling ducks were banded during the winter and spring. This is slightly lower than in 2013-2014 and is the second 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.



A female wood duck banded through LDWF wood duck box program.

The wood duck nest-box program completed its 26th year in 2015. LDWF personnel are maintaining 2,051 boxes currently in use. That is about the same as last year and at the target level. Replacement of old boxes and relocating unused boxes to more suitable habitat continues to be a primary activity of this program. The program goal is between 2,000 and 2,100 but we expect the number of boxes maintained and monitored through landowners in the Private Lands Program to continue to increase. Utilization was monitored at 1,957 boxes, which is back to the level prior to Hurricane Isaac, which resulted in the loss of many monitored boxes. Utilization has ranged from 45-100 percent in past years with an average utilization of about 80 percent.

LARGE CARNIVORE PROGRAM

LARGE CARNIVORE RESEARCH

Of the 16 American black bear subspecies, the Louisiana black bear is the only to have received formal protection under the United States Endangered Species Act; listed as threatened in 1992. Recovery and eventual delisting of the bear following the reduction or elimination of threats that originally led to listing is the primary purpose of the Endangered Species Act. Therefore, LDWF's bear research efforts to-date have been mostly targeted at long-term monitoring of extant subpopulations to collect the critical demographic, genetic, and spatial information required to effectively evaluate recovery criteria and determine if and when delisting is warranted. This information will also be used to sustainably manage bear populations following delisting as part of a seven-year Post-Delisting Monitoring Plan that the Large Carnivore Program and USFWS finalized during 2015. Based on research conducted by LDWF, USGS, USFWS, and University of Texas during 2006-2014, the USFWS determined delisting of the Louisiana black bear was warranted and published a Proposed Rule during spring 2015 to remove Endangered Species Act protection from the subspecies. A Final Rule is expected early 2016.

2014-2015 Research and Preliminary Results

1. Reproductive Vital Rates - To collect information on reproductive vital rates, we conducted 30 adult female den visits across all four bear subpopulations during February-March 2015 to count and mark cubs-of-the-year, and to count yearlings. From these efforts, we estimated an average litter size of 1.8 cubs (SE = 0.13) for the metapopulation (i.e., all four subpopulations combined).

2. Survival and Mortality - To monitor survival and cause-specific mortality, we live-captured 50 bears and outfitted these individuals with VHF or VHF-GPS radio-collars, or marked bears based on sex and age class. Using monthly aerial telemetry, we monitored 39 radio-collared bears (8M:31F) from all four subpopulations during 2014-2015. We documented seven mortalities (1M:6F [18 percent]) from this radio-collared sample of bears. These mortalities combined with carcass recoveries totaled 38 mortalities during the fiscal year, the majority of which was from roadkills (71 percent).

3. Abundance, Density and Growth - To estimate abundance and density and monitor temporal changes in population growth, we conducted our eighth consecutive year of non-invasive hair trapping in the Tensas River and Upper Atchafalaya River Basin subpopulations during May-July 2014. Samples were collected from 209 and 116 sites in both subpopulations, respectively, resulting in 2,256 individual hair samples.

We also initiated a new project during July-August 2014 to estimate abundance, density and temporal changes in population growth of the Three Rivers Complex subpopulation, and to evaluate bear movement and space use in the corridor between the Three Rivers Complex and Tensas River Basin subpopulations. Samples were collected from 140 and 94 sites in the Three Rivers Complex and the corridor, respectively, resulting in 668 individual hair samples.

All collected samples were sent to Wildlife Genetics International for microsatellite genotyping at eight to 21 markers, depending on study objectives.

New Research Projects Initiated During 2014-2015

1. Demographics and Genetics of a Reintroduced Black Bear Population in Louisiana - A study to estimate abundance, density, growth rate, reproductive success, and population genetics of the reintroduced Three Rivers Complex subpopulation. Ten black bear reintroductions occurred throughout the eastern and southeastern United States during 1958-2009, but because only three of these reintroduced populations have been investigated to determine the long-term characteristics of a successful reintroduction, little is known about them. This project may result in increased knowledge and improved management of reintroduced bear populations throughout the world.

2. Using Noninvasive Hair Sampling to Evaluate Connectivity of Disjunct Bear Populations

- A study to estimate abundance, density and population genetics of bears residing in or using a corridor between the Tensas River Basin and Three Rivers Complex subpopulations. Efficient methods are needed to monitor recolonization and connectivity of bear populations, especially in fragmented landscapes. This project will identify bear use and distribution and estimate connectivity in the corridor between the Three Rivers Complex and Tensas River Basin subpopulations using hair sampling and DNA-based analyses.

3. Den Selection in Four Subpopulations of Louisiana Black Bears

- A study in coordination with Louisiana Tech University to investigate female bear den selection in all four extant subpopulations during 2001-2016. A graduate student was hired through Louisiana Tech University to assist with this project, and the LDWF Large Carnivore Biologist DCL-A will serve on the graduate student's committee. This project will identify the factors that influence den selection, which fills a research void, and will allow LDWF to determine what habitat characteristics may be required in potential range expansion areas to support sustainable bear populations.

4. Movements, Dispersal and Resource Use of a Reintroduced Black Bear Population in Louisiana

- A study to investigate male bear movements, dispersal distances, and resource use of the reintroduced Three Rivers Complex bear subpopulation. Reintroduced populations are typically in the process of recolonizing vacant habitat prior to saturation of the release area, but little is known about how these populations expand and recolonize range. Therefore, this project may add to the growing body of evidence that suggests recolonizing bear populations exhibit demographic and spatial expansion characteristics that differ from those of stable populations.

2014-2015 LDWF Large Carnivore Research Publications

Laufenberg, JS, and JD Clark. 2014. Population viability and connectivity of the Louisiana black bear (*Ursus americanus luteolus*). United States Geological Survey Open-File Report 2014-1228. United States Geological Survey, Reston, VA.

O'Connell-Goode, KC, CL Lowe, and JD Clark. 2014. Effects of opening the Morganza Flood Control Structure on a threatened black bear population in Louisiana. *Animal Conservation* 17:476-485.

Murphy, SM, and M Davidson. 2015. Genetic characteristics of the Tensas River Basin subpopulation of Louisiana black bears. Technical Report to United States Fish and Wildlife Service. Louisiana Department of Wildlife and Fisheries, Lafayette, LA.

Cougars

Data collected by the Large Carnivore Program on confirmed cougar occurrences in Louisiana were used to evaluate the probability of cougar recolonization of the midwestern United States, to determine where the most likely recolonizations would occur, and to estimate population viability of recolonizing cougar populations in the Midwest. All available information suggested cougars will likely recolonize multiple parts of the midwestern United States by 2040, including parts of Louisiana and Arkansas.

- a. Smith, JB, CK Nielsen, and EC Hellgren. 2015. Suitable habitat for recolonizing large carnivores in the Midwestern USA. *Oryx*, DOI:10.1017/S0030605314001227
- b. LaRue, MA, and CK Nielsen. 2015. Population viability of recolonizing cougars in Midwestern North America. *Ecological Modeling*, DOI:10.1016/j.ecolmodel.2015.09.026.

BEAR MANAGEMENT

LDWF personnel responded to 223 human-bear conflict 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 FY 2014–2015, we captured 18 bears to address human-bear conflict issues reported to LDWF, primarily in the Lower Atchafalaya River Basin subpopulation. Program staff was called to release a young male bear from the Lower Atchafalaya River Basin subpopulation that was captured in a hog snare. The bear was removed from the hog snare and translocated to Richard K. Yancey WMA in the Three Rivers Complex subpopulation. Two coastal bears were captured during autumn 2014 in an advanced state of starvation; both were transported to a wildlife rehabilitation facility in Florida and returned to Louisiana when fully recovered. One coastal orphan cub was captured and translocated to Richard K. Yancey WMA, after he began hanging around houses looking for food.

The Large Carnivore Program Manager presented a bear workshop to the LDWF Law Enforcement Cadet Class educating cadets on bear behavior and biology. Similar presentations were also provided to law enforcement personnel in areas experiencing bear range expansion.

The Large Carnivore Biologist DCL-A presented preliminary results of a study investigating the potential for using the winter soft-release translocation method to mitigate human-bear conflict at the Eastern Black Bear Workshop. We also presented a summary of our community bear-proofing program in St. Mary Parish at the Eastern Black Bear Workshop. The Louisiana Black Bear Management Plan was completed and presented to the LDWF Commission in February 2015. We also worked with USFWS to complete a Post Delisting Monitoring Plan and to announce the Proposal to Remove the Louisiana Black Bear from the Federal List of Threatened and Endangered Wildlife.

A Program Biologist 1-3 was hired, and staff moved their offices from the Opelousas Regional Office to the USFWS Lafayette Office. The Large Carnivore Program staff began planning a Bear Attack Response training to take place in spring 2016. Work continued with USGS to improve the BearTrak database, and a Cooperative Endeavor was written and sent for approval by both agencies to continue the working relationship with USGS.

2014-2015 LDWF Large Carnivore Management Publications

Davidson, M, SM Murphy, K Ribbeck, F Kimmel, and J Duguay. 2015. Louisiana black bear management plan. Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

Murphy, SM, and M Davidson. 2015. Using the winter soft-release translocation method for human-bear conflict abatement. Proceedings of the 22nd Eastern Black Bear Workshop.

Siracusa, C, SM Murphy, and M Davidson. 2015. Efficacy of agency-funded community bear-proofing programs: a case study in Louisiana. Proceedings of the 22nd Eastern Black Bear Workshop.

BEAR SAFETY IN MIND (ST. MARY PARISH PROGRAM)

Accomplishments during 2014-2015 include:

- Daily monitoring of bear-resistant garbage cans in St. Mary Parish, and assisting homeowners with conflict resolution.
- Worked with SWeeDee/IESI/Progressive to resolve damages to bear-resistant garbage cans.
- Worked with St. Mary Parish Government and the City of Patterson to resolve issues with bear-resistant garbage cans, Progressive and local residents.
- Served on the Black Bear Festival board of directors.

- Worked with Berwick High School to distribute Black Bear Safety information in Renwick Subdivision in Berwick, La.
- Conducted Black Bear “proofing” presentations for the St. Mary Chamber of Commerce’s Leadership Workshop.
- Distributed Growler bear-resistant garbage cans along Highway 317 - these cans were purchased with the funds from the 2013 calendar year budget surplus. A total of 60 Growler cans were purchased, and 44 were distributed to residents along Highway 317 who did not have bear-resistant cans but were experiencing heightened conflict activity.
- Assisted LDWF biologists with conflict calls and monitoring bear traps in St. Mary Parish.
- Worked with the Town of Berwick to resolve human-bear conflict issues along River Road.
- Gave presentations to St. Mary Parish 4-H about bear proofing where they live.
- Attended the Eastern Black Bear Workshop in Mississippi as well as participating with an overview presentation of the St. Mary Parish Bear-Proofing Program.
- Worked to include in St. Mary Parish’s Request for Quote new stipulations for bear-proofing measures with a contracted waste hauler.
- Changes accepted and made into the parish’s new waste contract concerning residential bear-resistant containers:
 - restricted pick-up times.
 - new bear-resistant carts by Growler.
 - only rear loading/manual garbage trucks may be used with bear carts.

EDUCATION AND OUTREACH

The majority of outreach conducted in FY 2014-2015 centered on exhibition and presentation of bear information to schools and other interest groups around the state. LDWF staff participated in over 20 exhibition events and presentations throughout the year. These events included National Hunting and Fishing Day, the Louisiana Outdoor Expo, Franklin Black Bear Festival, and the Stir the Pot Festival at Palmetto Island State Park. Cumulatively, an estimated 1,700 individuals received information pertaining to the Louisiana black bear at these events.

A “Bear With Us” workshop was conducted for educators within the St. Landry Parish school district on Jan 24, 2015. A total of 27 educators from the parish participated in the professional development workshop, with the majority of educators being middle and high school teachers. The workshop was hosted in Opelousas,

La. The workshop featured an overview of the LDWF Large Carnivore Program, presented by the Large Carnivore Program Manager. Participants were given an overview of the state's bear population, information about the current recovery efforts, and black bear lessons to be utilized in the classroom setting. Participants of the 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 workshop experience. In summary, each participant of the "Bear With Us" workshop 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 PowerPoints presented during the workshop.
- A bear track plaque for use in classroom implementation.

The following literature/education material was designed and disseminated during 2014-2015 to inform Louisiana residents of black bear biology and behavior, recommended deterrents, bear safety, and subpopulation statuses:

- **"On the Rise...the Louisiana Black Bear"** - This document provides a general overview of the efforts of the Large Carnivore Program during the last two decades to attempt to recover the Louisiana black bear. Information contained within this document includes a map indicating permanently protected lands within the Louisiana Black Bear Habitat Restoration Planning Area, and a chart that summarizes research findings for the four extant subpopulations, including abundance, density and survival rate estimates.
- **"Easy DIY Bear-Resistant Trash Can" Instruction Sheet** - This publication shows homeowners a relatively quick and inexpensive way to prevent access to unsecured garbage cans by bears. A step-by-step pictorial guide is provided demonstrating the materials and labor required to make a residential garbage can bear-resistant. This publication also provides other options residents can use to deter bears from garbage cans including electric fencing, motion-activated sprinkler, and motion-activated alarms.
- **"Louisiana Black Bear...Louisiana's State Mammal"** - This document serves as a Louisiana black bear fact sheet and

provides biological and demographic information for the species. Information contained within this document includes a current subpopulation range map and general facts (e.g., standard weight, diet, dormancy, and den selection). This document also includes an in-depth pictorial and verbal description of the "cycle of the seasons;" which was provided by USFWS.

- **"Black Bear Biology"** - This publication explains black bear biology and its influence on black bear behavior. Topics include habitat, dormancy, food, mating, common black bear behaviors, and how to interpret and appropriately react to a black bear interaction.
- **"Hunting Safely in Bear Country"** - Published in the summer of 2015 issue of the "Wildlife Insider." Included facts about bear biology and behavior, how those characteristics influence sightings and encounters during fall hunting seasons, and what to do to avoid bear encounters as well as what to do if an encounter occurs.
- **Education Banners and Display Kiosk** - During this reporting period, the Large Carnivore Program produced two educational banners and a large, portable education display with an interactive computer kiosk. These education tools will be moved throughout the state to public libraries on a monthly rotation.

WILDLIFE DISEASE

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

Chronic Wasting Disease surveillance continued as 122 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 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 was completed. This project revealed that there is still a large amount of lead shot on the lakebed of Catahoula Lake, with only an 11 percent decrease since 1988. Also, a high percentage of ducks consumed lead shot and many exhibited lead liver levels above established lethal levels.

Surveillance of feral swine for Brucellosis and Pseudorabies was continued this year, with nearly 1,400 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 continued this year. To date, nearly 10 percent of the 105 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 continued.

The Wildlife Disease Program continued a study into the interaction of waterfowl and feral swine in regards to the transmission of influenza viruses on Catahoula Lake, La. Over 1,300 ducks were tested for avian influenza with 87 of those birds being matrix positive for avian influenza.

A cooperative agreement was entered with USDA Wildlife Services to perform surveillance of migratory waterfowl for High-Path Avian Influenza.

Disease investigations included several mortality events involving birds, including a brevetoxin and botulism outbreak which accounted for the death of over 6,500 wading birds and migratory waterfowl in Southwest Louisiana.

A study utilizing GPS technology and telemetry was conducted on Pass-a-Loutre WMA to evaluate the movement and habitat utilization of feral swine. Home ranges and feeding patterns of feral swine in the marsh are to be evaluated, and the collared pigs will be used as "Judges" pigs to increase harvest during aerial shooting operations.

LAND DEVELOPMENT & MANAGEMENT

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.

Analyses of customized wildlife habitat/forest inventories were completed this year on 18 WMAs. Information acquired using this inventory method facilitated the scheduling of habitat management on approximately 300,000 acres. General habitat inventories were conducted to facilitate the development of management prescriptions for Bayou Macon, Boeuf, Dewey Wills, Little River, Richard K. Yancey, and Russell Sage 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 Macon, Boeuf, Dewey Wills, Grassy Lake, and Richard K. Yancey WMAs. Harvests to improve wildlife habitat were initiated and/or completed on Boeuf, Dewey Wills, Sandy Hollow, Sicily Island Hills, and Walnut Hill WMAs.

Chemical treatments of invasive/non-native species, primarily Chinese tallow tree and cogon grass continued on Alexander State Forest, Sandy Hollow, and Grassy Lake WMAs. Prescribed burning treatments were conducted on Lake Ramsay and Little River WMAs to promote and improve habitat conditions for fire dependent wildlife and plants.

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 inventoried and evaluated hardwood plantations on Boeuf, Buckhorn, Ouachita, Richard K. Yancey, and Sherburne WMA. Research continued on several ongoing studies investigating seedling survival, sapling development, tree growth, and wildlife response to various silvicultural treatments.

Our GIS program completed spatial analysis of habitat inventory data resulting in the revision of our WMA forest management entry schedule. Our GIS program continues to update timber sale data, boundaries, roads and streams data input relative to our WMA forest management activities. Work continued on the comprehensive forest management database with support from partners of the Lower Mississippi Valley Joint Venture and Gulf Coastal Plains and Ozarks LCC.

Growth Monitoring Plots were reevaluated on Boeuf and Ouachita 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 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 performed red-cockaded woodpecker (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 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.



LEFT: Prescribed burning on Red-cockaded Woodpecker Safe Harbor property. **RIGHT:** Red-cockaded woodpecker banding.

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. Forestry Section staff hosted several training and outreach workshops to share research results and management experiences. 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.

WILDLIFE MANAGEMENT AREAS

The Wildlife Division of LDWF currently manages over 1.1 million acres in its WMA 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

(371,734 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
- 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. Due to a great effort by personnel in that ecoregion, the entire new addition boundary was marked with signs and paints, new SCP stations erected, and entrance/information signage installed all in less than three months. More acreage is scheduled to be added to Peason Ridge in the future.

A total of 106,684 user days were estimated for WGCP WMAs during FY 2014-2015. 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 9,220 hunter efforts accounting for 964 deer harvested.

Youth-only lottery turkey hunts were held on Ft. Polk, Jackson-Bienville, Loggy Bayou and Union WMAs. In addition to the regular physically challenged hunts scheduled on several WMAs, two lottery physically challenged hunts were conducted: one on Sabine WMA for the general public and the second on Camp Beauregard WMA for disabled veterans. The Sabine physically challenged hunt is conducted in conjunction with the local organization known as HELP (Hunters Enriching the Lives of People). HELP works in conjunction with a local veteran's club to sponsor the Camp Beauregard hunt. Persons participating in the hunts are provided food and transportation to blinds and assisted with recovering/cleaning deer and any special needs. These hunts are 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 to LDWF for public use from the landowners (Hancock Timber, Roy O. Martin, U.S. Army, U.S. Forest Service, Forest Investments, Calcasieu School Board, Molpus, Weyerhaeuser, and the State of Loui-

siana). The owners are compensated through a combination of tax exemptions, road maintenance, mowing, prescribed burning contracts, reduced theft and vandalism (due to regular presence of LDWF staff), as well as public goodwill. 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 258 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.

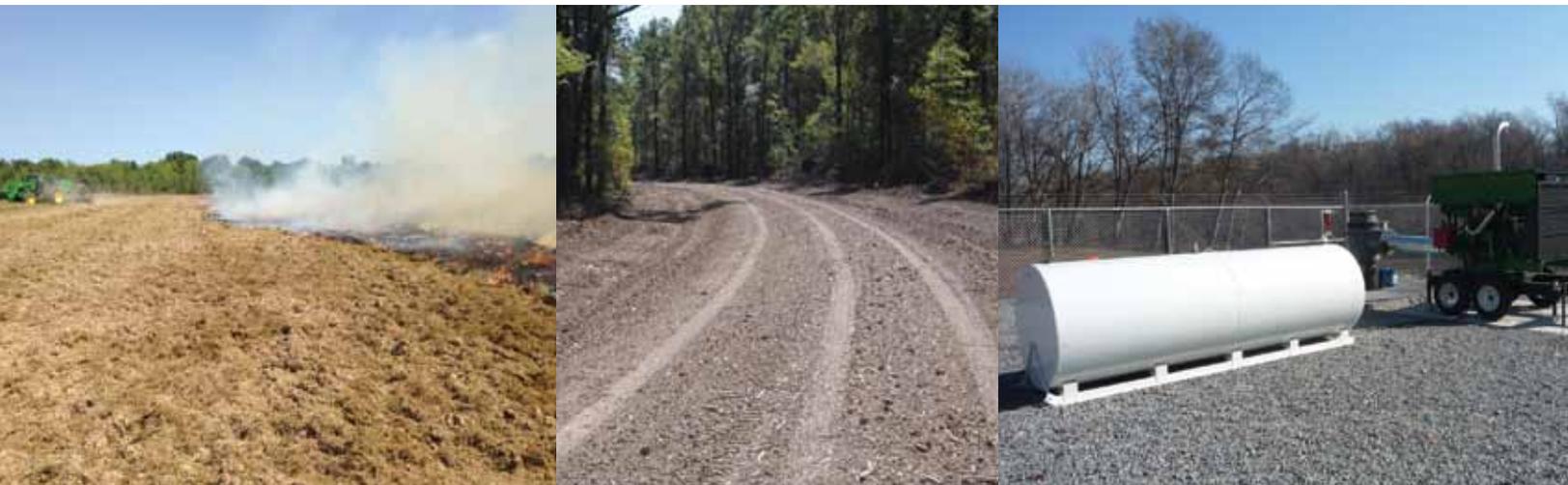
EAST GULF COAST PLAIN (EGCP) WMAs

(205,596 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 2014, 1,582 acres were acquired and added to Maurepas Swamp WMA.

A total of 81,399 user days were estimated for EGCP WMAs during FY 2014-2015. An alligator season was available on Joyce, Manchac, Maurepas Swamp and Pearl River WMAs with a harvest of 1,236 alligators by 18 commercial alligator trappers. LDWF received \$110,498.93 in revenue from commercial alligator harvest on EGCP WMAs. Recreation alligator harvest opportunities were also made available to the public. To facilitate recreational alligator harvest, 54 additional people were selected by lottery, issued three tags each, and harvested an additional 139 alligators on these four areas. EGCP personnel maintained existing WMA boundaries, buildings, equipment, roads and



LEFT: Dove field management on Boeuf WMA. **CENTER:** ATV trail construction project on Russell Sage WMA. **RIGHT:** Pumping station for Russell Sage WMA green tree reservoir.

trails. Managed public hunts were also conducted on several WMAs. Combined results for managed deer hunts were 1,572 hunter efforts with a total of 104 deer harvested.

On Sandy Hollow WMA, the USDA Natural Resources Conservation Service (NRCS) Wildlife Habitat Incentive Program (prescribed burning) and cogon grass 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 23,262 eggs valued at \$432,437.50 were collected.

EGCP personnel maintained 191 wood duck boxes. Personnel also participated in the state-wide 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 disease samples across the region for Chronic Wasting Disease testing. EGCP personnel continued to work with the deer program 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.

MISSISSIPPI ALLUVIAL VALLEY - NORTH (MAVN) WMAs

(135,193 acres):

- Bayou Macon
- Ben Lilly
- Big Colewa Bayou
- Big Lake
- Boeuf
- Buckhorn
- Bussey Brake
- Floy Ward McElroy
- Russell Sage
- Sonny J.C. Gilbert

The primary habitat type found on MAVN WMAs is the Mississippi River Alluvial Valley

bottomland hardwood forest, with the exception of Sonny J.C. Gilbert 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 hardwood forest species. Moist soil management units and greentree reservoirs are managed to provide habitat for waterfowl and other wetland birds.

The major land ownership activity was the consolidation of the former Ouachita WMA within the new boundaries of Russell Sage WMA. The Louisiana Wildlife and Fisheries Commission, citing more efficient use of resources and the elimination of duplication of services for two adjacent properties, approved the consolidation in March 2015.

MAVN WMA biologists and technicians conducted a wide range of activities including research and surveys involving mourning doves, Canada geese, wood ducks, wild turkey, bald eagles, bobwhite quail, shorebirds, and white-tailed deer. These included collecting Chronic Wasting Disease and blood samples from deer, disease research in feral swine, as well as waterfowl swabbing for disease surveillance. Biologists and area personnel assisted the bear section with management activities, including the hair-snare project, trapping/collaring, den visits, and handled numerous nuisance complaints. 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. MAVN staff also performed



Youth Turkey Lottery on Tunica Hills WMA

a variety of development and maintenance functions such as boundary marking, road maintenance, water control structure operation, moist soil management, shorebird management, beaver and other nuisance animal control, farm contract supervision, equipment maintenance, public user data collection, vegetation control, and food plot planting. Staff continued to assist the forestry section with forest management activities, including treatment and prescription planning, timber marking, reforestation, and timber harvest monitoring. They also conducted managed hunts and research projects. Approximately 290 wood duck nesting boxes were maintained and monitored by MAVN WMA personnel.

Recreational opportunities were provided to thousands of hunters, fishers, campers, sightseers, and other public users. A total of 89,794 user days were estimated for MAVN WMAs during FY 2014-2015. Deer hunting was the most popular utilization of these WMAs. Either-sex deer hunts, including mandatory deer checks, self-clearing permit data, and youth hunts, were held on the WMAs, with 16,761 user-days recorded and 958 deer harvested. Youth deer and dove hunters on Big Lake, Boeuf, Buckhorn, 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 Russell Sage WMAs. Turkey hunting was provided on Bayou Macon, Big Lake, Boeuf and Sicily Island Hills WMAs, with 1,045 hunters harvesting 41 birds. Bayou Macon, Big Lake, Boeuf, Buckhorn, and Russell Sage WMAs provided quality waterfowl hunting for 10,562 hunters, including some who traveled from out of state. The Wham

Brake waterfowl impoundment on Russell Sage WMA was not at full functionality during a portion of the season due to an ongoing water control structure replacement project. A total of 8,439 small game hunters enjoyed hunting on MAVN WMAs.

Major projects being started or completed include:

- Completion of the engineering portion of the Wham Brake water control structure and bridge replacement project.
- Commencement of the Saline/South Trail RTP project on Russell Sage
- Completion of the greentree reservoir pumping facility on Russell Sage
- Completion of the Hwy 80 Russell Sage headquarters demolition
- Timber Stand Improvement on Russell Sage, Boeuf, Bayou Macon, and Sicily Island Hills

The “Wish I Could ATV Trail Ride,” an annual one-day ATV trail riding event, was held on Boeuf WMA in June 2015. The event attracted 2,700 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 WMA.

- 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 National Wildlife Refuge) and four U.S. Army Corps of Engineers properties (Bayou des Ourses, Dewey W. Wills tract, Little River tract and Shatters Bayou) are also managed within the MAVS.



LEFT: Attakapas WMA browse survey. RIGHT: Road construction project on 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 USFWS, U.S. Army Corps of Engineers, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, 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 220,015 user days were estimated for MAVS WMAs during FY 2014-2015.

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 12,170 user-days recorded and 923 deer harvested. An additional 753 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 43 turkeys were harvested by an estimated 875 users. This includes

22 youth hunters who participated in the Sherburne, Spring Bayou, Grassy Lake, and Pomme de Terre WMAs youth lottery hunts, harvesting two turkeys. A member of National Wild Turkey Federation or MAVS staff 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 23,530 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 14,685 for this period. Dove fields are maintained, along with many acres of 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 500 wood duck boxes, conduct pre-season wood duck banding, and collect samples for Chronic Wasting Disease, 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. Eighteen youth waterfowl lottery hunters harvested 70 ducks, for an average of 3.9 ducks per youth hunter. One-hundred-and-seven youth deer lottery hunters harvested 32 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 66 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. These hunters filled 325 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.

Major projects being completed included:

- Completion of Phase 2 of the Spring Bayou Boat Launch Project.
- 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 and camping areas 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.

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 Easements, 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.



Water control structure on new green tree reservoir on Dewey Wills WMA.



LEFT: Prescribed burning trailer, equipped with hand tools for accomplishing burns, is available to private landowners through the Private Lands Program. **RIGHT:** Prescribed burn on native prairie in southwest Louisiana.

During FY 2014-2015, Private Lands Program biologists made habitat recommendations impacting 486,667 acres by conducting 226 site visits and delivering 44 written habitat management plans. They fielded 8,116 requests for information from the public. Under an agreement with USDA-NRCS, Private Lands Program biologists conducted 359 inspections of Wetland Reserve Easement 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.

Private Lands Program biologists are actively engaged with other agencies and organizations to coordinate conservation delivery efforts in Louisiana. A program biologist was vice chair of the Louisiana/Mississippi Conservation Delivery Network Steering Committee. Private Lands Program biologists are also active partners on the Texas/Louisiana Longleaf Pine Task Force, West-Central Louisiana Ecosystem Partnership, Louisiana/Mississippi Alluvial Valley Conservation Delivery Network, and other groups focused on natural resource management of private land in Louisiana.

Private Lands Program biologists are also responsible for carrying out activities such as migratory and resident bird banding, collection of biological data for research, habitat evaluations, disease investigations, nuisance animal response, administration of the alligator program, delivery of the DMAP program to 652 co-operators, and public outreach via workshops and media outlets.

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 2014-2015, the program provided direct input on many conservation programs, such as the Agricultural Conservation Easement Program (ACEP), Conservation Reserve Program, Environmental Quality Incentives Program, Regional Conservation Partnership Program, Conservation Stewardship Program and Working Lands For Wildlife Program included in the Agricultural Act of 2014. In addition, the program provided training for Private Lands Program staff and developed recommendations on individual properties to facilitate enrollment into Farm Bill conservation programs. The Farm Bill Program also began implementation of an agreement with the USDA-NRCS to provide technical assistance for the Wetland Reserve Program and ACEP. This agreement provides funding to develop wildlife habitat management recommendations in response to Compatible Use Authorization requests on Wetland Reserve Program/ACEP easements in Louisiana, which currently total approximately 298,000 acres. Additional accomplishments in FY 2014-2015 include working with numerous partners and states through Conservation Delivery Networks to develop a state proposal for the Wetlands Reserve

Enhancement Program. This project involved creating additional wetland habitat for migratory birds and other wildlife and enhancing water quantity and quality in northeast Louisiana. Input was also provided on recommendations to the Farm Service Agency on implementing a practice for Conservation Reserve Program that will provide incentives for landowners to enhance habitat for quail and other grassland birds on upland Conservation Reserve Program tracts in Louisiana which total approximately 40,000 acres. Lastly, the program, along with other LDWF staff, developed plans for and implemented the first timber thinning operation in a restored bottomland hardwood site enrolled in the Wetland Reserve Program. These actions will be used to guide implementation of similar practices in three states.

GRANTS

During FY 2014-2015, two 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 over 30 tracts and impacted over 5,000 acres. These activities will continue during the current fiscal year effort will be made toward procurement of additional State Wildlife Grant funding. In addition, the program continued delivery of a National Fish and Wildlife Foundation grant, secured to fund prescribed burning on 7,000 acres of privately owned forestlands in Central Louisiana.

EDUCATION

Conservation education is a vital part of the LDWF mission. The Education Program is a component of the Office of Wildlife 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 administrative specialist, one education manager, and one education program manager. The Archery in Louisiana Schools program has one state coordinator, one regional coordinator, and two part time employees. Three full time and one part time 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 stu-

dents 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 2014-2015, 142 new volunteer instructors were trained through 11 instructor courses. A volunteer instructor workshop was held at Camp Grant Walker in Pollock, La., with 90 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 2014-2015, volunteers contributed 25,863 hours of service time.

STUDENT CERTIFICATION

Total hunter education certifications remained similar to last fiscal year (14,978 in FY 2013-2014). The home-study version continues to increase in popularity as the number and proportion of students choosing this option increased in FY 2014-2015 (3,114 students for 21 percent in FY 2013-2014). Demand for bowhunter education remains low 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	365	11,142	74%
Home Study/Field Day	138	3,915	26%
Total	503	15,057	

Bowhunter Education

Four bowhunter education classes were offered, with 68 students certified.

HUNTING INCIDENTS

During FY 2014-2015, there were nine reported hunting incidents involving injury. None of the nine resulted in fatalities. Two 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 2015 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	4
Failure to Use a Fall Restraint Device	1
Failure to Identify Target	12
Failure to Check Beyond Target	12
Faulty Equipment	1
Shooter Stumbled & Fell	1
Total Incidents	9

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. An effort is being made to increase volunteer recruitment to assist with range duties. Volunteers



Shooting range at LDWF Woodworth Outdoor Education facility

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. (SELFS). SELFS 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 SELFS. Some of the SELFS 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 2014-2015, volunteer aquatic education volunteers provided 10,223 hours of service which was used as in-kind match for the aquatic education federal grant.

FISHING CLINICS

Sixty-nine aquatic education clinics were held across the state, with 6,295 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 youth aged 10-15 was held for the third time at the Woodworth Outdoor Education Center. Twenty youths 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" – 6,392 distributed
- "Let's Go Fishing" – 5,811 distributed
- "Finnie the Fingerling" – 3,713 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 6-10, 2014 and June 15-19, 2015 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. Forty teachers were trained at these two workshops 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. One workshop was held in which 13 teachers were trained.

Native Fish in the Classroom

Native Fish in the Classroom is a multidisciplinary, classroom-based aquaculture stewardship project for middle school and high school students. The goal of the Native Fish in the Classroom 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 2014-2015 school year, 24 teachers and 2,084 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.

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 2014-2015 with 135 participants and a Beyond BOW deer hunt was conducted on Floy McElroy WMA.

FAMILIES UNDERSTANDING NATURE (FUN) CAMP

Families Understanding Nature provides 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 2014-2015. 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. 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. One-hundred-twelve schools are currently participating in the program impacting an estimated 22,500 students. Two regional and one state tournament were held in FY 2014-2015. Thirty-nine schools were represented and 1,679 archers in the elementary, middle and high school divisions participated. Teams and individuals from five Louisiana schools participated in the National Archery in the Schools Program World Tournament July 22-25 in Nashville, Tenn. The Benton Elementary and Middle School teams placed first in their divisions, bringing home two World Champion trophies 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, 103 apprentices and 42 mentors have signed up, with 17 new pairings being made for FY 2014-2015.

COASTAL & NONGAME RESOURCES

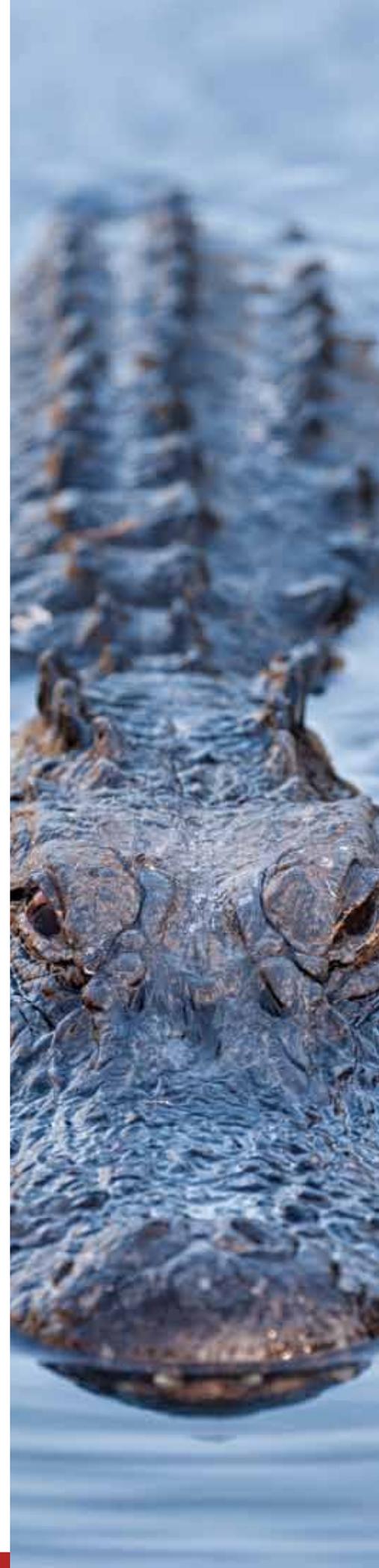
ROCKEFELLER WILDLIFE REFUGE

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 wildlife and fisheries 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 published 350+ peer-reviewed manuscripts, while also preparing technical reports and contrib-



Green-winged and blue-winged teal in RWR management unit.



uted papers to professional conferences. 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.

CONSTRUCTION/REPAIRS

RWR personnel and administrators continue to work with FEMA to expedite post hurricanes Rita and Ike construction projects. Maintenance and construction staff continued to clean ditches and maintain levees throughout the marsh on RWR.

Additional funds were approved FY 2014-2015 to build the new laboratory and grow-out facility near the storm platform, with staff continuing to work with architects on the design; bids are anticipated FY 2015-2016. Plans for the West End Dorm were completed FY 2014-2015 and bids are also anticipated FY 2015-2016. Additional FEMA funded projects that were initiated in FY 2014-2015 include water control structures and levees to be replaced (Old Cop Cop, Josephine, Dyson, Dyson Plug, Vermilion Nine Pipe) or repaired (Big and Little Constance, Unit 3 levees); completion of many of these projects should occur FY 2015-2016. Construction also began on 50,000 feet of marsh terraces for the Superior and Price Lake units, and these should be completed in FY 2015-2016. Capital Outlay levee work (Units 1, 8, 10, 13, and Price Lake) is ready for bid and is anticipated in FY 2015-2016. The five-mile Superior Levee test section was nearing completion in June 2015 (vicinity of Deep Lake) with 17 additional miles scheduled for construction in FY 2015-2016.

In addition to FEMA associated projects, RWR and Ducks Unlimited partnered to replace the two water control structures to manage the Price Lake Unit (collectively called the LSU structure). Both old structures were replaced with a larger, single water control structure; this structure will be dedicated as the Tom Hess Water Control Structure (FY 2015-2016) to honor the long-time RWR biologist and program manager. The design by Ducks Unlimited used a new box header to accommodate larger flows and a sluice gate option to alleviate large flood events. Along with the structure, fiberglass walkways and piers were installed to provide additional recreational fishing opportunities at the new structure.

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. Due to mounting costs and several failed attempts, it stopped drilling at about 24,500 feet; the rig was demobilized and off site by June 2014. Following the price reduction in oil/natural gas in FY 2014-2015, Chevron is planning to plug and abandon the site FY 2015-2016.

Staff continues to recognize the minimal requirements for removing Enlink pipeline on RWR property. Meetings and field trips were initiated in order to minimize impacts across the refuge. However, this project has been delayed due to the low oil/natural gas prices.

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. 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 waterfowl forage, 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 U.S. Army Corps of Engineers (USACE) for approximately 76 miles of levee restoration. Hydrologic restoration and unit management have improved as a result of completion of FEMA projects, while ditch maintenance of Unit 8 was completed. In addition to water control, staff performed vegetation control with herbicides via airboat to help improve habitat in units 6, 8 and 9. Aerial applications were also conducted to assist with vegetation control of 300 total acres in units 8 and 13.

Plans were initiated in FY 2014-2015 to reclaim Unit 9 (about 90 acres) and use it as the second release site for whooping cranes in southwestern Louisiana. Staff completed a prescribed burn in February 2015 and later completed a herbicide application of the unit in May 2015. Additional unit improvements (e.g., levee repairs, ditch maintenance, water control structure input) and pen construction is expected for FY 2015-2016.

Marsh fires during the right time of the year 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. However, during FY 2014-2015, water levels in many of the units were above marsh level precluding the ability to burn marsh units. Approximately 390 acres were prescribed burned in units 1 and 9, with a lightning fire burning approximately 1,000 acres in Unit 5.

Refuge staff continued monitoring giant salvinia and feral hogs, with both species showing signs of increasing 2012-2014. Since then, salvinia has been effectively managed on the refuge via the use of higher levels of salinity that are introduced by opening the East End Locks. Little sign of feral hogs were observed in FY 2014-2015, likely due to the overall higher water levels maintained in several of the units. Efforts will continue in FY 2015-2016 to monitor the status of these two invasive species on RWR.

Marsh Creation and Habitat Enhancement with Beneficial Use of Dredge Material

LWDF 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 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).

The Louisiana Department of Wildlife and Fisheries (LDWF) originally permitted three areas on RWR as potential wetland mitigation sites in 2000 (totaling 177.7 acres). The first site (4.7 acres) was completed FY 2009-2010, and the second site (66 acres) was completed during FY 2011-2012. Dredging at the third site (107 acres; above) was completed FY 2013-2014, and grass plantings occurred in April



LEFT: Recently planted marsh mitigation bank site. **RIGHT:** Rock breakwaters shoreline protection test section.

2015. Staff monitor these sites annually, with very successful grass plantings observed at the 4.7 and 66 acre sites. Consequently, these marsh creation projects have attracted fisheries species, a diversity of birds, and even muskrats.

Shoreline Protection and Stabilization

The shoreline along RWR's 26 miles of beach erodes approximately 30-50 feet per year. However, bio-engineered oysterings and lightweight aggregate core test sections have demonstrated to be effective in minimizing shoreline erosion. Preparations were made by refuge staff for Phase II Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) funding for three miles of breakwater sections west of Joseph Harbor with design work assistance from J. Foret (National Oceanic and Atmospheric Administration). The CWPPRA board failed to vote for the project in December 2014, but staff will pursue project funding by CWPPRA in 2015 and hope for a different vote outcome.

WILDLIFE MANAGEMENT

Alligator Nuisance Harvest

An experimental nuisance alligator harvest was conducted on RWR from Sept. 3-7, 2014 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 2014 alligators harvested was 7.68 feet compared to 7.61 feet in 2013. The average price per foot was \$27.87 in 2014 compared to \$32.03 in 2013; 2014 prices were lower than the high of \$38.28 per foot in 2008.

FISHERIES MANAGEMENT

RWR continued an 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 also



Largemouth bass reared at RWR.

improve recreational opportunities for the species on RWR. In the spring of 2015, the rearing ponds at RWR were stocked with 556,800 fry, and later seining of these ponds resulted in approximately 285,259 fingerlings (51.2 percent survival rate). Approximately 150,859 Florida-strain largemouth bass fingerlings were stocked on RWR in June 2014 with the remaining fingerlings stocked by LDWF Inland Fisheries division in the Red River in 2015 (134,400 fingerlings). We hope to continue this cooperative effort to assist Inland Fisheries with their target stocking goals.

WATERFOWL PROGRAM

In 1994, RWR began a long-term mottled duck banding program to monitor annual survival rates and analyze distribution along the Gulf Coast between Texas and Louisiana. The banding effort is now a cooperative effort with Texas and Louisiana and involves many state and federal biologists, technicians and student workers. Some of the early analysis of data has shown high variability in survival rates with some mortality attributed to hunting. Coastal and Nongame Resources (CNR) biologists completed the 21st year of the program by banding 1,781 mottled ducks statewide in 2014. Since 1994, CNR staff have banded 39,424 mottled ducks.

Black-bellied whistling ducks (*Dendrocygna autumnalis*) have greatly expanded their range since the mid 1990s to include southern Louisiana and recently as far east as the Carolinas. Black-bellied whistling duck banding efforts have been ongoing in Louisiana since 2010 in collaboration with LDWF Waterfowl Biologist Paul Link. During the spring of 2015, refuge biologists banded a total of 361 individuals at three sites in southwestern Louisiana.



Mottled Ducks

Winter aerial waterfowl surveys are conducted annually over CNR areas in south Louisiana on a monthly basis from November through January. Transects are flown in each management unit and the unmanaged marsh area, and thereafter, extrapolated to yield an estimate of total ducks on the area. The mean duck survey estimate on RWR during 2014-2015 was approximately 106,018 ducks per survey and is 73 percent higher than the long-term survey estimate from 1999-2013 (61,138 ducks per survey). The mean 2014-2015 estimates were 334 percent higher than the 2013-2014 survey average (31,719). We anticipate that ongoing marsh management activities will continue to improve waterfowl counts in the upcoming years.

A staff biologist also participated in the 2015 Mississippi Flyway Waterfowl Wing Bee in Carbondale, Ill. The wing bee provides data

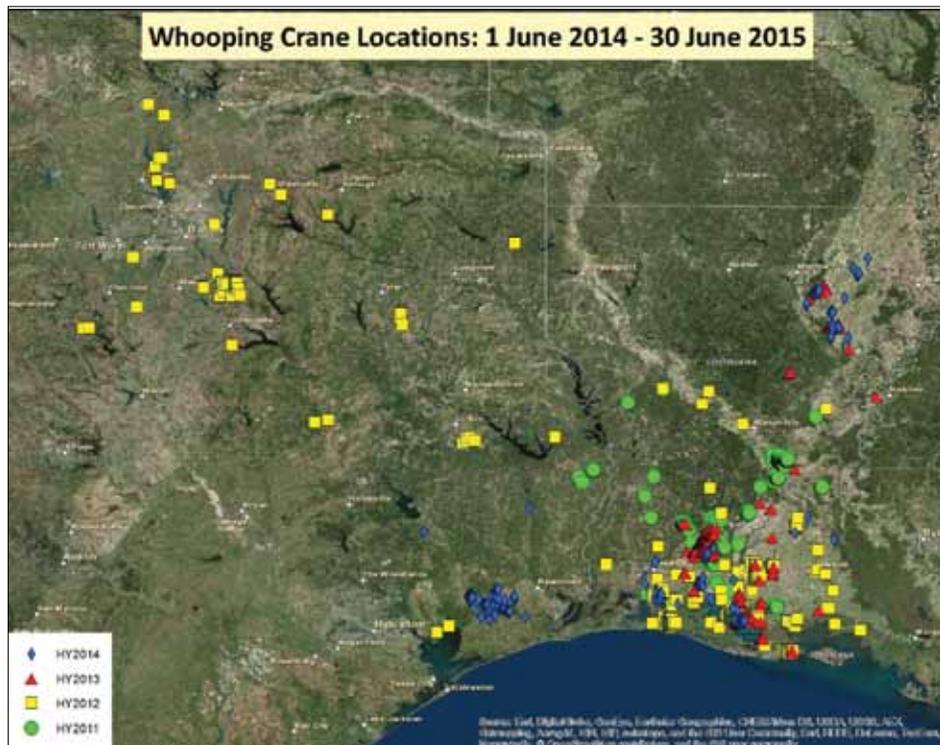
used to calculate the species composition, age and sex of duck species in the harvest, with approximately 30,000 waterfowl wings identified annually. When this data is combined with banding data, it allows an estimate of reproductive success from the previous year and a measure for the relative harvest rate for each age and sex. The data also provides spatial and temporal information regarding the distribution of the duck harvest.

WHOOPING CRANES

The Whooping Crane Reintroduction Program in Louisiana continued significant positive progress during this reporting period. First, the current population has a 61 percent survival rate (39 of 64 individuals), with the status of six cranes currently unknown. Survival of cranes within the 2011-2014 cohorts continues to be high after one year (70-75 percent survival), with minimal mortality following this one year period. To reduce costs associated with satellite PTT services, we evaluated cellular, GSM transmitters this year to track four juveniles and one adult crane; we will continue the trial in FY 2015-2016 to determine their utility in this region. At the end of the reporting period, 27 cranes were located in Louisiana and six in Texas. As in previous years, many cranes continue to heavily use the working wetlands - rice and crawfish agriculture - of the historical Cajun Prairie region of southwestern Louisiana (Jefferson Davis, Vermilion and Acadia parishes). We have also seen an expansion of habi-

tats used in the Mississippi River Alluvial Plain of northeastern Louisiana; these habitats are primarily being used by individuals from the 2013 and 2014 cohorts. Habitat use data continues to indicate that they are habitat generalists, with likely generalized diets.

We observed increased nesting activity in spring 2015, with four pairs nesting (five attempts including one re-nest). The nest locations were scattered across a wide spatial area in southwestern and central Louisiana in widely different habitats. For the latter, nesting was confirmed in coastal marshes on White Lake Wetlands Conservation Area, Vermilion Parish), an actively fished crawfish pond on private land (Avoyelles Parish), a riparian freshwater marsh/swamp (Allen Parish), and an impounded, inland wetland (Allen Parish). The diversity of habitats used is encouraging and is similar to the diversity of habitats (e.g., in coastal wetlands, agricultural lands, seasonal wetlands, etc.) used by reintroduced cranes in Louisiana during the non-nesting period. Where possible (i.e., non-marsh habitats) we continued conducting time activity budgets of nesting pairs. The nesting pairs observed exhibited high levels of nest attendance, with three of the five nesting attempts incubating nests to full term. However, none of the nests produced a hatched chick in 2015. Two nesting attempts by the same pair failed due to egg infertility (the same pair that laid two infertile clutches in 2014), one failed due to flash flooding associated with heavy rainfall (fertile egg),



Whooping crane nest with eggs.



*Help Restore a
Louisiana Treasure*
Protect Whooping Cranes

**Report Wildlife Violations to
1-800-442-2511**

Whooping crane billboard.

and two failed for unknown reasons after 16-37 days of incubation. We have not observed any incidence of biting black flies or other horsefly species interrupting observed nesting attempts in the Louisiana flock. We have observed six breeding pairs formed at the end of the reporting period, with potentially several more pairs forming going into the 2016 nesting season. Therefore, we expect to observe additional nests in 2016.

Public education remains a high priority of the reintroduction program. LDWF staff participated in over 50 festivals and events. A major focus of the education efforts centered on six teacher workshops with 74 middle and high school teachers from Louisiana. The Alexandria Zoo (Alexandria, La.) has shown interest in providing education/outreach opportunities to zoo patrons, with LDWF highly supportive of this cooperative effort. The whooping crane public awareness media plan for 2014-2015, funded by a grant from Chevron, included the use of billboard space provided by Lamar Advertising, radio commercial space purchased through the Louisiana Association of Broadcasters, and television commercial space purchased on cable television systems in Alexandria, Lafayette and Lake Charles. Billboards alone were estimated to reach almost 850,000 viewers. A survey of licensed hunters was also conducted to determine awareness and source of awareness of the reintroduction program. Within the survey group (2,165 licensed hunters), 56 percent had heard about the reintroduction. When asked how they heard about the reintroduction their responses were as follows: TV - 29 percent; radio - 16 percent; website/social media - 14 percent; newspaper - 11 percent; billboard - 8 percent; teacher workshop - 1 percent; and festival - 1 percent. Landowner relationships also remain a high priority, with continuing education efforts ongoing within the crawfish industry. LDWF staff continues to receive high support from farmers with cranes on their

property, and no landowner to this point (since 2011) has denied access to their properties.

However, as with prior reporting periods, we were not immune to some setbacks. We had four confirmed/likely mortalities during the reporting period, but this was less than the seven reported last year. Mortalities in 2014-2015 included one via power line collision, one via gunshot, and two likely mortalities with unknown fate.

We will continue to find new and exciting ways to ensure that this reintroduction succeeds, including activities associated with our management, research and education/outreach programs. During late 2015, a new release pen will be constructed on RWR into a refurbished 90-acre marsh unit. This is being completed to facilitate the ability to split the 2016 cohort, additional capacity of future cohorts, and to determine if cranes released "deeper" into the marsh will avoid venturing to the north where all gunshot mortalities have occurred.

The Whooping Crane Program is supported by multiple funding cooperators including Rockefeller Trust Funds, U.S. Fish and Wildlife Service, State Wildlife Grants, and corporate partners Chevron and ConocoPhillips.

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. A Research Ornithologist was hired August 2015, as well as a Research Technician in March 2015.

Outside researchers made five research requests and all were approved to use RWR as a study site. Projects included testing a new crab trap bait (LSU), trapping for American eels to determine population status and trap effectiveness (LDWF, Fisheries), using MaxEnt models to assess restoration on coastal bird species (University of Louisiana at Lafayette), terrapin reproductive physiology (SELA), and saltmarsh insect dispersal (LSU).

STAFF RESEARCH AT RWR

Diamondback Terrapin Population Status and Reproduction

During the spring of 2015, staff sampled for terrapins at three sites in Vermilion and Cameron parishes. Seventy-two terrapins were captured, including 10 long-term recaptures. Over the five-year study (2011-2014), 872 terrapins (including 29 recaptures) have been captured, marked and released.

In addition to capture data, 17 females were found in the field to be gravid and were transported to Bayou South Animal Hospital in Lake Charles for radiographic analysis. Mean clutch size was 7.4 eggs (range: 5-10), with clutch size similar to other studies reported in other Gulf of Mexico localities. This project is funded through Rockefeller Operating Funds.

Nesting and Utilization of Shell Rake Habitat by Bird Species of Concern

During the spring and summer of 2015, staff surveyed all suitable shell rake nesting habitat for American oystercatchers and colonial nesting seabirds in Cameron and Vermilion parishes. Two pairs of American oystercatchers were observed around the Calcasieu Lake area and one was observed near Sabine Lake, but no nesting activity was recorded. Seven pairs of American oystercatchers were observed on shell rakes in the Southwest Pass area adjacent to Marsh Island. Six nests from four pairs were

monitored in this area from March 31 - July 9. One nest hatched three chicks and fledged one chick in this area. Three adults and one chick were captured and banded using color bands with unique numeric combinations.

Five colonies of black skimmers and terns were located and monitored in the Southwest Pass region. The maximum number of tern nests and chicks counted within a colony was 135 and 49, respectively. The maximum number of black skimmer nests counted within a colony was 94. This project is funded through Rockefeller Operating Funds.

Nesting Ecology of Great Egrets in Phragmites

During the spring of 2015, staff counted all egret nests within Unit 14 of RWR by boat or drone. Nests were identified as having eggs, chicks (i.e., hatched), empty, or unidentified. The maximum number of nests with chicks was 130 during any count and the maximum number of nests with eggs during any count was 40; we believe efforts to count nests were conducted after the peak egg-laying period. A final count was conducted by drone to get an estimate of the total number of chicks. Approximately 125 chicks were observed in the drone footage and these chicks were believed to be at or near fledging age. This project is funded through Rockefeller Operating Funds.

COLLABORATIVE RESEARCH AT RWR

During the 2014-2015, 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:

- Habitat use and movements of reintroduced whooping cranes in southwestern Louisiana. W. Selman and S. Zimorski with

T. Perkins and S. King, LSU (funded by State Wildlife Grants).

- 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 (funded by Rockefeller Trust Funds and Gulf Coast Joint Venture).
- Hybridization and population structure of mottled ducks in the western Gulf of Mexico. W. Selman with R. Ford and S. Taylor, LSU (funded by Gulf Coast Joint Venture and LSU startup funds to S. Taylor).
- Establishing a spring Neotropical songbird migration station located in Nunez Woods. S. Collins with F. Moore, The University of Southern Mississippi (funded by Rockefeller Operating Funds and NSF funds to F. Moore).
- Population status of diamondback terrapins in Louisiana and the interaction of crab fisheries on population viability. W. Selman with J. Weibe and B. Stultz, LDWF (funded by LDWF Office of Fisheries).
- Population genetics of diamondback terrapins in Louisiana. W. Selman with C. Petre and B. Kreiser, The University of Southern Mississippi; S. Pearson and J. Weibe, LDWF (funded by Rockefeller Trust Funds).
- Pigment variability of diamondback terrapins in Louisiana. W. Selman with B. Reinke, Dartmouth College; S. Pearson and J. Weibe, LDWF (funded by Rockefeller Operating Funds).
- Reproductive physiology of diamondback terrapins in the Gulf of Mexico. W. Selman with J. Donini and R. Valverde, Southeastern Louisiana University (funded by Rockefeller Operating Funds and independent grants to J. Donini).

PUBLICATIONS BY RWR STAFF BIOLOGISTS

Eley, R.M., W. Selman, J.G. Nevarez, R.W. Bauer, R. King, and M. Dupuis. 2015. *Alligator mississippiensis* (American Alligator). Necrotizing exfoliation. *Herpetological Review* 46:246-248. *Alligator Resource Fund

Huntzinger, C.C., E. Lyons, and W. Selman. *Sternotherus odoratus* (Common Musk Turtle). Geographic distribution note. *Herpetological Review* 45:658. *SWG T-094

Huntzinger, C.C., K. Cantrelle, E.K. Lyons, and W. Selman. *Sternotherus carinatus* (Razorback Musk Turtle). Geographic distribution note. *Herpetological Review* 45:657. *SWG T-094

Jodice, P.G.R., J.M. Thibault, S.A. Collins, M.D. Spinks, and F.J. Sanders. 2014. Reproductive ecology of American Oystercatchers nesting on shell rakes. *The Condor* 116: 588-598. * previous funds to P. Jodice

Lindeman, P.V., I.J. Louque, Jr., C.C. Huntzinger, E. Lyons, S.H. Shively, and W. Selman. 2015. Eye color and chin pattern in the turtle *Graptemys pseudogeographica* in the Calcasieu River drainage of Louisiana, with comparison to adjacent drainages. *Herpetological Review* 46:179-185. *SWG T-094

Louque, Jr., I.J., W. Selman, C.C. Huntzinger, and E.K. Lyons. 2015. *Graptemys sabinensis* (Sabine Map Turtle). Kyphosis. *Herpetological Review* 46:81.

Selman, W. 2014. Review of "The Map Turtle and Sawback Atlas: Ecology, Evolution, Distribution, and Conservation" by P.V. Lindeman. *Copeia* 2014:596-597. *SWG T-094

Selman, W. and C. Baccigalopi. 2014. *Malaclemys terrapin* (Diamond-backed Terrapin). Geographic distribution note. *Herpetological Review* 45:460. *Rock operating



LEFT: Diamondbacked terrapin. **RIGHT:** RWR Biologist Samantha Collins inspects shell rake habitat for nesting birds.



LEFT: A. Arfman, McNeese State graduate student, surveys shorebirds on Rockefeller Wildlife Refuge. **CENTER:** Installation of nets for Neotropical migrant banding station. **RIGHT:** J. Donini, Southeastern Louisiana University graduate student, collaborates on terrapin research at RWR.

Selman, W., B. Baccigalopi, and C. Baccigalopi. 2014. Distribution and abundance of diamondback terrapins (*Malaclemys terrapin*) in south-western Louisiana. *Chelonian Conservation and Biology* 13:131-139. *Rock operating

Selman, W., S. Zimorski, C. Gaspard, C.C. Smith, and P. Vasseur. 2015. Emydid turtles. Unusual basking location. *Herpetological Review* 46:78-79. *Whooping crane Funding listed previously

Vasseur, P.L. and P.L. Leberg. 2015. Effects of habitat edges and nest-site characteristics on painted bunting nest success. *Journal of Field Ornithology* 86:27-40. *previous funds to P. Leberg.

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 (887 technical assistance contacts, 1,748 general information contacts, 650 group contacts). One of the largest groups the refuge hosts each summer is the 4-H Marsh Maneuvers Camp. In 2014, 61 high school students from 17 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.

In addition to formal education and outreach opportunities, a new refuge website (www.rwrefuge.com) was completed in June 2015 to display the different ongoing refuge activities. The main topics presented on the website include public use, management and research, with the latter serving as a repository for the 500+ publications, reports and conference abstracts by RWR staff since 1955. The public use section has provided much improved information for visitors, particularly recreational fishermen.

Examples of other technical assistance provided by RWR staff include:

- conducted winter raptor surveys for the Hawk Migration Association of America.
- participated in the Christmas Bird Count.
- assisted the Natural Heritage Program by conducting surveys for winter plover species and beach nesting birds on RWR beaches, while also conducting marsh bird surveys at Cameron Parish sites.

- completed mourning dove banding for the statewide dove monitoring program.
- assisted private landowners in assessing marsh conditions and management for waterfowl.
- hosted personnel from the International Crane Foundation to tour potential whooping crane pen sites on RWR, observe nesting pairs, and tour landscape.
- served as co-chair for the Gulf of Mexico region of the Diamondback Terrapin Working Group and organized a regional meeting in Lafayette.
- conducted peer-review and editorial duties for scientific journals; reviewed graduate student theses.
- served as student presentation judge at international meeting.
- participated in guided tours to the whooping crane pen site and Nunez Woods Bird Sanctuary.
- presented on the whooping crane reintroduction to multiple grade school, college,



RWR staff provide airboat tours for numerous groups throughout the year.

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

- presented on coastal ecology and ecosystem services to the Southwest Louisiana Economic Alliance Leadership group.
- 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.
- participated in career fairs for Cameron Parish School District and the LSU AgCenter.
- assisted the Cameron Parish Sheriff's Office with the recovery of illicit narcotics from Rockefeller Beach.

RECREATIONAL USE

Marsh management units, and more specifically water control structures, continue to be very popular with sport fishermen. For the second consecutive year since hurricanes Rita and Ike, 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. New recreational opportunities include the construction of new bird observation tower on Price Lake Road and new fishing piers associated with the new Tom Hess Structure that manages the Price Lake Unit. In addition to the projects completed FY 2014-2015, recently completed projects - such as the new boat launches and bulkheading at Joseph Harbor (FY

2012-2013) and new fishing piers on Price Lake Road (FY 2012-2013 and FY 2013-2014) - have continued to be a great attraction for local and regional fishermen. The new recreational projects completed over the last five years has greatly enhanced the fishing opportunities at these already popular recreational areas.

In FY 2014-2015, 77,798 vehicles (approximately 182,225 person use days) were counted entering the refuge, which is approximately 10 percent lower than 2013-2014 data (86,639 vehicles, approximately 202,958 person use days). However, equipment failure in all quarters surely lowered our 2014-2015 estimate, and it is likely that FY 2014-2015 was similar or higher than FY 2013-2014. Staff are working to improve equipment for FY 2015-2016.

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 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 nine 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

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 1,300 acres of rice planted in 2015. There were approximately 600 acres of crawfish ponds on the property in 2015.

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 2014 Alligator Trapping Season. The average size of the alligators trapped was 6.51 feet, with an average live length value of \$23.04 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 2014, WLWCA received a payment of \$20 per egg. A total of 6,322 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

2014 - Seventy-nine fishing permits were issued at a cost of \$40 per permit. Permittees and their guest were allowed to fish the Flor-

ence 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.

2015 - Eighty-two fishing permits were issued at a cost of \$40 per permit. Permittees and their guests 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, 2015

WATERFOWL LOTTERY

Waterfowl Hunting (2014-2015 Season)		
	Total Hunts	Participants
Teal Lottery Hunts	9	105
Marsh Lottery Hunts	12	142
Youth Hunts	2	16
Rice Field Lottery Hunts	33	241
Group Hunts	12.5	144

Waterfowl Hunting Results (2014-2015 season)		
	Marsh	Rice Field
Total Ducks Harvested	2275	494
Average Kill/Hunter (ducks)	5.51	2.05
Total Geese Harvested	186	78
Average Kill/Hunter (geese)	0.45	0.32

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, 2015. 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 overnight trips. During this period there was one overnight trip scheduled and hosted by WLWCA for a group from The Nature Conservancy. The Nature Conservancy held their annual board meeting at White Lake and they had a total of 22 participants over the course of the two day event.

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 110 logged names in our Visitor’s Guest Book in FY 2014-2015.

EDUCATION, OUTREACH AND RESEARCH

MARSH MANEUVERS

During December 2014, 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 has been conducting research on the different plant species located on this prairie. To date, approximately 95 different species have been identified. A coastal prairie enhancement project is currently ongoing with the Louisiana Natural Heritage Program. This project is funded through the State Wildlife Grants Program.

WHOOPIING 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 right-of-way 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.

2014-2015 FINANCIAL REPORT

Totals	
Beginning Fund Balance 2013-2014	\$1,792,870
Total Revenue	\$1,412,680
Total Expenditures	-\$936,113
Ending Fund Balance 2013-2014	\$2,269,437

Revenue	
Group Hunt Trip Fees	\$135,314
Group Hunt Charitable Contributions	\$237,500
Agricultural Leases	\$716,503
Alligator Egg Collection	\$193,120
Lottery Hunt Fees	\$62,680
Alligator Trapping Income	\$22,373
Interest Income	\$1,559
Mineral Bonuses	-
Surface Leases	\$38,136
Surplus Property	-
FEMA Reimbursements	-
Oil and Gas Royalty	-
Non-Consumptive Trips	\$1,725
Fishing Lottery	\$3,770
Total	\$1,412,680

Expenditures	
Salaries	\$355,535
Wages	\$75,130
Related Benefits	\$212,021
Travel	\$163
Operating Services	\$89,967
Supplies	\$113,278
Professional Services	\$14,441
Other Charges	\$8,050
Acquisitions	\$40,331
Major Repairs	-
Interagency Transfers (insurance)	\$27,197
Total	\$936,113



Marsh Maneuvers students paddling in a waterfowl impoundment.



Group Hunt participants after a waterfowl hunt at White Lake WCA.



Eastern screech-owls hatched in a nesting box at White Lake WCA.



Biologist collecting waterfowl data.

LOUISIANA NATURAL HERITAGE PROGRAM

The Louisiana Natural Heritage Program (LNHP) is responsible for the conservation of Louisiana's rare, threatened and endangered 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/Community Ecology; Zoology; and Wildlife Action Plan/State Wildlife Grants.

LANDSCAPE CONSERVATION COOPERATIVES

We have continued to commit time and resources to participating in the Gulf Coast Prairie and the Gulf Coastal Plain and Ozarks Landscape Conservation Cooperatives (LCCs). LNHP staff participate both as members of the Steering Committee and Science Teams.

The LCC Science Teams have prepared a Science Agenda and Work Plan and are working on determining high priority needs and desired ecological states for priority habitat systems. Ongoing projects developed by the Gulf Coastal Plain and Ozarks LCC identifying desired ecological conditions for managed open pine habitats, a Southeast Conservation Adaptation Strategy, and alligator snapping turtle, Louisiana pearlshell mussel, Louisiana pinesnake, and gopher tortoise conservation efforts. Ongoing projects developed by the Gulf Coast Prairie LCC include a coastal prairie decision support tool, coordination of *Quadrula* species research, impacts to oysters from sea level rise, and alligator gar recruitment using river state specific floodplain inundation models.

EAST GULF COASTAL PLAIN JOINT VENTURE

LDWF LNHP continued to participate as a board member in the East Gulf Coastal Plain Joint Venture. The LNHP Program Manager continued to serve as chair of the Prescribed Fire Committee and coordinated the implementation of the Prescribed Fire Communications Plan. The East Gulf Coastal Plain Joint Venture'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.

LNHP staff participated in the planning committee for the Prescribed Fire Summit: Putting Fire to Work for Working Forests and Landscapes that was held in Tallahassee, Fla., July 28-29. Staff served on a panel to discuss Programmatic, Large-scale Communications Efforts, and presented on the East Gulf Coastal Plain Joint Venture's Prescribed Fire Strategy. LNHP staff also facilitated a Focal Break-out Discussion on Longleaf in Alabama, Mississippi, Louisiana and Texas. Resources from the summit can be found at the link below:

<http://www.ncsu-feop.org/RxFire/communications/resources.html>

SOUTHEASTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES: WILDLIFE DIVERSITY COMMITTEE

The Southeastern Association of Fish and Wildlife Agencies (SEAFWA): Wildlife Diversity Committee's 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 Wildlife Diversity Committee and attended the annual SEAFWA conference in October 2014. Staff also attended the winter Wildlife Diversity Committee meeting in Mansfield, Ga. During FY 2014-2015, this committee worked on the following: competitive State Wildlife Grant (SWG) proposal that included all southeastern states, worked with the committee's newly hired SE At Risk Species data coordinator on upcoming year's planned work and agreement on priorities and timelines for completion, developed a

post-multi-district-litigation work plan for species and status assessments, regional list of subject matter experts to facilitate collaboration, committee-endorsed process for reporting/publishing assessments and findings for non-candidate species, and draft work plan and schedule for species assessments.

RARE, THREATENED AND ENDANGERED SPECIES WORKSHOP FOR RESOURCE MANAGEMENT SERVICE TIMBER COMPANY

LNHP provided a workshop on rare, threatened and endangered species and communities for Research Management Service (RMS) in Jena, La. This workshop focused on rare elements that occur or may occur on RMS 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 RMS-owned sensitive habitat 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 rare, threatened and endangered 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 Working Group (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
- 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 State Wildlife Action Plan 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 of reptiles and amphibians
- Gulf Coastal Plains & Ozarks LCC Alligator Snapping Turtle/LA Pinesnake/LA Pearlshell Mussel Groups
- CORA and MYAU Conservation Strategy Development Team
- LA Pinesnake Conservation Committee
- LA Pinesnake Reintroduction Committee
- National Military Fish and Wildlife Association
- LA Amphibian Monitoring Program
- Gopher Tortoise Bank Review Team
- White-nosed syndrome committee: southeastern partners
- LA Pearlshell Mussel Conservation Committee
- LDWF 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 Rangelwide Conservation Strategy Working Group
- Gopher Tortoise Rangelwide 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
- Barataria-Terrebonne National Estuary Program 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
- Barataria-Terrebonne National Estuary Program Bird Project Committee
- Gulf Coast Joint Venture Landbird Monitoring, Evaluation and Research Team
- Gulf of Mexico Avian Monitoring Network
- Mississippi Flyway Council Nongame Technical Committee
- Natural Resource Damage Assessment (NRDA) Avian Restoration
- Southeast Partners In Flight
- Swallow-tailed Kite Conservation Alliance (Working Group)
- Whooping Crane/White Lake Advisory Board
- Prothonotary Warbler Working Group
- Loggerhead Shrike Working Group
- RESTORE Technical Science Review Team
- Secretive Marsh Bird Working Group
- Gulf Coast Prairie LCC Science Team
- Gulf Coast Prairie LCC Prairie Team
- Southwest LA Master Naturalists Chapter Board
- Region 4 Wildlife TRACS Working Group
- LSU Sustainable Bioproducts Initiative Advisory Committee

LNHP OUTREACH PRESENTATIONS AND PUBLIC EVENTS

- 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
- "Current Topics and Techniques in Conservation Science" (RNR 7016) course at LSU
- Louisiana Master Naturalists of Greater New Orleans training courses
- RMS Timber Company Rare Species and Habitat Workshop
- Birds, Bogs and Butterflies presentation and nature walk
- Louisiana Environmental Education Commission Convention
- Louisiana Heritage Cook-off festival
- Neotropical Migratory Songbird Tour
- BREC Blackwater Conservation Area Bioblitz
- Louisiana Wildlife and Fisheries Foundation Auction Bird Tours

- Grand Isle Migratory Bird Festival
- Audubon Endangered Species Day
- Lake Charles Arbor Day Celebration
- 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
- Various news outlet coverage of Bald Eagle nest surveys
- Annual Gopher Tortoise Council Meeting and Spring and Fall Business Meetings
- Field lecture to Biology class at SE LA University
- Lake Charles KPLC interview regarding disappearing geese
- Southeast Partners in Amphibian and Reptile Conservation Annual Meeting
- SEAFWA conference and Wildlife Diversity Committee meetings
- Annual Gopher Tortoise Candidate Conservation Agreement meeting
- Gopher Tortoise Minimum Viable Population Coordination meeting
- Louisiana Amphibian Monitoring Program Annual Meeting

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. The SWG program is now 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 (Wildlife Action Plan) by October 2005. In response, LDWF developed a Wildlife Action Plan (WAP) to establish conservation needs and guide the use of SWG grant

funds for the next 10 years. A crucial aspect of the WAP is the identification of Species of Greatest Conservation Need (SGCN), which are those species most in need of conservation action as identified by each state. The 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 42 WAP revision meetings were held before the end of the fiscal year, and significant progress was made on the revision. The SWG Coordinator devoted 920 hours to the revision during the fiscal year. Specific tasks completed during FY 2014-2015 included:

- Completed climate change vulnerability assessments for 70 SGCN
- Completed the Climate Change chapter of the WAP and provided the chapter to subject matter experts for review
- Identified draft Conservation Opportunity Areas (COAs) and identified priority habitats and SGCN for each COA
- Completed the Introduction, State Overview, Approach, SGCN Conservation, Habitat Conservation, Invasive Species, Climate Change, and Research and Monitoring chapters and made them available for LDWF review
- Provided a letter to 90+ partners organizations informing them of the upcoming availability of the WAP for review
- Posted the draft WAP on the LDWF website for public review

FY 2014-2015 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 \$12.7 million in federal SWG funding, with an apportionment of \$660,000 in FY 2014-2015. Louisiana has funded 139 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, non-governmental organizations 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 2014-2015, 20 new project proposals were received for funding consideration. Thirteen proposals received approval by the SWG Committee by the end of FY 2014-2015 (*Table 1*), and had been submitted to USFWS for approval, along with all required documentation. After grant closings on June 30, 2015, there remained 44 ongoing SWG-funded projects.

During FY 2014-2015, nine SWG grants were closed (*Table 2*). Copies of final reports for all closed SWG grants are available to interested parties upon request. Nineteen grant amendments were submitted to USFWS during FY 2014-2015, and 39 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 2014-2015 Louisiana SWG produced nine peer-reviewed publications, representing eight 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 SGCN, 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 2014-2015, a total of 1,500 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 received significant updates, modifications,

TABLE 1.

New Louisiana State Wildlife Grants Opened During FY 2014-2015	
Rare, Threatened, and Endangered Species Database	
Beach Nesting Bird Surveys	
Coastal Prairie Research and Stewardship	
Secretive Marsh Bird Surveys	
Alligator Snapping Turtle Headstart Program	
Distribution, Abundance, and Nesting of Reddish Egrets	
Habitat Affinities and Day-Roost Characteristics of Northern Long-eared Bats	
Barrier Island Rock Breakwaters as Habitat for Fish Species of Concern	
Assessment of Back Barrier Marsh Creation Projects to Provide Avian Habitat	
Biogeographic Analysis of Crawfish Biodiversity of Northwestern Louisiana	
Distribution and Abundance of Map Turtles in the Red and Ouachita Drainages	
An inventory and Comparative Study of Bees in the Endangered Coastal Prairie of Louisiana	
Aquatic Invertebrate and Habitat Assessment to Define a Reference Condition for Index of Biotic Integrity Development in the South Central Plains Ecoregion	

TABLE 2.

Louisiana State Wildlife Grants Closed During FY 2014-2015	
T-60	Integrated Waterbird Use of Moist Soil Areas on WMAs
T-72-6	Bear Conflict Management Program
T-96	Salt Dome Hardwood Forest Breeding Bird Point Counts
T-97	Species Diversity and Relative Abundance of a Butterfly Pollinator Community in a Louisiana Cypress Swamp
T-98	Migration, Home Range, and Habitat Use of Louisiana Bald Eagles
T-99	Telemetric Study of Feral Hogs in Mixed Hardwood-Loblolly Pine Forests
T-100	Dredge Spoil Island Management at the Atchafalaya Delta
T-109	Distribution and Survival of Brown Pelicans in Coastal Louisiana
T-307	A Survey of Crayfishes, Aquatic Insects, and Benthic Fishes of Concern

TABLE 3.

Grant	Citation
T-92	Daniel, W. M., Brown, K. M., & Kaller, M. D. (2014). A tiered aquatic life unit bioassessment model for Gulf of Mexico coastal streams. <i>Fisheries Management and Ecology</i> , 21(6), 491-502.
T-92	Daniel, W. M., & Brown, K. M. (2014). The role of life history and behavior in explaining unionid mussel distributions. <i>Hydrobiologia</i> , 734(1), 57-68.
T-94	Ilgen, E. L., Hartson, C. A., Zaleski, O. S., & Lindeman, P. V. (2014). Map Turtles of the Mermentau: Status Surveys of Forgotten Populations. <i>Chelonian Conservation and Biology</i> , 13(1), 1-8.
T-65	Owen, T. M., & Pierce, A. R. (2014). Productivity and Chick Growth Rates of Royal Tern (<i>Thalasseus maximus</i>) and Sandwich Tern (<i>Thalasseus sandvicensis</i>) on the Isles Dernieres Barrier Island Refuge, Louisiana. <i>Waterbirds</i> , 37(3), 245-253.
T-55	Kang, S. R., & King, S. L. (2014). Suitability of Coastal Marshes as Whooping Crane (<i>Grus americana</i>) Foraging Habitat in Southwest Louisiana, USA. <i>Waterbirds</i> , 37(3), 254-263.
T-94	Selman, W., Baccigalopi, B., & Baccigalopi, C. (2014). Distribution and Abundance of Diamondback Terrapins (<i>Malaclemys terrapin</i>) in Southwestern Louisiana. <i>Chelonian Conservation and Biology</i> , 13(2), 131-139.
T-90	Vasseur, P.L. and P.L. Leberg. 2015. Effects of habitat edges and nest-site characteristics on Painted Bunting nest success. <i>Journal of Field Ornithology</i> , 86(1):27-40.
T-109	Walter, S. T., Carlross, M. R., Hess, T. J., & Leberg, P. L. (2014). Demographic trends of Brown Pelicans in Louisiana before and after the <i>Deepwater Horizon</i> oil spill. <i>Journal of Field Ornithology</i> , 85(4), 421-429.
T-105	Woltmann, S., Stouffer, P. C., Burns, C. M. B., Woodrey, M. S., Cashner, M. F., & Taylor, S. S. (2014). Population Genetics of Seaside Sparrow (<i>Ammodramus maritimus</i>) Subspecies along the Gulf of Mexico. <i>PLoS one</i> , 9(11), e112739.

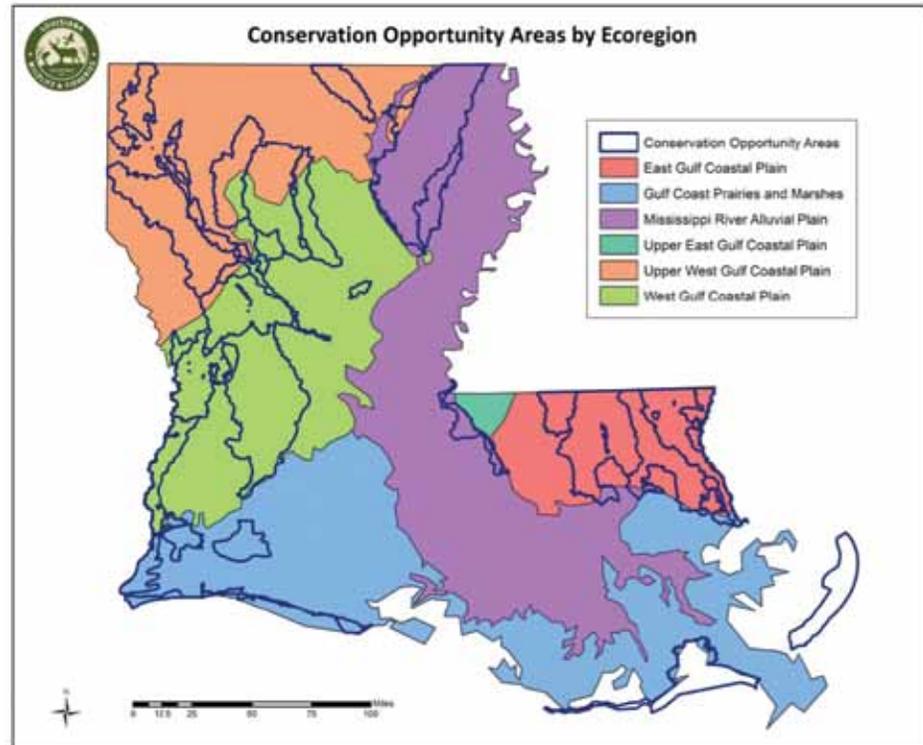


FIGURE 1. The above map is an overview of Louisiana Conservation Opportunity Area distribution relative to the ecoregions in the state.

and additions in Biotics from information gathered during flight surveys conducted in 2014. The bald eagle dataset also received significant updates, modifications and additions in Biotics from information gathered during flight surveys conducted in 2015. This was the first comprehensive bald eagle survey conducted by LDWF since 2008, resulting in 469 bald eagle records that were updated or modified and 30 new bald eagle records that were added to the database.

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 pipelines and roads. These activities repeatedly threaten SGCN 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 SGCN and natural communities within one mile of the project area. A comment letter is submitted to the requesting organization identifying potential impacts to SGCN, communities and critical habitats. The letter also indicates the presence of scenic rivers, state or federal parks, wildlife refuges, and wildlife management areas (WMAs) occurring within 400 meters of the project area.

LNHP receives Coastal Use Permits submitted to LDWF by the Louisiana Department of Natural Resources (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 SGCN. These flagged Coastal Use Permits are forwarded to LNHP biologists for review. As with private consultant reviews, comments are generated for potential impacts to SGCN, critical habitats, and natural communities. 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 2014-2015, LNHP staff conducted 1,421 project reviews which included 523 private consultant project reviews, 776 new or modified Coastal Use Permits, and 122 internal project reviews.

The LNHP Database Section processed a total of 35 digital data requests for private consultants, timber companies, nonprofit organizations, universities, and government agencies, an increase of 20 percent from FY 2013-2014. 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 SGCN 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 SGCN, natural communities and critical habitat, 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 five large-scale seismic and micro-seismic projects occurring throughout the state. These projects were reviewed by the LNHP and comments were submitted to the Seismic Section indicating potential impacts of these projects to SGCN and natural communities.

During FY 2014-2015, the Data Section provided considerable assistance on the development of two new WAP chapters - "Climate Change" and "Conservation Opportunity Areas (COAs)." In the previous fiscal year, WAP committee members began the process of developing COAs for inclusion in the WAP. COAs are landscapes located throughout the state that will provide high priority focal areas for conservation and restoration activities in Louisiana. Multiple variables went into the development of the COAs, with SGCN distribution being the primary factor used in delineating the COAs. The Louisiana Department of Environmental Quality (LDEQ) subbasins were used to show the distribution (both current and historical)

of SGCN throughout the state. During this fiscal year, fine-scale watershed-based distribution maps were created for 30 invertebrates and 51 natural communities. The distribution of SGCN and natural communities, along with several other factors including scenic rivers, urbanization data, existing protected lands, and high quality LDEQ subbasins for fish and wildlife propagation, went into developing 30 draft COAs.

Using the USGS National Land Cover Dataset and ArcGIS, all urban and other highly developed areas were clipped out of each COA. After all of the edits were completed and the COA boundaries finalized, the Database Section created SGCN lists for all habitat types located within each COA and seven COA Ecoregion maps identifying the COAs per Ecoregion.

The Database Section also assisted the WAP Coordinator with the Climate Change chapter, conducting climate change vulnerability assessments for Louisiana's SGCN. These assessments can be accomplished using a variety of tools, including NatureServe's Climate Change Vulnerability Index (CCVI). NatureServe's CCVI integrates projected exposure to climate change along with three sensitivity factors in order to generate a vulnerability score. During FY 2014-2015, there were 70 SGCN that were assessed using NatureServe's CCVI, and vulnerability scores were generated for each of these SGCN. Expert opinion was then used to assign a vulnerability score to an additional 238 SGCN in Louisiana. In addition to the CCVI work, the Database Section created multiple graphs for the Climate Change chapter.

Additional assistance provided by the Database Section on the WAP included:

- Updating all outdated information and maps in Chapter 2
- Recreating all tables in Chapter 2
- Creating threats assessment tables for a total of 70 natural communities and river basins
- Creating SGCN lists for all habitat types found within each COA
- Determining mussel distribution by LDEQ sub basin

PROJECTS

- The Database Section worked with US Fish and Wildlife Service (USFWS) on the "Best Management Practices for Oil and Natural Gas Drilling and Production in Louisiana Shale Plays" document. The section provided threatened and endangered species distribution maps for inclusion in the document. (Figure 2)

- Worked with NatureServe and Draxbiomass on a multi-jurisdictional sustainable forestry project. Draxbiomass proposed the development of a wood pellet plant in Bastrop, La., and requested sensitive species information within 70 miles of the proposed project site. LNHP worked with NatureServe, providing plant, animal and natural community data to Draxbiomass for the proposed project. (Figure 3)
- Worked on updating content information on the website, particularly the Species by Parish lists.
- Continued working on the SWG Scenic Rivers project (T-84).
- Worked on the Section 6 Environmental Review Tool Project.
- Assisted LNHP staff with field work for projects including:
 - Vegetation Surveys for the Sandhills Grant
 - Gopher Tortoise Surveys
 - Christmas Bird Counts
 - Piping Plover Surveys
 - Bald Eagle Surveys
 - LAMP Surveys
 - Secretive Marsh Bird Surveys
 - Breeding Bird Surveys
 - Beach Nesting Bird Surveys

BOTANY/COMMUNITY ECOLOGY SECTION

The main responsibilities of the Botany/Community Ecology Section include:

- Determining which plant species and natural communities (habitats) are rare in Louisiana.
- Conducting botanical inventories and ecological assessments on all types of land ownership. Interacting with landowners and managers to promote conservation of native plants and natural communities.
- Coordinating the Natural Areas Registry Program.
- Implementing habitat stewardship practices on LDWF-owned properties and private lands.
- Conducting education and outreach to promote understanding and appreciation of Louisiana's ecological diversity.
- Providing plant identification services to LDWF staff, natural resources professionals with other organizations, and the public.
- Working cooperatively with the Louisiana Master Naturalist Program.

RARE PLANT AND COMMUNITY SURVEYS

Collecting information in the field and from herbarium specimens is a routine activity. Many plant and community targets were the

Inflated Heelsplitter

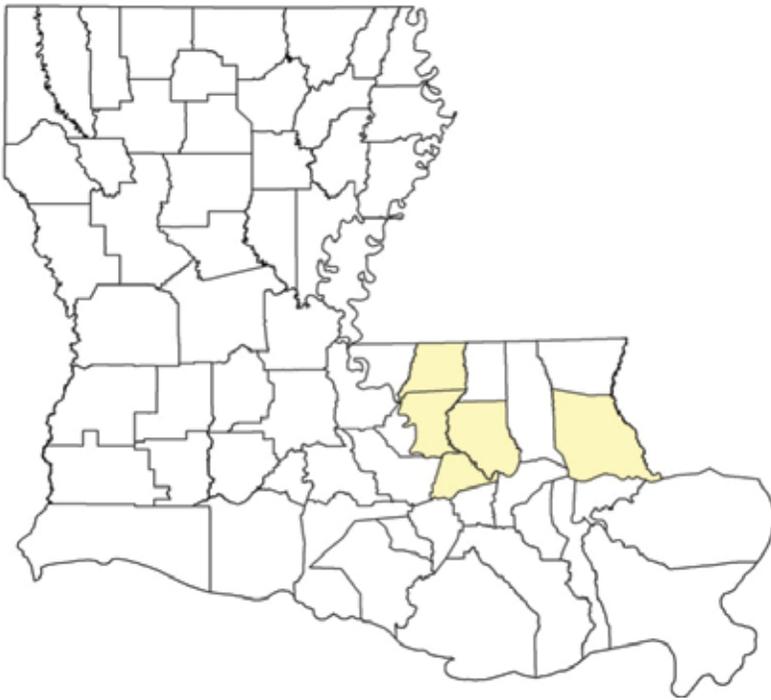


FIGURE 2. The above map shows the distribution of the inflated heelsplitter in Louisiana.



FIGURE 3. The above map shows the NatureServe/Draxbiomass multi-jurisdictional project which intersects Louisiana, Mississippi, and Arkansas. The LNHP provided all natural community data found within the indicated project area.

subjects of field surveys during the last fiscal year. Recently, these targets have been largely determined by geography, rather than taxonomy. An exception is Hall's pocket moss (*Fissidens hallii*). This species was petitioned for federal-listing. Botany/ Community Ecology staff have been gathering population data from herbarium specimens and conducting field surveys to locate this moss, which was last documented in Louisiana in 1997. Field surveys have not yet been successful, but will continue in the future. This moss may be truly rare, or simply overlooked due to lack of botanical exploration focusing on mosses. Historically, mosses have received practically no attention from LNHP botanists. This deficiency is currently being addressed by development of in-house expertise in bryology.

Botany/ Community Ecology Section initiated an intensive survey for rare plants and communities and invasive plants on approximately 40,000 acres of land recently acquired by Ft. Polk for military training. This project is fully federally-funded, with funds ultimately coming from U.S. Department of Defense. The final product will consist of geographic information presenting locations and attributes of target elements and depicting current and estimated historical vegetation types. Most of the land was acquired from forest products companies and therefore supports dense, fire-suppressed pine plantations. The Ft. Polk Environmental and Natural Resources Management Division will use the products delivered by the Botany/ Community Ecology Section to determine ecological restoration management actions.

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 three new properties totaling 121.85 acres were enrolled in the Natural Areas Registry. Enrollment of these three sites brings the total number of active Natural Areas to 120, capturing 48,684 acres. Nine Natural Areas received ecological "check-ups" this fiscal year. Technical assistance was provided to owners of five Natural Areas by telephone, email and in-person during site visits. Assistance included providing species identifications, information on conservation servitudes, help with marking boundaries, and writing letters of support for properties facing threats from development and vandalism. The Natural Areas Registry newsletter, "Bluestem," includes updates on the Natural Areas Registry (e.g. highlighting newly enrolled properties), articles relating to animal, plant and habitat conservation, conservation-related event announcements, and contact information for LNHP staff. During FY 2014-2015, one newsletter was sent to registry participants and other Natural Areas enthusiasts. Another newsletter was distributed in August 2015, just into FY 2015-2016. The next newsletter is planned for distribution in January 2016. The frequency of this publication during calendar years 2014 and 2015 has been semi-annual.



Sairah Teta presenting Natural Areas plaque to the owners of Silver Creek Forest Natural Area in Washington Parish.

HABITAT STEWARDSHIP

Habitat stewardship implemented by the Botany/ Community Ecology Section have focused on coastal prairie. This once extensive grassland is now critically imperiled (0.2 percent remaining of an original 2.5 million acres) and is a top conservation priority for LDWF. During FY 2014-2015, Botany/ Community Ecology staff, working with other biologists in LNHP and from Private Lands, applied prescribed fire to 800 acres among two prairie remnants on private lands in the Lake Charles area. This work is part of an ongoing research and stewardship project that is funded by a SWG. Botany/ Community Ecology staff also worked with WLWCA biologists to secure SWG funding to address woody encroachment on Deer Ridge, which supports marsh-fringing coastal prairie. Biologists at WLWCA conducted a prescribed burn in April 2014. Aerial herbicide application targeting Chinese tallow tree was accomplished

in late summer of 2014. This treatment was highly effective. However, a small area was not treated in the initial herbicide application and will be sprayed in late summer of 2016. Prescribed fire will be implemented on Deer Ridge again 2016, and consistently thereafter to prevent future woody invasion.

EDUCATION/OUTREACH

Botany staff delivered numerous presentations to other scientists, various clubs, university students, and science teachers during FY 2014-2015. Time was also dedicated to providing information at festivals and symposia. Organizations engaged and events attended during FY 2014-2015 included:

- Camp Grant Walker (LSU AgCenter 4-H camp)
- Ft. Polk Environmental and Natural Resources Division
- LDWF Education Program (Discovering Biodiversity Workshop)
- Louisiana Hiking Club
- Louisiana Master Naturalist Program (New Orleans Area Chapter)
- LSU School of Renewable Natural Resources
- Northlake Nature Center, Mandeville
- Resource Management Service, LLC (forest products company)
- Southeastern Partners for Amphibian and Reptile Conservation
- Stir the Pot Seafood Cook-off and Festival (Abbeville)

Scientific Publications

Rosen, D.J. and C. Reid. 2015. *Eleocharis X inaequilatera* (Cyperaceae), a new hybrid spikerush from the coastal plain of Louisiana and Texas. Phytoneuron 2015-23: 1-5.

Reid, C., D.J. Rosen, R. Carter, and P.M. Peterson. 2015. *Eragrostis plana* (Poaceae) new to Texas. Phytoneuron 2015-5: 1-3.

Non-technical Publications

Javed, S., C. Reid, and A. Bass. 2014. The Abbeville red iris. Fleur de Lis (Fall 2014): 9-10.

Reid, C. and A. Bass. 2014. Prairie in Louisiana. Louisiana Wildlife Insider (Winter): 12-13.

PLANT IDENTIFICATION

Botany/ Community Ecology staff members performed numerous plant identifications to assist others during the last fiscal year. Clients included other LDWF biologists, natural resources professionals outside of LDWF (government and private sector), students, and Louisiana citizens. Clients from within LDWF included biologists in Private Lands, Forestry, and Aquatic Plant Control programs. In many cases identifications were made from images or specimens provided. Plant identification assistance was also provided in the field.

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

LNHP administered federal aid grants for Species of Greatest Conservation Need through the Endangered Species Act Section 6 Program, Multi-state SWG, and Louisiana’s SWG Program. Section 6 projects included the following species: Louisiana pearlshell mussel, Louisiana pinesnake, gopher tortoise, as well



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.

as endangered species coordination. Section 6 Cooperative Agreements were renewed between LDWF, USFWS and National Oceanic and Atmospheric Administration.

Section 6 funds allowed staff to work on a multitude of rare, threatened and endangered species issues including:

- Coordination with USFWS to develop ranking maps for threatened and endangered species through the Wetland Reserve 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 surveillance, coordination and response plan.
- Conservation genetics of Louisiana pinesnakes (*Pituophis ruthveni*).
- Louisiana pinesnake 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.
- Partnering with private landowners and Weyerhaeuser for gopher tortoise status and potential habitat restoration.
- Louisiana pearlshell mussel population trends, long-term monitoring protocol, and data management.
- Louisiana pearlshell mussel conservation coordination with federal and parish partners.
- Louisiana pinesnake research and monitoring.

- The manatee sighting database was maintained and staff responded to stressed/dead manatees when reported.

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
- Bald Eagle Nesting Surveys
- Aerial Surveys for Colonial Nesting Waterbirds
- Distribution, Abundance, Nesting and Movements of Reddish Egrets in Louisiana
- Multistate Sandhills/Upland Longleaf Restoration Project
- Alligator Snapping Turtle Headstart Program

HERPETOLOGY

GOPHER TORTOISE

LNHP continues to partner 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 on Sandy Hollow WMA (33 adults with recruitment), Ben's Creek property (19 adults, no recruitment), pipeline rights-of-way (26 adults with recruitment), and a newly discovered population on Entergy's power line right-of-way

(seven adults, no recruitment) in Washington Parish. Habitat conditions surrounding tortoise burrows on the rights-of-way and adjacent areas were assessed. Four newly discovered burrows on private property in St. Tammany Parish were scoped, and two tortoises were present. Gopher tortoise population information for Louisiana was compiled and submitted to the Gopher Tortoise Minimum Viable Population working group for rangewide status assessment. 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.

Through Phase 2 of the Multi-state Sandhills/Upland Pine Restoration Grant, successful herbicide treatment was conducted on 549 acres (longleaf pine - 104 acres, slash pine - 237 acres, loblolly pine - 189 acres) surrounding gopher tortoise concentrations at Ben's Creek during the fall of 2014, and prescribed burning was conducted during May 2015 on 628 acres of private property in St. Tammany Parish, which currently has tortoises. Phase 3 of this grant was awarded in 2015, and LNHP plans to conduct prescribed burning in 2016 on approximately 1,500 acres of private properties surrounding Sandy Hollow WMA in Tangipahoa Parish. Prescribed burning is also planned for a privately-owned longleaf pine restoration site in St. Tammany Parish that is currently registered as a Natural Area under the LNHP Natural Areas Registry. LNHP will continue to work with private landowners interested in prescribed burning within the gopher tortoise range in Louisiana through other funding sources.



LEFT: Collaboration with stakeholders for gopher tortoise habitat improvements. **CENTER & RIGHT:** National Fish and Wildlife Foundation - Applied Scholar Program student intern assisting with gopher tortoise project.

LNHP continues to work with other states in the gopher tortoise's range as part of a "waif" tortoise working group to develop a program to address this issue. LNHP has constructed the third release pen for waif tortoises on Sandy Hollow WMA and received five waif tortoises during the past fiscal year. Health assessments and samples for Upper Respiratory Tract Disease testing were performed by the LSU School of Veterinary Medicine Wildlife Hospital. Four tortoises tested negative and were released at Sandy Hollow in 2015. One tortoise tested positive and was placed in a permanent home at Tickfaw State Park and will be used for educational purposes. An additional waif tortoise was received recently and will be released in 2016 on Sandy Hollow WMA pending favorable test results.

Cooperative planning efforts were made this fiscal year to host, for the first time in Louisiana, the 37th Annual Gopher Tortoise Council Meeting.

LOUISIANA PINESNAKE

The Louisiana pinesnake (*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 to habitat destruction and fire suppression. The majority of these snakes reside on industrial forest lands, and LNHP has been actively working with the timber industry to increase habitat quality by facilitating controlled burning through various grant programs. LNHP hired a new employee to work with our federal partners to develop a program for forest management practices that bolster the pinesnake populations and are compatible with timber harvest/production. This will allow the private industry to enter into Candidate Conservation Agreements with Assurances for the pinesnake. This program, be-

cause of the increase in quality habitat, could preclude the need to list the species; as well as, protect private landowners from future regulations in the event the species was to become listed. A recent study using federal funds was completed assessing the population genetics of this species. This information is being used to determine the next step in recovering this species.

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 pinesnake
- Use of detection dogs to detect Louisiana pinesnake
- Louisiana pinesnake habitat preferences
- Louisiana pinesnake food habits
- Louisiana pinesnake reintroduction feasibility

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 an SGCN (S3) in the state of Louisiana (LNHP 2015), and is listed as an SGCN in the 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 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 are 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 the fall of 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. 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. LNHP's Program Manager and Endangered Species Biologist participated in filming a television show for Louisiana Public Broadcast (LPB) with Chef John Folse and staff that highlighted



LEFT: Louisiana pearlshell mussel in Bayou Clear on Kisatchie National Forest. **CENTER:** Radio tagged alligator snapping turtle released at Sam Houston Jones State Park. **RIGHT:** Student intern assisting with Louisiana pinesnake surveys.



LEFT: "Hook's, Lie's and Alibis" filming with Chef John Folsie at White Oak Plantation.

the ecology, conservation and importance of the alligator snapping turtle to Louisiana's citizens. The show aired in the spring of 2015.

AMPHIBIAN AND REPTILE PROGRAM ACTIVITIES

Turtles

The biologist participated in the Marine Stewardship Council auditor meeting with Marine Fisheries as related to terrapin mortality and crab traps. Due to a renewed interest in commercial harvest of terrapins, the biologist worked with LDWF Enforcement to better define methods of take that are allowable for their harvest.

Turtle export data from the USFWS LEMIS (Law Enforcement Management Information System) were analyzed and tallied for calendar year 2014. From these, trends in harvest and sale of razor-backed musk turtles were evaluated. From data for 2014 and previous years, as

well as consultation with turtle trappers, buyers and exporters, the biologist prepared documentation for the USFWS regarding proposed additions of snapping turtles and softshells to CITES Appendices. The biologist also summarized Louisiana turtle landings from 1928-1971.

Proposed box turtle possession legislation, submitted by a private individual, was evaluated, resulting in a position letter for administrative staff. The biologist submitted a grant proposal to trap alligator snapping turtles in southwestern Louisiana, for review by the SWG Committee. The proposal was withdrawn when the turtle trapper caught 'ridgeback' fever.

Education

The biologist conducted a lecture on snakes and turtles for the Master Naturalist Program, presented a snake safety talk to CLECO employees, presented a talk on amphibians and reptiles to Boy Scouts in Metairie, and to fourth and fifth grade students at South Oaks

Elementary School in Denham Springs, gave talks on snakes to the Baton Rouge Hiking Club, and to the men's group of the Church at Marksville.

The biologist was interviewed about snakes for KATC TV in Lafayette, and performed for a Japanese News documentary on red-eared sliders, filmed at Capitol Lakes. The biologist also provided a turtle trapping demonstration in the Comite River for kids at the Enforcement Camp at Waddill, and participated in a Bioblitz of Blackwater for BREC.

Meetings

The biologist attended and participated in the Project Leaders Course (Baton Rouge), the annual Louisiana pinesnake group (Nacogdoches, TX), the Louisiana Association of Professional Biologists (Baton Rouge), the annual Louisiana Amphibian Monitoring Program meeting (Lafayette), Partners in Amphibian and Reptile Conservation meeting (Covington) and led its field trip to Big Branch National Wildlife Refuge, and served on the SWG Committee (Baton Rouge).

Miscellaneous Professional Duties

The biologist reviewed the following manuscripts: Chenier herpetofauna for Southeastern Naturalist; Maryland Snapping Turtle Harvest for The Wildlife Society Bulletin; Alligator Snapping Turtle Morphology and Genetic Variation for Zootaxa; and reviewed the PARC document on techniques used to monitor herpetofauna. He wrote the verbiage for the herpetofaunal inventory section of the Louisiana WAP, and drafted comments for Endangered Species Act listing of the black pinesnake. He provided comments to the USFWS Federal Register request regarding the importance of the North American Amphibian Monitoring Program.



LEFT: Gulf Coast box turtles mating, spring. **RIGHT:** Rough green snake hibernating in a crawfish burrow, late winter. (East Baton Rouge Parish)

The biologist reviewed and revised distribution maps for the forthcoming Peterson Field Guide to Amphibians and Reptiles, and worked with the LDWF Webmaster to improve the "Snakes of Louisiana" portion of the website.

Publications

The biologist neared completion of the manuscript for "A Field Guide to Louisiana Amphibians and Reptiles," and produced the following publications:

J. Boundy. 2014. Comments on some African taxa of leptotyphlopoid snakes. Occasional Papers, Louisiana State University Museum of Natural Science (84):1-7.

J. Boundy. 2014. Review of: G. Merker et al. Rosy Boas - patterns in time. Herpetological Review 45:720-721.

J. Boundy and P. David. 2015. The taxonomic status of the snake name *Tropidonotus roulei* Chabanaud, 1917. Herpetological Review 46:295-297.

B. Crother et al., 2015. North American Standard English & Scientific Names Database.

<https://ssarherps.org/publications/north-american-checklist/north-american-scientific-common-names-database/>

Services

The biologist served on the Standard English and Scientific Names Committee (Joint Societies: ASIH, HL and SSAR Snake subcommittee), continued as the Louisiana State Coordinator for the USGS: Biological Resources Division - North American Amphibian Monitoring Program, continued to serve on the Advisory Board of the Louisiana Gulf Coast Herpetological Soci-



Racer in late winter, fresh out of its muddy hibernaculum (Ascension Parish).

ety, and served as Vice President for the North American Field Herpetologists Association, South Central Chapter.

Miscellaneous

- Technical Contacts - 917
- General Contacts - 949
- Dredge Assessment hours - 37
- Restricted Snake Permits issued - 112
- Louisiana Amphibian Monitoring routes run - 61

Field Work

The biologist conducted six herpetofaunal surveys on private lands, 10 surveys on BREC park properties, two on national wildlife refuges, 11 on WMAs/LDWF sites, and 14 in state parks. One-hundred-fifty-two incidental surveys and observations were also made. Observed were 57 species (39 percent of the species in the state) and 1,439 individual amphibians and reptiles (Table 4). **Species of Greatest Conservation Need are in bold font.**

PUBLICATIONS

Gregory, B. B., J. O. Whitaker, Jr. 2014. Diet of Rafinesque's Big Eared Bat (*Corynorhinus rafinesquii*) in West-central Louisiana Southeastern Naturalist: 13(4):762-769

Gaillard, D. L., W. Selman, R. L. Jones, B. R. Kreiser, C. P. Qualls, and K. Landry. 2015. High Connectivity Observed in Populations of Ringed Sawbacks, *Graptemys oculifera*, in the Pearl and Bogue Chitto Rivers Using Six Microsatellite Loci. Copeia: 103(4):1075-1085.

SCIENTIFIC CONFERENCE PRESENTATIONS

Update on Louisiana Pinesnake Conservation. Southeastern Association of Fish and Wildlife Agencies Wildlife Diversity Committee meeting. Destin Fl. Oct. 20, 2014

Louisiana Pinesnake Conservation Efforts on both Public and Private Lands in Louisiana. Southeast Partners for Reptile and Amphibian



LEFT: Off-season Cajun chorus frog, fall (East Feliciana Parish). **CENTER:** Common five-lined skink, late spring (Livingston Parish). **RIGHT:** Rio grande chirping frog, parish record (East Feliciana Parish).

TABLE 4.

Species Observed	# Observed	Species Observed	# Observed
<i>Amphiuma tridactylum</i>	2	<i>Sternotherus odoratus</i>	6
<i>Ambystoma opacum</i>	9	<i>Pseudemys concinna</i>	18
<i>Ambystoma texanum</i>	2	<i>Terrapene carolina</i>	16
<i>Desmognathus auriculatus</i>	1	<i>Trachemys scripta</i>	99
<i>Eurycea guttolineata</i>	2	<i>Apalone mutica</i>	3
<i>Eurycea quadridigitata</i>	5	<i>Apalone spinifera</i>	8
<i>Plethodon mississippi</i>	1	<i>Hemidactylus turcicus</i>	43
<i>Scaphiopus holbrookii</i>	1	<i>Anolis carolinensis</i>	332
<i>Bufo fowleri</i>	18	<i>Sceloporus consobrinus</i>	3
<i>Bufo nebulifer</i>	57	<i>Plestiodon fasciatus</i>	57
<i>Acris crepitans</i>	125	<i>Plestiodon laticeps</i>	11
<i>Acris gryllus</i>	21	<i>Scincella lateralis</i>	102
<i>Hyla avivoca</i>	1	<i>Coluber constrictor</i>	11
<i>Hyla chrysoscelis</i>	call	<i>Farancia abacura</i>	2
<i>Hyla cinerea</i>	4	<i>Haldea striatula</i>	1
<i>Hyla squirella</i>	8	<i>Lampropeltis nigra</i>	5
<i>Pseudacris crucifer</i>	call	<i>Nerodia erythrogaster</i>	11
<i>Pseudacris fouquettei</i>	1	<i>Nerodia fasciata</i>	26
<i>Eleutherodactylus planirostris</i>	1	<i>Nerodia rhombifer</i>	10
<i>Eleutherodactylus cystignathoid</i>	9	<i>Opheodrys aestivus</i>	3
<i>Rana catesbeiana</i>	14	<i>Pantherophis spiloides</i>	7
<i>Rana clamitans</i>	141	<i>Storeria dekayi</i>	19
<i>Rana utricularia</i>	112	<i>Thamnophis proximus</i>	23
<i>Gastrophryne carolinensis</i>	13	<i>Thamnophis sauritus</i>	1
<i>Alligator mississippiensis</i>	7	<i>Thamnophis sirtalis</i>	3
<i>Chelydra serpentina</i>	1	<i>Agkistrodon contortrix</i>	1
<i>Macrochelys temminckii</i>	1	<i>Agkistrodon piscivorus</i>	38
<i>Kinosternon subrubrum</i>	12	<i>Crotalus horridus</i>	2
<i>Sternotherus carinatus</i>	9		



TOP: Personnel deploy a net used to capture manatees in Crystal River, Fla. **BOTTOM:** A manatee being processed for a health assessment following capture at Crystal River, Fla.

Conservation Annual Meeting Covington, La. Feb. 20, 2015

Louisiana's Gopher Tortoise Conservation Efforts. The 36th Annual Gopher Tortoise Council Meeting. Albany, GA. Oct. 18, 2014.

WEST INDIAN MANATEE

LNHP Endangered Species Biologist coordinated with USGS, USFWS, Florida Fish and Wildlife Conservation Commission, Alabama Department of Natural Resources, Dauphin Island Sea Lab, Audubon Zoo, and Texas Parks and Wildlife staff for information exchange on manatee sightings across the range and developed a sighting and response plan for manatee conservation during cold weather season. Manatees reported traveling through Louisiana, citizen

concerns, and location of warm water sources were assessed. LNHP staff assisted USGS, USFWS and Florida Fish and Wildlife Conservation Commission with manatee captures and health assessments in Crystal River, Fla.

NONGAME BIRD PROGRAM AND PERMITS COORDINATION

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 475 species in total - includes more than 400 nongame spe-

cies. 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, Mid-winter Bald Eagle Surveys, Piping Plover International Censuses, Secretive Marsh Bird Callback Surveys, Waterbird Nesting Colony Surveys, Bald Eagle Nesting Surveys, the Institute for Bird Populations' Monitoring Avian Productivity and Survivorship Program, 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, 93 percent of USGS's Breeding Bird Survey routes in Louisiana were assigned to active observers in the 2015 season. LNHP biologists documented many rare birds which were submitted for verification and inclusion into datasets including eBird, the LSUMNS Important Bird Record Program, and the Louisiana Bird Records Committee, thereby contributing to the ever evolving understanding of bird status and distribution in Louisiana. Highlights include two gray kingbirds in Plaquemines in April, a burrowing owl in Lafourche in December, two brown booby in St. Tammany in May, and others listed below in addition to a plethora of out-of-season records. During Christmas Bird Counts, LNHP biologists observed state-rare crested caracaras (28 individuals) and sandhill cranes (1,800+ 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. LNHP biologists received critical training during this fiscal year for upcoming projects, including capturing reddish egrets with Clay Green (Texas State University) and capturing red knot with David Newstead (Coastal Bends and Bays National Estuary Program). LNHP biologists also contributed to collaborative projects including capturing prothonotary warblers outfitted with geolocators at Sherburne WMA to assist a Louisiana Bird Observatory/Audubon Louisiana Project. While performing secretive marsh bird callback surveys, LNHP staff discovered multiple singing black-whiskered vireos (very rare in Louisiana) and one yellow-green vireo (exceedingly rare in Louisiana) at Pass-A-Loutre WMA. During this fiscal year, the Nongame Ornithologist was accepted to the RESTORE Council Technical Science Review Team. In addition, LNHP staff successfully garnered funding (fully

funded and/or matching funds) for five new or extended bird projects:

1. Beach Nesting Bird Surveys
2. Distribution, Abundance, Nesting and Movements of Reddish Egrets in Louisiana
3. Secretive Marsh Bird Callback Surveys
4. Establishment of a Network of Passive, VHF Radio Telemetry Towers Throughout Coastal Louisiana and Targeted Inland Sites
5. Red Knot Habitat Use and Migratory Pathways

BALD EAGLE NEST SURVEYS

Funded by a State Wildlife Grant, Rockefeller Trust, and the Eagle Conservation Fund, LNHP biologists aerielly surveyed bald eagle nesting activity statewide. Surveys were performed in February 2015 via rotary-wing aircraft utilizing a list frame of nests known to be active at least once since 2005. This list included approximately 520 nests. However, upon completion of Round 1 of the survey (identification of active nests), surveyors actually visited more than 640 nests. Of all documented nests, 356 were deemed active (i.e., with eggs, young, tending adults, etc.), roughly 55 percent of all surveyed nests. In April 2015, a subset of active nests was resurveyed (Round 2) to obtain data required to calculate productivity of the nesting eagles. Approximately 75 percent of resurveyed nests successfully produced at least one young in 2015. Average productivity was 1.2 young per nest; more than 430 eagles were produced in 2015 in Louisiana.

NONGAME AVIAN CONSULTATIONS

In addition to field data collection and compilation, the Nongame Bird Section provides reviews, comments and data for various entities including USFWS, Joint Ventures, LCCs, species- or guild-specific working groups, envi-

ronmental 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 and, in 2014, scored several bird SGCN for the Gulf Coast Vulnerability Assessment of the Gulf Landscape Conservation Cooperatives and supplied edits on the final document. The Nongame Ornithologist and Gulf-wide partners continued the development of the Gulf of Mexico Avian Monitoring Network during this period; this collaborative, comprehensive network of federal, state, academic and non-governmental organization 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.

The Nongame Bird Section played a vital role in the revision of the Louisiana WAP. In addition to serving on the Core Committee and several subcommittees, the Nongame Ornithologist provided the cover art as well as comments and edits for substantial portions of the book and authored several species accounts and significant portions of chapters.

The Nongame Bird Section continues to provide consultation to LDWF on all bird matters pertaining to the 2010 *Deepwater Horizon* oil spill and recovery and restoration.

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



LEFT: After periods of heavy rain, shorebirds like dunlin and dowitchers and gulls like this laughing gull make use of temporarily flooded fields for foraging. **CENTER:** Staff surveyed the state for nesting bald eagles in 2015. **RIGHT:** The painted bunting is a locally common songbird found in early successional habitats.

Migratory Songbird Tour at Sherburne WMA, the Grand Isle Migratory Bird Festival, National Hunting and Fishing Day, Eagle Expo, Endangered Species Day at Audubon Zoo, the Yellow Rails and Rice Festival, and the Waders in Working Wetlands: Shorebird Extravaganza in Thornwell are all partially staffed by LNHP biologists. LNHP biologists also participated in the development of the Louisiana Master Naturalists of Greater Baton Rouge curriculum programming, particularly the ornithology workshop. In addition, the Louisiana Wildlife and Fisheries Foundation auctions birding tours led by the Nongame Ornithologist each year as part of its fundraising ventures. The Nongame Ornithologist also led a full day workshop for the Louisiana Environmental Education Com-

mission and taught an introductory birding course at Becoming an Outdoor Woman. During this period, more than 240 technical phone calls and more than 890 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 Section, 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 2014-2015, 89 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; one such permit letter was 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 permit was issued in FY 2014-2015. 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.

OIL SPILL RESPONSE & ASSESSMENT

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

OVERVIEW

LDWF's Oil Spill Program documents/evaluates biological and ecological impacts associated with oil spills throughout Louisiana. These efforts have been significantly enhanced through the incorporation of additional trained personnel with direct knowledge and experience from the 2010 *Deepwater Horizon* oil spill. Collectively, these measures have both improved

existing programmatic strengths and incorporated novel means to define oil spill injury (short and long-term), an essential metric for future restoration of the state's natural resources. These efforts continue to be supported through strong collaborations with a variety of LDWF programs as well as federal and state Natural Resource Trustee agencies.

RESPONSE

LDWF's Oil Spill Program monitors and responds to reports of oil spills throughout Louisiana. This fiscal year our program received

10,213 oil spill reports from the principal reporting agencies: National Response Center and Louisiana State Police. These reports encompass a broad array of potential situations where volume reported may not be indicative of the overall resource injury. Program personnel carefully reviewed each of these reports so as to assess potential impacts to the state's wildlife and sensitive habitats. For many of the spills (40-50/month, average), personnel simply coordinated with other responding agencies to gain further information on the necessity of further action. For others, personnel were on site performing regimented evaluations of



LEFT: Representative spill within riparian habitat, a habitat type our program has been developing novel means to characterize oil spill related injury. **RIGHT:** Program personnel collecting an oiled Alligator Snapping Turtle for rehabilitation and release.

potential wildlife and associated habitat injury. When encountered, personnel recovered live, oiled wildlife for rehabilitation and subsequent release.

The Oil Spill Program performed on site evaluations at 43 spills within 2014-2015. Of note, many of these spills required multiple personnel over extended periods of time. Several representative examples include:

- **Bonnet Carre Oil Field:** This incident was the release of approximately 120 bbls of crude oil and 6,000 barrels of produce water from a flow line in the Bonnet Carre Oil Field (Location: near Laplace, St. John the Baptist Parish).
- **Milepost 51.5:** This incident was the release of 4,000 bbls (later upgraded to 4,500 bbls) of crude oil from a 20-inch interstate pipeline (Location: near Mooringsport, Caddo Parish).
- **Octave Header Bulkline:** This incident was the release of 100+ bbls of crude oil from a shut in flow line (Location: Delta NWR, Plaquemines Parish).
- **Ostrica Terminal:** This incident was the release of approximately 600 bbls of crude oil from an unsecured valve (Location: near Buras, Plaquemines Parish).
- **Tambour Bay:** This incident was the releases of approximately 250 bbls of crude oil that later impacted adjacent *S. alterniflora* marsh and tidal flats. (Location: Tambour Bay, Terrebonne Parish).
- **Nebo E-SWS:** This incident was the release of 200+ bbls of crude oil and an unknown amount of produce water (Location: near Nebo, LaSalle Parish).
- **Garden Island Bay:** This incident was the result of an airboat colliding with an abandoned wellhead which released 250 bbls of crude oil (Location: Pass-a-Loutre WMA, Plaquemines Parish).
- **Chacahoula:** This incident was the release of 60 to 80 bbls of crude oil from a pipeline (Location: Chacahoula, Terrebonne Parish).
- **Olla:** This incident was the release of approximately 100 bbls of crude oil into an adjacent wooded creek (Location: near Olla, La Salle Parish).

These and other spills presented many unique challenges during FY 2014-2015. The ability to effectively engage on these and other spill related issues stems from our programmatic commitment that all personnel maintain nationally recognized spill response training (HAZWOPER), reinforcing these training principles among partner agencies (Unified Re-

sponse Drills and Planning Sessions), as well as continually developing and memorializing novel approaches (developing LDWF’s Oiled Wildlife Response Plan) to defensibly characterize natural resource injury. In total, information generated from our program’s response activities continues to be an invaluable resource for state and federal trustees to develop potential preassessment and/or Natural Resource Damage Assessment (NRDA) processes as well as scale future restoration activities.

PREASSESSMENT AND NRDA ACTIVITIES

The incorporation of trained personnel from the 2010 *Deepwater Horizon* oil spill has enhanced our program’s ability to dedicate more concerted effort within three principal areas:

1. Case management of active NRDA cases,
2. Development and implementation of cooperative preassessment field activities and,
3. Development of novel and defensible means to characterize natural resource injury through programmatic research collaborations.

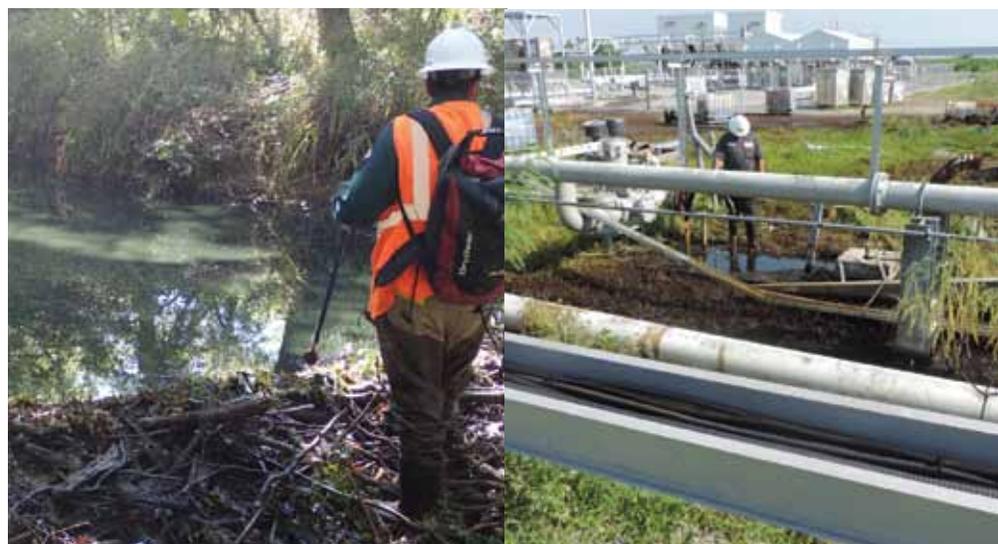
1. Case management of active NRDA cases:

From the onset of 2014-2015 program personnel evaluated information generated from active oil spill NRDA cases (n=8). These structured activities were designed with the intent of finalizing injury assessment to support restoration of the state’s natural resources. To date, several cases have and continue to transition from assessment to restoration in the forms included but not limited to conservation easements, beach and marsh creation, vegetative plantings, and land purchase.

2. Development and Implementation of Preassessment Field Activities:

Following each spill response activity our program and state trustees (LDWF Office of Fisheries, Coastal Protection and Restoration Authority [CPRA], LDNR, LDEQ, in coordination with the Louisiana Oil Spill Coordinator’s Office) critically evaluate the nature and extent (short and long term) of potential injury to the state’s natural resources. If trustees determine that additional information is required, a preassessment activity (a preliminary fact-finding exercise that provides the information necessary to determine whether to pursue restoration planning) may be implemented. This activity is critical as trustees must be able to meet or exceed established threshold injury criteria (ref. Oil Pollution Act of 1990 (OPA)) to initiate the formal NRDA process.

In 2014-2015 our program was the lead trustee in the development and implementation of preassessment activities associated with the Milepost 51.5 release, a large spill located in Mooringsport, La., adjacent to Caddo Lake. Of note our program’s ability to facilitate this effort was and remains greatly facilitated by the inclusion of trained *Deepwater Horizon* oil spill personnel. During the associated spill response activities, extensive wildlife and habitat injury was documented by program personnel. This information (qualitative and quantitative) was utilized to develop a regimented preassessment work plan that will inform trustees as to the nature and extent of the associated injury. The plan was reviewed by state trustees and agreed to by the Responsible Party whose representatives actively participated in all scheduled activities. Moving forward trustees will utilize this and related information to outline



LEFT: Documenting potential wildlife and habitat impacts associated with the Milepost 51.5 spill. **RIGHT:** Program personnel documenting progress of oil clean-up efforts in collaboration with LOSCO (Ostrica Terminal spill).



LEFT: Oiled juvenile alligators collected for rehabilitation and release (Chacahoula spill). **CENTER:** Program personnel performing turtle survey within Milepost 51.5 preassessment activity. **RIGHT:** Diamondback Terrapin.

representative restoration plans designed to promote enhanced recovery as well as compensate the general public for natural resource loss or impairment.

3. Develop novel and defensible means to characterize natural resource injury through programmatic research collaborations:

LDWF's Oil Spill Program continues to develop novel means to address targeted areas within oil spill injury assessment, with many principal concepts stemming from "lessons learned" in the *Deepwater Horizon* oil spill and several other cases. Greater emphasis has been placed on developing defensible tools to promote more representative assessment activities. Some examples include: 1.) Characterization of representative species, species in which we have a broad understanding of life history and physiology, as a means of clearly quantifying associated injury and 2.) Development and implementation of validated and defensible wildlife and habitat sampling methodologies. The development of these tools remains a critical component for our program's current and future ability to defensibly characterize injury within spill response and preassessment/NRDA assessment. Some examples include:

Proposal Submission: Develop the Diamondback terrapin (*Malaclemys terrapin*) as a bioindicator species for future injury assessment within the Louisiana Gulf Coast

Overview: Our program is the LDWF's principal representative for Oil Spill Response, Assessment and Restoration activities that occur in Louisiana. As part of this directive we continue to work with trustee representatives (federal and state) to identify potential impacts caused by oil spills to Louisiana's natural resources. As oil and gas exploration and transportation increase across and in proximity to Louisiana's

coastal zone, so do the chances of an oil spill occurring that causes harm to these precious natural resources. In particular, the diamondback terrapin spends its life cycle within Louisiana's coastal zone and is a protected species within Louisiana. Efforts to understand its abundance and distribution as well as effects of oil and/or dispersant on its reproductive productivity, growth and survival are key components to protecting this species of concern and helping to restore diamondback terrapin following an incident.

Evaluation of Diamondback Terrapin (*Malaclemys terrapin*) Nesting Ecology and Reproductive Productivity throughout coastal Louisiana

Steven Pearson, Charlie Wahl, James Ialleggio, Ariel Dauzart, Jon J Wiebe

Summary: Extensive nest searching occurred within the Oyster Bayou region (Terrebonne Parish) during July 2015. These efforts resulted in the identification of a large number of intact terrapin nests (n=20). Of these, 13 nests were caged to document associated hatchability. Results from this study will be summarized within 2016.

DEEPWATER HORIZON

As a result of the *Deepwater Horizon* oil spill, our program has begun to prioritize and develop programmatic directions that will inherently improve our overall ability to characterize oil spill injury. Some examples of this include:

1. Development of representative species within a variety of habitat types;
2. Improved characterization (quantitative and qualitative) of wildlife and habitat injury during the active portion of the response;
3. Seeking out new technologies and methodologies to greatly improve both our efficiency and accuracy in tandem with overall cost savings.

This group effort which incorporates a variety of professional disciplines continues to enhance the Oil Spill Program's capabilities to defensibly address oil spill injury in support of future natural resource restoration.

COASTAL OPERATIONS PROGRAM

The Coastal Operations Program 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 these coastal properties encompasses the oversight of all daily activities on these areas. Responsibilities include (but are not limited to) marsh management and restoration, facility and equipment maintenance, data collection, assistance with research, habitat enhancement, coordinating managed hunts, oversight/monitoring of field projects such as oil/gas activities and maintenance dredging of federal navigation channels, posting of properties, management of fur and alligator resources on properties, and education/outreach.

This year has been relatively stable for the Coastal Operations Program. The program did not experience any employee turnover and only had three employees that required extended leave due to non-work related medical issues. Additionally, two WAE (temporary) employees were hired to assist with heavy equipment work at Pointe-aux-Chenes WMA which resulted in the accomplishment of multiple projects. Stability in the lack of tropical weather events was also appreciated this year. Coastal Operations Program sustained no property damage as a result of tropical storms or hurricanes. The lack of tropical weather conditions allowed for some progress with repairs from past hurricanes. Several FEMA projects to repair damaged infrastructure from hurricanes Katrina, Rita, Ike, Gustav, etc. were initiated and/or completed across the coast.

The Coastal Operations Program oversees and operates heavy equipment (excavators, bulldozers, a tugboat, barges, and other equipment) to aid with restoration and management on coastal properties. Coastal Operations staff improved the program's heavy equipment fleet this year. The construction of a small "truckable" push boat was completed and put into service in August 2014. The vessel was purchased to help move deck and spud barges in shallow water. Additionally, the construction of a new amphibious excavator was initiated in May 2015. The new excavator will replace an old, deteriorated machine that was damaged beyond repair. It will be completed during the early part of next fiscal year.

Overall, the Coastal Operations Program had a very successful year of numerous accomplishments (see below for more details). These accomplishments were aimed at improving refuges and WMAs for the good of the public and the natural resources that are present at these coastal areas. The Coastal Operations Program strives to provide excellent recreational opportunity, conserve coastal marsh habitats, and implement restoration projects to improve habitat conditions for wildlife and fishery resources.

WATERFOWL

The 2014-2015 waterfowl season was from Nov. 15, 2014 - Jan. 25, 2015 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 5,658 duck hunters visited the WMAs during the 11 survey dates and averaged 3.4 ducks per attempt. Hunters also harvested 2,700 coots, 140 gallinules, 65 mergansers, and approximately 20 geese. The Limited Access Areas (LAAs) continued to be the most successful hunting locations on their respective WMAs.

TEAL SEASON

The 2014-2015 teal season was from Sept. 13-28, 2014. Coastal Operations staff conducted hunter participation/harvest surveys on four days during the season on four coastal WMAs (same as above). An estimated 1,520 teal hunters visited the WMAs this year during the four days that waterfowl bag checks were performed. These hunters harvested an estimated 1,674 teal for a success of 1.1 teal per hunter effort.

DEER

Self-clearing permits and hunter check in of harvested deer revealed that 3,965 hunter efforts were expended to harvest 225 deer during the 2014-2015 hunting season on Atchafalaya Delta, Pass-a-Loutre, Pointe-aux-Chenes, Lake Boeuf and Salvador WMAs. This equates to a success of one deer for every 17.6 efforts. Ninety percent of the effort and 88 percent of the harvest was on Atchafalaya Delta WMA.

HOGS

According to self-clearing permits and hunter interviews, approximately 224 hunter efforts were successful in removing 68 hogs for a success of one hog per 3.3 efforts. These statistics are for Pass-a-Loutre, Pointe-aux-Chenes and Salvador WMAs only. Eighty-five percent of the effort and 86 percent of the harvest was

on Pass-a-Loutre WMA. One hog was reported harvested from Atchafalaya Delta WMA during the 2014-2015 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 900 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 includes a diverse range of ecotypes from broad upland ridge habitat to brackish marshes.

The Atchafalaya Delta WMA includes the Wax Lake Outlet Delta which was created as a result of a man-made channel dredged in the 1940s for flood protection purposes. This flood protection measure resulted in the creation of a phenomenal delta system that is of interest to a wide variety of users. One user group that is very intrigued by the Wax Delta is the community of professionals that study construct, and promote river diversions. Coastal Operations staff assisted with multiple field trips this year to the Wax Delta to provide tours of the area. Trips were held for members of the House/Senate Natural Resource Committees, Water Institute of the Gulf/CPRA's "Diversion Expert Panel" (coordinated by Restore or Retreat), Louisiana Wildlife Federation guests (media event), and representatives from LSU's Coastal Sustainability Studio. A common topic during these trips was the use of the Wax Delta as a model for future coastal restoration in Louisiana. Coastal Operations staff provided technical and logistical support for these field trips.

The Atchafalaya Delta WMA houseboat mooring lottery and lease program continued during the 2014-2015 hunting season. All available leases were renewed and lease fees were collected which generated \$28,574.



LEFT: Tyson Crouch and Todd Baker banding mottled ducks. **CENTER:** Atchafalaya Delta WMA's new storage/office building in Berwick, La. **RIGHT:** One of two new boat docks constructed at the Wax Delta Campground. (Atchafalaya Delta WMA)

The remaining mooring areas were issued by computerized lottery drawing. Fees collected for lottery permits generated \$22,600. A total of 73 houseboat permits (lease and lottery) were issued for the 2014-2015 hunting season. 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, Coastal Operations staff performed some maintenance and improvements to the Log Island and Wax Delta mooring areas. Numerous new pilings were installed to replace unusable pilings as part of this maintenance project.

WMA staff continued to work closely with USACE on multiple issues related to the maintenance of the lower Atchafalaya River Federal Navigation Channel. USACE awarded a contract to Weeks Marine to dredge a portion of the Bar Channel south of Eugene Island in 2014. As part of this project, Weeks beneficially used material to construct a new bird nesting island on the west side of the channel south of "Bird Island West." The dredge material was very fluid, spread out laterally as it was discharged, and target elevations were not met. However, it did form a good foundation for future dredging contracts/projects. The new island was named "Aves Island." Coastal Operations staff also coordinated with USACE personnel about selecting locations for the placement of beneficial use material adjacent to the river in the Bay Channel. Coastal Operations staff hosted a field trip in April 2015 to view and discuss possible disposal locations for 2016 dredging operations. Due to budgetary issues, USACE only plans to bid out a small contract for the Bay Channel. Coastal Operations staff provided multiple options for beneficial use of dredge material ranging from small areas adjacent to Big Island to large areas of open water that could accommodate millions of cubic yards of material.

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 the completion of a 3D seismic survey on the east side of the WMA. Coastal Operations staff worked with Seismic Exchange and Castex personnel regarding access restrictions during

waterfowl season. Overall, the seismic project went well, and no compliance issues were documented. The seismic survey was completed in October 2014 on the WMA. Other mineral activities included reviewing and commenting on proposals for proposed well locations, proposed pipelines, and plug/abandonment projects.

Coastal Operations staff used available FEMA funds to replace the Atchafalaya Delta WMA storage/office building in Berwick, La. The old building was damaged beyond repair due to Hurricane Ike. LDWF purchased a portable building via Office of State Purchasing in early 2015. Additionally, as a Title 38 Project, Berry Brothers was hired to construct an elevated platform and place the portable building on top of the platform. The project was completed in June 2015.

The Deer Island Pass Coastal Impact Assistance Program Project was initiated this fiscal year. Coastal Operations staff coordinated with St. Mary Parish and CB&I (consultant) regarding this project. Coastal Operations provided input on project features/design, coordinated access to the site, and participated in the pre-bid meeting for the project. The project will be awarded during the fall of 2015 and will be constructed in early 2016. The project includes the construction of a 3,900-foot long by 10-foot deep channel connecting the Atchafalaya River to the east side of the Main Delta. It also includes approximately 80 acres of marsh creation near Plumb Island Point.



Youth hunter with a doe harvested during the youth lottery deer hunt at Atchafalaya Delta WMA.



LEFT: Participants during a media event/field trip to the Wax Delta sponsored by the Louisiana Wildlife Federation. **RIGHT:** Dr. Andy Nyman (LSU) and Todd Baker describing the Wax Delta formation during a House/Senate Natural Resource Committees field trip and tour. (Atchafalaya Delta WMA)

Staff continued to maintain facilities, campgrounds and Big Island to a high standard this year. In addition to routine maintenance across the WMA, significant repairs to the main road of Big Island were completed this year. 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. Staff also constructed two new boat docks at the Wax Delta Campground to provide better public access/accommodations. Staff also planted a variety of trees and replaced picnic tables on the Main Delta campground. Finally, ongoing projects to improve facilities included major renovations to the WMA's living quarters (houseboat). It has been at a shipyard most of this fiscal year undergoing hull repairs and improvements, plumbing repairs and interior renovations.

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:

- LSU's mottled duck/mallard hybridization assessment of the western gulf coast.
- LSU and USACE's remote sensing research of dredge material deposition associated with the Big Island Mining CWPPRA Project.
- USGS monitoring of sediment transport, deposition and trapping efficiency in marshes at the Wax Delta.
- LSU, University of Texas and University of Minnesota's National Science Foundation "Delta Observatory" Project designed to improve modeling and forecasting of delta growing processes that can support restoration and resource management.

- Coastal Estuary Services' efforts to monitor Coast-wide Reference Monitoring System sites.
- Water Institute of the Gulf's sampling of nekton in submerged aquatic vegetation at the Main Delta.

Recreational use of the WMA totaled approximately 21,950 visitors. Total rainfall for the year was 35 inches.

Hunting Statistics

Teal Season

Hunter success during the 2014 teal season was poor. The average kill per effort was 0.9 teal per hunter during the four dates that staff conducted hunter surveys. This average was slightly higher than the 2013 season.



LEFT: Youth hunter and chaperone with a doe and spike harvested during the youth lottery deer hunt. **RIGHT:** Youth hunt group photo. (Atchafalaya Delta WMA)

Waterfowl Season

During the 11 waterfowl bag checks conducted, an estimated 2,385 hunters averaged 3.4 ducks per hunter. Success in the WMA's LAAs continue to be better than the WMA average. Average hunter success within the LAAs was approximately one duck per hunter, greater than the average hunter success outside of the LAA. The top three species harvested on the WMA were green-wing teal, blue-wing teal and gadwall. Also harvested were 766 coots, 12 mergansers, 17 snow geese, and four speckled belly geese.

Deer Season

Archery Season	
Efforts	3,595
Harvest	200 deer (117 bucks, 83 does)
Success	1 deer/18 efforts
Youth Hunts	
Youth Participants	30
Efforts	57
Harvest	15 deer (6 bucks, 9 does)
Success	1 deer/4 efforts
Total Season	
Efforts	3,652
Harvest	215 (123 bucks, 92 does)
Success	1 deer/16.9 efforts

Hog Season

As stated earlier, one hog was reported harvested from Atchafalaya Delta WMA during the 2014-2015 hunting season. Hunters reported an interest in harvesting hogs during roughly 900 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 2014 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 three day effort to install approximately 265 new boundary signs during August 2014. During the posting effort, Coastal Operations staff attempted to band mottled ducks at the WMA. A total of two ducks were banded. These two birds were the first ducks banded on the WMA in a very long time, if not ever.

A change to Biloxi WMA's vessel access regulations was implemented for the 2015-2016 hunting season. The new adopted regulation states that "mud boats or air cooled propulsion vessels can only be powered by straight shaft (long-tail) air-cooled mud motors that are 25 total horsepower or less. All other types of mud boats or air cooled propulsion vessels (including surface drive boats) are prohibited." This regulation was implemented to lessen marsh impacts from mud boats.

As per the landowner's request (Biloxi Marsh Land Corporation), steps were initiated to remove an old, abandoned weir that has become a navigational hazard to boaters. The weir was once located in a bayou, but is now 200 yards out in Lake Borgne due to shoreline erosion. Coastal Operations staff assessed the abandoned weir, collected required information, and obtained cost estimates for removal. This project will be bid out next fiscal year.

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 the department in 2000. The refuge is saline marsh/dune habitat and home to the largest colonial water bird colony in Louisiana (Raccoon Island).

Multiple large scale restoration projects are being pursued for future implementation on Isle Dernieres Barrier Island Refuge. LDWF hosted an interagency field trip to discuss the future plans for the NRDA TE-100 Caillou Lake Headlands Beach & Dune Restoration Project (Whiskey Island). Representatives from CPRA, National Oceanic and Atmospheric Administration, Bureau of Ocean Energy Management, Regulation, and Enforcement, and Coastal Engineering Consultants participated in the talks for the estimated \$100 million project.

LDWF hosted multiple site visits for the monitoring of past projects. Ducks Unlimited, Nicholls University and Coalition to Restore Coastal Louisiana staff participated in a trip to Raccoon Island to monitor past planting projects as well



LEFT: Plantings on Trinity Island. RIGHT: Planting project. (Isle Dernieres Refuge)



Planting project at Isle Dernieres Refuge.

as discuss future plans. T. Baker Smith staff conducted elevation surveys for the monitoring of Raccoon Island Shoreline Protection and Marsh Creation Project (CWPPRA – TE48).

Various restoration projects were implemented this year including:

- The annual Coalition to Restore Coastal Louisiana/Nicholls/LDWF planting project. Approximately 4,000 smooth cordgrass plugs and black mangrove seedlings were planted as part of the project. These plugs were planted primarily on Raccoon Island in an attempt to colonize the marsh creation area from the TE-48 project. Some black mangroves were planted along California Cut within Trinity Island as well. Black mangrove propagules were collected from Whiskey and Trinity islands to aid in future planting projects.
- Coalition to Restore Coastal Louisiana installed approximately one mile of sand fence on Raccoon Island. Coastal Operations staff provided logistical assistance for the project.
- The Soil and Water Conservation District sponsored an effort to plant sand live oaks and smooth cordgrass (1,800 plugs) at Trinity Island.

The refuge was host to multiple research projects including:

- Nicholls University continued with their 2014-2015 field season for their breeding water bird research project involving black skimmers and tern species. Nicholls University staff also conducted research and barrier island monitoring via unmanned aerial vehicles.
- University of Louisiana - Lafayette conducted research on brown pelicans, mam-

malian predators, as well as using an unmanned electric aerial vehicle to assist in counting nesting colonial water birds.

- LSU School of Entomology conducted ant collections on barrier islands.
- Barataria-Terrebonne National Estuary Program continued its monitoring of solitary and colonial nesting birds.
- USGS, with the help of LDWF staff, accessed the refuge to conduct piping plover surveys, winter plover surveys, and prey base monitoring as part of an extension from research starting in 2012.

Coastal Operations staff prepared regulation information, a service agreement, and a special use permit for the “Colonial Waterbird Response to Predator Removal on Barrier Islands” research project conducted by Nicholls State University (across all islands of the refuge). This past winter was the first of its implementation, and the trapper removed 54 nutria and three coyotes from the refuge.

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.

Self-clearing permits revealed that approximately 134 hunter efforts resulted in the harvest of six deer. This equates to an average of one deer harvested per 22.3 efforts. Permit data also revealed that three hunter efforts resulted in a harvest of three rabbits.

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.

LDWF staff hosted a meeting with Richard House of the Russell Sage Foundation this year. The meeting was held in Baton Rouge and included CNR administrators, representatives from LDWF Fiscal Section, and others. Discussions centered on future budgets and projects to be constructed at Marsh Island.

LDWF continued to pursue improvement to facilities and infrastructure at the Marsh Island Refuge Headquarters during this fiscal year. The Marsh Island FEMA Consolidation Project was advertised in May 2015. This project included the construction of a new boat shed and living quarters, a new airboat shed, and the demolition of the old boat shed. Unfortunately, no bids were submitted by contractors as a result of Facility Planning and Control’s bid process. Consequently, the project will be re-designed during next fiscal year. As part of this FEMA project, asbestos removal from the boat shed and living quarters was initiated, but was postponed due to the presence of nesting barn swallows.

Coastal Operations staff also met with architects and engineers to further the development of the Marsh Island “Master Plan” Capital Outlay project and other Capital Outlay projects to replace water control structures at the refuge. The Master Plan project will address additional infrastructure needs (non-FEMA) at the headquarters (bulkhead, infill, buildings, etc.). These projects will advance to the design phase of development during next fiscal year.

Coastal Operations staff finalized a management plan for multiple water management units on the refuge. These plans were necessary for two dredge permit applications submitted to USACE. These applications are part of FEMA projects for the Big Impoundment and Big Dam levee systems. Also a part of these FEMA projects, LDWF reviewed and commented on bid packages for the Big Impoundment

repairs, Big Dam levee work, and bulkhead replacement at the headquarters facility.

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

- **Marsh Island Chenier Restoration Project**: Funded by CPRA's Coastal Forest Conservation Initiative, this project was designed to restore cheniere habitat via the planting of tree species such as live oak and hackberry, historically found on the refuge. This project is set to take place during the winter of 2016.
- **Bayou Platte Bird Island Project**: This project was 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) was completed during the spring of 2015. Due to the poor substrate, LDWF staff had great difficulty reaching the intended acreage increase. However, staff conducted surveys indicated that the target goal of breeding bird pairs (550) was greatly exceeded again this year.
- **TV-21 East Marsh Island CWPRA Project**: This project was originally completed in early 2011, and during its third year of monitoring, several levee breaches were located. An O&M (maintenance) project was implemented by CPRA and the selected contractor, Professional Construction Services. The work entailed the



Marsh Island Refuge heavy equipment project - levee repairs.

degrading of dikes, removal of a timber plug, and bay shore levee repairs. Professional Construction Services had trouble meeting the elevation requirements on the bay shore and ultimately had to use rock boulders instead of articulated mats for a portion of the repairs. Professional Construction Services also had difficulty plugging an interior canal, and LDWF staff were required to close the canal with vinyl sheet piling.

- The Natural Resources Conservation Service (NRCS), Soil and Water Conservation District, and LDWF conducted a collaborative effort to plant 8,500 plugs of smooth cordgrass on the shoreline and mudflats of Bayou Blanc. Five-hundred plugs each of seashore paspalum and salt grass were planted atop an oil and gas location canal within the TV-21 marsh creation project.
- Coastal Operations heavy equipment operators began repairing/re-lifting a degraded levee system in Yute's Cut. This levee system is a part of the Big Dam unit and will assist in the functionality of this water management unit.
- The second full year of the nutria program was conducted this year, and the selected trappers were allowed to hunt/trap from Dec. 15, 2014 - March 31, 2015. Four of the original six trappers returned from the previous year, and the sections were redrawn to accommodate the remaining trappers. In those three months, these hunters harvested approximately 4,650 nutria.
- Research conducted on Marsh Island included a coastwide look at disease in blue crabs, disease research on nutria, American oystercatcher surveys, and winter plover surveys. Also, Coastal Operations staff banded approximately 275 mottled ducks on the refuge.

- Refuge staff prescribe burned just over 8,000 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 8,270 visitors. Rainfall for the year was 30 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.

Coastal Operations staff put forth considerable effort towards feral hog research and monitoring this year. Staff successfully implemented the third year of the LDWF/USFWS Pass-a-Loutre Aerial Hog Eradication Project. The harvest took place in March 2015 via the assistance of Jesuit Bend Helicopters. A total of 87 hogs were harvested as a result of one week's effort. Additionally, staff conducted habitat damage surveys and collected samples (blood, stomach, hair and feces) from the harvested hogs. This project is being conducted to deter-



Marsh Island Refuge boundary posting

mine the impacts of hog herbivory on coastal marshes of the WMA and preliminary results indicate that habitat damage was 33 percent less in the area hunted versus the control area. Three years of data collection has provided indisputable evidence that aerial hog eradication can create significant measurable improvements in habitat conditions in coastal marshes of Plaquemines Parish.

WMA staff also assisted Wildlife Division biologists and veterinary staff with a hog telemetry project at Pass-a-Loutre WMA. The project included the trapping, collaring and releasing of five sows to monitor daily movement/habitat use via satellite and radio telemetry technologies. WMA staff assisted with building corral traps, crating and transporting live hogs, netting hogs via helicopter, and other logistical support.

Coastal Operations staff provided logistical support this year for a tour of West Pearl River in association with a Natural Heritage Program hosted conference on reptiles and amphibians (Southeast Partners in Amphibian and Reptile Conservation). Pass-a-Loutre's M/V "Roseau" (40-foot deck boat) and a bay boat were brought to Pearl River to support the trips. WMA staff traveled a great distance via water to get the deck boat to Pearl River and the crew overcame multiple issues that surfaced during the journey. The tours were a success thanks to the extra efforts of WMA staff.

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. WMA staff were also involved in responding to oil spills tied to oil production on the WMA. Staff assisted with multiple response efforts for spills in the Garden Island Bay and Southeast Pass areas.

Lease and lottery mooring permit opportunities were made available to the public this fiscal year in response to public request for more houseboat mooring opportunity. Bid and lottery applications were advertised and an official bid opening/lottery meeting was held. However, no bids or lottery applications were received from the public. As a result, the houseboat mooring program was discontinued indefinitely.

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 mined a portion of the Pass-a-Loutre Hopper Dredge Disposal Area and pumped material into West Bay to beneficially create wetlands. Coastal Operations staff also coordinated with USACE about future plans for beneficial use activities and disposal protocols on Pass-a-Loutre WMA. As part of that effort, a right of entry permit was developed for the dredging of South Pass that included locations and compliance requirements for pumping dredge material on Pass-a-Loutre WMA. USACE staff hopes to secure funding to re-dredge South Pass in the coming years. If this occurs, a considerable amount of marsh creation will occur on the WMA.

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

- Coastal Operations staff continued to coordinate with Ducks Unlimited on the development of two crevasse projects at Pass-a-Loutre WMA. Ducks Unlimited was successful at obtaining funding from North American Wetlands Conservation Act (NAWCA) for the South Pass crevasse project. This project will be constructed during next fiscal year. The design, permitting and field surveys were completed this year for the Johnson's Pass crevasse project. This project will be funded and constructed by LDWF Coastal Operations staff. The project is scheduled to be constructed during the fall of 2015.
- Coastal Operations staff continued to coordinate repairs to the Freshwater Reservoir Water Management Unit adjacent to Dennis Pass. A field trip with representatives from the National Marine Fisheries Service was held this year to discuss the project and resolve issues related to the issuing of a Clean Water Act Sect. 404 permit. The field trip resulted in the acquisition of a permit for the project. Bid documents will be finalized for the project in the fall of 2015 and the project will be bid out in early 2016. FEMA funds will be used for this project.
- Coastal Operation staff coordinated with the Restore the Earth Foundation to design/plan a tree planting/restoration project at the WMA. The project will be constructed in August 2015 to commemorate the 10-year anniversary of Hurricane Katrina.



Hog data collection (Pass-a-Loutre WMA).



Hog telemetry project (Pass-a-Loutre WMA).



Improvements and maintenance to 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. Staff expanded existing food plots at the Pass-a-Loutre Reservoir, Loomis Campground and Pass-a-Loutre headquarters and planted summer crops for the first time in decades. The food plots were planted to supplement the dietary needs of deer at Pass-a-Loutre WMA.
- Interior repairs to the living quarters continued this fiscal year to address faulty design of the bathrooms' showers. The faulty design resulted in significant water damage to the building. Additionally, significant repairs to the HVAC system at

the Pass-a-Loutre headquarters (living quarters and conference room) has to be completed this year.

- WMA staff and Coastal Operations' heavy equipment operators assisted with a project to improve multiple campgrounds at Pass-a-Loutre WMA. Staff built new docks at three campgrounds to provide better accommodations for the public and to use funds bequeathed to LDWF by the late Mr. Lawrence Bruff.
- WMA staff posted the LAA and a portion of the WMA boundary between Cheniere and Southeast passes. The boundary posting was accomplished to delineate public vs. private land (due to private in-holding).

The Pass-a-Loutre WMA headquarters continued to serve as a field facility for multi-day field

meetings, university research and educational events. This year the facility hosted numerous guests including but not limited to Loyola researchers collecting data for a larval blue crab study, Barataria-Terrebonne National Estuary Program staff conducting beach nesting bird surveys, LUMCON students conducting summer field work, and LSU ecological students gaining field experience as part of college course work. The facility also hosted a wide variety of LDWF employees such as LDWF Enforcement Division staff conducting patrols, Wildlife Division staff working on duck and hog telemetry projects, Natural Heritage Program staff conducting secretive marsh bird call back surveys, and Office of Fisheries staff collecting fisheries data. Coastal Operations staff provided housing, logistical support, and/or information about Pass-a-Loutre WMA for these events.

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

- Hog Enclosures and Vegetative Response (LSU)
- Fisheries Research and WMA Monitoring (Loyola University)
- Deer Tagging Project (survival, movement, home range) (LDWF)
- Wilson's Plover Monitoring Project (nesting success, hog depredation, nesting utilization of beach habitat) (LDWF)

WMA staff banded waterfowl on the WMA this year including 118 black-bellied ducks and 24 mottled ducks. The black-bellied duck banding effort also included the implanting of telemetry tags as part of an ongoing project to monitor the movement patterns of the species in Louisiana.

Recreational use of the WMA was estimated to be 13,580 visitors. Total rainfall for the year was 61 inches.



Black bellied whistling duck telemetry project (Pass-a-Loutre WMA).

Hunting Statistics

Teal Season

During the four bag checks conducted an estimated 65 hunters harvested 214 teal for an average success of 3.3 teal per hunter.

Waterfowl Season

An estimated 740 hunters using the WMA during the 11 waterfowl bag check dates averaged 4.7 ducks per hunter effort. The LAA averaged six ducks per hunter effort. The top three species harvested were gadwall, blue-wing teal and green-wing teal. Hunters also harvested 50 coots and 10 mergansers.

Deer Season

Self-clearing permits revealed that 155 hunter efforts were made to harvest 15 deer. This equates to one deer per 10.3 efforts.

Hog Season

Hunter interviews and self-clearing permits recorded 190 hunter attempts which resulted in the harvest of 59 hogs for a success of one hog for every 3.2 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 2014 season. A total of 373 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.

Similar to last fiscal year, Coastal Operations staff allocated time to coordinating hurricane repairs at Point-aux-Chenes WMA. Coastal Operations staff made significant progress on multiple FEMA projects. The first was the completion of the Point Farm ditch clearing FEMA project. Grilliot Construction was hired to clean out the drainage ditches on Point Farm that were filled in as a result of Hurricane Ike. This project was

completed in February 2015. The second was repairs to the DU/Pointe-aux-Chenes Unit from Tropical Storm Lee and Hurricane Isaac. A contract was awarded to L.B. Trucking to deliver rip rap to armor the S-3 Structure to repair damage from Tropical Storm Lee. The rip rap was delivered and installed in June 2015. Also, a contract was awarded to Low Land Construction for the Hurricane Isaac repairs to the DU/Pointe-aux-Chenes Unit. These repairs were initiated in June 2015 and will be completed early next fiscal year. The third was the Grand Bayou fishing wharf FEMA project. Project design was completed in early 2015 and a pre-bid meeting was held for in May 2015. The project will be constructed in September 2015.

Legal staff finalized the donation of 308 acres of mitigation land this fiscal year. The property was reforested as part of required mitigation due to the Bayou Corne Sink Hole and donated to LDWF to be incorporated into the boundary of Pointe-aux-Chenes WMA. The property is located adjacent to Point Farm and was officially donated in April 2015. Coastal Operations staff plans to post the property and update boundary maps for Pointe-aux-Chenes WMA next fiscal 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. A meeting was held at Pointe-aux-Chenes in September 2014 with the private landowners to discuss their USACE application to install a gate across St. Louis Canal. After much discussion, a compromise was made to satisfy the private landowners and LDWF. The application for the gate was withdrawn and the landowners were issued a permit allowing improved access to their property.

There was an increase in mineral exploration and activity at Pointe-aux-Chenes WMA this year. One of the larger projects was the drilling of a well in the southeast corner of the Point Farm dove field. Coastal Operations and Minerals Management staff coordinated with BTA (the exploration company) regarding access, restrictions and other regulatory issues. Other mineral related activities included pipeline repairs, surveys, replacement of pipeline signage, and right-of-way maintenance.

Terrebonne Levee and Conservation District (TLCD) continued to design and construct flood protection and mitigation projects on the WMA. LDWF staff frequently coordinated with TLCD staff regarding these projects. Some of the accomplishments of TLCD include:

- TLCD continued to construct the J-2 Reach of the "Morganza to the Gulf" hurricane protection levee during FY 2014-2015. This section of levee stretches from Montegut to the east side of Point Farm. A new contract was issued in May 2015 to elevate the levee one foot. This work will continue into 2016.
- TLCD completed the construction of a replacement water control structure for the Montegut Management Unit this year.
- TLCD continued to building terraces in and around the Point-aux-Chenes/DU and Montegut units. These terraces were built as mitigation for wetland impacts from several levee projects.
- TLCD initiated the design of a mitigation project that entailed creating 100 acres of marsh in the Montegut Unit via hydraulic dredge and borrow material from Madison Bay. Field data was collected to determine the feasibility of constructing the project. Coastal Operations provided logistical support for the field work and



TPCD cleaning drainage ditches (Pointe-aux-Chenes WMA).



LEFT: Dove hunters. **CENTER:** Aquatic education clinic. **RIGHT:** Youth hunt. (Pointe-aux-Chenes WMA)

provided input on the design of the project. LDWF staff is also pursuing additional funds to support the project and increase the project footprint.

Coastal Operations staff continued to coordinate 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 create a right-of-entry agreement allowing for levee improvements on the west bank of Grand Bayou from the Grand Bayou Marina to the northern boundary of the WMA. South Lafourche plans to complete all regulatory requirements so that construction contracts can be awarded as funding comes available.

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

- Coastal Operations staff continued to coordinate with NRCS regarding the planting of marsh grass as part of the LA-39 Coastwide Vegetative Planting CWPRRA Project. An interagency agreement was finalized this fiscal year which will allow for the project to be implemented in the fall of 2015.
- Coastal Operations staff continued to support the LSU AgCenter's Coastal Roots Program. Students from local grade schools assisted with the planting of cypress trees and various bottomland hardwood species at Point Farm this year.
- Ducks Unlimited and Coastal Operations staff continued to develop plans and pursue funding for the creation of a moist soil unit on the lower end of Point Farm.
- Coastal Operations staff continued to coordinate 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.

Terrebonne Parish Consolidated Government initiated and completed maintenance dredging of ditches at Point Farm during this fiscal year. This maintenance work was overdue and of great benefit to Terrebonne Parish and LDWF from a drainage perspective.

Coastal Operations staff assisted with the annual Terrebonne Aquatic Education Clinic hosted by LDWF Wildlife Division. To improve the clinic, Coastal Operations staff assisted with the construction of a pavilion at the Pointe-aux-Chenes headquarters this year. The clinic was held in April 2015.

Coastal Operations staff assisted with a tour of the Grand Bayou Unit as part of a week-long Ducks Unlimited Conservation Programs Committee meeting in Houma, La., in February 2015. Staff provided an airboat tour for all of the participants and allowed Ducks Unlimited to set up a tent at the boat launch for a catered lunch. The Grand Bayou Unit was chosen for the tour since it was a past NAWCA project coordinated by Ducks Unlimited.

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

- Staff hired an architect to assist with creating a preliminary design for needed repairs to the Pointe-aux-Chenes residence.
- Staff performed repairs to the St. Louis Canal boat shed. This project was constructed using LDWF labor and FEMA funded materials.
- Staff continued with routine maintenance and improvement to the Pointe-aux-Chenes WMA headquarters.

- Staff spent a considerable amount of time preparing for hunting season at Point Farm. Staff planted and fertilized the dove fields, planted food plots for deer season, and added two new deer stands for the 2015 youth hunts.
- LDWF heavy equipment was used to initiate improvements the lower Point Farm road that provides access to the S-2 and S-3 structures of the DU/Pointe-aux-Chenes Unit. Dirt from the FEMA ditch cleaning project was used to elevate the road approximately three feet. This project, along with other dirt work, will continue next fiscal year.

Staff attempted to band mottled ducks on multiple occasions during the summer months. Only a total of six ducks were banded due to the lack of birds present at the refuge.

Recreational use of the WMA was estimated at 35,900 users. Total rainfall for the year was 39 inches.

Hunter Statistics

Teal Season

During the four bag checks conducted an estimated 880 hunters averaged 1.1 teal per hunter effort.

Waterfowl Season

During the 11 waterfowl checks conducted for the season an estimated 2,363 hunters had an average success of 3.1 ducks per hunter attempt. The top three species harvested were green-wing teal, lesser scaup and blue-wing teal. Hunters also harvested 1,840 coots, 140 gallinule and 53 mergansers. Hunters using the Montegut and Pointe-aux-Chenes LAAs continued to have better success than non-LAA

hunters. The LAAs averaged over five ducks per hunter while the rest of the WMA averaged 3.3 ducks per hunter.

Deer Season

Twenty-six reported bow hunt efforts and 39 youth hunt efforts resulted in the harvest of five deer. This equates to one deer per 13 hunter efforts.

Squirrel Season

An estimated 55 efforts were made averaging 1.4 squirrels per effort.

Rabbit Season

An estimated 47 efforts were made averaging slightly less than one rabbit per hunter.

Dove Season

Hunter harvest data (self-clearing permits and hunter surveys) revealed that 244 hunter efforts resulted in the harvest of 1,071 doves for an average of 4.4 doves per effort.

Hog Season

Self-clearing permits revealed that 31 hunter efforts resulted in the harvest of six hogs. This equates to one hog per 5.2 hunter efforts.

Alligator Season

A total of 224 alligator tags were issued to Pointe-aux-Chenes commercial (200 tags) and lottery (24 tags) alligator hunters for the 2014 season. A total of 222 tags were filled. 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.

LDWF staff coordinated with representatives from St. Charles Parish Government, the Marcello family and the consultant group GSE this year regarding the future plans for Pier 90 (a boat launch used for access to Salvador WMA). The parish has plans to rebuild the facility and make it a multi-use marina/tourist attraction with a restaurant, public boat launch, private camps, boat slips, etc. LDWF coordinated with the parish to reserve an area of the facility for LDWF to use for the management of Salvador WMA.

Meetings were held this fiscal year to discuss the future of the headquarters facility at Salvador WMA. LDWF and Facility Planning and Control staff are working together to use available FEMA funds from multiple project worksheets to renovate the "Caretaker's Camp" (i.e., current living quarters). In tandem with the FEMA project, LDWF plans to use operating budget to renovate the boat house, construct a new generator shed/fuel dock, and build a platform for a shipping container that will be used for storage. The plan also includes the demolition of the other deteriorated buildings at the facility such as the old headquarters, tractor shed and tool shed. The goal is to obtain FEMA approvals early next fiscal year and transition to the design phase of the project next summer.

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, building repairs and improvements, and generator maintenance. Staff also replaced numerous missing LAA boundary signs at the refuge.

Coastal Operations staff assisted with monitoring and oversight for a small oil spill on the WMA that caused wetland impacts. The spill occurred in March 2015 and resulted from a leaking pipeline.

An estimated 11,925 recreational users visited the WMAs this year.

Hunting Statistics

Teal Season

During the four bag checks conducted this year an estimated 100 hunter efforts resulted in an average harvest of 1.1 teal per hunter.

Waterfowl Season

During the 11 waterfowl bag checks conducted this season an estimated 170 hunters averaged 0.8 ducks per hunter effort. The Davis Pond

diversion outfall area averaged 0.9 ducks per hunter and the LAA averaged one duck per hunter. The top three duck species harvested were ring-necked ducks, blue-wing teal and wood ducks. Hunters also harvested an estimated 110 coots during waterfowl season.

Deer Season

Self-clearing permit data showed that 55 hunter efforts resulted in the harvest of four deer. Hunter success was one deer per 7.8 efforts.

Hog Season

Self-clearing permits revealed that three hunter efforts resulted in the harvest of three hogs. This equates to one hog per hunter effort.

Alligator Season

A total of 486 alligator tags were issued to Salvador WMA commercial (456 tags) and lottery (30 tags) alligator hunters for the 2014 season. A total of 478 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.

Due to USFWS's oversight, Coastal Operations staff had relatively little to no participation in the daily management of the refuge this fiscal year.

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.

NRCS, Environmental Protection Agency, and Coastal Operations staff continued to pursue funding for restoration work at the refuge via the CWPPRA program. During this fiscal year, the West Vermilion Bay Shoreline Protection and Marsh Creation Project was proposed as a cooperative effort between NRCS and Environmental Protection Agency and selected by



Field trip for CWPPRA Project. (State Wildlife Refuge)

the CWPPRA Task Force for Phase 0 funding. Coastal Operations staff assisted with multiple field trips and provided technical support for the project. The project will be eligible for engineering and design funds at the end of 2015. If funded, the project would result in the creation of marsh near Hog Lake and the armoring of three sections of shoreline on the western edge of Vermilion Bay.

Coastal Operations staff continued to support efforts to repair/replace infrastructure at State Wildlife headquarters that was damaged during hurricanes Rita and Ike. During this fiscal year, staff continued to assist with the development

of the FEMA bulkhead repair project. This project will replace approximately 120 feet of bulkhead adjacent to the boat shed. The design of this project was finalized at the end of this fiscal year and it will be bid out in late 2015. Staff also assisted with an asbestos assessment project for the demolition of the old living quarters, which is part of a pending FEMA claim. Coastal Operation staff provided input and logistical support for both of these projects.

Ducks Unlimited's Tom's Bayou Water Control Structure project that is being funded by NAWCA remained in the design phase again this fiscal year. Coastal Operations staff contin-

ued to coordinate with Ducks Unlimited and other agencies to advance the project. After extensive collaboration with National Marine Fisheries Service, Coastal Operations and Ducks Unlimited staff were successful at obtaining the required Clean Water Act Sect. 404 permit from USACE. This project will be constructed in 2016.

Coastal Operation staff provided airboat support for a NAWCA field trip with representatives from Audubon, Ducks Unlimited and McIlhenny Corp. in September 2014. The field trip was held to provide NAWCA council staff with a first-hand view of past restoration projects in the Vermilion Bay area. The ongoing Tom's Bayou project was a topic of discussion during the field trip.

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.

Coastal Operations staff based at Marsh Island Refuge continued to maintain the facilities and equipment at State Wildlife Refuge. Staff routinely visited the refuge to perform needed work such as maintenance to facilities and public use areas.

An estimated 5,465 recreational users visited the refuge this year.

FURBEARER MANAGEMENT

MONITORING FUR HARVEST

The 2014-2015 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 2,559 trapping licenses were sold during the 2014-2015 trapping season. Of these, 2,450 were adult residential licenses, 31 were adult non-residential trapping licenses, and 78 were youth residential licenses. These figures show a decrease in trapping licenses sold when compared to the previous season (2,848).

A total of 350,497 animals were harvested (all species), which was a decrease of 68,802 from the previous season's total of 419,299. The total value of the 2014-2015 fur harvest to the state's trappers was estimated at \$1,784,806.58. This total value was a decrease of \$527,573.22 from the previous season.

The nutria harvest (341,708) decreased by 46,556 from the previous season's total of 388,264. The average nutria pelt price paid to trappers during this past season was \$2.19. 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 nutria-induced damage to coastal vegetation by increasing the incentive for harvest. During the 2014-2015 season, a total of

341,708 nutria tails, worth \$1,708,540 in incentive payments, were collected from 266 participants. Seventy-three participants (27 percent) turned in less than 200 tails, 59 participants (22 percent) turned in 200-499 tails, 28 participants (11 percent) turned in 500-799 tails, and 106 participants (40 percent) turned in 800 or more tails.

TOTAL NUMBER OF NUTRIA HARVESTED BY METHOD OF TAKE IN 2014-2015

Twenty parishes were represented in the 2014-2015 program season with harvests ranging from 203 to 114,373 nutria per parish. The greatest number of tails (114,737) were collected from Terrebonne Parish, followed by St. Mary (50,392) and St. Martin parishes (40,045).

February was the most active month for harvesting nutria (103,381 tails) while November was the least active month (13,874 tails). (See CNCP 2014 - 2015 Report, CWP-PRA Project LA-03b.)

VEGETATIVE DAMAGE CAUSED BY NUTRIA

As a monitoring requirement of CNCP, a coast-wide aerial survey was conducted in May 2015 covering the coastal parishes of Louisiana. The total number of sites visited in 2015 was 12, 11 of which were classified as nutria damage in 2014. During the 2015 survey, 10 were classified as old nutria damage, one was considered recovered, and one new site was identified.

The 11 nutria-damaged sites observed along transects during the 2015 survey had a total of 1,602 acres impacted by nutria feeding activity (6,008 extrapolated). This is approximately a 43.7 percent increase in acres impacted by nutria since the 2014 survey (1,115 acres, extrapolated to 4,181 acres coastwide). CNCP continues to be a successful means of controlling the nutria population with over 300,000 animals harvested annually. Despite the increase in nutria-induced marsh damage observed during the 2015 survey, the number of nutria-impacted acres in Louisiana’s coastal marsh has decreased significantly over the 13 years of the program.

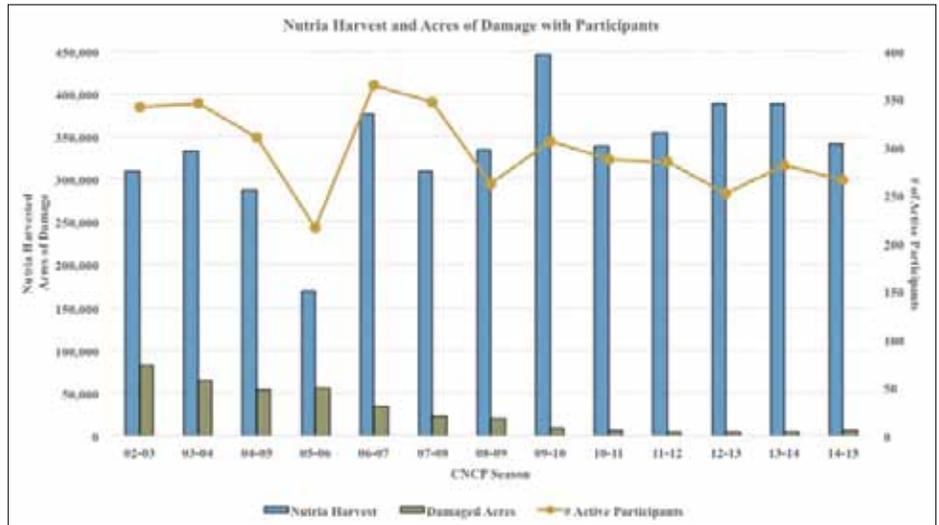


FIGURE 4. Nutria Harvest and Acres of Damage with Participants.

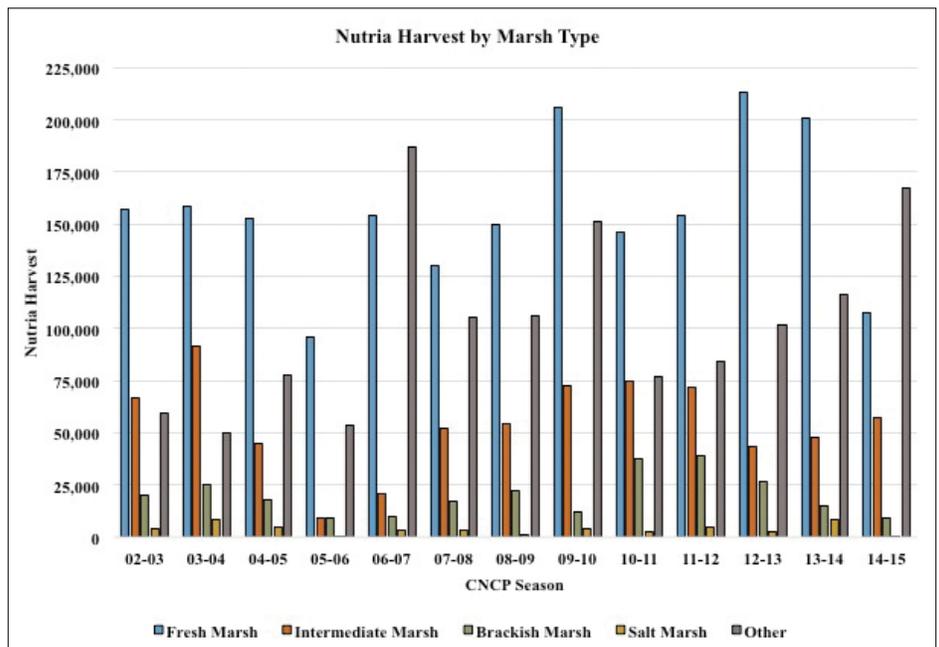


FIGURE 5. Nutria Harvest by Marsh Type.

FIGURE 6. 10-YEAR AVERAGE PERCENTAGE OF TOTAL HARVEST BY SPECIES

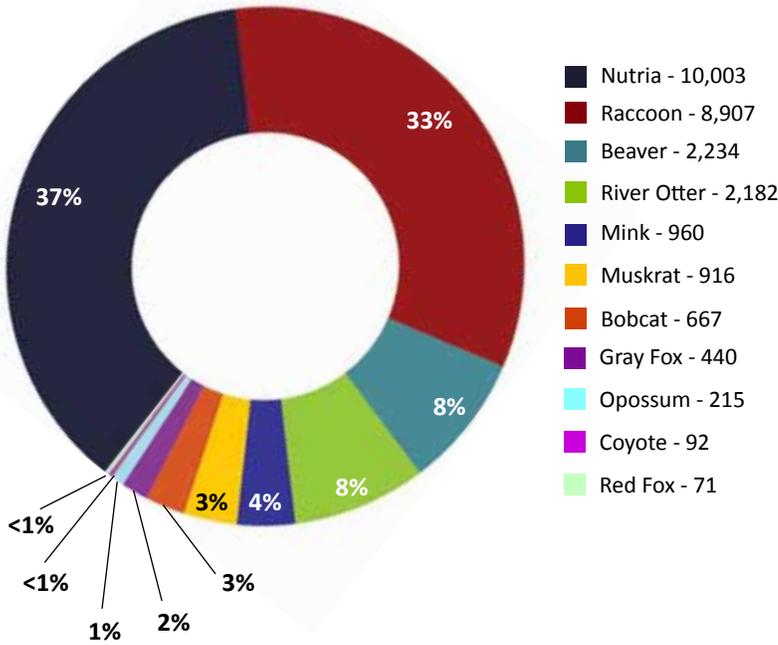


TABLE 5.

10-YEAR AVERAGE VALUE FOR EACH SPECIES	
River Otter	\$109,031.49
Raccoon	\$43,904.24
Bobcat	\$25,583.19
Nutria*	\$17,621.89
Beaver	\$14,699.68
Mink	\$8,249.01
Grey Fox	\$6,608.13
Muskrat	\$3,631.30
Red Fox	\$1,109.24
Coyote	\$592.01
Opossum	\$190.06

FIGURE 7. PERCENT OF TOTAL HARVEST BY SPECIES (FY 2014-2015)
Total Harvest: 9,073

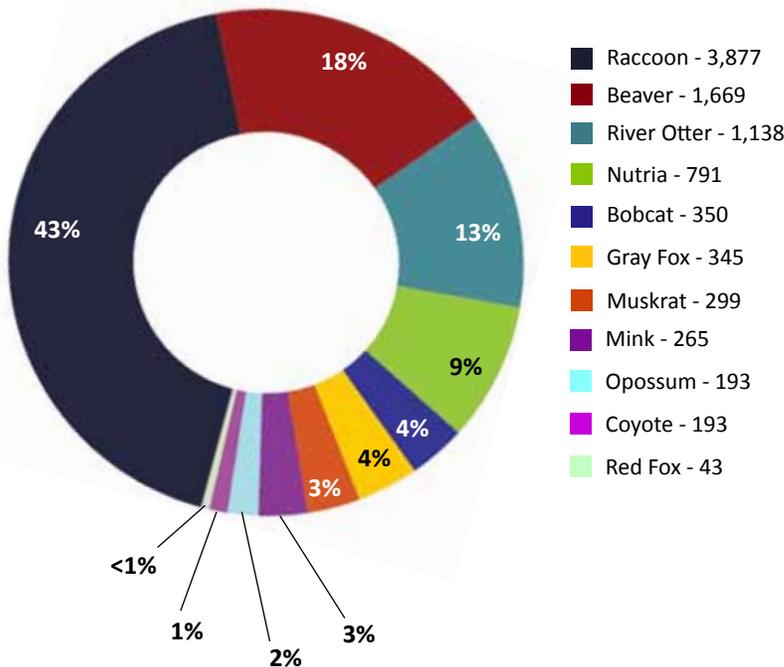


Photo by Dan Dzurisin, Flickr

FUR ADVISORY COUNCIL

The Fur Advisory Council has continued to focus on three major goals this year. The first goal is educating the public concerning the role of wildlife utilization in conservation and habitat management. 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 third goal is to bolster Louisiana’s fur industry through educating locals on trapping skills and best management practices.

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 presented at schools, libraries and local events such as the Cameron Wildlife Festival and National Hunting and Fishing Day events. The school-based educational program continued to be well-received, and additional educational materials were provided to teachers on CDs and through online resources. The council also worked with Boy Scouts at the JAKES Day scouting event. The council website carried the educational story to a much broader audience.

The international fur market has continued to decline during the 2014-2015 year with political unrest and economic crisis in Eastern Europe. Mainland China still holds the largest

market for Louisiana furs, and Chinese fur buyers purchased from Louisiana this year. The Fur Advisory Council attended fur shows in mainland China in 2014-2015.

Louisiana dealers are developing the infrastructure necessary to expand the fur harvest locally in the future. The council has worked to make sure that the art of fur trapping continues as part of Louisiana’s living heritage. Two trapping workshops were piloted successfully this year. Sixty-six students ranging in age from 12 to 65 years attended the workshops. Students learned about trap preparation, skinning and hide care, and laws and best management practices.

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 2014 we estimated that 46,221 alligator nests were present in the coastal marsh habitats; an increase of 2.5 percent from 2013 (*Figure 8*).

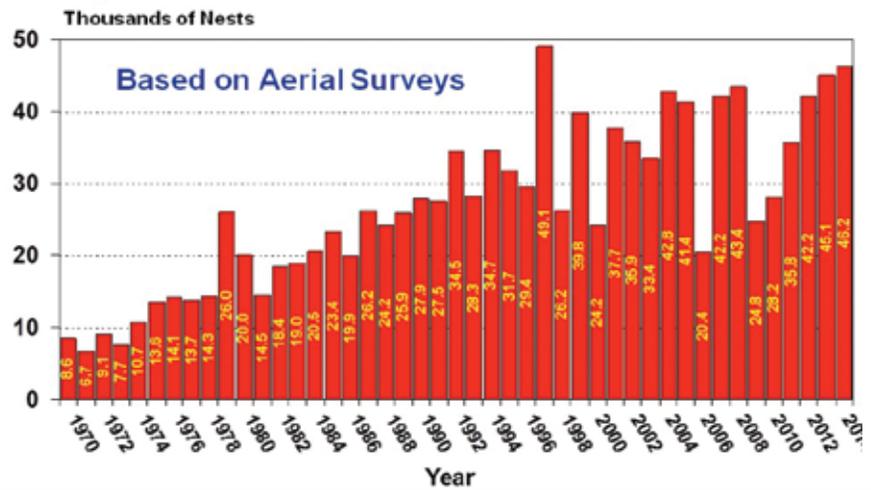
Wild alligator harvest quotas are established to correlate harvest with alligator population density and distribution. Alligator harvest tags are allocated to individuals who either own or lease land that is considered alligator habitat. Digital landowner and survey information are combined with the 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.

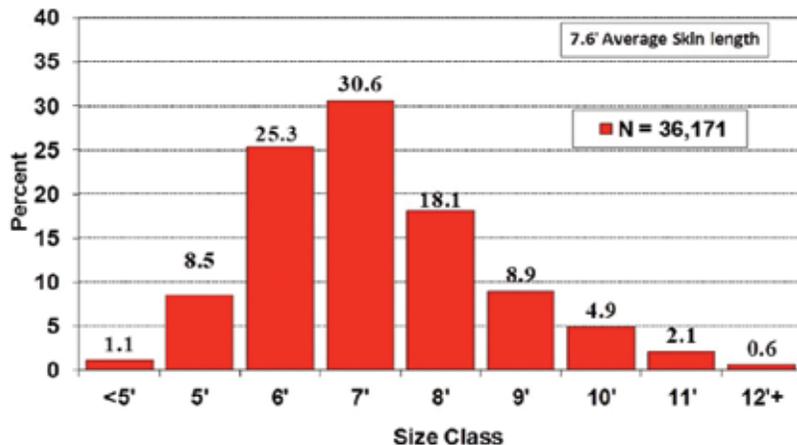
In September 2014, the annual wild alligator harvest produced 36,221 alligators, which averaged 7.6 feet in total hide length and had an estimated value of over \$13.8 million. Beginning in late winter 2008 and continuing into spring and summer of 2009, the worldwide economic recession significantly 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 2011, 2012 and 2013 demand and price for both wild and farm-raised alligators began to recover; that recovery has continued into 2014. It is anticipated the price for wild alligators harvested in 2015 will remain stable as compared to 2014. Adult-sized alligators (those 6 feet and larger) comprised the majority of the harvest (*Figure 9*).

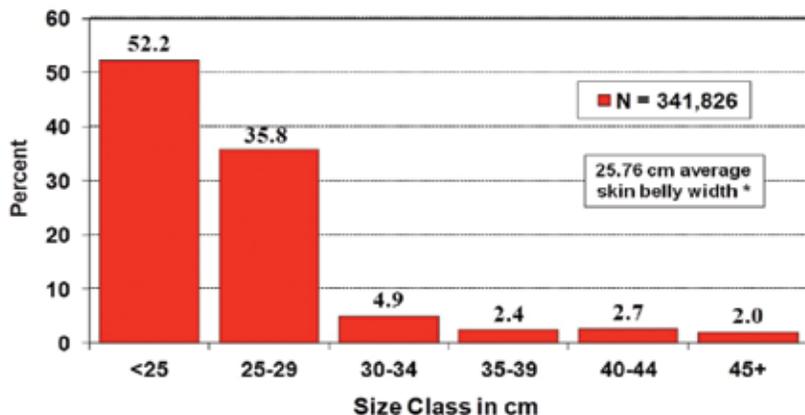
FIGURE 8. LOUISIANA COASTAL MARSH ALLIGATOR NEST PRODUCTION (1970-2014)



**FIGURE 9. LOUISIANA WILD ALLIGATORS HARVESTED
(2014 REGULAR HARVEST SKIN LENGTHS)**



**FIGURE 10. LOUISIANA WILD ALLIGATORS HARVESTED
(2014 REGULAR HARVEST SKIN LENGTHS)**



LDWF provided additional alligator harvest opportunities for the general public by continuing its lottery alligator harvest program. In 2014 the lottery alligator harvest program provided opportunities for 349 alligator hunters to harvest 897 alligators. Lottery alligator harvests were conducted on 45 public areas (WMAs and public lakes) throughout the state.

FARM ALLIGATOR PROGRAM

The January 2015 statewide farm/ranch inventory totaled 799,047 alligators, up from 663,411 alligators in January 2014, and surpassing the record of 731,909 in January 2009. The decline in 2012 was due in large part to the worldwide economic recession, and to farmers voluntarily limiting their egg collections signifi-

cantly 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 collecting 353,176 wild alligator eggs yielding 300,546 hatchlings. In 2012 farmers continued to build their inventories by collecting 413,648 eggs which produced 349,514 hatchlings, while in 2013 farmers collected 498,285 wild alligator eggs which produced 432,386 hatchlings. In 2014 farmers collected 528,719 wild alligator eggs which produced 468,142 hatchlings. During the 2014 tag year (January 2014 through December 2014) an estimated 341,888 farm-raised alligators were harvested, averaging 25.76 cm belly width (*Figure 10*). The total estimated value of these alligators was \$81.7 million.

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 2014-2015, a total of 46,794 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 2014, 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 2014-2015, a total of 62 nuisance alligator hunters were enrolled in the program; annually the nuisance hunters respond to several thousand complaints and harvest approximately 2,500 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 2014-2015.

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. Previously staff from the LSU Department of Experimental Statistics assisted with annual evaluation of survival and growth based on farm "re-traps" recovered in September harvests. We now have contractors from LSU's School of Renewable Natural Resources providing input as to analyses on this project; which includes a graduate student Master's degree 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 2014 wild season staff collected sex ratio data on 13,573 alligators (66.5 percent males, 33.5 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 -

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 West Nile Virus occurred in fall/winter 2003. Aggressive mosquito control on farms has reduced on farm mosquito populations and seems to have reduced the incidence of West Nile Virus in recent years. During FY 2014-2015 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. 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 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 as

continued to work with LDWF staff to update Best Management Practices as needed.

7. Alligator Research Facility -

After several years of planning and fund raising by industry personnel, construction is now complete 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 is 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. 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; various diets and feeding regimes are tested and findings disseminated to industry personnel at meetings throughout the year.

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; a manuscript on these findings is being prepared. 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 a case report of necrotizing exfoliation in a wild alligator.

2. LSU School of Natural Resources -

The LSU Department of Experimental Statistics was 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. This fiscal year

we transitioned to new statisticians (faculty with the School of Renewable Natural Resources) due to the pending retirement of current contract statistician and research associate.

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

A research contract was established as of July 1, 2013 to run through June 30, 2016 for aquaculture nutritionist Dr. Reigh and his research associate to conduct digestibility studies continue to aid farmers in their farm management; industry support from feed manufactures at Cargill have been instrumental in this process. Experimental diets were tested in feeding trials and an experimental diet performed comparably to the standard 56 percent protein (control) diet. Two other diets (one with a higher digestible protein content than the one tested and lower digestible energy-to-protein ratio but with similar amino acid ratios, and one with a lower digestible protein content and higher digestible energy-to-protein ratio but with similar amino acid ratios) were tested concurrently with this diet and the control diet, and both gave significantly poorer results than this formulation. The diets were produced as cold-pelleted (sinking) feeds in the lab, so they were not at all similar in physical characteristics to the extruded control diet to which they were compared. Dr. Reigh plans to test a formulation (similar to that described above) in the research facility from September 2014 - August 2015 to see if it performs well under more realistic production conditions than could be achieved in the lab tests. If so, we will have a second level of verification that Dr. Reigh's efforts to develop a diet based on the amino acid availability of ingredients, which he previously determined for this particular group of feedstuffs, is on track and we can continue to build on this information base. Dr. Reigh is currently measuring amino acid availability in another set of ingredients that he hopes to have completed soon. The team plans to continue these measurements for as long as possible, with as many ingredients as possible, to establish a database on the nutritional value of a wide range of feedstuffs. We hope to apply what is learned in feeding trials such as these to demonstrate how this information can be used for the benefit of alligator producers. Broad goals are to create more options in feed formulations, allow greater control of feed costs, improve diet utilization, and reduce waste of feeds.

OTHER RESEARCH

In addition to LDWF research studies, we continued to support and collaborate with graduate students, post-doctoral research associates, and university faculty with their research

studies on numerous projects. Associates from several universities (Harvard University, Yale University, University of North Texas, University of California at San Bernardino, University of California San Francisco, University of Southern California, La Sierra University, and Western Illinois University) were hosted at RWR in 2014-2015 to collect additional samples for several studies, or we provided samples to them if travel costs were prohibitive. Several collaborators made presentations with LDWF staff as co-authors at meetings as listed below.

In the summer of 2014 and June 2015 we made collections of a series of embryos for further collaborative studies. We collected and preserved these embryos for several research teams.

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. Construction of the new laboratory building and improved alligator holding facilities will aid our research progress in the future.

PUBLICATIONS

We published several abstracts and full papers this year, two of which were selected for Publication Awards by the Louisiana Association of Professional Biologists. Some manuscripts published in FY 2014-2015 include:

Eelsey, R. M. and R. Bourgeois. 2014. *Macrochelys temminckii* (Alligator Snapping Turtle). Juvenile basking. *Herpetological Review*. 45(4):688-689.

Finger, J. W. Jr., R. J. Williams, M. T. Hamilton, R. M. Eelsey, V. A. Oppenheimer, S. D. Holladay, and R. M. Gogal, Jr. 2014. (Abstract). Impact of collection time on hematologic and immune markers in the American alligator (*Alligator mississippiensis*). Poster presentation at the University of Georgia, College of Veterinary

Medicine, Science of Veterinary Medicine Research Symposium. October 9, 2014.

Galli, G., R.M. Eelsey, E. Dzialowski, H. Shields, and D. Crossley II. 2014. (Abstract). Evidence of hypoxic metabolic programming in developing alligator hearts. Presentation at the American Physiological Society meeting October 5-8, 2014, San Diego, California.

Joneson, J. R., R. M. Eelsey, and T. Owerkowicz. 2014. (Abstract). Musculoskeletal plasticity of the hindlimb/tail locomotor module in the American alligator (*Alligator mississippiensis*). Presentation at the American Physiological Society meeting October 5-8, 2014, San Diego, California.

Joneson, J.R., R.M. Eelsey, and T. Owerkowicz. 2014. (Abstract). Tenotomy of the caudofemoralis longus muscle in American alligators elicits no changes in skeletal morphology despite significant muscular changes - unexpected implications for the evolution of theropod locomotion. Presentation at the Society of Vertebrate Paleontology meeting, Berlin, Germany. November 5-8, 2014. Pg. 156.

Kerfoot, J. R. Jr., M. P. Fern, and R. M. Eelsey. 2014. Scaling the feeding mechanism of captive *Alligator mississippiensis* from hatchling to juvenile. *Biology*. 3:724-738.

Nelson, D., K. Tate, R. M. Eelsey, and D. Crossley. 2014. (Abstract). Temperature effects on heart rate and baroreflex function of embryonic American alligators (*Alligator mississippiensis*). Presentation at the American Physiological Society meeting October 5-8, 2014, San Diego, California.

Platt, S.G., R. M. Eelsey, P. L. Trosclair, III, and J. T. Linscombe. 2014. *Alligator mississippiensis* (American Alligator). Cannibalism. *Herpetological Review*. 45(3):488-489.

Rehorek, S. J., M. Duffy, J. R. Zacherl, K. Anand, R. M. Eelsey, and T.S. Smith. 2014. An examination of the sensory structures in the oral cavity of the American alligator (*Alligator mississippiensis*). *Journal of Morphology*. 275:1312-1320.

Tate, K., J. Eme, J. Crossley, T. Rhen, R. M. Eelsey, Z. Kohl, and D. Crossley. 2014. (Abstract). Hypoxia during critical windows of ontogeny alters organ mass and cardiovascular function in the American alligator (*Alligator mississippiensis*). Presentation at the American Physiological Society meeting October 5-8, 2014, San Diego, California.

Vasconcellos, D., T. Owerkowicz, J. Eme, J. Blank, R. M. Eelsey, and J. Hicks. 2014. (Abstract). Cervical osteoderms reveal pattern of whole body growth in juvenile American alligators. Presentation at the American Physiological Society meeting October 5-8, 2014, San Diego, California.

Camarata, T., A. Howard, A. O’Conner, P. Chow, S. Mukta, R. M. Elsey, J. Conrad, B. Beatty, N. Solunias, and A. Vasilyev. 2015. (Abstract). Adult nephrogenesis and persistence of Six2 expressing progenitor cells in the reptilian kidney. Poster presentation at the Experimental Biology meetings, March 28 – April 1, 2015, Boston.

Elsey, R. M. and D. M. Richard. 2015. Unusually high alligator nest density. *Crocodile Specialist Group Newsletter*. 34:(2)37-38.

Elsey, R. M., W. Selman, J. G. Nevarez, R. W. Bauer, R. King, M. Dupuis, and K. Kim. 2015. *Alligator mississippiensis* (American Alligator). Necrotizing exfoliation. *Herpetological Review*. 46(2):246-248.

Elsey, R. M., S. G. Platt, and M. G. Shirley. 2015. An unusual beaver (*Castor canadensis*) lodge in a Louisiana coastal marsh. *Southeastern Naturalist*. 14(2)N28-N30.

Finger, J. W. Jr., R. J. Williams, M. T. Hamilton, R. M. Elsey, V. A. Oppenheimer, S. D. Holladay, and R. M. Gogal, Jr. 2015. Influence of collection time on hematologic and immune markers in the American alligator (*Alligator mississippiensis*). *Journal of Immunoassay and Immunochemistry*. 36:496-509.

Jensen, B., B. Boukens, D. A. Crossley, III, R. M. Elsey, D. Sedmera, I. Efimov, and V. M. Christoffels. 2015. (Abstract). A specified atrioven-

tricular conduction system in the American alligator (*Alligator mississippiensis*) heart. Poster presentation at 22nd edition of the Weinstein Cardiovascular Development Conference April 30 - May 2, 2015.

Keenan, S. K., R. M. Elsey, and A. Engel. 2015. (Abstract). The good, the bad, and the unknown: microbial symbioses of the American alligator. Presentation at the SICB meeting. January, 2015, West Palm Beach, Florida. S3.6.

Keenan, S. K., and R. M. Elsey. 2015. The good, the bad, and the unknown: microbial symbioses of the American alligator. *Integrative and Comparative Biology*. (in press). doi:10.1093/icb/icv006.

Lance, V., R. M. Elsey, and P. L. Trosclair, III. 2015 Sexual maturity in male American alligators in southwest Louisiana. *South American Journal of Herpetology*. 10(1):58-63.

Membrano, N., R. M. Elsey, and T. Owerkowitz. 2015. (Abstract). Embryonic responses to carbonic anhydrase inhibition and exogenous calcium supplementation in eggs of the American alligator. Presentation at the SICB meeting. January, 2015, West Palm Beach, Florida. 58.4.

Reed, D. A., L. B. Porro, R. M. Elsey, J. Iriarte, and C. F. Ross. 2015. (Abstract). The presence of the external mandibular fenestra in the lower jaw of Alligator does not substantially increase peak

von Mises stress and is energetically negligible. Presentation at the SICB meeting. January, 2015, West Palm Beach, Florida. P3-162.

Rosenblatt, A. E., J. C. Nifong, M. R. Heithaus, F. J. Mazzotti, M. S. Cherkiss, B. M. Jeffery, R. M. Elsey, R. A. Decker, B. R. Silliman, L. J. Guillette Jr., R. H. Lowers, J. C. Larson. 2015. Factors affecting individual foraging specialization and temporal diet stability across the range of a large-bodied “generalist” apex predator. *Oecologia*. 178:5-16.

Skates, D. I., T. Owerkowitz, J. Eme, J. M. Blank, R. M. Elsey, and J. W. Hicks. 2015. (Abstract). Locomotor exercise exerts no systemic effect on the dentary in the American alligator. Presentation at the SICB meeting. January, 2015, West Palm Beach, Florida. 58.3.

Yang, J. C. Lien, R. M. Elsey, and T. Owerkowitz. 2015. (Abstract). Cardiac regenerative capacity of *Alligator mississippiensis*. Presentation at the SICB meeting. January, 2015, West Palm Beach, Florida. 58.1.

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 multiple scientific journals and review numerous manuscripts each year.

ALLIGATOR ADVISORY COUNCIL

The Alligator Advisory Council monitors and addresses numerous issues affecting the alligator industry at local, national and international levels. The council supports husbandry and disease research through LSU Ag Center, addresses public concerns regarding animal welfare through media and education, engages in international conservation and trade issues, and develops markets for sustainable Louisiana products.

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. Governor Gerry Brown signed the legislative bill AB2075, extending the sunset clause to Jan. 1, 2020. California has historically been a strong pro-animal rights state. The Council continues to discuss the importance of exempting alligators from the anti-wildlife trade laws with the bill sponsor, Luis Alejo.

The council has worked to develop humane harvest guidelines through LSUSVM, LDWF staff, and the Louisiana Alligator Farmers and Ranchers Association. Louisiana farmers have worked with the council to begin implementing these best management practices.

The council’s participation in CITES, CGS and IACTS monitoring continues to provide a strong foundation for sustainable international trade. The council has continued to work with USFWS to build upon the Masterfile permit systems for alligator farmers. A system that could update reports in real time would reduce the lag time of two years for CITES reports.

The Alligator Advisory Council worked with the LSU School of Human Ecology to promote the use of lower grade alligator skins. LSU student garments were showcased at the Marsh on the

Catwalk Alligator Competition in May 2015. Students from the Beijing Institute of Fashion Technology also worked with grade-3 alligator leather and showcased their products at the Beijing Fashion Week. This year LSU students traveled to China to work with the Chinese students. The council has worked to develop a long-term collaboration to establish an alligator skin product design studio in Beijing to promote Louisiana alligator skins.

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 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 2014-2015 the Habitat Section was comprised of the four following programs: Statewide Environmental Investigations; Louisiana Natural and Scenic Rivers Program; Permits Coordination; and Seismic Section.

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 U.S. Fish and Wildlife Service grant. Staff is responsible for reviewing and providing comments and mitigation recommendations on all permits sought from state and federal environmental regulatory agencies, primarily the Louisiana Department of Natural Resources (LDNR) and U.S. Army Corps of Engineers (USACE). Staff members received, reviewed and provided comments to 1,651 state and federal permit applications during FY 2014-2015. It was determined that compensatory mitigation was required on approximately 20 percent of the 1,651 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.

As seen in the past several years, staff continued to receive a significant number of USACE Section 10 permit applications for the withdrawal 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.

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 2014-2015, staff conducted 185 on-site field inspections and participated in 154 meetings with applicants, agents and regulatory agency personnel. Staff gave six presentations to natural resource agencies, universities, professional organizations, schools, landowners, citizens or civic groups.

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 2014-2015, 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 15 wetland mitigation banks were approved and authorized in Louisiana during FY 2014-2015, totaling over 5,543 acres statewide. Staff attended all Interagency Review Team meetings and nearly all of the site investigations.

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 and approving, sometimes with modification, 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. Coastal Use Permit applicants can be required, at the request of Statewide Environmental Investigations staff, to modify the activity if the proposed location unnecessarily impacts an oyster reef. There were 77 water bottom assessments reviewed and approved by agency staff during FY 2014-2015.

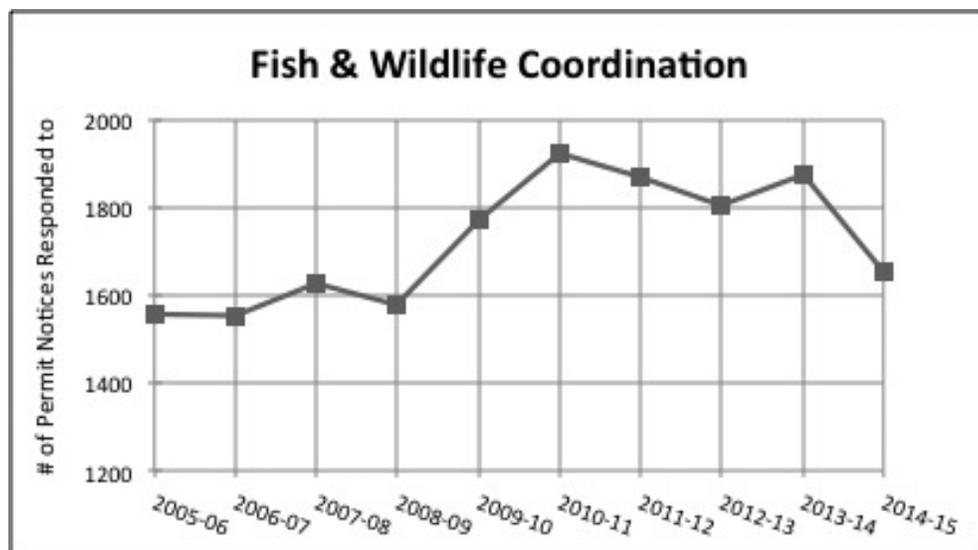


FIGURE 1. Number of State and Federal permit notices reviewed and commented on by Habitat Section staff annually

PROJECTS OF OTHER AGENCIES AND THE PRIVATE SECTOR

LDWF worked with numerous governmental agencies in conducting environmental investigations including: U.S. Fish and Wildlife Service; National Marine Fisheries Service; U.S. Environmental Protection Agency; USACE; U.S. Forest Service; U.S. Department of Agriculture; Federal Highway Administration; Federal Aviation Administration; Farmers Home Administration; U.S. Coast Guard; Department of Energy; Federal Energy Regulatory Commission; Department of Defense; National Park Service; Housing and Urban Development; Louisiana Department of Transportation and Development; LDNR; Louisiana Department of Environmental Quality (LDEQ); the Louisiana Department of Culture, Recreation and Tourism; Louisiana National Guard; 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, 2014 and June 30, 2015 to receive reports on progress of implementing the recommendations of the initial plan. As the commission continues its work, LDWF's 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 non-governmental organizations, 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. LDWF participates as both a Steering Committee member and Science Team member. This past year the LCC completed science projects intended to address priority science needs. Completed projects included a Decision Support Tool for Mottled Duck, Barrier Island Data Integration and Assessment, a Sea-Level Rise Marsh Model, a Grassland Decision Support Tool, and a Gulf Coast Vulnerability Assessment. Science



FIGURE 2. Gulf Coast Prairie Landscape Conservation Cooperative map.

projects completed by the LCC (i.e., Sea-Level Rise Marsh Model and Gulf Coast Vulnerability Assessment) were instrumental in developing climate change projections and adaptation strategies detailed in LDWF's 2015 Louisiana Wildlife Action Plan.

TECHNICAL ASSISTANCE PROVIDED

Staff continue to track 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 non-governmental organizations for conservation recommendations, guidance, biological data or project reviews. During FY 2014-2015 we replied to a total of 2,702 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 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.

The Scenic Rivers Program's website continued to be updated throughout FY 2014-2015. Applications for proposed activities on Scenic Rivers were made 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 Grants project which funded the development of several Scenic Rivers Management Plans. This funding has assisting Scenic Rivers in working toward completion of Management Plans for Beckwith Creek, Hickory Branch, Barnes Creek, Bundicks Creek and Drakes Creek during FY 2014-2015. As part of the development of these five Scenic River Management Plans and in efforts to garner public input and support, staff conducted four public hearings in southwest Louisiana and spoke at a Louisiana Forestry Association Board meeting.

In FY 2014-2015, the Bayou Liberty Management Plan was finalized. The Bayou Liberty Management Plan was developed in consultation with the Division of Administration, Department of Culture, Recreation and Tourism, Louisiana Department of Agriculture and Forestry, LDEQ, local government agencies



Images captured during the recovery of a vessel abandoned on Cane Bayou. The image on the left depicts Scenic River's Coordinator Chris Davis and Biologist Zach Chain with the sunken vessel in tow as they carefully negotiate a group of young paddlers participating in Louisiana State Park's Outdoor Outreach Program. The image on the right is of the hauled out vessel being mucked out by Biologist Zach Chain.

(including St. Tammany Parish) and non-governmental organizations. 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.

Several enforcement actions were initiated in FY 2014-2015. These included issuance of 12 Compliance Orders and the forwarding of nine violations to LDWF's Enforcement Division for citations. 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. Staff spent a considerable amount of time and effort on numerous sand and gravel operations to develop/implement water management plans aimed at minimizing impacts to scenic rivers. Staff also worked with Florida Parish developers to formulate adequate Stormwater Pollution Prevention Plans to minimize impacts to scenic rivers.

During surveys, Scenic River staff began an effort to document derelict vessels, attempt to locate responsible parties and have the vessels removed by whichever means prudent. One such vessel, which could not be linked to a previous owner and had been the source of a number of complaints, was physically removed from Cane Bayou by Scenic Rivers staff. Once removal was executed, staff coordinated with St. Tammany Parish government to ensure

that the vessel was hauled off and properly disposed. In addition to numerous corrective actions and other benefits, our surveys also resulted in the discovery and documentation of a previously unreported oil spill on Bogue Falaya River. Essential information was passed to Louisiana State Police and the National Response Center in a timely manner, allowing further investigation/response to occur.

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 21 Scenic River Permits were issued during FY 2014-2015. During that period an additional 12 applications were withdrawn. In addition to considering permits, Scenic Rivers staff made 29 determinations of "no permit required" for activities undertaken near scenic rivers but with no potential to significantly degrade the ecological integrity of a scenic river. The coordinator and staff conducted numerous site visits and field investigations statewide, surveying approximately 160 stream miles, with a large portion of the section's 154 meetings being specific to scenic rivers issues. One public hearing was held for consideration of an application to withdraw water from a Scenic River; the associated permit application was later denied.

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 Coordinator 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 2014-2015, the Permits Coordinator received, processed, tracked and disseminated responses to 1,651 permit notices.

LONG-TERM MONITORING OF MC 252 IMPACTS

Following the declared end of all "active" *Deepwater Horizon* oil spill response, due to remaining state concerns regarding residual *Deepwater Horizon* oiling within sensitive habitats, Louisiana negotiated a continued monitoring and treatment agreement with BP Exploration and Production. A member of the Habitat Section

staff familiar with the *Deepwater Horizon* response was selected to coordinate the state's efforts. Working closely with the Louisiana Oil Spill Coordinator's Office, Coastal Protection and Restoration Authority, LDEQ and LDNR, we developed sampling protocols, reporting templates, mitigation guidance, standard operating procedures and best management practices for the effort. During FY 2014-2015 staff successfully coordinated four complete rounds of surveys covering over 50 impacted shoreline segments. We also oversaw one additional round of monitoring/treatment at the seven "high frequency" shoreline segments. Staff participated in 20 core group meetings and conference calls, four meetings with BP Exploration and Production, and assisted in holding two training events for Louisiana field representatives. As the second year of monitoring approached, working with the Louisiana core group (including representatives from Coastal Protection and Restoration Authority, Louisiana Oil Spill Coordinator's Office, and LDEQ), staff successfully defended the continued monitoring of 43 impacted shoreline segments.

Throughout FY 2014-2015, the Habitat Section ensured that LDWF properties and other sensitive habitats containing residual *Deepwater Horizon* oiling received continued monitoring, and we pursued treatment when appropriate. Among our successes was the removal of over 28,000 lbs. of oiled material from nesting habitat on the beaches of East Grand Terre.



Images captured by Habitat Section staff during their monitoring of oil recovery on East Grand Terre. Over 28,000 lbs. of material was removed from this area. The top image depicts BPXP contractors removing oiled material from the intertidal zone. The bottom image is of a chunk of mat being removed. Note the surface sheens emanating from the oiled material.

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 57 well locations, pipeline projects and other mineral exploration related permits on LDWF properties. The program also issued six rights-of-way, surface leases, surface/subsurface leases, and six mineral leases were allowed on LDWF properties during FY 2014-2015. All of these projects are reviewed and coordinated with field personnel to ensure that they are compatible with LDWF management area programs.

In FY 2014-2015 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 60 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. The Mineral Program continued to ensure regulatory compliance and coordinate credit sales for LDWF's two wetland mitigation banks located on Rockefeller Wildlife Refuge and Boeuf WMA. The Mineral Program also represented LDWF at each monthly meeting of the State Mineral and Energy Board.

In addition to the above 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. This past fiscal year commercial dredge fill pits were inspected to ensure operator compliance with program regulations.

The Mineral Program also applied for and received 13 USACE permits which authorized LDWF to undertake management actions on LDWF properties.



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 the 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.

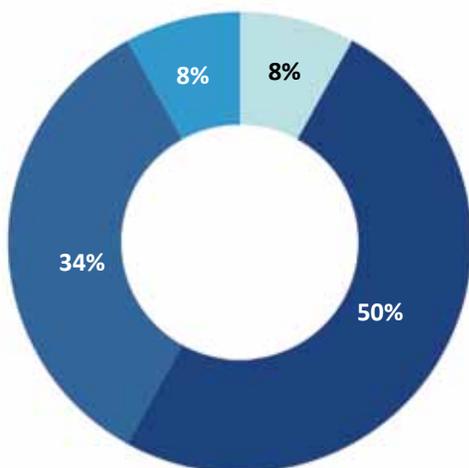
ORGANIZATION

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 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.

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 Commission (GSMFC). Funds from the USFWS are primarily from fed-

eral assistance in the Sport Fish Restoration Program. These 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. 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.

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

Monitoring efforts related to the 2010 *Deepwater Horizon* oil spill continued throughout FY 2014-2015. As one of the primary state agencies involved in oil spill response, LDWF Fisheries staff continued to monitor beaches for recurring oil events from the spill, participated in response and recovery efforts of marine mammals and sea turtles, and participated in the ongoing Natural Resource Damage Assessment (NRDA). LDWF also conducted enhanced fisheries monitoring to better manage fisheries in the wake of the spill.

FISHERIES CLOSURES

During FY 2014-2015, all portions of state waters were reopened to recreational and commercial fishing. The last remaining closed areas located near Bay Jimmy and Bay Batiste, within the Barataria Basin, were reopened on June 9, 2015. On Dec. 10, 2014, waters seaward a distance of one-quarter mile from the shoreline of East Grand Terre and Caminada Pass westward to Belle Pass were reopened.

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.

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. Where logistically possible and appropriate, marine mammal carcasses are also recovered for necropsies or are necropsied in the field. LDWF has 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 and many necropsies have been performed utilizing this state of the art facility.

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. During July 1, 2014 - June 30, 2015, LDWF responded to over 50 sea turtle strandings and 64 marine mammal strandings, each including three live animals. LDWF Office of Fisheries staff performed 21 marine mammal necropsies and six internal exams on dead stranded marine mammals during this fiscal year.

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. 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).

Reproductive Outcomes surveys were performed in April, May and July of 2015 in an effort to document if female dolphins captured in June of 2014 as part of the NRDA Live Dolphin Health Assessments in Barataria Bay had successful or unsuccessful pregnancies. This is a continued effort working with LDWF's partners at NOAA and National Oceanic Service continuing to document impacts to dolphins in Barataria Bay as a part of NRDA.

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. Preliminary programming and planning are 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 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 was completed in July 2014 and indicated that success criteria has been met. Construction of the oyster hatchery is now complete, and the facility is operational and producing oyster larvae during testing phase of hatchery systems.

Oyster Hatchery

The construction of the new Michael C. Voisin oyster hatchery, pursuant to the Phase I *Deepwater Horizon* Oil Spill NRDA Early Restoration Plan as part of the Louisiana Oyster Cultch Project, has been completed. The Louisiana Oyster Cultch Project involved the placement of a minimum 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 is now operational and has begun to produce oyster larvae for corrective action on recent cultch plants, if needed, and further enhance oyster production on the public oyster seed grounds. Prior to moving in, hatchery systems were constructed and established in the algal stock room, algal production room and larval production room. The systems in these rooms are designed to produce oyster larvae for LDWF rehabilitation projects as well as Louisiana SeaGrant research and extensions projects. A unique algal culturing system in the algal production room provides high quantity and quality algal feed which is necessary for rais-

ing hatchery-produced oyster larvae. Algal and larval production commenced for the first time ever in the new oyster hatchery during the summer of 2015.

Louisiana Marine Fisheries Enhancement, Research and Science Center

The *Deepwater Horizon* NRDA trustees published the Final Plan for Phase III of Early Restoration in June 2014, which included the \$22 million Louisiana Marine Fisheries Enhancement, Research and Science Center project. The Phase III Plan was officially approved in October 2014, thus initiating this project, which will establish the infrastructure to responsibly develop marine aquaculture-based tools for fishery management, research and education in Louisiana. At the conclusion of FY 2014-2015, LDWF was engaged in the land siting process.

Publications

Gothreaux, C. and P. Banks. 2014. Aquaculture and Louisiana Fisheries: Innovative oil spill rehabilitation efforts. *Fisheries*, 39:11, 536-540.

Presentations

Gothreaux, C. 2015. Louisiana Marine Fisheries Enhancement, Research, and Science Center. Louisiana Department of Wildlife and Fisheries Research Meeting, Grand Isle, La.

Gothreaux, C. 2014. Louisiana Marine Fisheries Enhancement, Research, and Science Center: Project Summary. Nicholls State University Seminar, Thibodaux, La.

Gothreaux, C. 2014. Louisiana Marine Fisheries Enhancement, Research, and Science Center: Project Summary. Louisiana Outdoor Writers Association Annual Conference, Houma, La.

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 2014-2015. In inshore waters, 214 6-foot and 1,585 16-foot trawl samples were collected. In state offshore territorial waters, 233 20-foot trawl samples were collected. Information crucial to setting the closing dates of the 2014 spring inshore shrimp season, opening dates of the 2015 spring inshore shrimp season, opening and closing dates of the 2014 fall inshore shrimp season, and the closing and reopening of shrimping in portions of state territorial waters in 2014 and 2015 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. Over 500 square-meter samples are collected each July, and approximately 2,800 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 2014 Oyster Stock Survey results indicated an increase (+10 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 2014 showed approximately 1.9 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 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 2014 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 statewide and showed promising results. It continues to be tested and strengthened utilizing updated data each year.

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 2014-2015, 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 2014-2015 the three-year project was completed. A portion of these funds were awarded to the University of New Orleans 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 2014-2015, and the results have been compiled into a research paper produced by the University of New Orleans that provides valuable insight into Louisiana's oyster industry.



FIGURE 1. Map of boat activity generated from VMS data. Green dots indicate fishing behavior; orange dots suggest gearing behavior; yellow dots indicate travel; red dots indicate little or no movement. Dark blue is water, and grey is land. Daily behavior of vessels in Vermilion Bay, Louisiana table from "Maintaining Sustainable Oyster Shell-Stock on Louisiana Public Seed Grounds Utilizing Vessel-Monitoring Data" by Thomas Soniat (UNO).

Cultch Planting

Approximately 12,500 cubic yards of crushed limestone was placed in three separate areas of Calcasieu Lake in May 2015. These new cultch plants were funded from the Oyster Seed Ground Development Account and will be sampled in the fall of 2015 for the presence of a successful oyster spat catch. The total area of the three plants encompassed approximately 65 acres. Twenty-five acres were planted in West Cove, 20 acres planted on the southeast side of the lake near Lambert's Bayou, and 20 acres planted north of the harvest area near Commissary Point.

Oyster Hatchery and Research

LDWF has continued its involvement and collaboration with Louisiana SeaGrant at the existing oyster hatchery on Grand Isle and assisted with oyster larvae production. A portion of the hatchery-produced larvae raised at the existing hatchery was used by LDWF for a remote setting project and for deploying in the western part of the state (Figure 2).

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.

Results of this spat-on-shell pilot project through Month 6 are being analyzed, but show an approximate 3.4 percent survival of oysters deployed. Growth of hatchery-raised animals appears to be similar to growth of natural set oysters.

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.

LDWF is working closely with Plaquemines Parish on the Remote Setting Program and is utilizing Buras Boat Harbor as the program's work

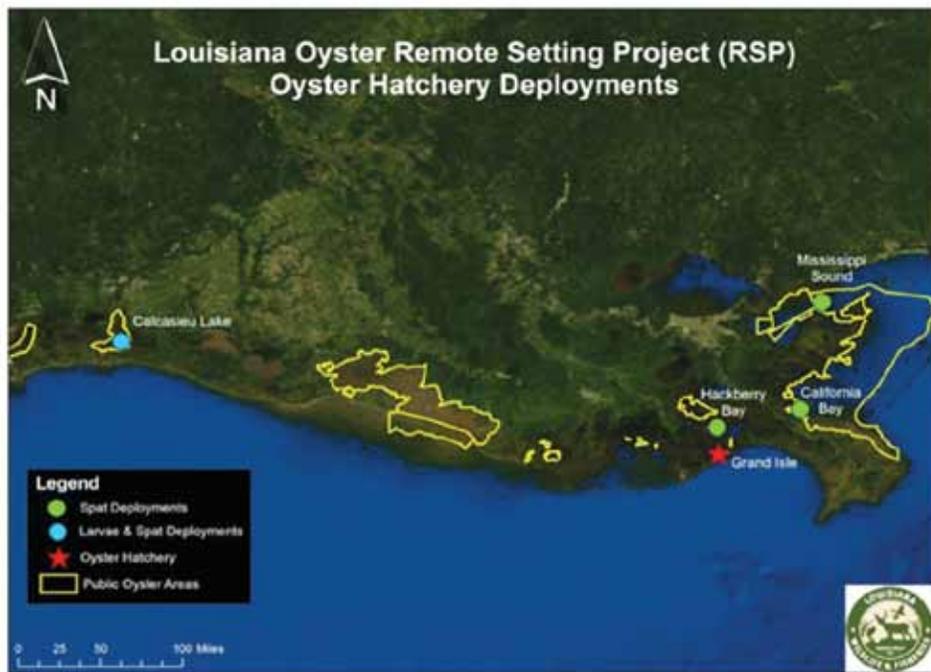


FIGURE 2. Larvae and/or spat deployment locations in public oyster areas of Louisiana 2011-2015.

site. Site improvements and the construction of work areas and the remote setting tanks are currently under way. Funding for the project comes from LDWF, Coastal Protection and Restoration Authority and a Community Development Block Grant through Plaquemines Parish. Site construction includes a new, concrete bulkhead, an oyster shell staging area, and six remote setting tanks. It is anticipated that construction will be complete by December 2015 and oyster larvae from the hatchery on Grand Isle will begin to be utilized for remote setting in Buras by the summer of 2016.

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.

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 monthly.
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 2014-2015, the fishery-independent finfish sampling program collected 933 (101 percent) gill net samples, 1,109 (99 percent) seine samples, and 263 (97 percent) trammel net samples for a 99 percent overall completion rate. Gill net sampling exceeded targets, while seine and trammel sampling were slightly below 100 percent sampling due to changes in sampling methodology and weather.

FRESHWATER FINFISH SAMPLING

Freshwater fisheries resources are monitored and managed through various sampling methods. In FY 2014-2015, 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 125 lakes, rivers and streams. Sampling sites on inland lakes, reservoirs and rivers are predetermined 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 661 stations were sampled for 275 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. Sixty-three 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 292 gill net samples were taken on various lakes and rivers, while 294 lead net and hoop net samples were fished during the fiscal year.

Special largemouth bass age, growth and mortality studies started or continued on 10 water bodies during FY 2014-2015, while crappie age, growth and mortality studies started or continued on 10 lakes. The extensive data collected will be used in consideration of existing and proposed harvest regulations.

MARINE MAMMAL AND SEA TURTLE STRANDING AND RESCUE PROGRAM

In January and March 2015, LDWF staff were able to successfully release 26 Kemp's ridley sea turtles that were successfully rehabilitated in Louisiana from the New England cold stunning event. Due to the large number of animals brought in, the turtles were transported to various rehabilitation facilities across the United States. Upon rehabilitation, they were released into the waters of the Gulf of Mexico off the coast of Louisiana.

Beginning in December 2014, LDWF partnered with researchers from the U.S. Geological Survey to initiate a long-term mark recapture survey of live sea turtles in Louisiana. During this time, a loggerhead sea turtle and 28 green sea turtles were captured.

On June 29, 2015, LDWF investigated a report from a Grand Isle Beach sweeper that sea turtle nesting crawl was discovered on Grand Isle Beach. Upon investigation working under directives from USFWS, LDWF staff confirmed a loggerhead sea turtle nest on the western end of Grand Isle Beach not far from Caminada Pass. This historical discovery marks the first ever documented and confirmed sea turtle nest along the coast of Louisiana.

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 276,000 commercial fishing trips reported last year producing in excess of 207 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.

Shrimp are the state's most valuable fishery. In 2014, total shrimp landings measured approximately 116 million pounds (all species combined/heads on weight) and had a dockside value of \$237.5 million. Brown shrimp landings comprised approximately 40 percent of FY 2014-2015 landings. White shrimp landings in 2014 measured nearly 70 million pounds (heads-off) weight. Although landings of both brown and white shrimp were below the 2000-2014 annual average, dockside values were considerably above annual averages (*Figure 3*).

Louisiana commercial blue crab landings for 2014 totaled approximately 43.2 million pounds and had a record dockside value of approximately \$67 million (*Figure 4*).

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 5*).

Louisiana commercial freshwater finfish landings for FY 2014-2015 totaled approximately 12 million pounds and included common species such as alligator gar, blue catfish, channel catfish, flathead catfish, freshwater drum, buf-

falo, bowfin, carp and gizzard shad. Total dockside value of these species was approximately \$5.2 million. Wild caught crawfish landings in Louisiana for 2014 was 13,113,673 lbs. with a dockside value of \$16,208,969.

RECREATIONAL HARVEST

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.

At the end of 2014, using LA Creel data, it was estimated that a total of 2,187,892 recreational angler trips were taken.

During the first half of 2015, fisheries biologists worked a total of 768 LA Creel assignments and conducted approximately 5,016 interviews of recreational fishing trips along Louisiana's coast through the LA Creel program. This resulted in a total of 13,435 anglers being surveyed and 35,625 fish being counted in the first half of 2015. During the first half of 2015, 16,148 private angler effort phone call or email attempts were conducted to estimate effort. Of those attempts, 15,797 resulted in completed surveys. Approximately 800 charter captains were monitored with a total of 1,729 charter angler trips taken during the first half of 2015.

In order to benchmark the LDWF LA Creel program against the NMFS Marine Recreational Information Program, the two entities agreed to conduct both surveys simultaneously for the



Sea turtle crawl on Grand Isle Beach in June 2015.

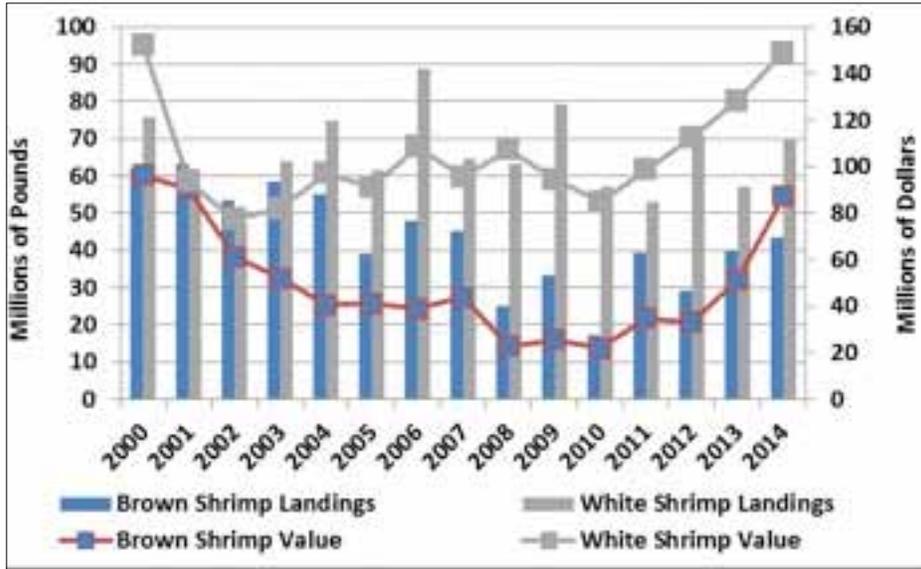


FIGURE 3. Annual white and brown shrimp landings and value (Source: LDWF trip ticket data).

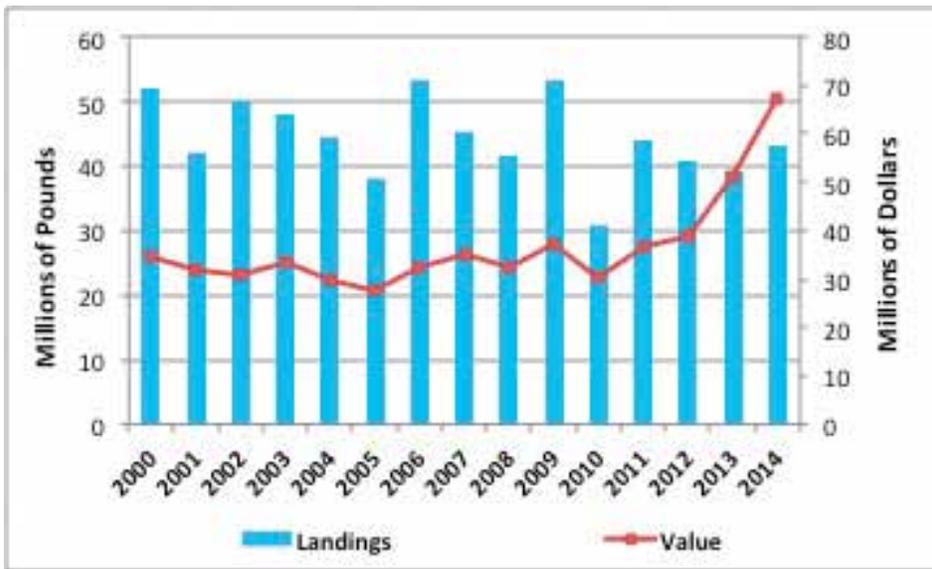


FIGURE 4. Annual blue crab dockside landings and values (source: LDWF trip ticket data).

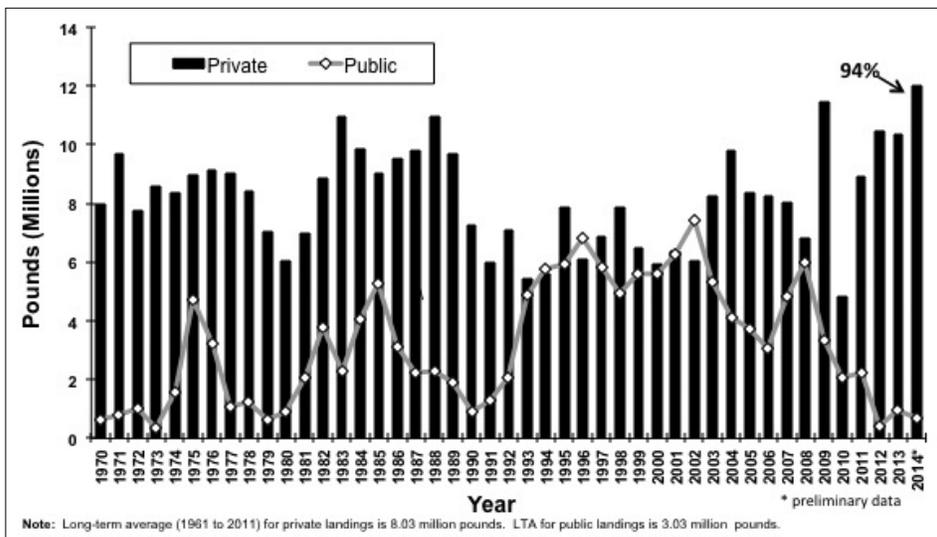


FIGURE 5. Historical Louisiana oyster landings from private oyster leases and public oyster areas.

entire 2015 calendar year. During the first half of 2015, fisheries biologists conducted approximately 4,306 interviews of recreational fishermen along Louisiana’s coast through Marine Recreational Information Program surveys. In the Marine Recreational Information Program, the number of interviews equals the number of anglers surveyed, which, again, is approximately 4,306 working 435 assignments in the same time period.

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 2014-2015. These lakes and rivers include the Atchafalaya Basin, Caney Creek, Grand Bayou, Lake Bruin, Lake Henderson, Larto Lake, Raccourci Lake, Red River and Vernon Lake.

During FY 2014-2015, fisheries biologists conducted 808 interviews of 1,466 recreational anglers on freshwater lakes and rivers. Fishing trips averaged 3.8 hours in length and anglers caught an average of 1.71 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

Stock assessments of black drum, sheepshead, southern flounder and striped mullet were completed and presented to the LWFC for transmittal to the Louisiana Legislature in February 2015. These assessments use statistical catch at age models to estimate annual time-series of spawning stock biomass and fishing mortality rates. Current status of each stock is determined with estimates of reproductive potential. Based on results of these assessments, no overfishing is occurring and no stock is considered overfished. Final reports are available (citations in “Reports” section).

LA Creel

The stock assessment section continued to provide biweekly recreational landings estimates from the LA Creel Survey to marine fishery managers. The LA Creel Survey statistical protocol is available (citation in “Reports” section).

Reports

Beck, S. G. Decossas, J. Shepard. 2014. Recreational Statistics Program: LA Creel Landing Statistics. Louisiana Department of Wildlife and Fisheries.

Davis, D., J. West, J. Adriance, and J.E. Powers. 2015. Assessment of Black Drum *Pogonias cromis* in Louisiana Waters - 2015 Report. Report to the Louisiana Legislature by the Wildlife and Fisheries Commission.

Davis, D., J. West, J. Adriance, and J.E. Powers. 2015. Assessment of Southern Flounder *Paralichthys lethostigma* in Louisiana Waters - 2015 Report. Report to the Louisiana Legislature by the Wildlife and Fisheries Commission.

West, J. and J.E. Powers. 2015. Update Assessment of Striped Mullet *Mugil cephalus* in Louisiana Waters - 2015 Report. Report to the Louisiana Legislature by the Wildlife and Fisheries Commission.

West, J., D. Davis, S. Beck, J. Adriance, and J.E. Powers. 2015. Assessment of Sheepshead *Archosargus probatocephalus* in Louisiana Waters - 2015 Report. Report to the Louisiana Legislature by the Wildlife and Fisheries Commission.

Inland

Ongoing fishery surveys are being conducted on 11 Louisiana waterbodies with significant largemouth bass fisheries to provide information for management on each bass population and the fisheries they support (Table 1). The fishery surveys are conducted on each waterbody for three consecutive years before assessment analyses are conducted. In previous years, largemouth bass population dynamics and fishery characteristics were determined for 11 Louisiana waterbodies that completed three consecutive years of surveys (see “Reports” section).

Ongoing fishery surveys are also being conducted on eight Louisiana waterbodies with significant crappie fisheries to provide information for management on each crappie population and the fisheries they support (Table 2). The fishery surveys are conducted on each waterbody for three consecutive years before as-

essment analyses are conducted. In previous years, crappie population dynamics and fishery characteristics were determined for 10 Louisiana waterbodies that completed three consecutive years of surveys (see “Reports” section).

When assessment analyses are conducted, equilibrium age-structured population models are used to simulate each fisheries response to multiple size regulations. Results provide information to fishery managers to better understand the effects of current harvest regulations on their fisheries while also providing a baseline to compare future regulation change against. Final project reports are available for waterbodies with completed sampling, describing the status of each waterbody’s largemouth bass population or crappie 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.

Beck, S., and J. West. 2014. Bayou D’Arbonne Lake Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Larto/Saline Lake Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Old River Raccourci Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Poverty Point Reservoir Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Toledo Bend Reservoir Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

Beck, S., and J. West. 2014. Vernon Lake Crappie: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

TABLE 1. Schedules of Louisiana Largemouth Bass Stock Assessments - 22 waterbodies

WATERBODY	YEARS CONDUCTED	STATUS
Atchafalaya Basin	2009-2011	Completed
Black-Clear	2010-2012	Completed
Bruin	2013-2015	Ongoing
Bundick	2015-2017	Ongoing
Caddo	2011-2013	Completed
Calcasieu	2012-2014	Ongoing
Cane River	2015-2017	Ongoing
Caney	2014-2016	Ongoing
Cataouatche	2010-2012	Completed
Chicot	2010-2012	Completed
Concordia	2010-2012	Completed
Cross	2010-2012	Completed
D’Arbonne	2010-2012	Completed
False River	2010-2012	Completed
Grand Bayou	2015-2017	Ongoing
Grassy, Verret, Palourde	2015-2017	Ongoing
Iatt	2013-2015	Ongoing
Poverty Point	2010-2012	Completed
Raccourci	2015-2017	Ongoing
Red River (Pools 1-5)	2013-2015	Ongoing
Toledo Bend	2010-2012	Completed
Vernon	2010-2012	Completed

TABLE 2. Schedules of Louisiana Crappie Stock Assessments – 22 waterbodies

WATERBODY	YEARS CONDUCTED	STATUS
Bruin	2013-2015	Ongoing
Bundick	2015-2017	Ongoing
Caddo	2010-2012	Completed
Cane River	2015-2017	Ongoing
Caney	2014-2016	Ongoing
Cross	2010-2012	Completed
D’Arbonne	2010-2012	Completed
Fausse Point	2013-2015	Ongoing
Grand Bayou	2015-2017	Ongoing
Iatt	2013-2015	Ongoing
Larto-Saline	2009-2012	Completed
Louis	2013-2015	Ongoing
Poverty Point	2010-2012	Completed
Raccourci	2009-2013	Completed
Red River (Pool 5)	2013-2015	Ongoing
Sibley	2015-2017	Ongoing
Toledo Bend	2009-2011	Completed
Vernon	2009-2011	Completed

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.

West, J., D. Davis, and S. Beck. 2013. Chicot Lake Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2013. Cross 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. Bayou D'Arbonne Lake Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2013. False River Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2013. Lake Concordia Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2013. Poverty Point Reservoir Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., D. Davis, and S. Beck. 2013. Toledo Bend Reservoir Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2013. Vernon Lake Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

West, J., S. Beck, and D. Davis. 2014. Caddo Lake Largemouth Bass: Population and Fishery Characteristics with Size Limit Simulations. Louisiana Department of Wildlife and Fisheries.

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 2014-2015, the 13 management plans below were completed and approved. A total of 76 management plans are now available to the public on the LDWF website.

Waterbody management plans completed during FY 2014-2015 and available to the public on the LDWF website:

- Black Bayou Reservoir
- Black River-Cocodrie Lake Complex
- Cotile Lake
- Cypress Bayou Reservoir
- Hardwater Lake
- Lacassine Refuge Pool
- Larto-Saline Lake Complex
- Lower Pontchartrain Subbasin
- Macon Bayou Cutoffs
- Mill Creek Reservoir
- Sabine River
- Sibley Lake
- Woolen Lake

MARINE FISHERY MANAGEMENT PLANS

LDWF began developing new and updating existing fishery management plans to provide a mechanism to strategically implement science-based management recommendations for proactively responding to and 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 created a document to guide the development of future fishery management plans to ensure they are consistent with federal fisheries conservation and management practices and international best management practices, mainly applicable principles and standards of the United Nations Food and Agriculture Organization's (FAO) Code of Conduct for Responsible Fisheries.
- Using the guidance document referenced above, LDWF staff have completed new fishery management plans for blue crab and shrimp and will complete a new plan for oyster in the spring of 2016. Staff reviews new research and monitoring information for these species every

year, documents progress toward fishery management goals, and will fully review and revise management plans every five years, or sooner if necessary. LDWF will prioritize development of additional new fishery management plans for other species based on commercial, recreational, and ecological significance and management needs.

- These fishery management plans are also be complemented by FAO-based self-assessments to document consistency with best management practices and identify any potential gaps in information or management to address in future plan updates.

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 2014-2015.

Lake Pontchartrain Basin and Portions of Mississippi River Basins

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 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.
- Lake Borgne and the open waters of Breton and Chandeleur sounds as described by the double-rig line.

Closed at 6:00 a.m. July 21, 2014, the remaining inshore waters.

2014- Fall Inshore Shrimp Season

Opened at 6:00 p.m. Aug. 18, 2014, from the MS/LA state line westward to South Pass of the Mississippi River.

Closed at official sunset Dec. 22, 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.
- 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
- Lake Pontchartrain and Lake Borgne.

Closed at official sunset Jan. 28, 2015, 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.

2015 - Spring Inshore Shrimp Season

Opened at 6:00 a.m. May 18, 2015, from the MS/LA state line westward to South Pass of the Mississippi River.

Closed at 6:00 p.m. June 19, 2015, except for the following waters:

- Lake Pontchartrain and 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.

Closed at 6:00 p.m. July 3, 2015, except for the following waters:

- The open waters of Breton and Chandeleur sounds as described by the double-rig line.

Western Mississippi River, Barataria, Terrebonne, Atchafalaya River and Vermilion-Teche River Basins

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 the westward shore of Freshwater Bayou

Closed at 6:00 a.m. July 15, 2014, from South Pass of the Mississippi River to the Atchafalaya.

Closed at one half hour after sunset July 3, 2014, from the Atchafalaya River westward to the western shore of Freshwater Bayou

2014 – Fall Inshore Shrimp Season

Opened at 6:00 a.m. Aug. 18, 2014, from the Atchafalaya River westward to the western shore of Freshwater Bayou.

Opened at 6:00 p.m. Aug. 18, 2014, from South Pass of the Mississippi River westward to the Atchafalaya River

Closed at official sunset Dec. 22, 2014, from the eastern shore of South Pass of the Mississippi River westward to the western shore of Freshwater Bayou.

2015 - Spring Inshore Shrimp Season

Opened at 6:00 a.m. May 18, 2015, from the eastern shore of South Pass of the Mississippi River westward to Freshwater Bayou Canal.

Closed at 6:00 p.m. June 19, 2015, from the Atchafalaya River westward to the western shore of Freshwater Bayou Canal.

Closed at 6:00 p.m. June 19, 2015, from the eastern shore of South Pass of the Mississippi River westward to the Atchafalaya River except for the following areas:

- Those inside waters south of 29 degrees 26 minutes 00 seconds north latitude from 89 degrees 50 minutes 30 seconds west longitude westward to the western shore of the Barataria Waterway.
- Those inside waters south of 29 degrees 13 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 those inside waters south of 29 degrees 06 minutes 00 seconds north latitude from 90 degrees 34 minutes 00 seconds west longitude westward to 90 degrees 46 minutes 00 seconds west longitude.

Closed at 6:00 p.m. July 3, 2015, the remaining open areas.



FIGURE 6. 2014 Spring Shrimp Season Opening Map.



FIGURE 7. 2014 Fall Shrimp Season Opening Map.



FIGURE 8. 2015 Spring Inshore Shrimp Season Opening Map.

Mermentau, Calcasieu and Sabine River Basins

2014 - Spring Inshore Shrimp Season

Opened at 6:00 a.m. June 2, 2014, from Freshwater Bayou 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.

2014 – Fall Inshore Shrimp Season

Opened at 6:00 a.m. Aug. 18, 2014, from the Freshwater Bayou westward to the LA/TX state line.

Closed at official sunset Dec. 22, 2014, from Freshwater Bayou westward to the LA/TX state line.

2015 – Spring Inshore Shrimp Season

Opened at 6:00 a.m. May 18, 2015, from the western shore of Freshwater Bayou Canal westward to the LA/TX state line.

Closed at 6:00 p.m. July 3, 2015, from the western shore of Freshwater Bayou Canal westward to the LA/TX state line.

Offshore Shrimp Seasons

Closed at official sunset Dec. 22, 2014, in the following waters:

- That portion of state outside waters extending a distance of three 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. 28, 2015, in the following waters:

- That portion of state outside waters extending a distance of three 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 22, 2015, 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 18, 2015, in the following waters:

- That portion of state outside waters extending a distance of three 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 44.4 million pounds from 2000-2014. 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 2000-2014 average by 11 percent.

Work was completed on a survey designed to collect and analyze data on incidental bycatch in the Louisiana crab trap fishery with special emphasis on diamondback terrapins (*Malaclemys terrapin*) and to collect and analyze blue crab sex, stage and size frequency distribution. From December 2012 through June 2015, a total of 8,496 trap sets were made. Thirty-seven species of finfish and invertebrates were captured and documented as bycatch in sampling events conducted coastwide, including 12 diamondback terrapins; five in the Barataria Basin, three in the Terrebonne Basin, three in the Vermilion/Teche River Basin and one in the Pontchartrain Basin. In comparison of

total blue crab catch (16,293) with total bycatch (1,732), an average of 9.4 crabs were 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 1.44 crabs per trap soak hour. The Terrebonne Basin accounted for highest bycatch number; the percentage of bycatch to total catch (15.6 percent) ranked highest followed by the Barataria Basin (11.7 percent), Vermilion Basin (9.7 percent) and Pontchartrain Basin (6.9 percent). The Sabine River Basin had the lowest bycatch number as well as the lowest percentage of bycatch to blue crab catch (4.4 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 2014-2015, the oyster season on most of the public grounds opened on Oct. 20, 2014 (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 205,000 barrels of oysters (seed and market-size oysters combined) during the season (one barrel = two sacks). The majority of harvest came from a five-day season during March 2015 in the Mississippi Sound area of the public grounds. During that short opening, approximately 120,000 barrels were harvested. Calcasieu Lake in southwestern Louisiana also produced a sizeable share of the total harvest, as fishermen took approximately 43,000 sacks of market-size oysters from the West Cove area of the lake.

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 the LWFC and implemented during FY 2014-2015:

July 2014

- Commercial king mackerel season opened on July 1 at 12:01 a.m., concurrent with a federal opening.
- Commercial fisheries for small coastal sharks re-opened July 1 following an annual seasonal closure from April 1 - June 30.
- The LWFC adopted a Notice of Intent at its July meeting to modify regulations for reef fish. The proposed rule would remove dog and mahogany snapper and schoolmaster from the 10 fish per person recreational creel limit for reef fish. The proposed rule would also remove the 12-inch minimum size limit for dog and mahogany snappers and schoolmaster, and the 8-inch minimum size for black seabass for both commercial and recreational harvesters. It would remove blackline tilefish and anchor tilefish from the 20 fish per person aggregate recreational creel limit for reef fish. The rule would remove red hind, rock hind and misty grouper from the four fish per person aggregate creel limit for reef fish. It would also remove the current recreational closed season for rock and red rind, currently Feb. 1 through March 31 of each year. Public comments were taken on the Notice of Intent until Sept. 4, 2015.

August 2014

- Louisiana closed the season for the commercial harvest of greater amberjack on Aug. 25, 2014, consistent with a closure in federal waters.

TABLE 3. 2014-2015 Oyster season opening and closing dates on the public oyster areas of Louisiana.

PUBLIC OYSTER AREA	SEASON OPENING	SEASON CLOSURE
Primary Public Grounds East of MS River and North of MS River Gulf Outlet, including Lake Borgne	March 5, 2015	March 20, 2015
Primary Public Grounds East of MS River and South of MS River Gulf Outlet	Oct. 20, 2014	April 30, 2015
Barataria Bay, Little Lake, Lake Tambour, Deep Lake Public Oyster Seed Grounds	Sept. 3, 2014	April 30, 2015
Bay Junop Public Oyster Seed Reservation and Lake Mechant Public Oyster Seed Grounds	Oct. 20, 2014	April 30, 2015
Vermilion/East & West Cote Blanche/Atchafalaya Bay Public Oyster Seed Grounds	Sept. 3, 2014	April 30, 2015
Calcasieu Lake - West Cove	Oct. 27, 2014	April 30, 2015
Bay Gardene, Hackberry Bay, Sister Lake, East Side of Calcasieu Lake, Sabine Lake	CLOSED	

October 2014

- The updated spotted seatrout stock assessment was presented to the LWFC at their October meeting.

November 2014

- Louisiana closed the commercial season for the harvest of king mackerel on Nov. 7, 2014 at noon.

December 2014

- The LWFC adopted a Notice of Intent at its December meeting to modify regulations for the Recreational Offshore Landing Permit. The proposed rule would exempt anglers under the age of 16 as an adjustment in the program so that juvenile anglers who are not required to possess a recreational fishing license would have consistent rules, avoiding confusion. LDWF has implemented other survey methods to estimate the number of anglers under 16 participating in the harvest of those species requiring a ROLP. Further proposed changes would clarify existing language in the rule which specifies that the ROLP term be the same as the annual saltwater license, as well as add language exempting anglers on a paid-for-hire trip from the ROLP when the captain of that vessel has a valid ROLP. Public comments were accepted regarding the proposed rule until Feb. 5, 2015.
- Louisiana closed the season for the recreational harvest of red snapper in state waters on Dec. 31, 2014.
- Commercial fishery for the harvest of spotted seatrout closed on Dec. 31, 2014.

January 2015

- Commercial fishery for small coastal sharks opened at 12:01 a.m. on Jan. 1, 2015.
- Commercial fishery for non-sandbar large coastal sharks opened at 12:01 a.m. on Jan. 1, 2015.
- All Louisiana waters closed to the commercial harvest of striped mullet with a mullet strike net on Jan. 19, 2015.
- 2015-2016 commercial king mackerel season was set consistent with federal season.
- Commercial fishery for spotted seatrout opened on Jan. 2, 2015.

February 2015

- The annual stock assessments for striped mullet and the assessments for black drum, southern flounder and sheepshead were presented to the LWFC for transmittal to the Louisiana Legislature.

March 2015

- Louisiana opened the season for the recreational harvest of red snapper in state waters on March 20, 2015.

April 2015

- Louisiana waters closed to the recreational and commercial harvest of all sharks on April 1, 2015, consistent with a state closed season.

May 2015

- Louisiana closed the season for the commercial harvest of large coastal sharks on May 6, 2015.

FRESHWATER FINFISH MANAGEMENT

Revisions were made to regulations for black and white crappie and include the following:

- On Eagle Lake (Madison Parish - shared boundary water with Mississippi) the crappie regulations were changed from a 50 fish daily limit with no minimum length to 30 fish daily limit with an 11-inch minimum length limit.

FISHERIES RESEARCH**GRAND ISLE LABORATORY**

The Fisheries Research Lab, located in Grand Isle on the shore of Barataria Bay, is one of the richest estuarine complexes in the Gulf of Mexico. While fisheries research and monitoring is conducted throughout the state, the Fisheries Research Lab is the base for much of this work within 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.

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 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, vertical line and bottom longline. 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 and 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 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 2015, 40 shrimp/groundfish stations were sampled by LDWF personnel. Depths ranged from 3 to 45 meters (latitudes 28.50° to 29.70° and longitudes -88.50° to -93.92°). All seven historic plankton stations were sampled during the summer survey (plankton no longer surveyed on the fall survey), with locations ranging from latitudes 28.50°-29.01° and longitudes 88.50°-91.50°.

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.

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 2015, nine stations were sampled during the spring survey (between the latitudes 28°29.90 and 29°00.35, longitudes 88°29.73 and 93°52.90). No fall survey was conducted.

SEAMAP Vertical Line Survey

The SEAMAP Vertical Line Survey is conducted monthly from May to September 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 2015, 101 vertical line stations were sampled, landing 692 fish, of which 638 were red snapper (92.2 percent).

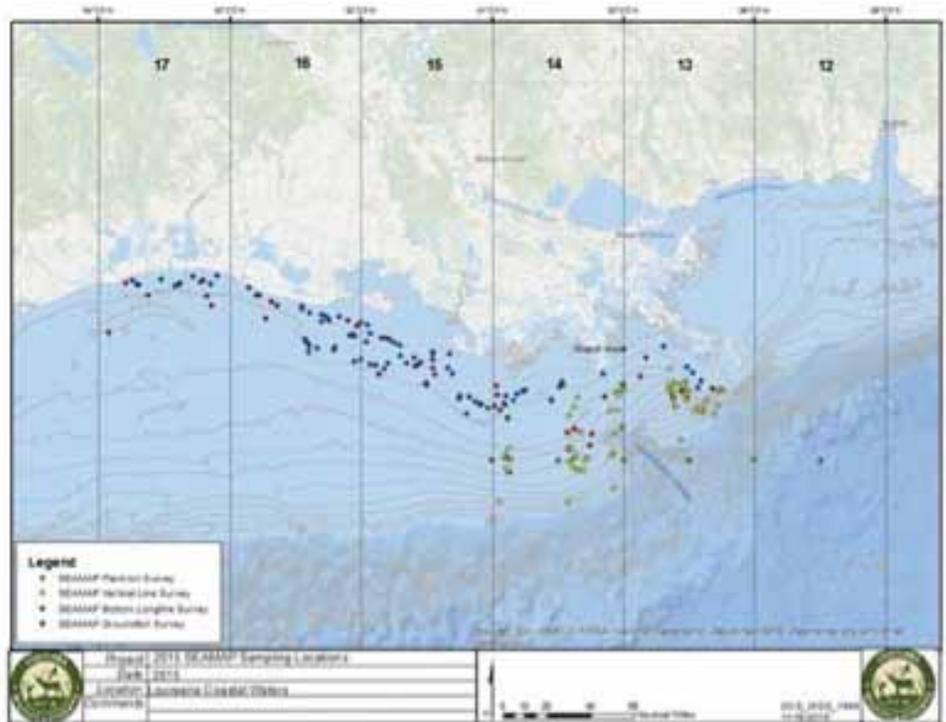


FIGURE 9. Map of sites sampled during 2015 as part of all four LDWF SEAMAP surveys.

SEAMAP Bottom Longline Survey

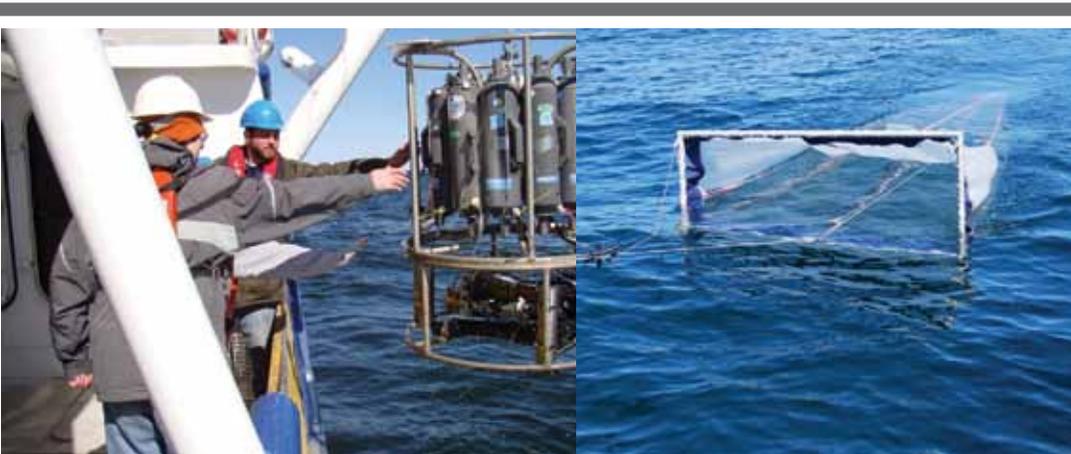
The SEAMAP Bottom Longline Survey collects information on the abundance and distribution of elasmobranchs and bottom feeding species with standard one nautical mile longline sets. Stations are generated in coordination with NMFS, in which bottom longline stations are proportionally allocated by longitude 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 and measured for length(s), weight and sex (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, Louisiana participated in a stratified bottom longline sampling program across the Louisiana coast from latitudes 28.00°-29.36°, longitudes 89.00°-94.00°, depths 7-294m. From July 2014 - September 2014, 41 sites were sampled, landing 854 animals, and a total of 284 sharks were tagged and released. In 2015, Louisiana participated in a stratified bottom longline sampling program across the Louisiana coast from latitudes 28.00°-29.36°, longitudes 89.00°-94.00°, depths < 10 m. In April 2015 - June 2015, 52 sites were sampled, landing 1,683 animals, and a total of 542 sharks were tagged and released.

Research Projects

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



LEFT: A CTD rosette is lowered from the deck of the R/V Pelican by LDWF biologists working on a SEAMAP groundfish cruise. RIGHT: Surface neuston nets like this one, as well as bongo nets, are pulled during SEAMAP ichthyoplankton cruises.



LEFT: LDWF biologists deploy Vertical Line sampling gear near an offshore oil rig during a recent SEAMAP survey. **RIGHT:** LDWF biologists restrain a Greater Hammerhead shark during a SEAMAP bottom longline cruise.

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 120 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 2014-2015, two members of the dive survey team obtained Advanced Open Water Certification, increasing our ability to survey deeper depth increments. All dive team members were certified as Emergency Oxygen Providers, allowing for any staff present during sampling to provide emergency oxygen in the incidence of a diving accident or decompression event.

Characterizing the Use of Green-Stick Fishing Gear in the Northern Gulf of Mexico

The primary objective of this research project is to characterize the catch and bycatch of greenstick gear when used to target Atlantic tunas, particularly yellowfin tuna, in the northern Gulf of Mexico. Data collection focused on reporting the features that contributed to the gear's success at catching target tuna spe-

cies (i.e. yellowfin tuna) such as locations and conditions in which fish were caught. Release condition data were collected to help evaluate the gear's ability to provide lower incidental bycatch mortality. General economic variables of interest including fuel costs and the estimated value of landed catch were also collected in order to evaluate the potential for this gear type to be used as an alternative to pelagic longline fishing gear. The goal was to operate as much like a commercial operation as possible, targeting large gradable yellowfin tuna used in the sushi/sashimi market.

During FY 2014-15, four sampling trips lasting two to three days in length were conducted in open waters, along sargassum mats and around oil and gas production platforms. Three species of commercially valuable tuna were captured using the gear including blackfin tuna, yellowfin tuna and bigeye tuna during 29 hours of fishing. Other commercially valuable species captured included mahi mahi. All fish captured were hooked in the jaw and all bycatch were alive upon release except for two skipjack tuna, which were discarded. Bycatch species caught included little tunny and skipjack.

Juvenile Drum Population Assessment Study

Fisheries research biologists in conjunction with Coastal Study Area scientists conducted an assessment study targeting juvenile red drum and black drum in Barataria and Ter-

rebonne Bay basins. Biologists worked to 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 also tried to establish 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 was determined by the quantity of age 1 through age 3 red and black drum captured with each gear type.

The sampling regime was divided into two phases. Phase 1, which was designed to test which gear most efficiently targeted red drum, began in November 2013 and concluded in April 2014. Ninety-seven juvenile red drum and 51 juvenile black drum were captured during Phase 1. Phase 2, which compared experimental gear with existing sampling gear, began in November 2014 and ended in March 2015. A total of 186 red drum and 90 black drum were captured during Phase 2 of the project. Data analysis is currently underway and results of this study will help LDWF to improve management and assessment methodologies.

Environmental Protection Agency Coastal Assessment

Beginning in early 2015, LDWF personnel participated in the National Coastal Condition Assessment. The assessment, designed to



A member of the LDWF Dive Team records observations during a platform survey.

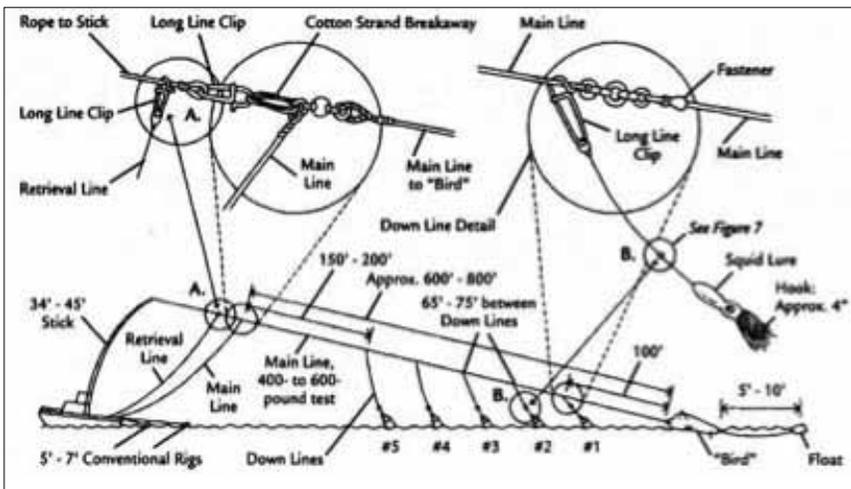


FIGURE 10. Diagram of basic greenstick gear set-up. Source: Wescott 1996.



A tail cut from a large yellowfin tuna caught during the greenstick gear assessment project is compared to a key in order to estimate the meat quality (or 'grade') of the fish.

evaluate the condition of the nation's coastal waters, is conducted concurrently in all states with coastal or Great Lakes borders and is coordinated by the U.S. Environmental Protection Agency every five years. In Louisiana, 97 coastal sites were identified for sampling during the 2015 assessment. Samples from all sites include sediment, water and biotic samples as well as a suite of physical parameters. Online training for field staff was conducted in March 2015, and multi-state field training was hosted by LDWF at the Grand Isle Fisheries Research Lab in late April 2015. Potential sites were scouted for suitability in May 2015, and sampling commenced in early June with 23 sites completed by the end of FY 2014-2015.

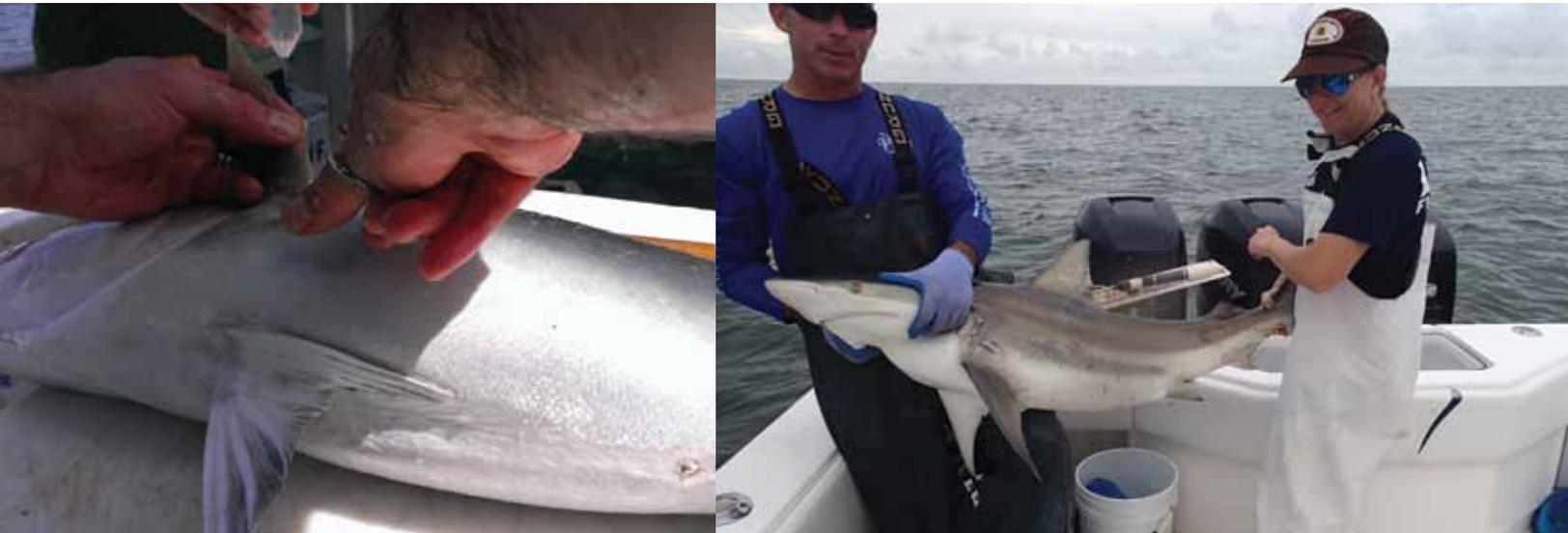
Regional Population Genetic Structure of Offshore Finfishes

In order to address regional management strategies for four popular coastal and offshore finfish species, LDWF began a research project in 2013 with Southeastern Louisiana University to assess the genetic population structure of red drum, red snapper, amberjack and cobia in the northern Gulf of Mexico. Sampling for all species was coordinated by LDWF biologists via targeted sampling, coordination with Coastal Study Areas, as well as collaboration with regional state and university partners. Sample collection for all four species was completed in October 2014 with over 1,500 unique tissue samples spanning a geographic range from Corpus Christi, TX, along the entire Gulf Coast to Tampa, Fla. Results of this research were presented at the Louisiana chapter meeting of the American Fisheries Society, though limited evidence was found for regional genetic population structure in these species.

Pelagic Research Program

LDWF's Pelagic Research Program was initiated in 2012 in response to data gaps and management needs for several key offshore recreational and commercial species. The program is composed of three main parts: pelagic dock sampling, biological research projects and electronic tagging.

Since inception of the Pelagic Research Program, an unprecedented number of biological samples have been obtained from highly migratory species from Louisiana-based fisheries. These samples are typically very difficult to obtain. While the main dock effort has focused on yellowfin tuna (1,630 individuals sampled by this program through the end of FY 2014-2015), other pelagics of management interest were sampled as well, including blackfin tuna, wahoo, swordfish and mako sharks.



LEFT: LDWF biologists remove a fin clip from a Greater amberjack as part of a regional examination of population genetic structure. **RIGHT:** This female blacktip shark was tagged as part of a project to assess post-release survival and behavior.

Several research projects have profited from the success of the LDWF's pelagic dock sampling efforts. Stomachs, tissue and reproductive organs collected from the Louisiana fishery were processed and analyzed at the University of Southern Mississippi's Gulf Coast Research Lab as part of an LDWF-funded assessment of yellowfin tuna feeding ecology, genetic stock structure and reproductive biology. Chemical analysis was performed on ear bones from the same tuna at Texas A&M Galveston in an attempt to assign natal origin to adult fish from the Louisiana fishery. LDWF biologists have simultaneously been working on methods to accurately age yellowfin tuna. Sampling for these projects was completed during the end of FY

2014-2015, and results are being submitted to the International Convention for the Conservation of Atlantic Tunas. The results are expected to significantly elevate the quality of biological information available regarding yellowfin tuna from the Gulf of Mexico, and thereby enhance managers' ability to conserve stocks to the benefit of all user groups.

Electronic tagging is another tool used by the LDWF's Pelagic Research Program to provide managers with essential fish habitat and behavior data. Three different tag types (pop-off satellite tags, internal archival tags and surface position only tags) are currently being used on several species of management interest,

including yellowfin tuna, Atlantic tarpon, scalloped hammerhead sharks, blacktip sharks, and whale sharks. Results from these tagging studies are shared with both regional managers and the general public via the www.fishla.org website.

Spotted Sea Trout Life History Study

Spotted seatrout is one of the most popular sport fish in the southeastern United States. Known locally as "specks," they serve an important role in both the economic and sociologic landscapes of the coastal southeast. Spotted seatrout provide revenue for local economies by means of charter fishing, tackle sales and tourism, while also acting as a food source for many. Because of their popularity and economic significance, spotted seatrout have been thoroughly studied, and life history parameters have been estimated throughout all reaches of their range. It is a short-lived, estuarine dependent species that has demonstrated only limited migration between estuaries in previous studies. These factors make spotted seatrout a great indicator of ecosystem health because changes in the health of the coastal waters directly affect their life history (i.e. growth rate, age at maturity, fecundity, etc.). The study site, the Barataria Basin, is one of the most impacted ecosystems in Louisiana in terms of anthropogenic (i.e. modification of natural flow patterns, habitat disturbance, nutrient loading, etc.) and natural influences (i.e. storm action, sedimentation, etc.). We are replicating a previous study conducted during the mid-1990s (1994-1995) on the age, growth and reproduction of spotted seatrout in the Barataria Basin to see how life history parameters may have



FIGURE 11. Statewide sites surveyed by LDWF biologists during the EPA National Coastal Condition Assessment



LEFT: LDWF biologists net a large yellowfin tuna as part of the yellowfin tuna electronic tagging project. Tuna are netted and then transferred to a cradle inside the boat where a quick surgery is performed to insert an internal archival tag before the fish is released. **RIGHT:** The reproductive biology of speckled trout in the Barataria Basin is being reexamined by LDWF biologists. Here, a speckled trout is being measure before internal examination.

changed over the last 20 years with the intention of providing the best science available for the next spotted seatrout stock assessment.

Publications

Hoolihan JP, Wells RJD, Luo J, Falterman B, Prince ED, Rooker JR (2014) 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

Lang, ET and GR Fitzhugh (2015) Oogenesis and fecundity type of Gray Triggerfish (*Balistes capricus*) in the Gulf of Mexico. *Marine and Coastal Fisheries* 7(1): 338-348.

Porch, CE, GR. Fitzhugh, ET Lang, H Lyon, and BC Linton (2015) Estimating the dependence of spawning frequency on size and age in Gulf of Mexico Red Snapper. *Marine and Coastal Fisheries* 7(1): 233-245.

Presentations

E.R. Hoffmayer, J.A. McKinney, R. Graham, J. Holmberg, R. de la Parra, B. Galván Pastoriza, S. Fox, S. Pierce, A. D.M. Dove, W. B. Driggers III. 2015. Long-Term Assessment of Whale Shark Population Connectivity Using Photo-Identification in the Western Atlantic Ocean. 68th Annual Gulf and Caribbean Fisheries Research Institute Conference. Panama City, Panama, Nov. 9-13.

E.R. Hoffmayer, J.A. McKinney, J. Hendon, J. Franks, B. Falterman, W. B. Driggers III. 2015. Northern Gulf of Mexico Whale Shark Research Program: What We Have Learned about Whale

Shark Aggregations in the Northern Gulf of Mexico. Joint Meeting of Ichthyologists and Herpetologists, Reno, NV, July 16-19.

Lang, ET, G Fitzhugh, S Theberge. (2014) Fecundity pattern of gray triggerfish, *Balistes capricus*. Southern Division of the American Fisheries Society Spring Meeting, Charleston, South Carolina.

Leonhardt, E., P. Banks, and J. Atilano. 2015. Hatchery-produced spat-on-shell pilot project: development of setting, deploying, and sampling techniques, and preliminary survival and growth results. The 36th Annual Meeting of the Louisiana Chapter of the American Fisheries Society. Baton Rouge, Louisiana.

OYSTER REMOTE SETTING PILOT

LDWF started a 12-month pilot project in the summer of 2014 to monitor the survival and growth of hatchery-produced oyster pediveliger larvae set on whole oyster shell and to establish setting, deploying and sampling protocols. Larvae were raised at the Louisiana Sea-Grant Oyster Hatchery for this study. Sampling continued through 2015 at plots located in Hackberry and California bays. Preliminary results at Month 6 showed a total of 3.4 percent survival of hatchery-produced spat. Final results and conclusions are forthcoming. Protocols from this project were developed and will be used at the new Michael C. Voisin Oyster Hatchery and at a large scale remote setting facility currently under construction in Buras, La.

TAG EVALUATION STUDY

The tag evaluation study has expanded into a field trial to compare reported recapture rates for redfish and speckled trout tagged with either T-bar tags or traditional dart tags. Nineteen active taggers participated in the tag retention field study during FY 2014-2015. Citizen scientists participating in this study were selected based on their elite status in the Cooperative Tagging Program, having tagged over 100 fish in the previous year. Experimental tagging kits were distributed at training meetings held in a series of locations including Baton Rouge, New Orleans, Lake Charles, Bourg and Grand Isle.

During FY 2014-2015, over 2,100 fish were tagged with T-bar tags as part of the tag evaluation study. There were 802 redfish tagged with T-bar tags, of which 39 were recaptured for a 4.9 percent reported recapture rate; in addition, two of those fish were recaptured a second time and released again. There were 1,330 speckled trout tagged with T-bar tags, but only 18 recaptured resulting in a 1.4 percent reported recapture rate.

Presentations

Gothreaux, C. 2015. Marine fish tagging programs in Louisiana. Women's Tagging Workshop, Gonzales, La.

Crouch, M. 2015. Marine fish tagging programs in Louisiana. Women's Tagging Workshop, Gonzales, La.

Gothreaux, C. 2015. Conventional tagging overview. Louisiana Department of Wildlife and Fisheries Research Meeting, Grand Isle, La.

Gothreaux, C. 2014. Marine fish tagging programs in Louisiana. Coastal Conservation Association Westbank Chapter Meeting Belle Chase, La.

Gothreaux, C. 2014. Marine fish tagging programs in Louisiana. Nicholls State University, Thibodaux, La.

Gothreaux, C. 2014. Marine fish tagging programs in Louisiana. Coastal Conservation Association New Orleans Chapter Meeting, Metarie, La.

Gothreaux, C. 2014. Marine fish tagging programs in Louisiana. Lake Charles Kayak Fishing Club, Lake Charles, La.

AGE & GROWTH LABORATORY

The collection of age, growth and reproductive information used to develop age-structured stock assessments is coordinated through the LDWF Age and Growth Laboratory in Baton Rouge. The Age and Growth Lab monitors 15 species of fish. Monitoring is done through the collection of otoliths and spines (gray triggerfish) for aging purposes. Coastal Study Area biologists record length, weight, gender and location when fish are collected in the field. The 15 fish species consist of 12 saltwater and three freshwater species. The three freshwater species are black crappie, white crappie and largemouth bass. The saltwater species are black drum, gray snapper, greater amberjack, gray triggerfish (spines), king mackerel, red drum, red snapper, sheepshead, southern flounder,

spotted seatrout, striped mullet and vermillion snapper. Tripletail and yellowfin tuna are also sampled by Coastal Study Area biologists. These are considered research species because they were added to this list to gain new fishery information through field dependent collection along with developing an aging protocol. The Venice lab is in charge of collecting and processing the tripletail and yellowfin tuna otoliths, but the Baton Rouge Age and Growth Lab assists with some of the reading and sectioning. All saltwater otoliths/spines are obtained through fisheries dependent sampling, except for tripletail, which are collected by both dependent and independent sampling methods. Dependent sampling requires field marine biologists to collect the otolith or spine when they interview a recreational angler, and also includes interviewing commercial fishermen at commercial fishing docks. Freshwater otoliths are obtained through independent sampling, requiring Inland field biologists to target a particular species. The lab usually receives otoliths (and spines) throughout each month of the year.

From July 1, 2014, to June 30, 2015, the Age and Growth Lab in Baton Rouge received 14,210 otoliths and 36 gray triggerfish spines. Out of those 14,246 structures received, 14,240 were aged. Within that total, 3,095 of those otoliths were freshwater, and all have been aged. Spotted seatrout was the most collected species out of any marine or inland species because quotas for spotted seatrout are the highest and is popular among anglers. The totals for each species are as follows:

- Black Drum - 1,381
- Black Crappie - 671
- Gray Snapper - 353
- Greater Amberjack - 60
- Gray Triggerfish - 36
- King Mackerel - 11
- Largemouth Bass - 2,012
- Red Drum - 1,804
- Red Snapper - 1,428
- Sheepshead - 698
- Southern Flounder - 499
- Spotted Seatrout - 4,198
- Striped Mullet - 664
- Vermillion Snapper - 19
- White Crappie - 412

Otoliths were also collected from the two research species, tripletail and yellowfin tuna. As mentioned earlier, the Venice lab spearheads the sampling and processing of tripletail and yellowfin tuna. The total for those two species are:

- Tripletail - 20
- Yellowfin Tuna - 341

The season for striped mullet, black and white crappie collection is typically the fall. Largemouth bass sampling is mostly done during the spring and early summer months.

Otolith sampling quotas were adjusted in early 2015 from the previous year. These adjustments were made before BioFin funding was restored; therefore, some of the sample numbers were lower than average for the first half of 2015. The number of marine otoliths has slightly increased compared to last year's numbers. All otoliths received during this time period have been processed, meaning they were cataloged, prepared for sectioning and first read.

From July 1, 2014 to June 30, 2015, the Age and Growth Lab received the reference set for black drum, gray snapper, gray triggerfish, greater amberjack, red drum, red snapper, sheepshead and vermillion snapper. The lab has not received any reference sets since the annual Gulf States Marine Fisheries Commission (GSMFC) Otolith Processor's Workshop in May. This meeting is held in St. Petersburg, Fla., and hosted by Florida Fish and Wildlife Research Institute. The reference sets are used to help sharpen Age and Growth biologists' otolith aging skills. The sets are also used to ensure all labs base their ages on the correct criteria.



FIGURE 12. Tags and applicators used in the tag evaluation field study: dart-tip anchor tag (above) and T-bar anchor tag (below).



FIGURE 13. LEFT: Inserting an acoustic transmitter into a redfish. **RIGHT:** Acoustic telemetry fish are marked with a blue dart tag prior to release.

OTHER RESEARCH

ACOUSTIC TELEMETRY TAGGING

LDWF is leading a collaborative research project in Lake Pontchartrain to study the movements and habitat preferences of important fish species using acoustic telemetry technology. Fish are surgically implanted with acoustic transmitters, enabling tagged fish to be detected when swimming near receivers deployed throughout various habitats in the lake. The receiver array is used to cooperatively track redfish and speckled trout tagged by LDWF, speckled trout tagged by LSU, redfish and bull sharks tagged by the University of New Orleans, and sturgeon tagged by USFWS and the U.S. Army Corps of Engineers (USACE).

During FY 2014-2015 the receiver array was expanded into neighboring Lake Borgne to detect fish once they leave the Lake Pontchartrain system. Two tagging events were held in FY 2014-2015, with the primary focus on redfish. Volunteer anglers partnered with biologists to collect and transported live fish to an LDWF surgery boat. A total of 29 redfish and three speckled trout were tagged in November 2014, and 31 redfish were tagged in June 2015. Six of these fish were subsequently recaptured by anglers, with two being released back into the lake. Data from the receiver array have been downloaded regularly throughout the year, filtered corresponding to organization, and sent to our collaborating partners for analysis.

PRESENTATIONS

Ferguson, A. 2015. Implementing a coast-wide acoustic array in Louisiana. Louisiana Department of Wildlife and Fisheries Research Meeting, Grand Isle, La.

Ferguson, A. 2015. Acoustic telemetry program overview. Coastal Conservation Association Northshore Chapter Meeting, Madisonville, La.

Ferguson, A. 2014. Passive acoustic telemetry in Lake Pontchartrain, Louisiana. Integrated Tracking of Aquatic Animals in the Gulf of Mexico (iTAG) Network Workshop, St. Petersburg, Fla.

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. Participation in the Tagging Program offers anglers a unique opportunity to act as citizen scientists, working alongside biologists for a common goal - to improve the 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.

Dedicated volunteer anglers are essential to the success of any tagging study. In FY 2014-2015, 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, www.taglouisiana.com 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 and FY 2014-2015, partially due to program promotion using the social media outlet Facebook and www.taglouisiana.com site. The "Tag Louisiana" Facebook page, which has over 2,200 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 increasing interest and awareness for the tagging program.

Tagging Program Statistics

The Tagging Program experienced an increase in participation from Year 10 (FY 2013-2014) to Year 11 (FY 2014-2015). Seven hundred twenty nine anglers tagged at least one fish. Active participants (tagged at least 10 fish per year) in the Tagging Program increased from 258 to 343 anglers, and there was a 69 percent increase in total number of fish tagged, from 17,955 to 30,328. Program totals since the program's inception in 1988 are 210,924 fish tagged, of which 8,421 have been recaptured.

Of the 30,328 fish tagged during Year 11, 15,862 were red drum, 12,493 were spotted seatrout, 65 were yellowfin tuna, 355 were red snapper, and 1,553 were non-target species. Fish were tagged and recaptured throughout the Gulf of Mexico, in every Gulf state from Texas to Florida, with the majority occurring in Louisiana. During Year 11, 1,605 fish were reported as recaptured. This includes fish that were tagged in Year 11 and recaptured again in Year 11. Of the 1,605 reported recaptures, 1,092 were red drum, 395 were spotted seatrout, 19 were red snapper, and 99 were non-target species.

The recapture rate for red drum tagged during Year 11 was 6.9 percent, spotted seatrout was 3.2 percent, and red snapper was 5.4 percent.

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 provides financial assistance to local government entities through a competitive process to construct, improve and repair boating and fishing access facilities. This program is funded through the Sport Fish Restoration Program and includes both freshwater and saltwater projects. Projects may include the construction of boat ramps, parking areas, docks, bulk heading and fishing piers. Two boating access projects were completed in FY 2014-2015. An additional five projects are in the planning or construction phase. One fishing access project is in the planning and design phase.

BOATING ACCESS PROJECTS COMPLETED

- **Leeville Public Boat Launch** - Project included 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 included upgrading parking, boat ramp and dock facilities.

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.
- **West End-Breakwater Drive Boat Launch** - Project includes renovating the existing two-lane boat ramp and parking area.
- **Ben Lilly Conservation Area Kayak Launch** - Project includes road access, parking area and boat launch construction designed for kayaks.

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 in providing 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 2014-2015 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 2014-2015, the Aquatic Plant Control Program completed 73 Vegetation Management Plans for Louisiana public waterbodies.

In FY 2014-2015, herbicides were applied to 52,074 acres of nuisance aquatic vegetation, and the majority of these efforts included control of 21,400 acres of water hyacinth, 19,575 acres of giant salvinia, 4,158 acres of alligator weed, and 2,400 acres of common salvinia. In addition, approximately 901,500 adult giant salvinia weevils and 33,900 adult common salvinia weevils were stocked in 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 13 inland reservoirs in FY 2014-2015 (*Table 4*).

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, 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. Last fiscal year, 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.*). LDWF treated the pond last year and followed up with additional treatments this year to also combat another nuisance aquatic plant, water hyacinth.

TABLE 4. Drawdowns conducted in FY 2014-2015.

LAKE NAME	PURPOSE OF DRAWDOWN	DATES
Bussey Brake (Morehouse Parish)	lake renovation	July 22, 2013 - project completion
Clear-Smithport (Desoto Parish)	drawdown structure repairs; vegetation control	July 8, 2014 - project completion
Kepler Lake (Caddo Parish)	vegetation control; shoreline and property maintenance	June 15 - Sept. 15, 2014 Sept. 16 - Dec. 1, 2014
Black-Clear Lake (Natchitoches Parish)	vegetation control; bottom oxidation	July 5 - Nov. 1, 2014
Saline Lake (Natchitoches/Winn Parish)	vegetation control; bottom oxidation	July 1, 2014 - Jan. 1, 2015
Lake Louis (Catahoula Parish)	bottom oxidation	Sept. 1, 2014 - Feb. 15, 2015
Mill Creek Reservoir (Bienville Parish)	vegetation control; shoreline and property maintenance	Sept. 2, 2014 - no later than Jan. 31
Cheniere Lake (Ouachita Parish)	vegetation control; bottom oxidation	Sept. 2, 2014 - Jan. 15, 2015
Hardwater Lake (Grant Parish)	vegetation control (99% coverage); triploid grass carp into in spring	Sept. 2 - Dec. 1, 2014
Chicot Lake (Evangeline Parish)	vegetation control; bottom oxidation	Sept. 2, 2014 - Jan. 15, 2015
False River (Point Coupee Parish)	dredging; substrate consolidation and property maintenance	Sept. 2, 2014 - Jan. 15, 2015
Henderson Lake (St. Martin Parish)	vegetation control	Fall 2014
Bistineau Lake (Bienville/Bossier/Webster Parish)	giant salvinia control as needed	Drawdown will be considered when giant salvinia exceeds 1500 acres

This fiscal year, a total of 50 acres of nuisance aquatic vegetation were treated in Joe Brown Park. This included 20 acres of duckweed treated with 20 gallons of diquat at a rate of one gallon per acre, and 30 acres of water hyacinth treated with 15 gallons of 2,4-D at a rate of 0.5 gallons per acre. Separate applications were made throughout FY 2014-2015.

Results were excellent. LDWF personnel assessed the pond frequently and made applications as necessary. The pond was able to remain open and accessible to the public year-round.

Terrebonne Marsh Water Hyacinth Control

For many years, the 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 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 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 2014-2015, LDWF treated 8,925 acres of hyacinth in the Terrebonne marsh. USACE received a small amount of funding to conduct a limited amount of hyacinth control in this area during this same time period. They were able to treat approximately 2,500 acres of water hyacinth, which complemented the efforts of LDWF in that area. 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 are typically 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 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. Experiments continued throughout FY 2014-2015, and results indicated that a specialized adjuvant containing both methylated vegetable oil and an organosilicone component is as effective as the mixture of two unique surfactants that was being used previously. Along with this discovery, it has been proven that either of the herbicides Clipper (flumioxazin) or Stingray (carfentrazone) can be used as an alternative to diquat dibromide to act as an indicator and to initiate plant damage when combined with glyphosate for salvinia control. These efforts will continue 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.

COMMUNITY FISHING PROGRAM

“Get Out & Fish!” a new community fishing program was developed and initiated in November 2014. The goal of the program is to work with local community organizations and governments to provide easily accessible, high-quality fishing opportunities to everyone in Louisiana. The program intends to recruit new anglers to the sport of fishing and promote outdoor activities for future generations. In order to accomplish this mission, public water bodies that met the required specifications were chosen by LDWF biologists to begin stocking fish on a regular basis. The first location, Girard Park Pond in Lafayette, La., began stocking catchable size channel catfish in November 2014. Three additional sites were identified and will join the program in FY 2015 -2016.

Lafayette Area

The first location selected for the “Get Out & Fish!” program was Girard Park pond in Lafayette, La. The pond was stocked on eight occasions with catchable size channel catfish or rainbow trout. The initial stocking occurred in November 2014, with 800 pounds of adult channel catfish. The stocking was accompanied by a launch event hosted by LDWF. The “Get Out & Fish!” event provided an opportunity for anglers of all experience levels to learn new fishing skills and techniques, and over 250 anglers registered to participate. LDWF provided training in fish identification, knot tying, casting practice and several other educational fishing activities. Several anglers were surveyed, and more than half of those surveyed had never fished at Girard Park pond prior to that day. Girard Park pond continued to stock fish on a monthly basis through June 2015. In December 2014 through February 2015, the pond was stocked monthly with 200 pounds of rainbow trout. In March 2015 through June 2015 the pond was stocked monthly with 200 pounds of channel catfish.

Field cameras were used to record fishing pressure in October 2014 through June 2015. Pictures were taken of the bank every 30 minutes and anglers were counted. The numbers showed a steady increase in fishing pressure as continued stockings occurred. There was a remarkable jump in numbers once rainbow trout stocking began. In October, prior to the first stocking, the angler count was 27. After the first stocking of channel catfish in November, the angler count jumped to 104. In January, after the monthly stocking of rainbow trout, 585 anglers were recorded.

Additional Sites

LDWF biologists completed several site visits of potential locations to be added in FY 2015-2016 to the “Get Out & Fish!” program. Three additional locations will be added in FY 2015-2016.

ARTIFICIAL REEFS

The legislative framework for the Louisiana Artificial Reef Program was established in 1986, which also created the Artificial Reef Trust Fund. Artificial reef development in Louisiana began in 1987 at offshore sites, using donated oil and gas structures through the mechanism known as Rigs-to-Reefs. In addition to the material donation, the cost savings realized by reefing are shared with the Artificial Reef Trust Fund. This funding goes towards developing, monitoring and enhancing the artificial reef potential of Louisiana, as well as supporting other fishery management activities. This fund was constitutionally protected in FY 2014-2015 through Amendment 8, resulting from the November 2014 ballot vote.

The Louisiana Artificial Reef Program is managed by LDWF under the guidance of the Artificial Reef Development Council, which consists of representatives from LDWF, LSU School of the Coast and Environment and Louisiana Sea-Grant. The initial Louisiana Artificial Reef Plan was developed and implemented in November 1987 and primarily focused on offshore reefs sites via the Rigs-to-Reefs mechanism. While these reefs remain the backbone of the program, the plan has seen revisions to address

evolving needs including the integration of Special Artificial Reef Sites and deepwater reef sites. The most recent iteration has been the development of a distinctive Inshore and Nearshore Artificial Reef Plan, which was approved in FY 2013-2014.

The July 2014 meeting of the Artificial Reef Council included the approval of seven 50-acre inshore planning areas to expedite the development and enhancement of Louisiana’s inshore reefs. Permitting was initiated in FY 2014-2015 for enhancement at two of the inshore planning areas, specifically at Redfish Point Reef and Independence Island Reef. Nearshore planning areas are in the initial stages of creation, and maps depicting potential sites were presented at the March 2015 Artificial Reef Council meeting.

Over the course of FY 2014-2015, the Louisiana Artificial Reef Program enhanced nine offshore reefs sites using 12 material donations (platform structures) and received \$7 million in donations from oil and gas company participation. Additionally, three reef structures were created at the nearshore reef site Ship Shoal 26, a popular speckled trout hotspot commonly called the “Pickets.” This brings the total number of established Louisiana artificial reef sites to 109 (Figure 14), which includes 30 inshore reefs, five nearshore reefs, 48 offshore planning area reefs, 18 offshore Special Artificial Reef Sites and eight deepwater reefs.

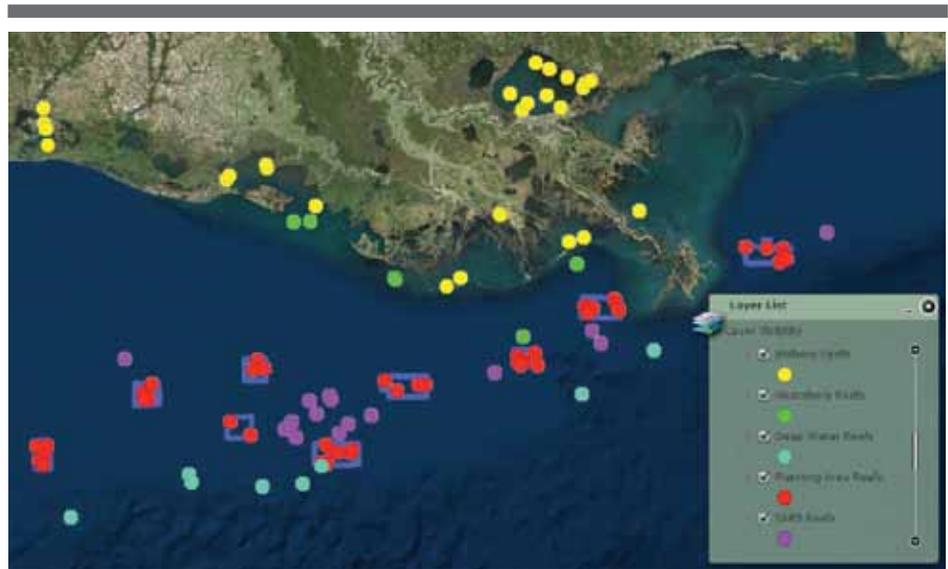


FIGURE 14. Louisiana’s artificial reef sites: There are 30 inshore reef sites (yellow) spread across the coastal basins. Currently there are only five nearshore reef sites (green) adjacent to the south-central portion of the Louisiana coast. The offshore reef sites are grouped into three categories: planning area reefs, Special Area Reef Sites, and deepwater reefs. The 48 planning area reefs (red) are located inside the boundaries of the nine offshore planning areas (blue line). The 18 Special Area Reef Sites (purple) fall outside of the planning areas, yet presented unique opportunities for reefing purposes. The eight deepwater reefs lie beyond the 400-ft depth contour.

PRESENTATIONS

McDonough, M., A. Ferguson, and M. Bradley. 2015. Artificial reef monitoring: inshore and offshore. Louisiana Department of Wildlife and Fisheries Research Meeting, Grand Isle, La.

McDonough, M. 2015. The Louisiana artificial reef program. Artificial Reef Development Council Meeting, Baton Rouge, La.

McDonough, M. 2014. The Louisiana artificial reef program. Artificial Reef Development Council Meeting, Baton Rouge, La.

Important Figures for FY 2014-2015

74 Total established offshore artificial reef sites

- 48 planning area reefs
- 18 special artificial reef sites
- 8 deepwater reefs

Offshore structures converted to permanent habitat

- 358 platform jackets
- 8 drill rig legs
- 12 oil and gas structures deployed

5 established nearshore reefs

- created the Pickets Reef complex (Ship Shoal 26)

30 established inshore reefs

- created 7 planning areas
- permitted two reefs for 2015-2016

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 department’s “Resource Enhancement through Stocking” guidelines. The program also provides support services for outreach and education activities.

FISH STOCKING

This year, in partnership with the USFWS, 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, approximately 5 million fish were released in 59 water bodies around the



Florida largemouth bass fingerlings produced at Booker Fowler Fish Hatchery ready for release to public waters.

FISH STOCKING BY WATERBODY

TABLE 5. 7/1/2014 - 6/30/2015

WATERBODY	SPECIES	SIZE	NUMBER
Anacoco Lake	Florida Largemouth Bass	Fingerlings	32,101
Bayou D'Arbonne Lake	Florida Largemouth Bass	Fingerlings	299,136
Bayou DeSiard	Triploid Grass Carp	Adults	1,000
Beaver Park Pond	Channel Catfish	Fingerlings	300
Black River Lake	Hybrid Striped Bass	Fingerlings	17,420
Bundicks Lake	Florida Largemouth Bass	Phase 2 Fingerlings	15,750
Caddo Lake & James Bayou	Florida Largemouth Bass Paddlefish	Fingerlings Sub-Adults	151,140 2,007
Calcasieu River	Florida Largemouth Bass Hybrid Striped Bass	Fry Fingerlings	537,600 100,000
Caney Creek Reservoir	Florida Largemouth Bass Florida Largemouth Bass	Fingerlings Phase 2 Fingerlings	1,131 24,045
Caney Lake Lower (Kisatchie National Forest, Webster Parish)	Florida Largemouth Bass	Fingerlings	1,148
Caney Lake Upper (Kisatchie National Forest, Webster Parish)	Florida Largemouth Bass	Fingerlings	700
Cheniere Brake Lake	Florida Largemouth Bass	Phase 2 Fingerlings	375
Claiborne Lake	Florida Largemouth Bass Hybrid Striped Bass	Fingerlings Fingerlings	80,156 97,600
Corney Lake (Kisatchie National Forest, Claiborne Parish)	Florida Largemouth Bass	Fingerlings	7,158
Cotile Lake	Florida Largemouth Bass	Fingerlings	24,139
Crooked Creek Lake	Florida Largemouth Bass	Fingerlings	7,963
Cross Lake	Florida Largemouth Bass	Fingerlings	142,199
Dubuisson Lake	Florida Largemouth Bass	Fingerlings	3,981
False River	Florida Largemouth Bass Hybrid Striped Bass	Phase 2 Fingerlings Fingerlings	2,997 26,000
Fort Polk Ponds	Bluegill Channel Catfish Redear Sunfish	Fingerlings Adults Fingerlings	32,704 186 810
Fullerton Lake (Kisatchie National Forest, Vernon Parish)	Florida Largemouth Bass	Fingerlings	230
Grand Bayou Reservoir	Florida Largemouth Bass Channel Catfish	Fingerlings Fingerlings	68,718 31,802
Girard Park Pond	Rainbow Trout Channel Catfish Triploid Grass Carp	1-Year-Old Adults Adults	1,160 200 30
Gum Springs (Kisatchie National Forest)	Florida Largemouth Bass	Fingerlings	114
Hardwater Lake	Florida Largemouth Bass Triploid Grass Carp	Fingerlings Adults	10,218 5,000
Hodges Gardens	Triploid Crass Carp	Adults	1,600
Ivan Lake	Florida Largemouth Bass Channel Catfish Triploid Grass Carp	Fingerlings Fingerlings Adults	6,749 26,001 600
Jennings Park Pond	Florida Largemouth Bass	Phase 2 Fingerlings	123
Lacassine Pool	Florida Largemouth Bass	Fingerlings	140,044

WATERBODY	SPECIES	SIZE	NUMBER
Lake Arthur & Mermentau River	Paddlefish	Fry	75,362
	Paddlefish	Fingerlings	3,412
	Florida Largemouth Bass	Fry	1,201,200
Lake Bistineau	Florida Largemouth Bass	Fingerlings	339,686
Lake Bruin	Florida Largemouth Bass	Fingerlings	20,049
	Hybrid Striped Bass	Fingerlings	30,000
Lake Concordia	Hybrid Striped Bass	Fingerlings	10,500
Lake Fields	Florida Largemouth Bass	Fry	51,600
Lake Long	Florida Largemouth Bass	Fry	51,600
Lake St. John	Hybrid Striped Bass	Fingerlings	21,000
Larto Lake	Florida Largemouth Bass	Fingerlings	40,754
Martin Lake	Florida Largemouth Bass	Phase 2 Fingerlings	8,235
	Triploid Grass Carp	Adults	500
Mill Creek Lake	Florida Largemouth Bass	Fingerlings	6,174
Moore Park	Channel Catfish	Fingerlings	300
Nantachie Lake	Florida Largemouth Bass	Fingerlings	20,136
Poverty Point Reservoir	Florida Largemouth Bass	Fingerlings	20,010
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	Phase 2 Fingerlings	8,000
Red River Pool 4	Florida Largemouth Bass	Phase 2 Fingerlings	8,000
Red River Pool 5	Florida Largemouth Bass	Phase 2 Fingerlings	8,000
Rockefeller Refuge	Florida Largemouth Bass	Fingerlings	153,743
Saline Lake (Catahoula Parish)	Florida Largemouth Bass	Fingerlings	43,925
Saline Lake (Natchitoches Parish)	Triploid Grass Carp	Adults	1,040
Sherburne WMA	Channel Catfish	Fingerlings	309
Spanish Lake	Hybrid Striped Bass	Fingerlings	12,000
Spring Bayou	Triploid Grass Carp	Adults	20,000
Thistlethwaite WMA	Channel Catfish	Fingerlings	309
Toledo Bend Reservoir	Florida Largemouth Bass	Fingerlings	820,391
Turkey Creek Lake	Florida Largemouth Bass	Fingerlings	60,082
Valentine Lake (Kisatchie National Forest)	Florida Largemouth Bass	Fingerlings	456
Vernon Lake	Florida Largemouth Bass	Fingerlings	42,153
Veteran's Park	Channel Catfish	Fingerlings	200
West Feliciana Sports Park	Hybrid Bluegill	Fingerlings	750
TOTAL			4,998,211

For Non-Florida Largemouth Bass: Fry <0.25", Fingerlings = 1-<12"; 1Yr-Old – 1 year old in age (length varies); Adult – sexually mature (length varies)

For Florida Largemouth Bass: Fry <0.25"; Fingerlings = 2-3"; Phase 2 Fingerlings = 3"+; 1 Yr Old – 1 year old in age (length varies);

Adult – sexually mature (length varies)

state. Table 5 provides comprehensive list of fish stocked in Louisiana waters during FY 2014-2015.

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 2,900 pounds of catfish for U.S. Forest Service fishing derbies and 3,300 pounds of catfish for Fort Polk fishing derbies. Hatchery biologists also 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's Booker Fowler Fish Hatchery began assisting with Louisiana pearlshell mussel research by providing space, water and daily care of the animals and equipment in 2014.

Host studies conducted by Tony Brady of the USFWS at Booker Fowler Fish Hatchery in 2015 identified 12 species of fish that can host the Louisiana pearlshell mussel glochidia, with four of those serving as primary host species. Table 6 summarizes the study results. Fifty redspot darters (*Etheostoma artisaie*) inoculated with glochidia at Booker Fowler Fish Hatchery were also released into Moccasin Branch, a stream in Kisatchie National Forest that dried up in 2011, wiping out the resident Louisiana pearlshell mussel population. Five additional inoculated darters were maintained at Booker Fowler Fish Hatchery and used to estimate numbers of transformers that may have been on the fish released in Moccasin Branch. It was estimated that the Louisiana pearlshell mussel inoculated darters released in Moccasin Branch had the potential to produce 1,160 transformers.

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

TABLE 6. Fish species and LPM transformers produced during 2015 host trials at Booker Fowler State Fish Hatchery.

FISH SPECIES	# FISH INOCULATED	# TRANSFORMERS PRODUCED	# TRANSFORMERS/ FISH	% TOTAL TRANSFORMERS
Striped Shiner	36	40	1.1	6.29
Redspot Darter	7	119	18	18.71
Redfin Shiner	10	29	2.9	4.56
Blackspot Topminnow	7	7	1	1.1
Creek Chubsucker	9	102	11.3	16.04
Brown Madtoms	4	29	7.3	4.56
Dusky Darters	3	21	7	3.3
Longear Sunfish	8	125	15.6	19.65
Spotted Bass	2	26	13	4.09
Spotted Sucker	3	1	0.3	0.16
Creek Chub	5	115	23	18.08
Blacktail Redhorse	1	25	25	3.93
TOTAL		639		100%

Table from "Host study and Free Release Culture Effort for the Louisiana Pearlscale Mussel *Margaritifera hembeli* 2015," by Tony Brady(USFWS)

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>)

FISHERIES OUTREACH AND EDUCATION PROJECTS

OUTREACH

The Aquatic Outreach and Education Program is 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 75,000 Louisiana citizens in FY 2014-2015.

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 new to the outdoors with the desire to fish. A partnership between

LDWF, CCA of Louisiana, Cabela's and National Wildlife Federation afforded many women an opportunity to attend a one-day Women's Fish Tagging Workshop to provide them 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 five 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."



LEFT: Winners of the April 2015 LASS event held in Grand Isle at Bridgeside Marina. **RIGHT:** LASS Tournament Director Sam Barbera with the youth anglers at the August 2014 LASS event at Delta Marina in Empire.

LOUISIANA SALTWATER SERIES

The Louisiana Saltwater Series (LASS) was created by the Louisiana Wildlife and Fisheries Foundation to promote the conservation and enhancement of Louisiana's saltwater sport fish resources, while providing a competitive opportunity for avid fishermen and newcomers alike. The LASS events also feature a youth division, and are used to encourage participation in the Louisiana Cooperative Marine Sport Fish Tagging Program, presenting the unique opportunity to release large numbers of fish at one time and location. 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.

LASS events occurring during FY 2014-2015 span the last four tournaments of the 2014 series, including the championship, as well as the first three tournaments of the 2015 series. LDWF biologists staff each tournament and tag fish when the Aquarium of the Americas tagging crew is unavailable. The Audubon Aquarium of the Americas staff attended four of the seven FY 2014-2015 LASS events, tagging fish and providing technical support and information to the anglers regarding best fish handling practices.

There were a total of 837 redfish tagged at LASS events in FY 2014-2015, with an overall reported recapture rate of over 11 percent (*Table 7*). The 2014 championship in Venice broke LASS records for not only the most fish tagged, but also the heaviest fish. The first LASS event of 2015 was held in conjunction with the Northshore Boat Show, with an option for anglers to launch at a site of their preference. The recapture rates were variable for each tournament,

TABLE 7. Redfish tagged and recaptured during FY 2014-2015 Louisiana Saltwater Series Tournaments.

DATE	LOCATION	TEAMS	REDFISH TAGGED	REDFISH RECAPTURED	RECAPTURE RATE
July 19, 2014	Port Fourchon Marina (Fourchon)	35	100	20	20%
Aug. 23, 2014	Delta Marina (Empire)	46	128	16	12.5%
Sept. 13, 2014	Seaway Marina (Lafitte)	34	129	9	6.9%
Oct. 17-18, 2014	Venice Marina (Venice)	45	231	10	4.3%
March 21, 2015	Northshore Harbor Center (Slidell)	63	93	16	17.2%
April 11, 2015	Bridgeside Marina (Grand Isle)	36	66	24	36.4%
May 2, 2015	Delta Marina (Empire)	38	90	2	2.2%

with the overall rate consistently higher than typical results observed in the Cooperative Tagging Program. The event with the highest reported recaptures was the 2015 tournament in Grand Isle, with an incredible 36 percent recapture rate.

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.

TABLE 8. Number of crab trap closures and numbers of trap removed annually.

YEAR	AREA(S)	TRAPS	BOAT DAYS
2004	2	6,894	90+
2005	4	4,623	50+
2006	1	2,935	31+
2007	2	1,495	15
2008	1	1,234	3
2009	1	788	n/a
2010	1	477	n/a
2011	1	1,100	n/a
2012	2	2,798	66
2013	2	969	32
2014	1	1,051	24
2015	1	422	9
Total	19	24,786	320+

A derelict crab trap cleanup was conducted over a 10-day period in a portion of western Cameron Parish from Feb. 21 - March 1, 2015. This crab trap cleanup was jointly conducted by LDWF and Texas Parks and Wildlife Department and focused on the border waters with Sabine Lake and the adjacent natural bayous. Volunteers, LDWF staff, Louisiana SeaGrant and CCA assisted in retrieving more than 400 abandoned crab traps.

Together, seven boats and over 50 man days of effort were logged during the cleanup effort, resulting in the removal of 422 abandoned and derelict crab traps.

FISHLA.ORG

A comprehensive, consumer-facing recreational fishing website was developed by the Fisheries Public Information staff in conjunction with a third-party contractor. The new site, *FishLA.org*, aims to position itself as the most comprehensive source for Louisiana fishing by providing fresh, relevant, user-friendly resources. It is designed to connect and support anglers of all skill sets, provide direct access to meaningful tools and resources, enhance each angler's individual experience, and inform the public on agency programs that encourage the enjoyment of fishing on Louisiana's waterways. A key component of the site is the Fishing Professor application, which allows the site visitor to access real-time data from LA Creel surveys to determine what kinds of fish were caught, where and when. Users can limit their search to specific types of fish and can hone in on specific fishing areas and marinas where fish were caught or landed.

A soft-launch of the site took place during FY 2014-2015, and a marketing plan is being developed for the site's official launch in 2016. During this soft-launch period, visitor comments and suggestions are being collected and taken into consideration as LDWF moves into Phase 2 of the project, further developing the Fishing Professor application.

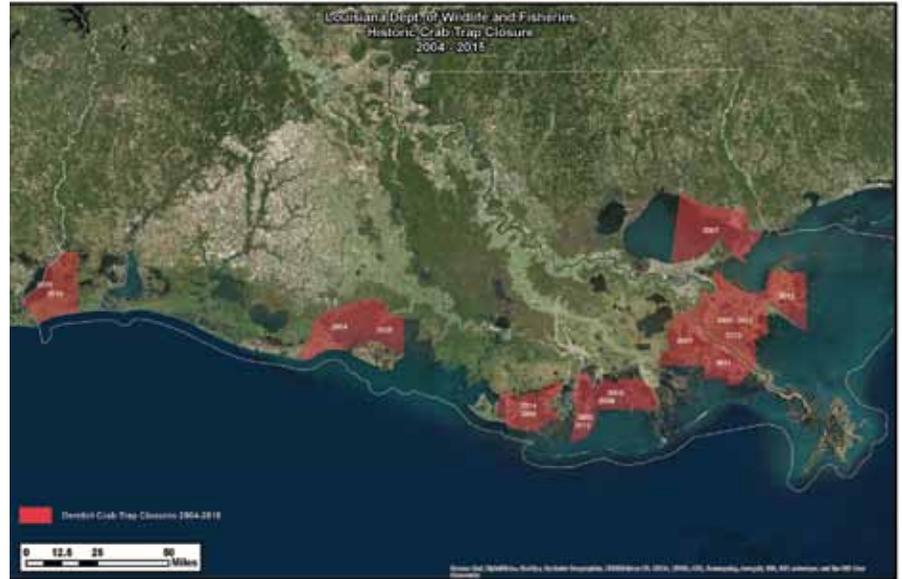


FIGURE 15. Map of derelict crab trap closures and cleanups since 2004.



New FishLA.org website.

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 the Louisiana Department of Health and Hospitals and the Louisiana Department of Agriculture and Forestry, 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 must register with LDWF. In FY 2014-2015, the online renewal process was simplified, allowing participants to easily renew their permit instead of reapplying. 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.

The program's first two years focused on building program interest among seafood dealers and processors within Louisiana. During FY 2014-2015, implementation was focused 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 program has launched additional marketing campaigns including the use of social media.

As of FY 2014-2015 there were a total of 125 permitted seafood businesses participating in the program with over 60 applications pending. Restaurant participation was increased by 150 percent, and several Certified labeled seafood retail packages are being sold in grocery markets across the state.

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 now being made by many U.S. buyers and retailers. LDWF is meeting these challenges with multiple approaches.

LDWF has explored mainstream sustainability 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 Marine Stewardship Council sustainability certification. The Office of Fisheries continues the upkeep required for certification. In June 2015, the Louisiana blue crab fishery successfully completed its third-year audit. LDWF provided additional evidence on the sustainability of the fishery and the agency's responsible management practices, including data on fishery bycatch and the diamondback terrapin population and the agency's Fishery Management Plan.

In addition to Marine Stewardship Council certification, the Office of Fisheries has been developing a Gulf-centric sustainability certification system in partnership with the Audubon Nature Institute. The Audubon Gulf United for Lasting Fisheries (GULF) program is leading the development of this sustainability certification system based on the United Nations FAO and International Standards Organizations protocols. LDWF participates on the Audubon GULF Technical Advisory Committee, which met in September 2014, April 2015 and most recently in July 2015. Pre-assessments for Louisiana blue crab and oyster certification were conducted in February 2015 against the Audubon standard. Preparations were being made in the summer of 2015 to present the GULF certification system to the International Standards Organization/International Accreditation Forum for formal recognition.

LDWF is directly engaging FAO and other international partners in developing best management practices for small-scale, warm-water coastal fisheries. Partners from the U.S., Australia, Brazil, Mexico, and the UN FAO have formed a Gulf of Mexico Working Group under LDWF leadership. The hope and expectation is that these best practices will provide the basis for a new set of FAO Technical Guidelines for Gulf of Mexico fisheries and similar fisheries around the world. Working Group meetings have taken place in July, August and October 2014; and January, February, March and May 2015. In June 2015, LDWF presented a summary report of the Working Group project to FAO staff and the UN FAO Committee on Fisheries Bureau in Rome.

We are continually vetting our program with seafood buyers to ensure Louisiana seafood and the Audubon GULF program will have market acceptance. LDWF has engaged national retail organizations and suppliers in intense dialogue concerning sustainable seafood market needs and desires. LDWF meets with seafood

industry actors regularly at such forums as the North American Seafood Expo held annually in Boston and the SeaWeb Sustainability Summit, which was held in New Orleans in December 2014. At the latter conference, LDWF officials presented the agency's work on sustainable and responsible fisheries management to help the private sector and non-governmental organization communities understand the issues facing Louisiana and the Gulf. LDWF is an active member of The Sustainability Consortium and contributes to their sustainability criteria and performance indicators for sustainable seafood. The agency is also directly involved in refining The Sustainability Consortium's Seafood Sustainability Program Principles. LDWF continues active conversations with private-sector actors about "fishery improvement plans" and "marine advancement plans" for those Louisiana fisheries that have not taken up formal certification. LDWF closed out a Sustainable Fisheries Partnership fishery improvement plan for the shrimp fishery in May 2015. In the summer of 2015, LDWF participated in discussions about the shrimp fishery with local, regional and national seafood representatives, including Walmart and Sysco, to potentially develop a new marine advancement plan under Audubon leadership.

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 Louisiana Fisheries Forward, the voluntary industry professionalization program, is to create a better-informed and more efficient commercial fishing industry that helps ensure the economic sustainability of the state's 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.

Louisiana Fisheries Forward, Advancing Our Seafood Industry, is an LDWF Office of Fisheries, collaborative effort with Louisiana SeaGrant and LSU AgCenter. Louisiana Fisheries Forward is a multi-year, multi-phase profes-

sionalism program for all sectors of the state's commercial fishing industry, including fishermen, dock owners, processors and distributors. This program is providing the education and training essential for the continued success of the industry and is focusing on a number of important topics through videos with corresponding fact sheets, the Louisiana Fisheries Forward Summit, hands-on workshops and the Louisiana Fisheries Forward website.

From July 2014 to June 2015, LDWF and Louisiana SeaGrant continued to execute Phase I of Louisiana Fisheries Forward; mainly, the production and post production of the training videos as noted below. Additionally, work continued on the production of educational materials (referred to as fact sheets), the offering of in-person training sessions (referred to as dock days), a refrigeration demonstration project, the Louisiana Fisheries Forward website (<http://lafisheriesforward.org>) and an annual fisheries summit. Within the time frame as noted above, aside from the voluntary component of Louisiana Fisheries Forward, the Commercial Crab Trap Gear Requirement was developed and executed as well as the start of Phase II for Louisiana Fisheries Forward.

Phase I training videos (available on <http://lafisheriesforward.org>):

- Best Practices for Commercial Fisherman
- Best Practices for Seafood Dealers and Processors
- Best Business Practices for the Seafood Industry
- Best Practices for Commercial Crab Fisherman

Legislation was passed during the 2014 regular session that required the LWFC to establish a program to increase and elevate professionalism in the commercial crab industry. Throughout the fall of 2014, LDWF developed the Louisiana Fisheries Forward Commercial Crab Gear Requirement. The Commercial Crab Gear Requirement consists of basic training and field training requirements that focus on education such as proper fishing techniques necessary for the health and sustainability of crabs, proper techniques for the best capture and presentation of the crabs for marketability and proper placement, tending and maintenance of crab traps to reduce potential conflicts with other user groups. Beginning Nov. 15, 2014, any person who wishes to obtain a commercial crab trap gear license must first complete this program unless the following exception applies (possessed a valid crab trap gear license any two of the license years, 2011, 2012, 2013 or

2014). By June 2015, there were approximately 141 active participants and approximately 79 participants who completed the requirement. For Commercial Crab Gear Requirement details, please visit www.wlf.la.gov/crabtraining.

In early March 2015, the Louisiana Fisheries Forward Summit was held in Houma, La. Attended by approximately 400 participants, the one-day summit offered comprehensive education and training for the commercial fishing industry through informative presentations and materials, as well as a 35 booth trade show and an array of hands-on workshops. Plans are underway to possibly host the 2016 Louisiana Fisheries Forward Summit in New Orleans.

In late March 2015, the Louisiana Fisheries Forward website was launched (<http://lafisheriesforward.org>).

By June 2015, Phase II of Louisiana Fisheries Forward was underway. Within Phase II, four videos will be produced with corresponding fact sheets, several hands-on workshops will be offered to include new and trending topics, and the Louisiana Fisheries Forward Refrigeration Demo Unit will be premiered, a 6,500 lb. unit that consists of a brine freezer, plate freezer and chilled water system.

LDWF's intention is to give our seafood industry access and training to the latest trends, requirements and technology in their profession. The seafood industry should have as much opportunity for training as any other industry in our state - we believe it will yield higher quality products and give our seafood community a competitive advantage in the marketplace. Since the launch of Louisiana Fisheries Forward, Advancing Our Seafood Industry, this one-of-a-kind professionalism program for Louisiana's commercial fishing industry has received inquiry, acknowledgement and recognition throughout many facets of local, regional, national and world fishing industries.

SEAFOOD TECHNOLOGY AND EQUIPMENT PROGRAM

Over the past few years the Office of Fisheries has developed 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.

TABLE 9. Louisiana Fisheries Forward Commercial Crab Gear Requirement.

PROGRAM STATUS	APPRENTICESHIP	SPONSORSHIP	GRAND TOTAL
Applicant Ineligible	1	5	6
Approved	24	117	141
Conditionally Approved	26	53	79
Incomplete	4	4	8
M S Ineligible	10	24	34
In Review	0	1	1
Grand Total	65	204	269

Phase 1 of the Seafood Technology and Equipment Program launched the Oyster Refrigeration Program in October 2012. Phases 2 and 3 of this program were launched during FY 2013-2014 and continued through FY 2014-2015. Phase 2, the Health Compliance Program, assisted 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 were 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 Louisiana Department of Health and Hospitals 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 costs. The maximum reimbursable amount for this program was \$30,000.

In FY 2014-2015 the Office of Fisheries created an entirely new online platform for the Seafood Technology and Equipment Program. This new online system will allow our staff to streamline the time from proposal to implementation of any Seafood Technology and Equipment Program initiative that we develop. This new online system will also allow us the flexibility of using one application portal to process forms from several different programs at one time.

SHRIMP REFRIGERATION PROGRAM NUMBERS FY 2014-2015 ONLY	
Applications Approved for Payment	46
Applications Awaiting Inspection	0
Total Payments Made	\$836,804.79

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 2014-2015, the Shrimp Task Force met on Aug. 6, 2014, March 10, 2015, April 1, 2015 and April 15, 2015. The Shrimp Task Force Management Subcommittee met on Aug. 27, 2013 and Feb. 13, 2014. Agenda items discussed include:

- Gulf-wide seafood certification and expansion of the Louisiana Wild Seafood Certification
- Certified 'Premium' shrimp
- Recommendations for fall 2014 shrimp season
- Outreach on skimmer tow times
- Amendment of the "firing line" in Calcasieu
- Amending the shrimp 'Inside/Outside Line'
- Refrigeration grants within the STEP Program
- Federal Shrimp Permit Moratorium
- Trip Ticket training
- Allowing experimental shrimp gear
- Funding of Louisiana Seafood Board salaries through Task Force funds

CRAB TASK FORCE

The Crab Task Force continued to work with the Office of Fisheries in FY 2014-2015 toward improving the Louisiana crab fishery. The task force met on Sept. 30, 2014, Nov. 4, 2014, Jan. 27, 2015, and April 14, 2015. Agenda items discussed include:

- Louisiana Fisheries Forward Program and crab gear license requirements
- Sustainability Certification and industry options

- 2015 Derelict Crab Trap Clean-up
- Report on trap limits in other states
- Discussion of 2015 legislative items
- Gear license fee structure and trap limits
- Expansion of Crab Trap Gear License Professionalism Exemption to include dealer landings
- Regulations to reduce maiden crab harvest
- Establish funding source and allow for travel/per diem for Crab Task Force members
- Crab Stock Assessment results
- Blue Crab Management Plan
- Penalties for undersized crabs
- Results from the LDWF Cooperative Research Survey

OYSTER TASK FORCE

In FY 2014-2015, the Oyster Task Force met on Aug. 5, 2014, Oct. 7, 2014, Dec. 9, 2014, Dec. 18, 2014, Jan. 13, 2015, Feb. 24, 2015, March 18, 2015, April 7, 2015, April 23, 2015, and May 5, 2015. Agenda items discussed include:

- Mandated VMS legislation
- Oyster Hatchery operation and construction schedule
- Mini-sack measurement requirements
- Washington D.C. Mardi Gras events
- ISSC regulatory changes
- Louisiana Fisheries Forward content
- Lifting the Oyster Lease Moratorium
- Updating the Oyster Task Force logo
- Mussel bycatch market
- Additional enforcement needs
- Coastal Restoration and Master Plan Impacts to the Industry
- Development of a Louisiana oyster industry documentary
- Artificial Reef sites
- Legislative discussions regarding the management of the oyster resource
- Louisiana oyster marketing initiatives by the Louisiana Seafood Promotion and Marketing Board

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.

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 2014-2015, 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 2014-2015.

SURVEYS

SURVEY OF NATIONAL HUNTING AND FISHING DAY PARTICIPANTS

On Sept. 27, 2014, 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 354 participants in this event. Results of this survey were completed and sent to the LDWF Public Information Section in October 2014.

SURVEY OF LOUISIANA RECREATIONAL OFFSHORE LANDINGS PERMIT HOLDERS

In August 2014, the SRD staff conducted an online survey of 18,347 individuals who held a Recreational Offshore Landings Permit (ROLP) and provided a verified e-mail address on the topic of regional management of the red snapper fishery in the Gulf of Mexico. The survey registered 4,463 responses for a response rate of 24.3 percent.

PUBLICATIONS, REPORTS AND PRESENTATIONS

Isaacs, Jack C. "Results of an On-Line Survey of Louisiana Recreational Off-Shore Landing Permit Holders Soliciting Views on a Proposed Red Snapper Sector Separation Policy," August, 2014.

Isaacs, Jack C. "Summary of a Survey of Participants in the 2014 Louisiana Department of Wildlife and Fisheries National hunting and Fishing Day Event." October, 2014.

Isaacs, Jack C. "Results of the Cooperative Research Survey among Respondents Who Targeted Crabs." Presentation at the Louisiana Crab Task Force Meeting, April, 2015.

Isaacs, Jack C. "Female Commercial Shrimp Harvesters in Louisiana." Presentation at the Louisiana Chapter of the American Fisheries Society, Baton Rouge, Louisiana, May 29, 2015.

Isaacs, Jack C. "Results of a Survey of Commercial Fishermen Who Harvested Wild Crawfish in Louisiana." Presentation at the Louisiana Chapter of the American Fisheries Society, Baton Rouge, Louisiana, May 29, 2015.

Tabarestani, Maryam. "U.S. Shrimp Demand Market Analysis: A Source Differentiated Mixed Demand Model." Presentation at the Louisiana Chapter of the American Fisheries Society, Baton Rouge, Louisiana, May 29, 2015.

REPRESENTATION ON TASK FORCES, STUDY GROUPS AND COMMITTEES

During FY 2014-2015, SRD staff members represented LDWF on the following task forces, study groups and committees:

- GSMFC FIN Social/Economic Work Group
- Louisiana Blue Crab Task Force
- Louisiana Shrimp Task Force
- 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 FISHERY 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 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 on 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 socioeconomics. LDWF biologists are also 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. LDWF biologists participated in the creation of various fishery management plans for Gulf species.

REPORT ACRONYMS

ACEP - Agricultural Conservation Easement Program
CCA - Coastal Conservation Association
CCVI - Climate Change Vulnerability Index
CNCP - Coastal Nutria Control Program
CNR - Coastal and Nongame Resources
COA - Conservation Opportunity Area
CPRA - Coastal Protection and Restoration Authority
CWPPRA - Coastal Wetlands Planning, Protection and Restoration Act
DMAP - Deer Management Assistance Program
EGCP - East Gulf Coastal Plain WMAs
FAO - United Nation's Food and Agriculture Organization
GOHSEP - Governor's Office of Homeland Security and Emergency Preparedness
GSMFC - Gulf States Marine Fisheries Commission
LAA - Limited Access Area
LASS - Louisiana Saltwater Series
LCC - Landscape Conservation Cooperative
LDEQ - Louisiana Department of Environmental Quality
LDNR - Louisiana Department of Natural Resources
LDWF - Louisiana Department of Wildlife and Fisheries
LDWF-LED - Louisiana Department of Wildlife and Fisheries Law Enforcement Division
LNHP - Louisiana Natural Heritage Program
LSUSVM - LSU School of Veterinary Medicine
LWFC - Louisiana Wildlife and Fisheries Commission
MAVN - Mississippi Alluvial Valley - North WMAs
MAVS - Mississippi Alluvial Valley - South WMAs
NASBLA - National Association of State Boating Law Administrators
NAWCA - North American Wetland Conservation Act
NAWMP - North American Waterfowl Management
NOAA - National Oceanic and Atmospheric Administration
NMFS - National Marine Fisheries Service
NRCS - USDA Natural Resources Conservation Service
NRDA - Natural Resource Damage Assessment
RCW - Red-cockaded Woodpecker
RMS - Research Management Service
RWR - Rockefeller Wildlife Refuge
SEAFWA - Southeastern Association of Fish and Wildlife Agencies
SEAMAP - Southeast Area Monitoring and Assessment Program
SFI - Sustained Forestry Initiative
SGCN - Species of Greatest Conservation Need
SWG - State Wildlife Grant
TLCD - Terrebonne Levee and Conservation District
USACE - U.S. Army Corps of Engineers
USDA - U.S. Department of Agriculture
USFWS - U.S. Fish and Wildlife Service
USGS - U.S. Geological Service
VMS - Vessel Monitoring System
WAP - Wildlife Action Plan
WGCP - West Gulf Coastal Plain WMAs
WLWCA - White Lake Wetlands Conservation Area
WMA - Wildlife Management Area

